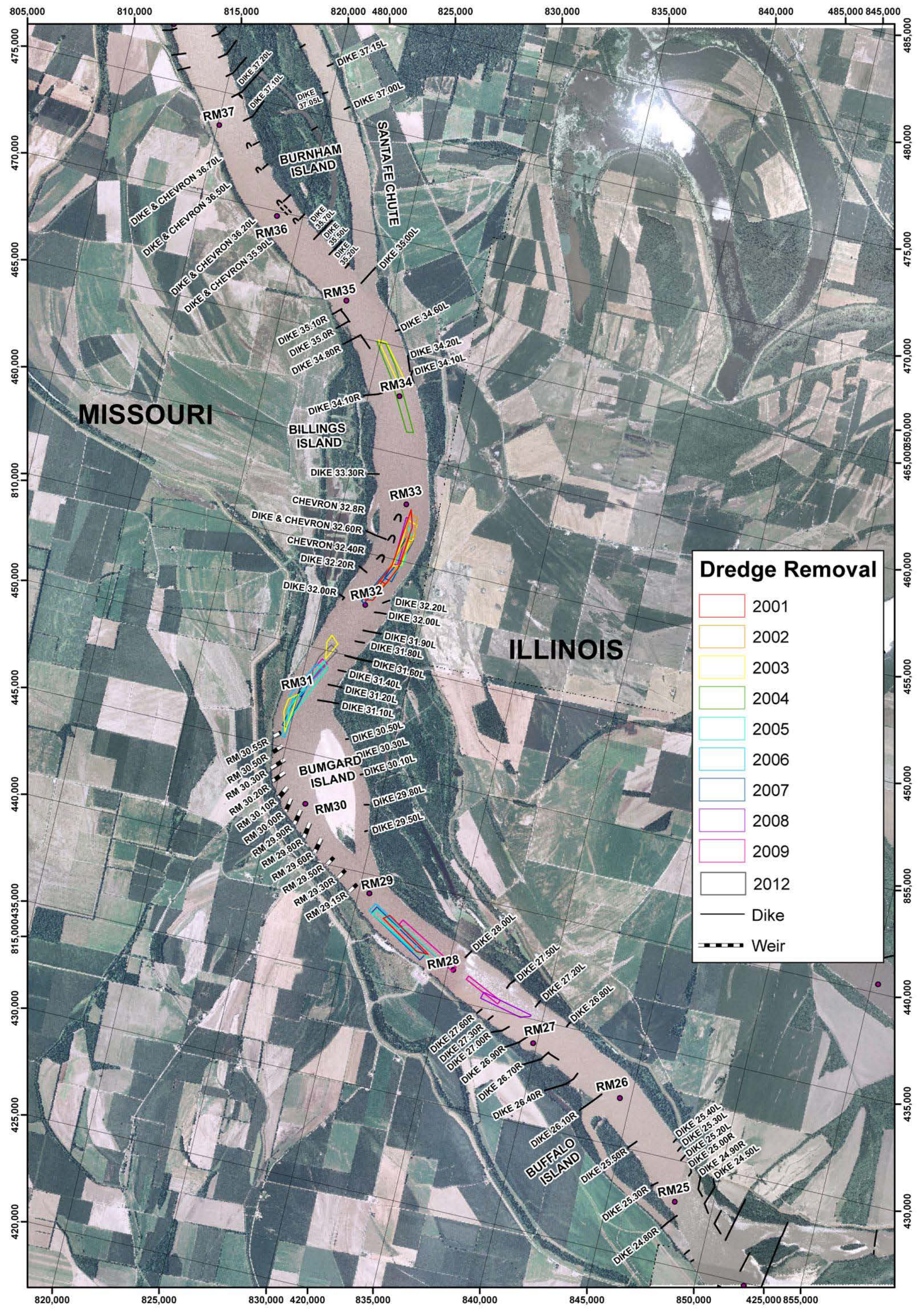
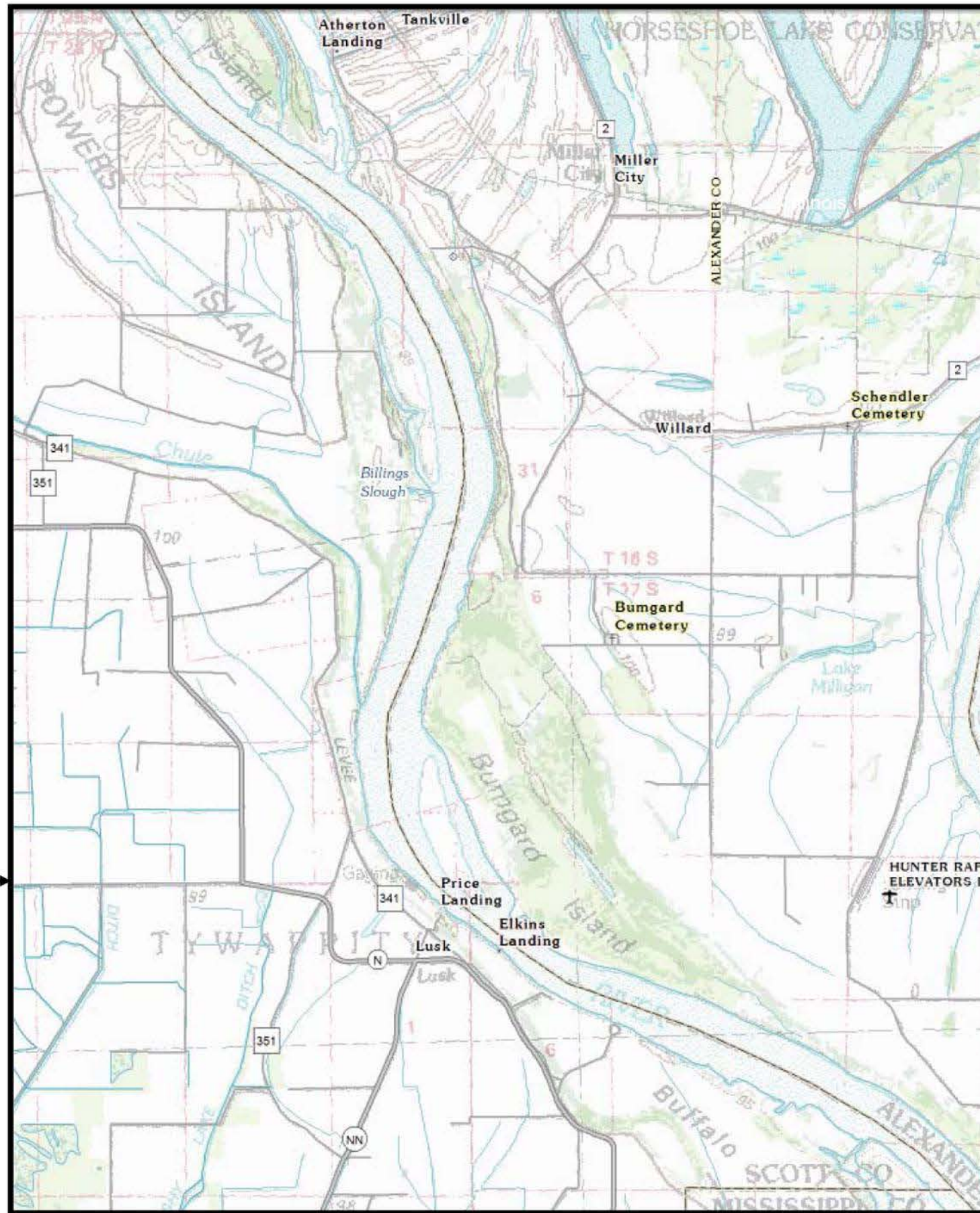




Dredge Removal

[Red outline]	2001
[Orange outline]	2002
[Yellow outline]	2003
[Light Green outline]	2004
[Cyan outline]	2005
[Blue outline]	2006
[Light Blue outline]	2007
[Purple outline]	2008
[Pink outline]	2009
[White outline]	2012
[Solid line]	Dike
[Dashed line]	Weir





**US Army Corps
of Engineers**
St. Louis District®

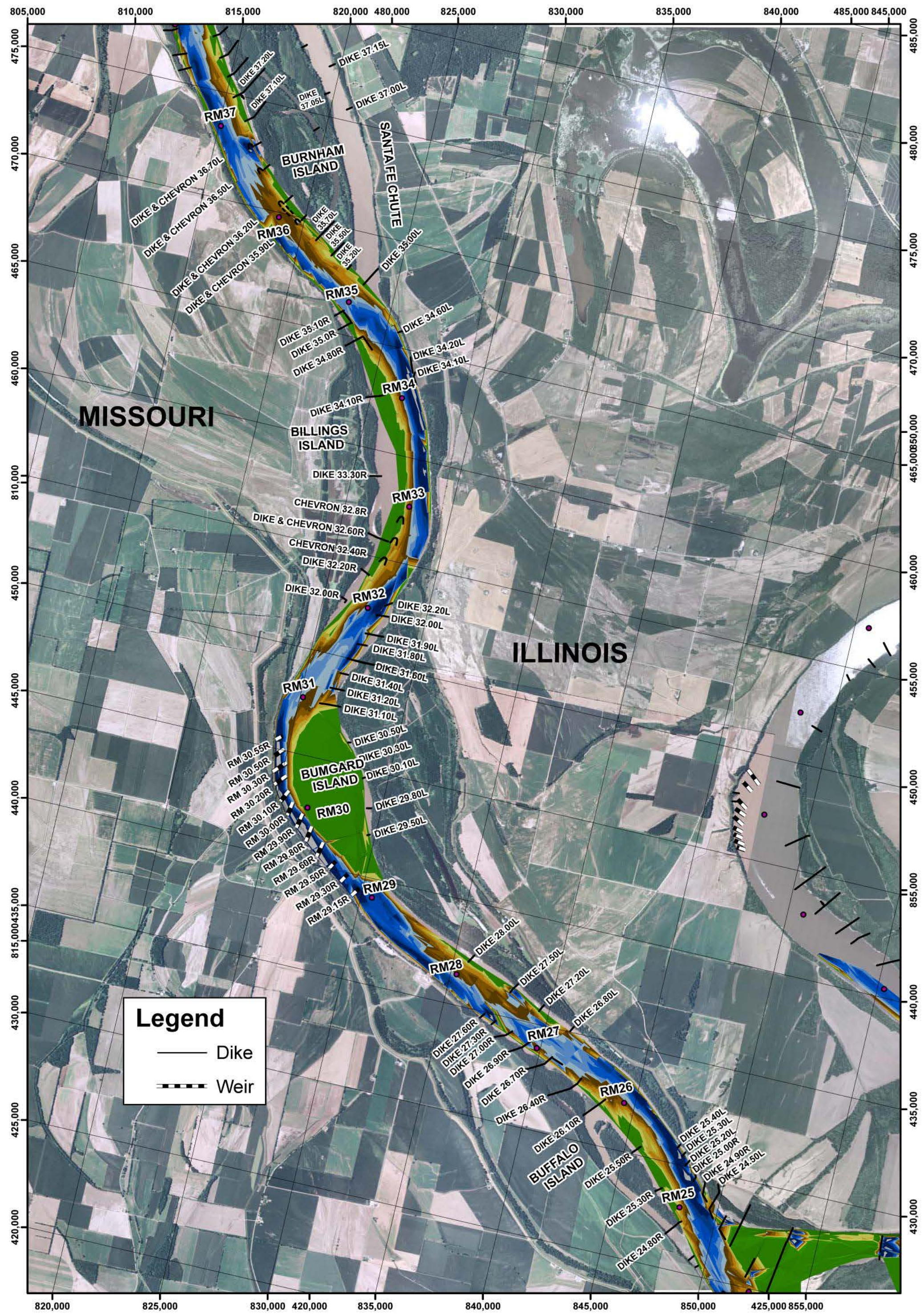
APPLIED
RIVER
ENGINEERING CENTER



REVIEWED BY: J. BROWN, P.E.	DRAWN BY: K. CLANCEY	U.S. ARMY ENGINEER DIVISION CORPS OF ENGINEERS ST. LOUIS, MISSOURI
CHECKED BY: E. BRAUER, P.E.	SUBMITTED BY: K. CLANCEY	APPLIED RIVER ENGINEERING CENTER ST. LOUIS DISTRICT
APPROVED BY: R. DAVINROY, P.E.	PLAT DATE: JUNE 2012	
FILE NAME: Z:\Bumgard Island HSR study\Plates\LocationMap\Vicinity-Plate#1		

**Bumgard Island
Location & Vicinity Map**

**PLATE
NUMBER
2**

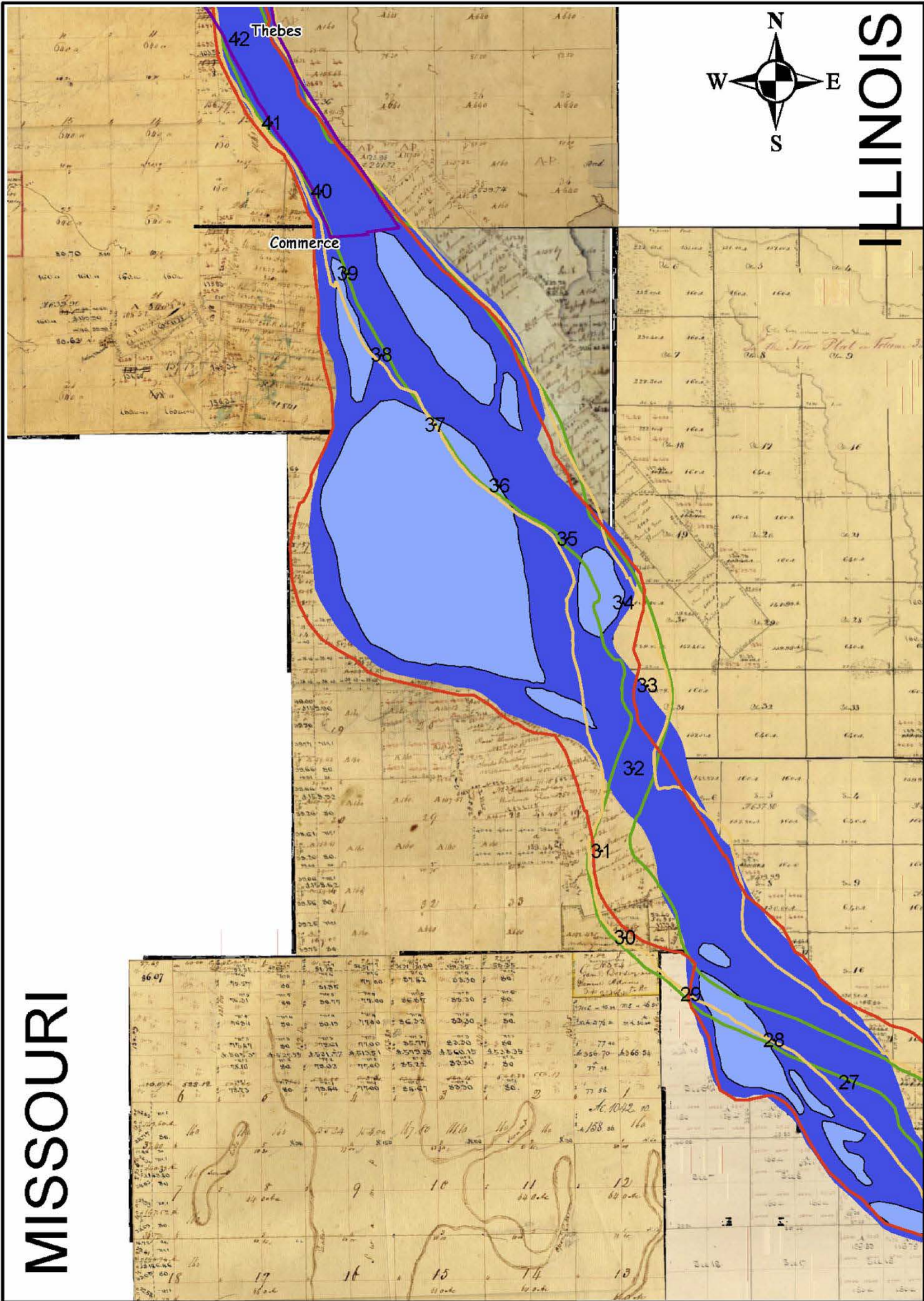


Legend

— Dike

--- Weir





2003

1928

1881

1866

1817

0

5,280

10,560

21,120

Feet

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

GEOMORPHOLOGY OF THE MIDDLE MISSISSIPPI
RIVER FROM ST. LOUIS, MO TO CAIRO, IL

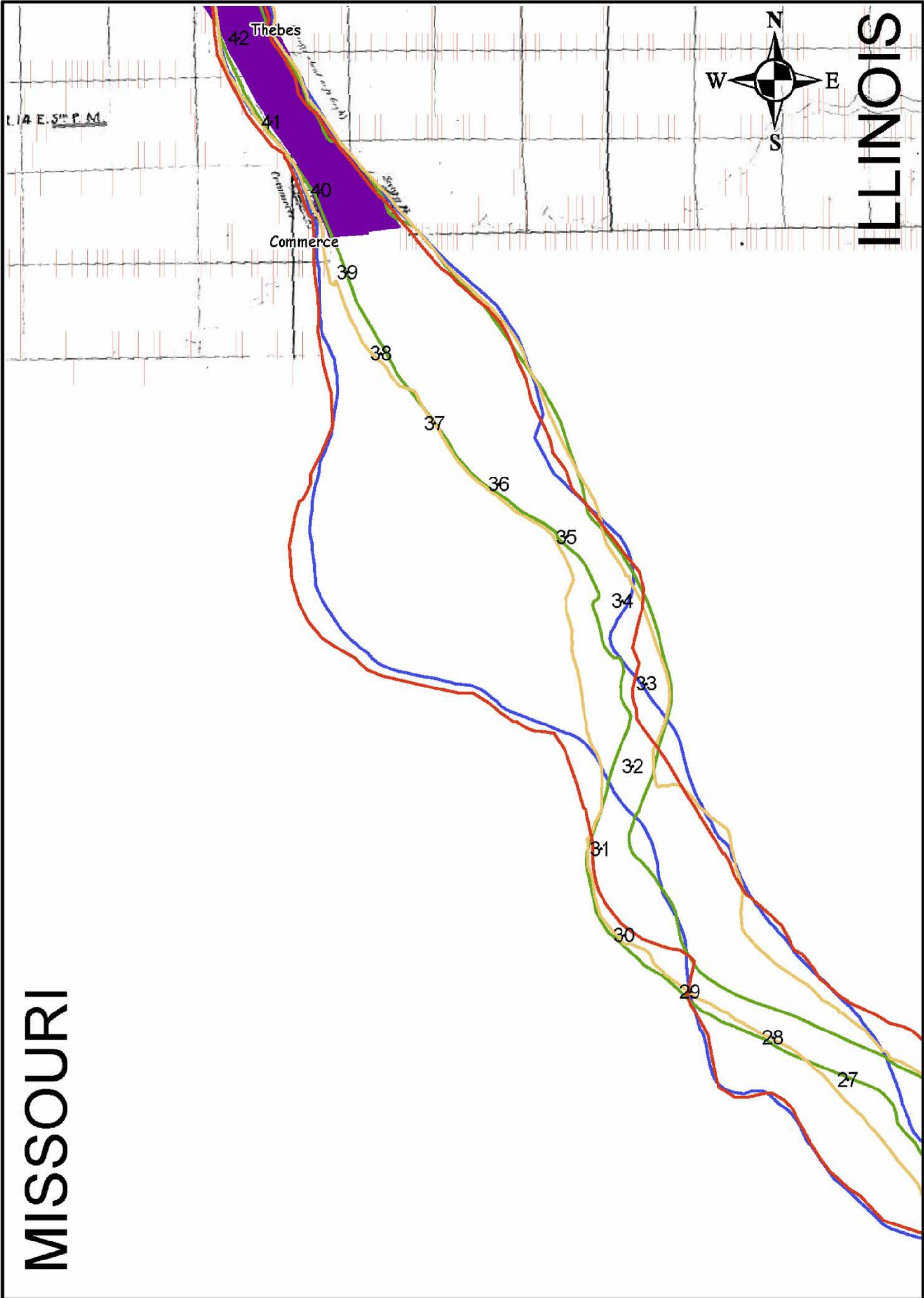
1817 Planform

SOURCE: 1817-1820 Government Land Office Surveys

APPLIED
RIVER
ENGINEERING CENTER

RIVER MILES 42-26

PLATE NO. 56



2003

1928

1881

1866

1817

0

5,280

10,560

21,120

Feet

SOURCE: Warren, Bvt. Major General G. K.

APPLIED RIVER ENGINEERING CENTER

DESIGNED BY
K. Clancey

DRAWN BY
K. Clancey

SUBMITTED
K. Clancey

FILE NAME
Z:\Bumgard Island HSR study\Plates

REVIEWED BY
E Brauer, P.E.

APPROVED
Rob Davinroy, P.E.

CHECKED BY
J Brown, P.E.

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

GEOMORPHOLOGY OF THE MIDDLE MISSISSIPPI
RIVER FROM ST. LOUIS, MO TO CAIRO, IL

1866 Planform

RIVER MILES 42-26

PLATE NO. 57

PLATE
NUMBER
5

Bumgard Island Geomorphology
1866 Planform

U.S. ARMY ENGINEER DIVISION CORPS OF ENGINEERS ST. LOUIS, MISSOURI	DESIGNED BY K. Clancey		
	DRAWN BY K. Clancey	REVIEWED BY E Brauer, P.E.	CHECKED BY J Brown, P.E.
	SUBMITTED K. Clancey		APPROVED Rob Davinroy, P.E.
	FILE NAME Z:\Bumgard Island HSR study\Plates		

APPLIED
RIVER
ENGINEERING CENTER

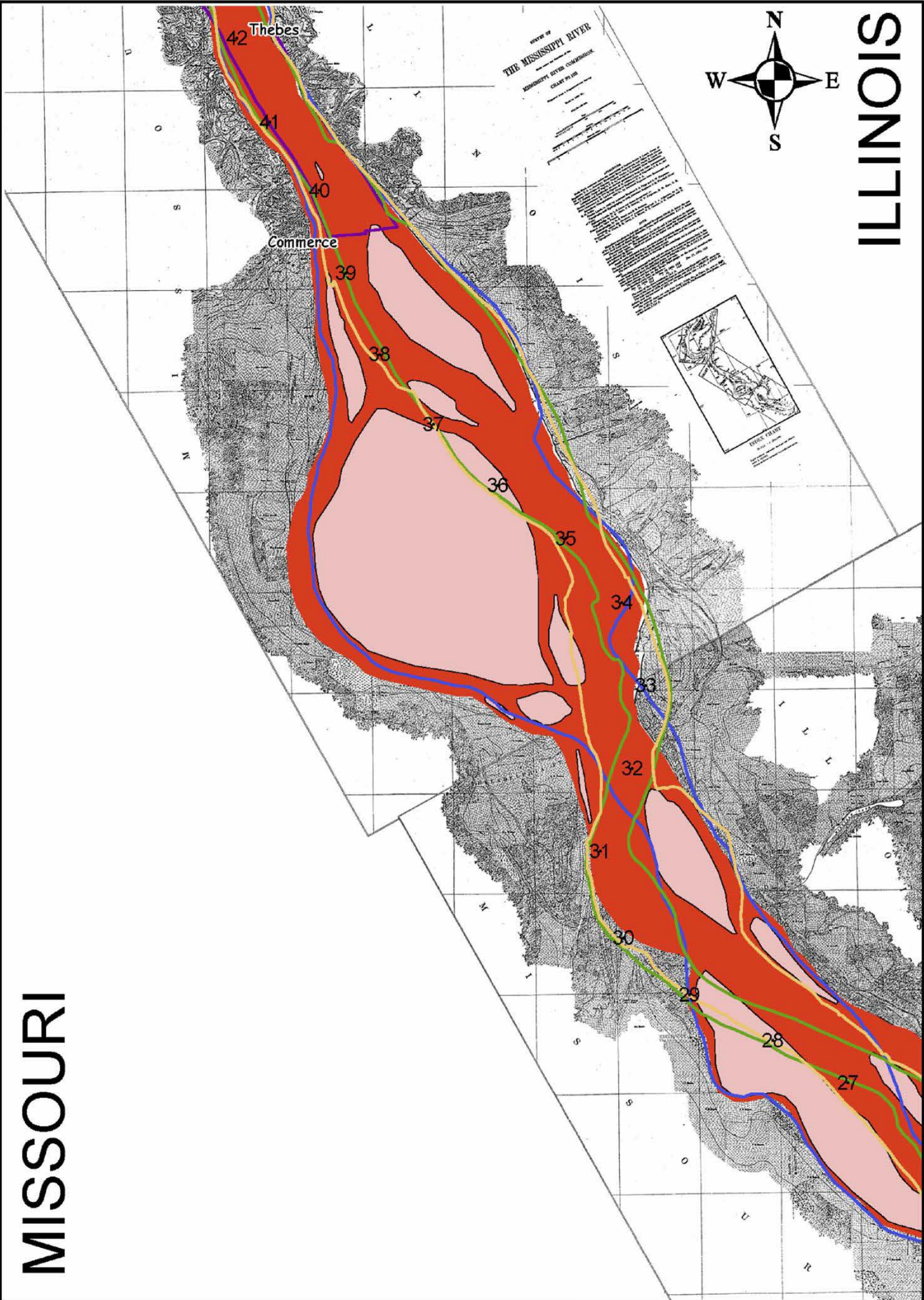
US Army Corps
of Engineers
St. Louis District

MISSISSIPPI



STATE OF
THE MISSISSIPPI RIVER
MISSISSIPPI RIVER COMMISSION
CHART NO. 108

NOTES:
1. This planform is based on the 1881 planform of the Mississippi River from St. Louis, Mo. to Cairo, Ill., as shown on the chart of the Mississippi River Commission, Chart No. 108, and the 1881 planform of the Mississippi River from Cairo, Ill., to the Gulf of Mexico, as shown on the chart of the Mississippi River Commission, Chart No. 109.
2. The planform is based on the 1881 planform of the Mississippi River from St. Louis, Mo. to Cairo, Ill., as shown on the chart of the Mississippi River Commission, Chart No. 108, and the 1881 planform of the Mississippi River from Cairo, Ill., to the Gulf of Mexico, as shown on the chart of the Mississippi River Commission, Chart No. 109.
3. The planform is based on the 1881 planform of the Mississippi River from St. Louis, Mo. to Cairo, Ill., as shown on the chart of the Mississippi River Commission, Chart No. 108, and the 1881 planform of the Mississippi River from Cairo, Ill., to the Gulf of Mexico, as shown on the chart of the Mississippi River Commission, Chart No. 109.
4. The planform is based on the 1881 planform of the Mississippi River from St. Louis, Mo. to Cairo, Ill., as shown on the chart of the Mississippi River Commission, Chart No. 108, and the 1881 planform of the Mississippi River from Cairo, Ill., to the Gulf of Mexico, as shown on the chart of the Mississippi River Commission, Chart No. 109.
5. The planform is based on the 1881 planform of the Mississippi River from St. Louis, Mo. to Cairo, Ill., as shown on the chart of the Mississippi River Commission, Chart No. 108, and the 1881 planform of the Mississippi River from Cairo, Ill., to the Gulf of Mexico, as shown on the chart of the Mississippi River Commission, Chart No. 109.
6. The planform is based on the 1881 planform of the Mississippi River from St. Louis, Mo. to Cairo, Ill., as shown on the chart of the Mississippi River Commission, Chart No. 108, and the 1881 planform of the Mississippi River from Cairo, Ill., to the Gulf of Mexico, as shown on the chart of the Mississippi River Commission, Chart No. 109.
7. The planform is based on the 1881 planform of the Mississippi River from St. Louis, Mo. to Cairo, Ill., as shown on the chart of the Mississippi River Commission, Chart No. 108, and the 1881 planform of the Mississippi River from Cairo, Ill., to the Gulf of Mexico, as shown on the chart of the Mississippi River Commission, Chart No. 109.
8. The planform is based on the 1881 planform of the Mississippi River from St. Louis, Mo. to Cairo, Ill., as shown on the chart of the Mississippi River Commission, Chart No. 108, and the 1881 planform of the Mississippi River from Cairo, Ill., to the Gulf of Mexico, as shown on the chart of the Mississippi River Commission, Chart No. 109.
9. The planform is based on the 1881 planform of the Mississippi River from St. Louis, Mo. to Cairo, Ill., as shown on the chart of the Mississippi River Commission, Chart No. 108, and the 1881 planform of the Mississippi River from Cairo, Ill., to the Gulf of Mexico, as shown on the chart of the Mississippi River Commission, Chart No. 109.
10. The planform is based on the 1881 planform of the Mississippi River from St. Louis, Mo. to Cairo, Ill., as shown on the chart of the Mississippi River Commission, Chart No. 108, and the 1881 planform of the Mississippi River from Cairo, Ill., to the Gulf of Mexico, as shown on the chart of the Mississippi River Commission, Chart No. 109.



- 2003
- 1928
- 1881
- 1866
- 1817

0 5,280 10,560 21,120 Feet

SOURCE: Mississippi River Commission, 1880-1882, 1884, 1888, 1889, 1891-1899



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

GEOMORPHOLOGY OF THE MIDDLE MISSISSIPPI RIVER FROM ST. LOUIS, MO TO CAIRO, IL

1881 Planform

RIVER MILES 42-26

PLATE NO. 58

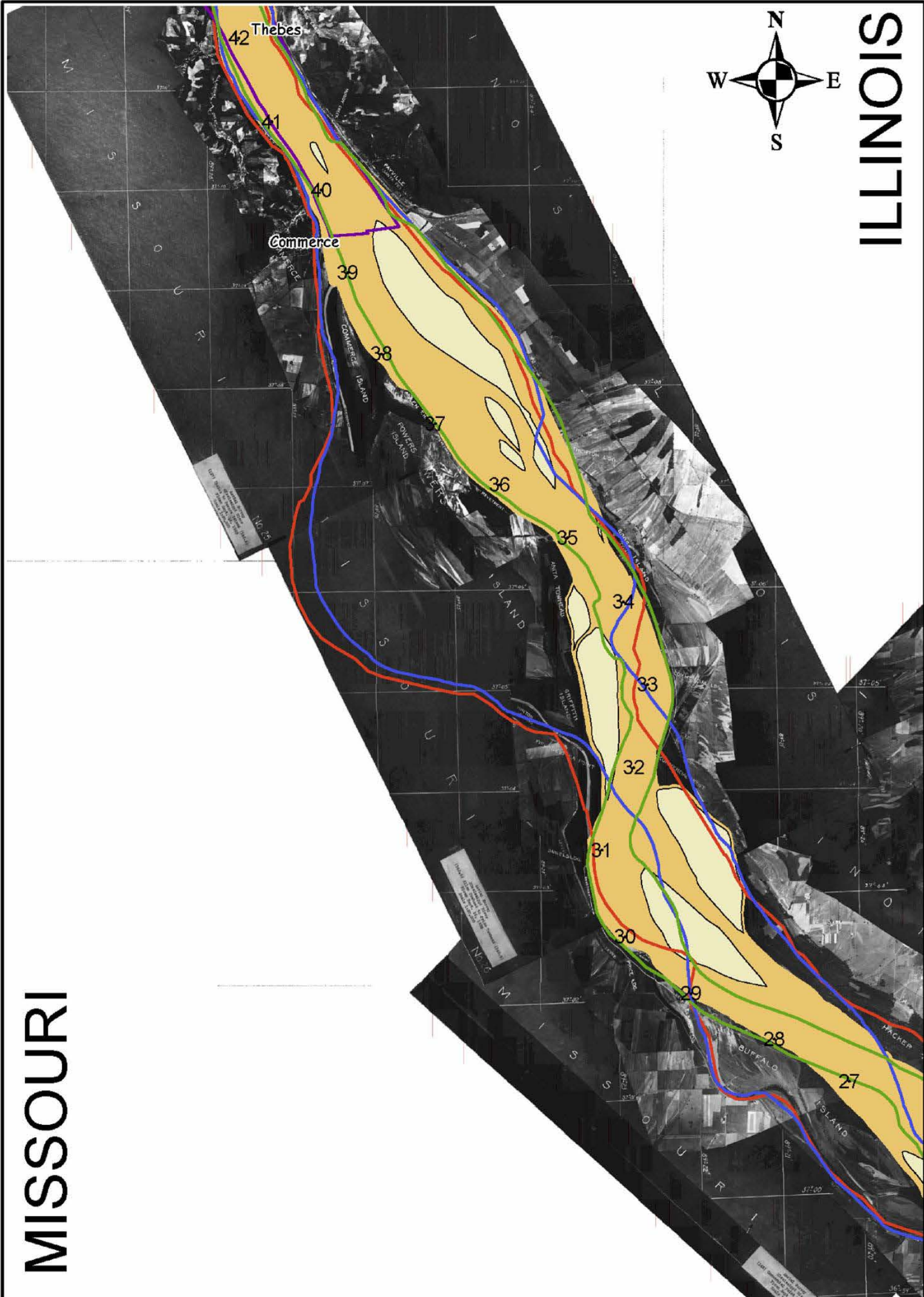


PLATE
NUMBER
6

Bumgard Island Geomorphology
1881 Planform

U.S. ARMY ENGINEER DIVISION CORPS OF ENGINEERS ST. LOUIS, MISSOURI	K. Clancey		
	DRAWN BY K. Clancey	REVIEWED BY E Brauer, P.E.	CHECKED BY J Brown, P.E.
Mississippi River Basin St. Louis District Bumgard Island HSR Model RM 36.0 - 25.0	SUBMITTED: K.Clancey		APPROVED: Rob Davinroy, P.E.
	FILE NAME: Z:\Bumgard Island HSR study\Plates		





MISSOURI

- 2003
- 1928
- 1881
- 1866
- 1817

0 5,280 10,560 21,120 Feet

SOURCE: Aerial Photographs
Flown 5 OCT 1928



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

**GEOMORPHOLOGY OF THE MIDDLE MISSISSIPPI
RIVER FROM ST. LOUIS, MO TO CAIRO, IL**

1928 Planform

RIVER MILES 42-26

PLATE NO. 59

U.S. ARMY ENGINEER DIVISION CORPS OF ENGINEERS ST. LOUIS, MISSOURI	DESIGNED BY K. Clancey		
	DRAWN BY K. Clancey	REVIEWED BY E Brauer, P.E.	CHECKED BY J Brown, P.E.
	SUBMITTED K.Clancey		
	APPROVED Rob Davinroy, P.E.		
Mississippi River Basin St. Louis District Bumgard Island HSR Model RM 36.0 - 25.0	FILE NAME Z:\Bumgard Island HSR study\Plates		



- 2003
- 1928
- 1881
- 1866
- 1817

0 5,280 10,560 21,120 Feet

SOURCE: Aerial Photographs



DESIGNED BY: K. Clancey
DRAWN BY: K. Clancey
CHECKED BY: J. Brown, P.E.



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

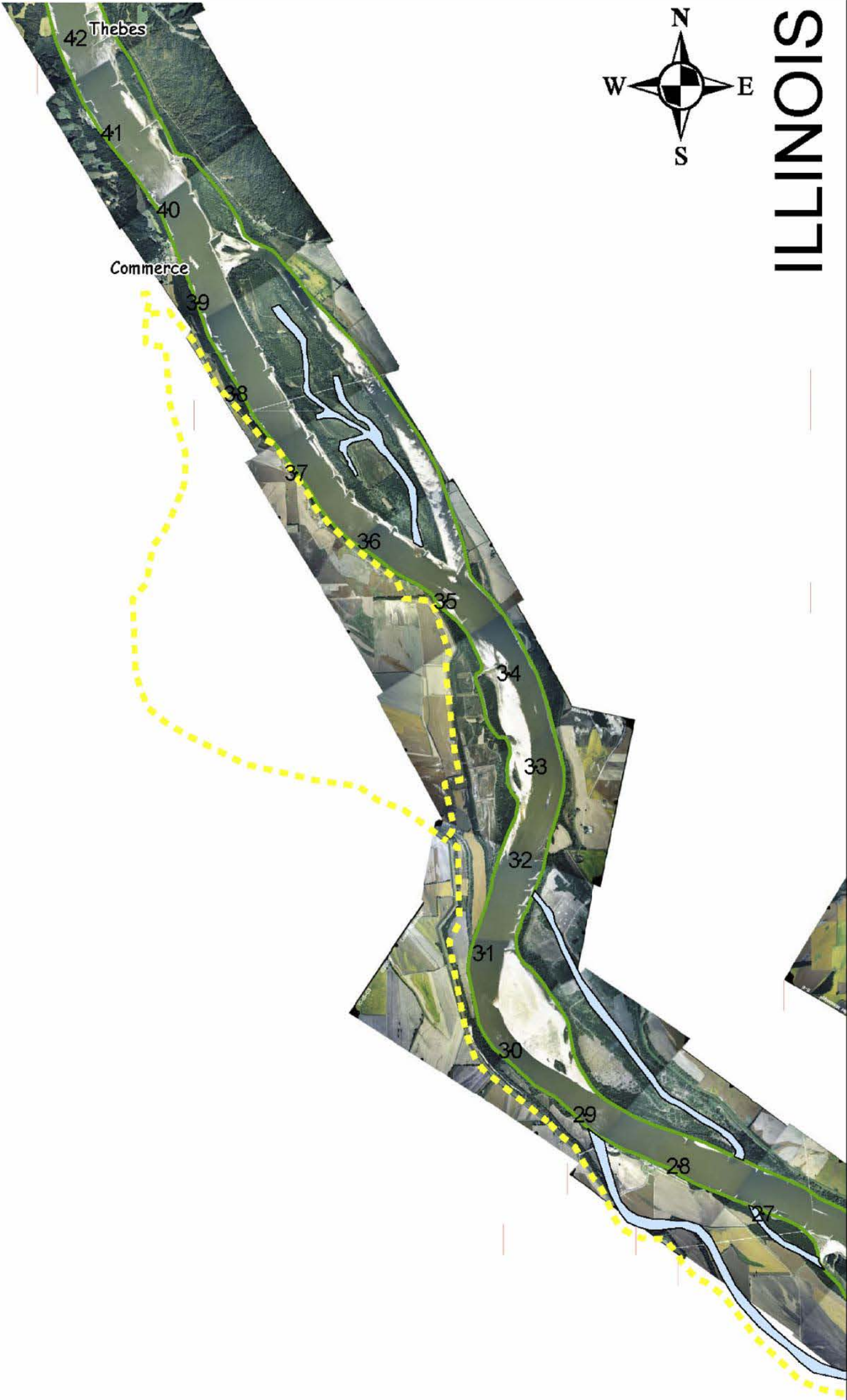
GEOMORPHOLOGY OF THE MIDDLE MISSISSIPPI
RIVER FROM ST. LOUIS, MO TO CAIRO, IL

2003 Planform

RIVER MILES 42-26

PLATE NO. 60

U.S. ARMY ENGINEER DIVISION CORPS OF ENGINEERS ST. LOUIS, MISSOURI	DESIGNED BY: K. Clancey		
	DRAWN BY: K. Clancey	REVIEWED BY: E Brauer, P.E.	CHECKED BY: J Brown, P.E.
	SUBMITTED: K.Clancey		
	APPROVED: Rob Davinroy, P.E.		
	FILE NAME: Z:\Bumgard Island HSR study\Plates		



LEGEND

- Levee
- 2003 Planform
- Isolated, Deep Oxbow
- Side Channel, Sloughs or Backwater



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

GEOMORPHOLOGY OF THE MIDDLE MISSISSIPPI
RIVER FROM ST. LOUIS, MO TO CAIRO, IL

BLUEPRINT FOR RESTORATION

RIVER MILES 42-26

PLATE NO. 61



FORWARDED BY: [blank]
RECEIVED BY: [blank]
DATE RECEIVED: [blank]

U.S. ARMY ENGINEER DIVISION CORPS OF ENGINEERS ST. LOUIS, MISSOURI	DESIGNED BY K. Clancey		
	DRAWN BY K. Clancey	REVIEWED BY E Brauer, P.E.	CHECKED BY J Brown, P.E.
	SUBMITTED: K.Clancey		
	APPROVED: Rob Davinroy, P.E.		
	FILE NAME: Z:\Bumgard Island HSR study\Plates		

Bumgard Island Geomorphology
Blueprint for Restoration



PLATE
NUMBER
10

0 1,625 3,250 6,500
Feet
1925 AERIAL PHOTOGRAPH
OVERLAY
2007 AERIAL PHOTOGRAPH

U.S. ARMY ENGINEER DIVISION CORPS OF ENGINEERS ST. LOUIS, MISSOURI	DESIGNED BY: K. Clancey		
	DRAWN BY:	REVIEWED BY:	CHECKED BY:
	K. Clancey	E Brauer, P.E.	J Brown, P.E.
	SUBMITTED:		
Mississippi River Basin St. Louis District Bumgard Island HSR Model RM 36.0 - 25.0	K. Clancey		APPROVED:
	FILE NAME: Z:\Bumgard Island HSR study\Plates		Rob Davinroy, P.E.





PLATE
NUMBER
11

0 1,625 3,250 6,500
Feet
1935 AERIAL PHOTOGRAPH
OVERLAY
2007 AERIAL PHOTOGRAPH

U.S. ARMY ENGINEER DIVISION CORPS OF ENGINEERS ST. LOUIS, MISSOURI	DESIGNED BY K. Clancey		
	DRAWN BY K. Clancey	REVIEWED BY E Brauer, P.E.	CHECKED BY J Brown, P.E.
	SUBMITTED: K. Clancey		
Mississippi River Basin St. Louis District Bumgard Island HSR Model RM 36.0 - 25.0	APPROVED: Rob Davinroy, P.E.		
	FILE NAME: Z:\Bumgard Island HSR study\Plates		



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US Army Corps
of Engineers
St. Louis District



PLATE
NUMBER
12

0 1,625 3,250 6,500
Feet
1942 PLANFORM MAP
OVERLAY
2007 AERIAL PHOTOGRAPH

DESIGNED BY K. Clancey		
DRAWN BY K. Clancey		
REVIEWED BY K. Clancey E Brauer, P.E. J Brown, P.E.		
CHECKED BY K. Clancey Rob Davinroy, P.E.		
SUBMITTED K. Clancey		
APPROVED Rob Davinroy, P.E.		
FILE NAME Z:\Bumgard Island HSR study\Plates		

U.S. ARMY ENGINEER DIVISION
CORPS OF ENGINEERS
ST. LOUIS, MISSOURI
Mississippi River Basin
St. Louis District
Bumgard Island
HSR Model
RM 36.0 - 25.0

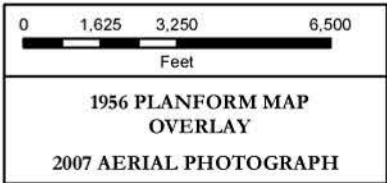


APPLIED
RIVER
ENGINEERING CENTER

US Army Corps
of Engineers
St. Louis District
EET



PLATE
NUMBER
13

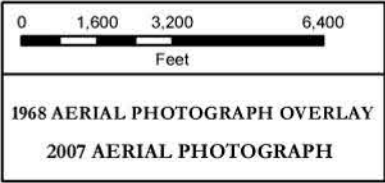


U.S. ARMY ENGINEER DIVISION CORPS OF ENGINEERS ST. LOUIS, MISSOURI	DESIGNED BY: K. Clancey		
	DRAWN BY:	REVIEWED BY:	CHECKED BY:
	K. Clancey	E Brauer, P.E.	J Brown, P.E.
	SUBMITTED: K. Clancey		
Mississippi River Basin St. Louis District Bumgard Island HSR Model RM 36.0 - 25.0	APPROVED: Rob Davinroy, P.E.		
	FILE NAME: Z:\Bumgard Island HSR study\Plates		





PLATE
NUMBER
14

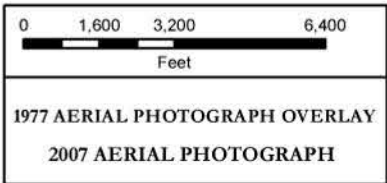


U.S. ARMY ENGINEER DIVISION CORPS OF ENGINEERS ST. LOUIS, MISSOURI	DESIGNED BY K. Clancey		
	DRAWN BY K. Clancey	REVIEWED BY E Brauer, P.E.	CHECKED BY J Brown, P.E.
	SUBMITTED K. Clancey		
	APPROVED Rob Davinroy, P.E.		
Mississippi River Basin St. Louis District Bumgard Island HSR Model RM 36.0 - 25.0			
FILE NAME Z:\Bumgard Island HSR study\Plates			





PLATE
NUMBER
15



U.S. ARMY ENGINEER DIVISION CORPS OF ENGINEERS ST. LOUIS, MISSOURI	DESIGNED BY K. Clancey		
	DRAWN BY K. Clancey	REVIEWED BY E Brauer, P.E.	CHECKED BY J Brown, P.E.
	SUBMITTED K. Clancey		
Mississippi River Basin St. Louis District Bumgard Island HSR Model RM 36.0 - 25.0	APPROVED Rob Davinroy, P.E.		FILE NAME Z:\Bumgard Island HSR study\Plates



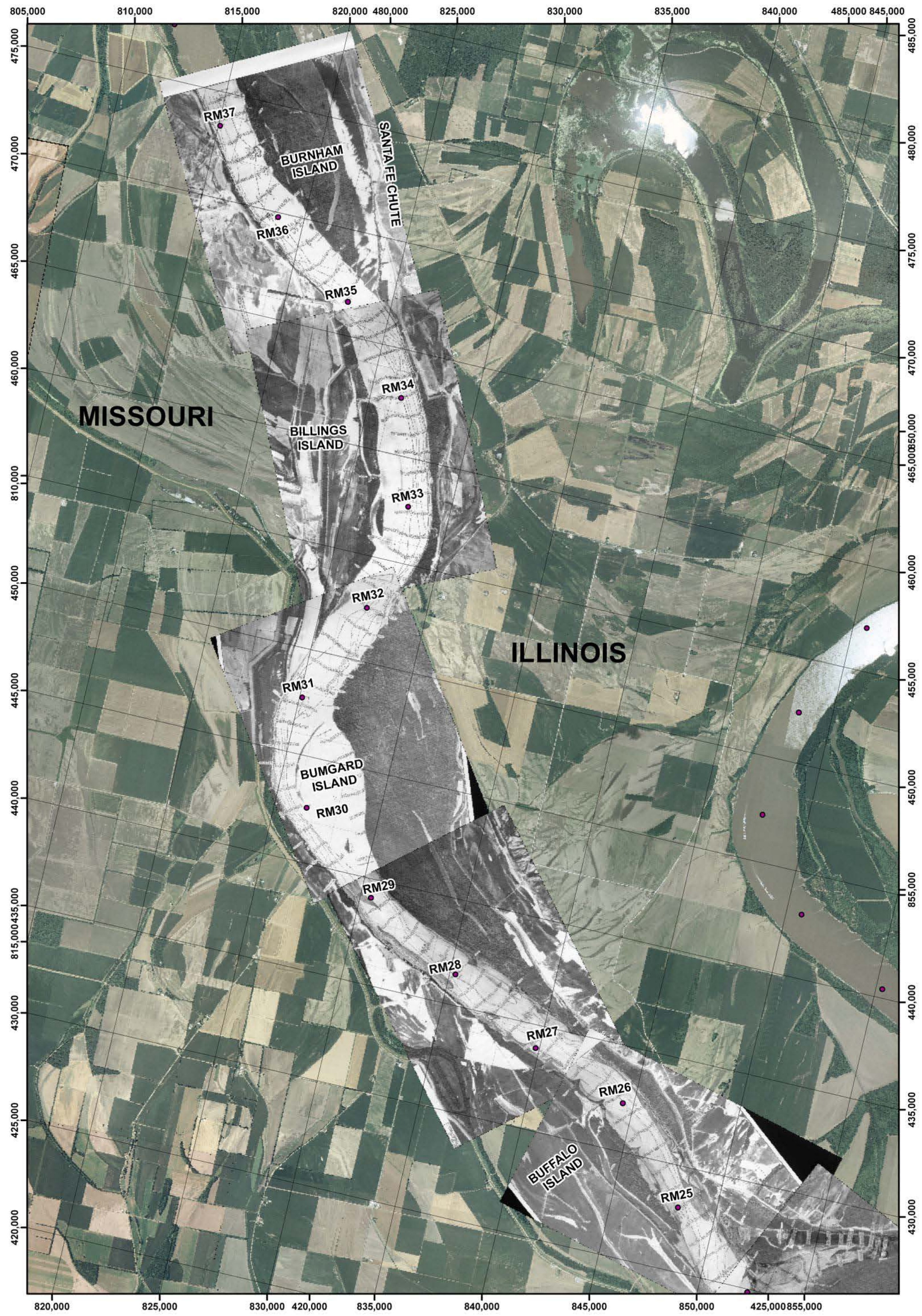
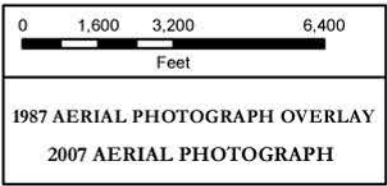
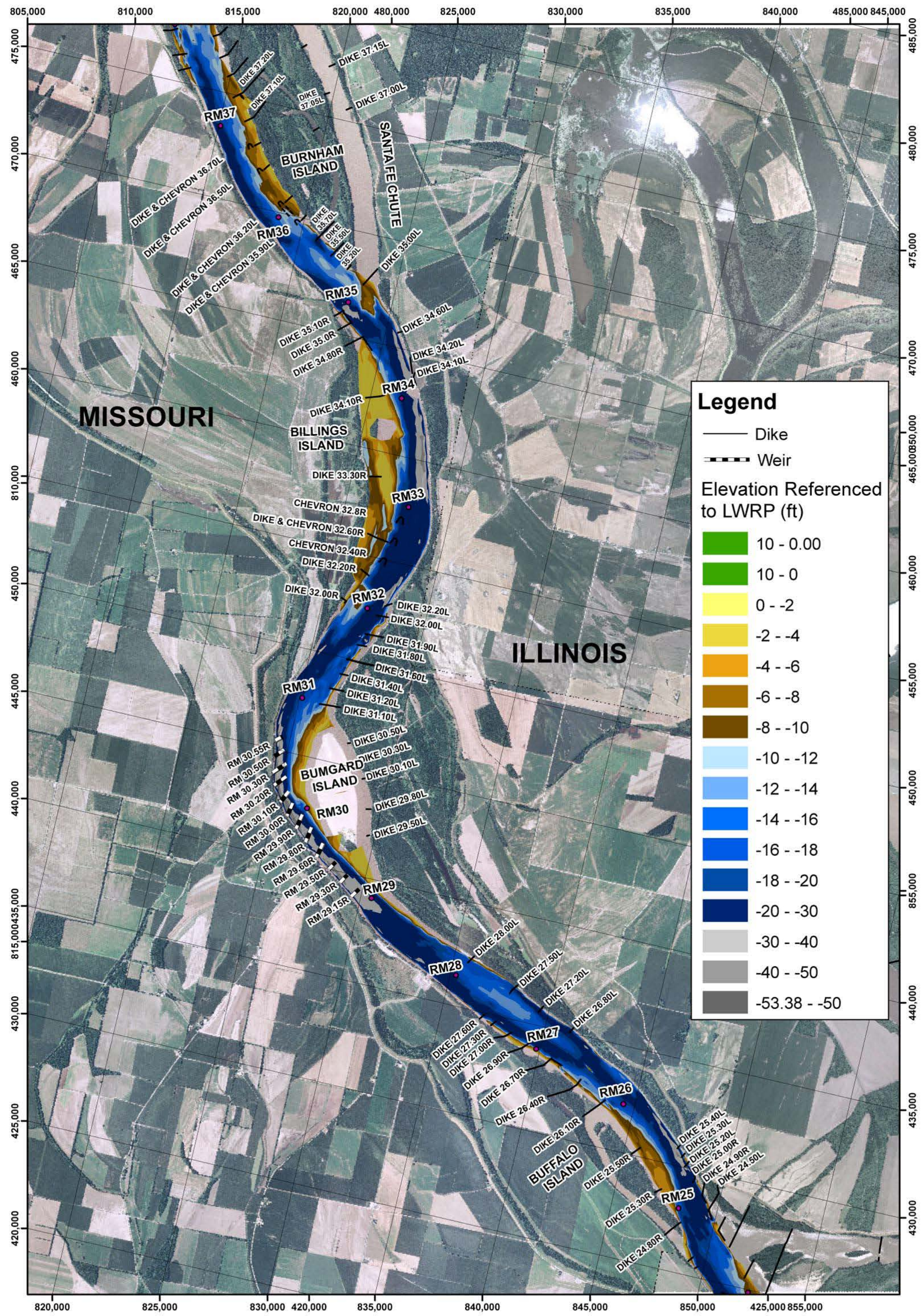


PLATE
NUMBER
16



U.S. ARMY ENGINEER DIVISION CORPS OF ENGINEERS ST. LOUIS, MISSOURI	DESIGNED BY K. Clancey		
	DRAWN BY K. Clancey	REVIEWED BY E Brauer, P.E.	CHECKED BY J Brown, P.E.
	SUBMITTED K. Clancey		
	APPROVED Rob Davinroy, P.E.		
Mississippi River Basin St. Louis District Bumgard Island HSR Model RM 36.0 - 25.0	FILE NAME: Z:\Bumgard Island HSR study\Plates		





Legend

Dike

Weir

Elevation Referenced to LWRP (ft)

10 - 0.00

10 - 0

0 - -2

-2 - -4

-4 - -6

-6 - -8

-8 - -10

-10 - -12

-12 - -14

-14 - -16

-16 - -18

-18 - -20

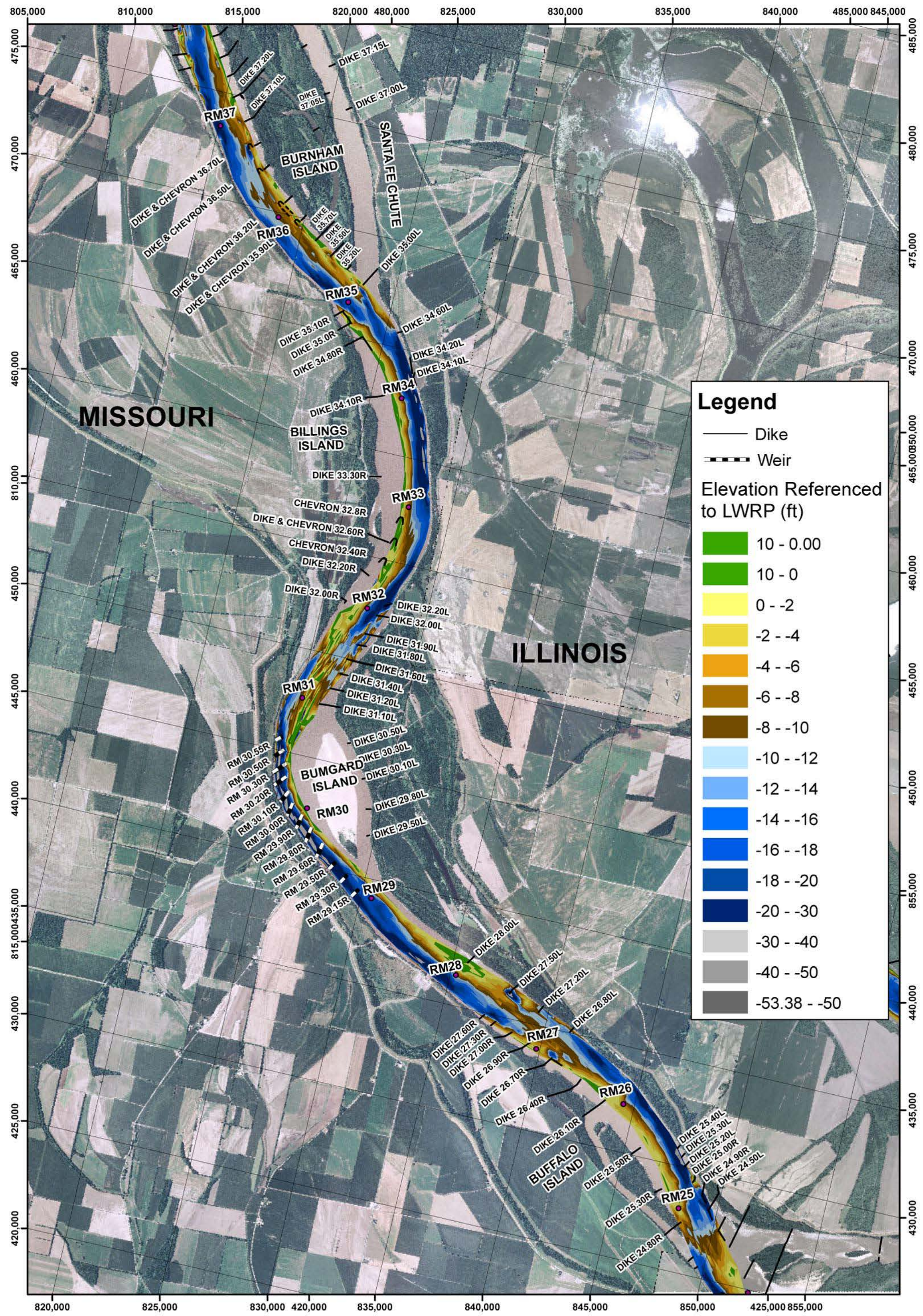
-20 - -30

-30 - -40

-40 - -50

-53.38 - -50





Legend

Dike

Weir

Elevation Referenced to LWRP (ft)

10 - 0.00

10 - 0

0 - -2

-2 - -4

-4 - -6

-6 - -8

-8 - -10

-10 - -12

-12 - -14

-14 - -16

-16 - -18

-18 - -20

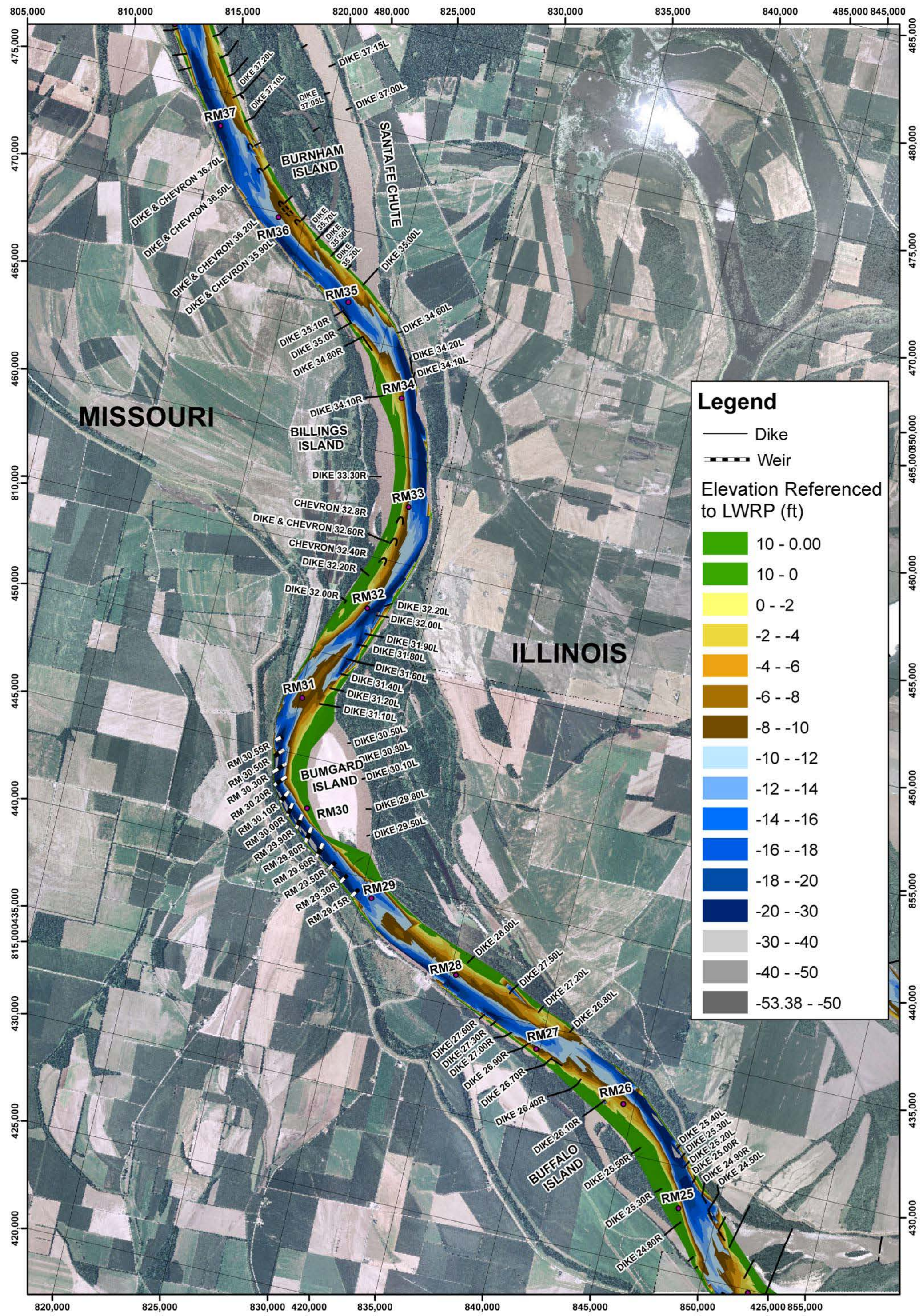
-20 - -30

-30 - -40

-40 - -50

-53.38 - -50





Legend

Dike

Weir

Elevation Referenced to LWRP (ft)

10 - 0.00

10 - 0

0 - -2

-2 - -4

-4 - -6

-6 - -8

-8 - -10

-10 - -12

-12 - -14

-14 - -16

-16 - -18

-18 - -20

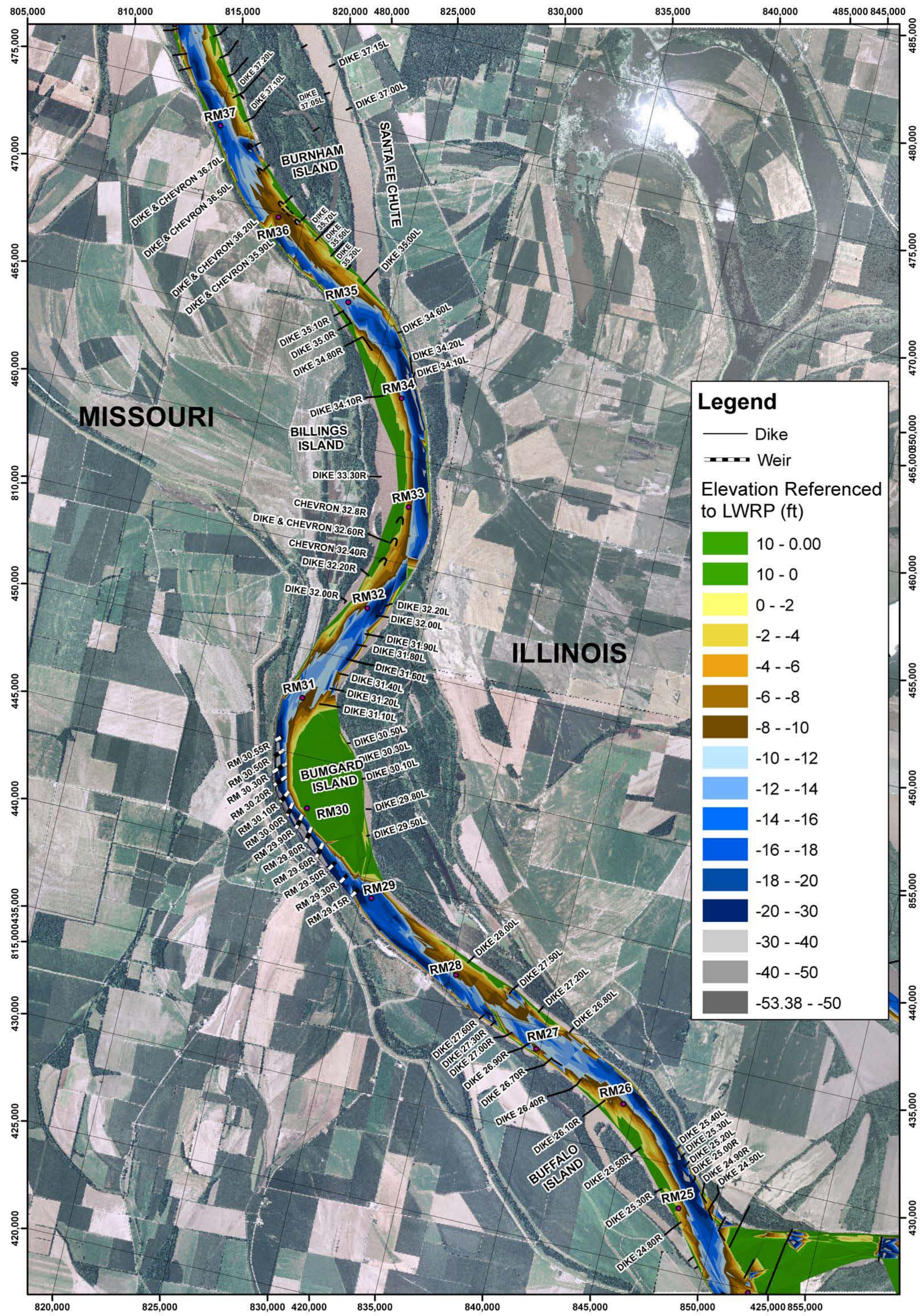
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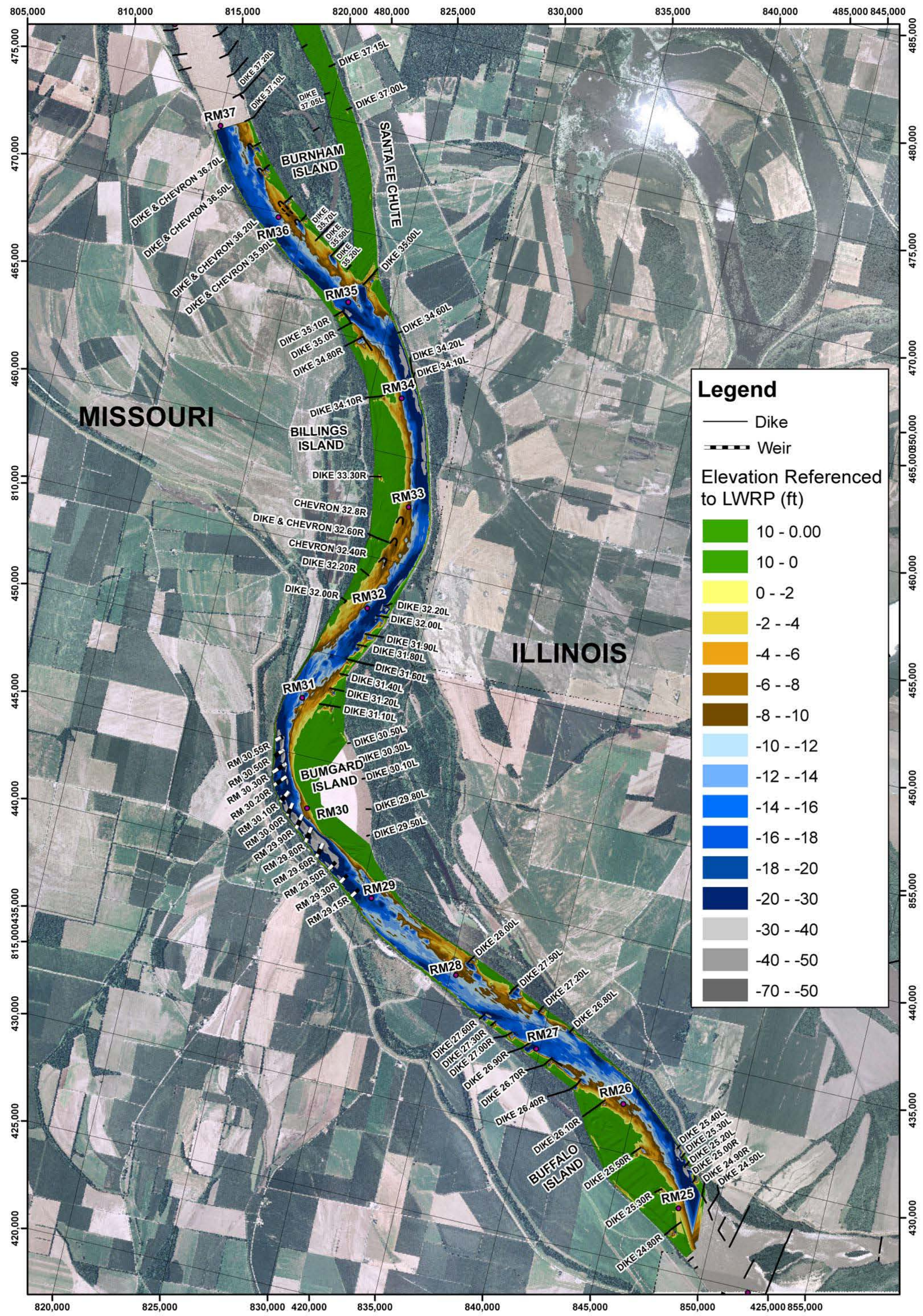
-30 - -40

-40 - -50

-53.38 - -50







Legend

Dike

Weir

Elevation Referenced to LWRP (ft)

10 - 0.00

10 - 0

0 - -2

-2 - -4

-4 - -6

-6 - -8

-8 - -10

-10 - -12

-12 - -14

-14 - -16

-16 - -18

-18 - -20

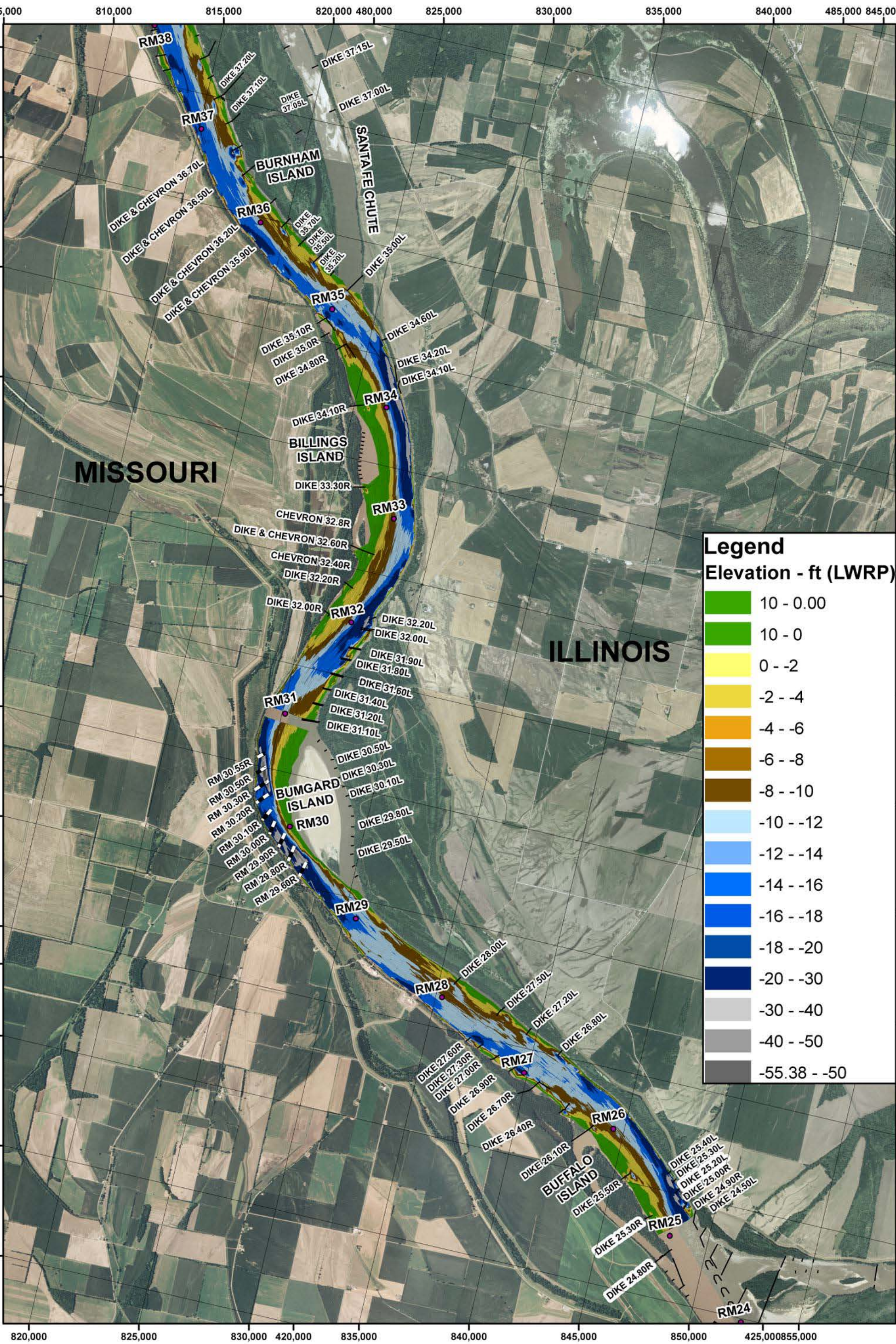
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-30 - -40

-40 - -50

-70 - -50



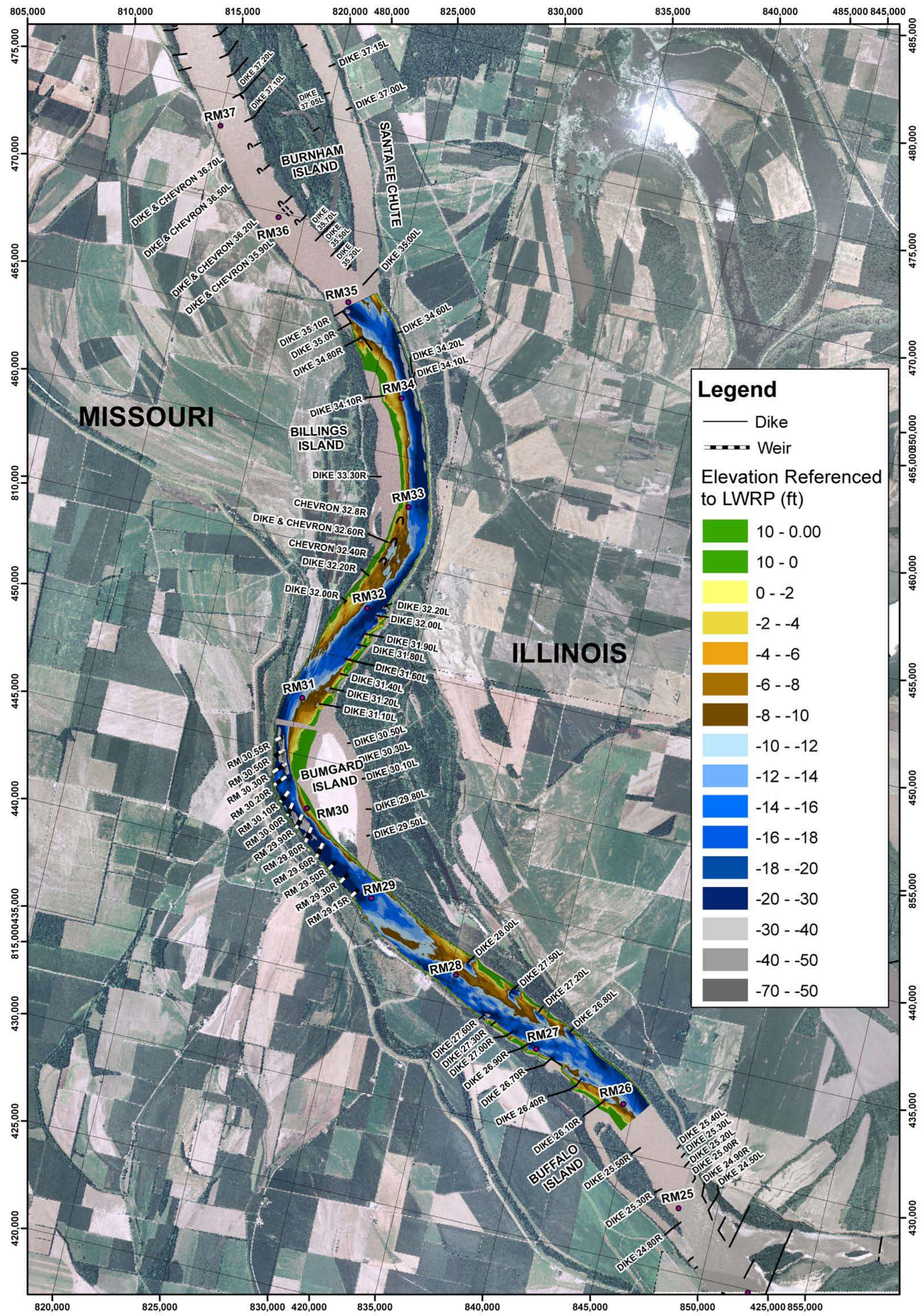


Legend

Elevation - ft (LWRP)

	10 - 0.00
	10 - 0
	0 - -2
	-2 - -4
	-4 - -6
	-6 - -8
	-8 - -10
	-10 - -12
	-12 - -14
	-14 - -16
	-16 - -18
	-18 - -20
	-20 - -30
	-30 - -40
	-40 - -50
	-55.38 - -50





Legend

Dike

Weir

Elevation Referenced to LWRP (ft)

10 - 0.00

10 - 0

0 - -2

-2 - -4

-4 - -6

-6 - -8

-8 - -10

-10 - -12

-12 - -14

-14 - -16

-16 - -18

-18 - -20

-20 - -30

-30 - -40

-40 - -50

-70 - -50

PLATE
NUMBER
23

01,6003,2006,400

Feet

HYDROGRAPHIC SURVEY

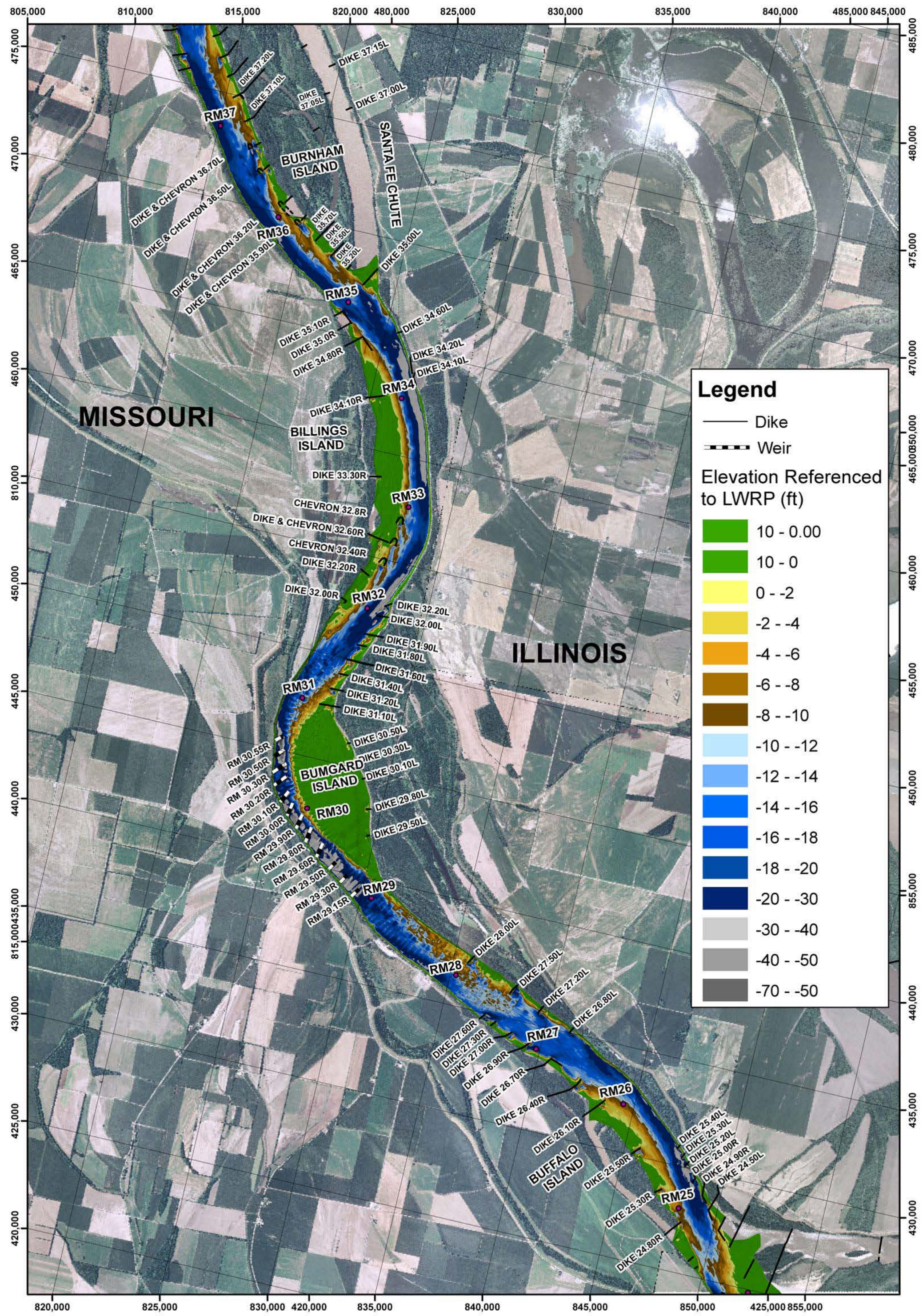
SEPTEMBER 19, 2007

STAGE (FT): 10.4

2007 AERIAL PHOTOGRAPH

U.S. ARMY ENGINEER DIVISION CORPS OF ENGINEERS ST. LOUIS, MISSOURI	DESIGNED BY: K. Clancey		
	DRAWN BY:	REVIEWED BY:	CHECKED BY:
	K. Clancey	E Brauer, P.E.	J Brown, P.E.
	SUBMITTED:	APPROVED:	
Mississippi River Basin St. Louis District Bumgard Island HSR Model RM 36.0 - 25.0	K. Clancey	Rob Davinroy, P.E.	
	FILE NAME:	Z:\Bumgard Island HSR study\Plates	





Legend

Dike

Weir

Elevation Referenced to LWRP (ft)

10 - 0.00

10 - 0

0 - -2

-2 - -4

-4 - -6

-6 - -8

-8 - -10

-10 - -12

-12 - -14

-14 - -16

-16 - -18

-18 - -20

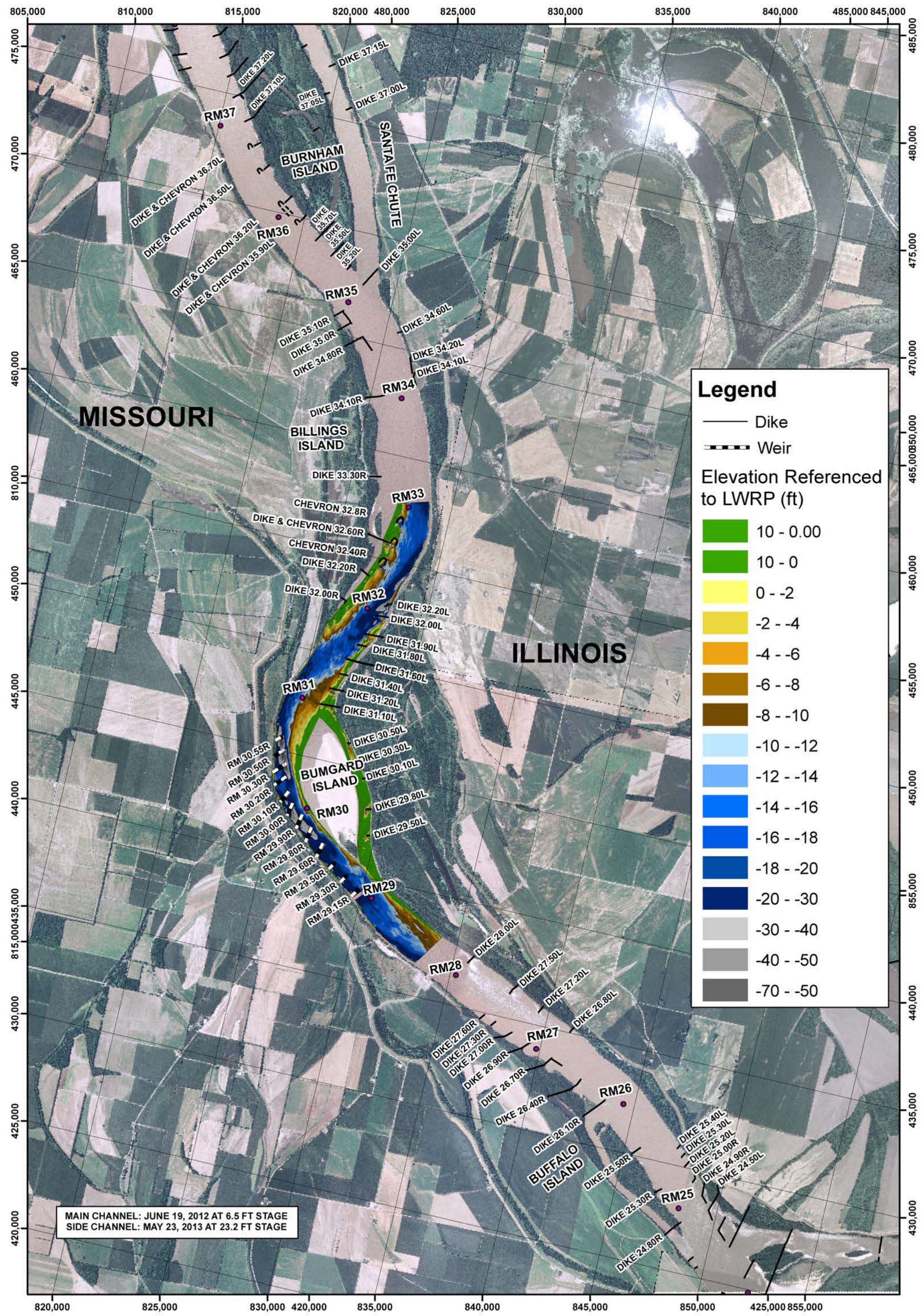
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-30 - -40

-40 - -50

-70 - -50





Legend

Dike

Weir

Elevation Referenced to LWRP (ft)

10 - 0.00

10 - 0

0 - -2

-2 - -4

-4 - -6

-6 - -8

-8 - -10

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-12 - -14

-14 - -16

-16 - -18

-18 - -20

-20 - -30

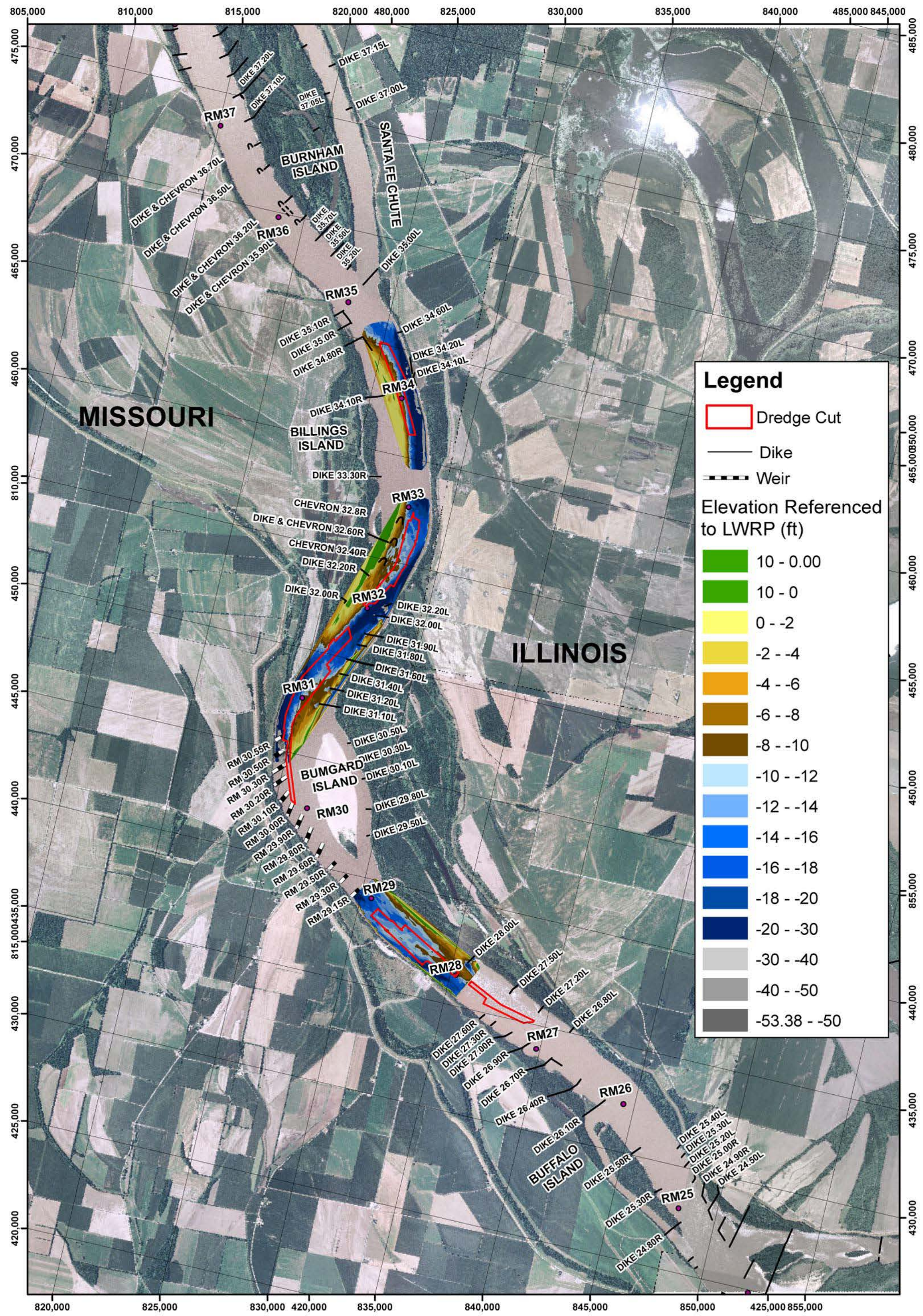
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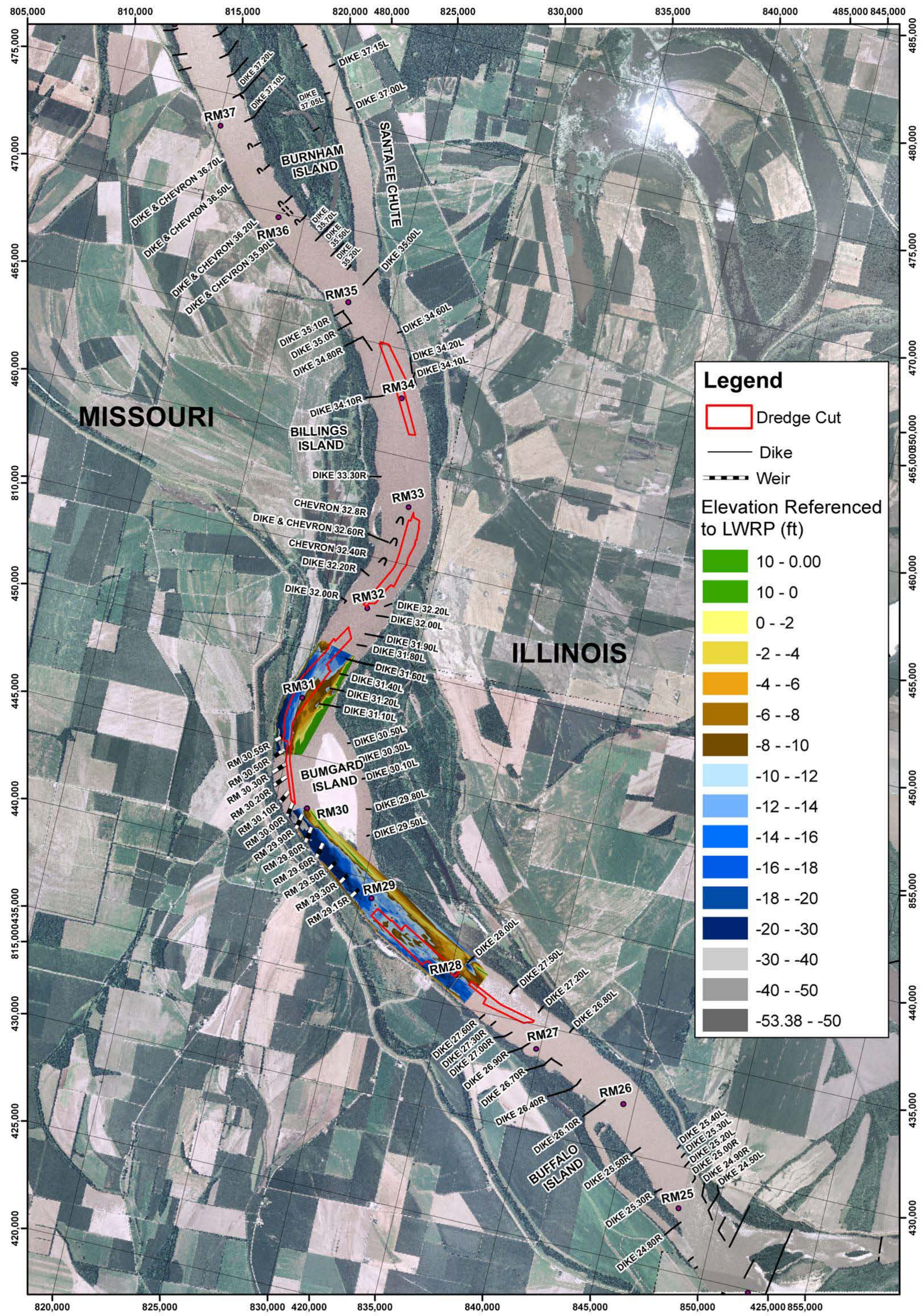
-40 - -50

-70 - -50

MAIN CHANNEL: JUNE 19, 2012 AT 6.5 FT STAGE
SIDE CHANNEL: MAY 23, 2013 AT 23.2 FT STAGE







Legend

Dredge Cut

Dike

Weir

Elevation Referenced to LWRP (ft)

10 - 0.00

10 - 0

0 - -2

-2 - -4

-4 - -6

-6 - -8

-8 - -10

-10 - -12

-12 - -14

-14 - -16

-16 - -18

-18 - -20

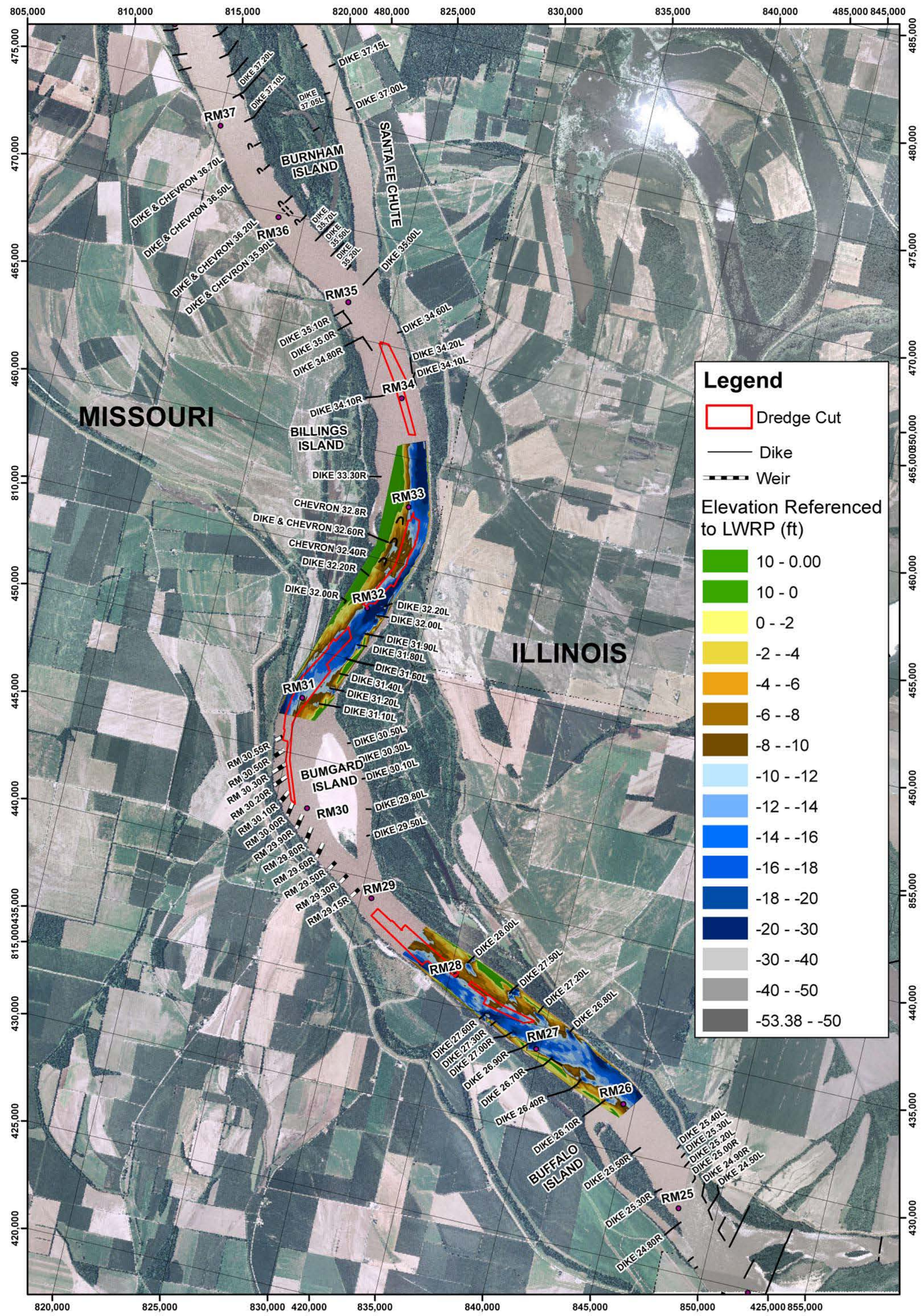
-20 - -30

-30 - -40

-40 - -50

-53.38 - -50





Legend

Dredge Cut

Dike

Weir

Elevation Referenced to LWRP (ft)

10 - 0.00

10 - 0

0 - -2

-2 - -4

-4 - -6

-6 - -8

-8 - -10

-10 - -12

-12 - -14

-14 - -16

-16 - -18

-18 - -20

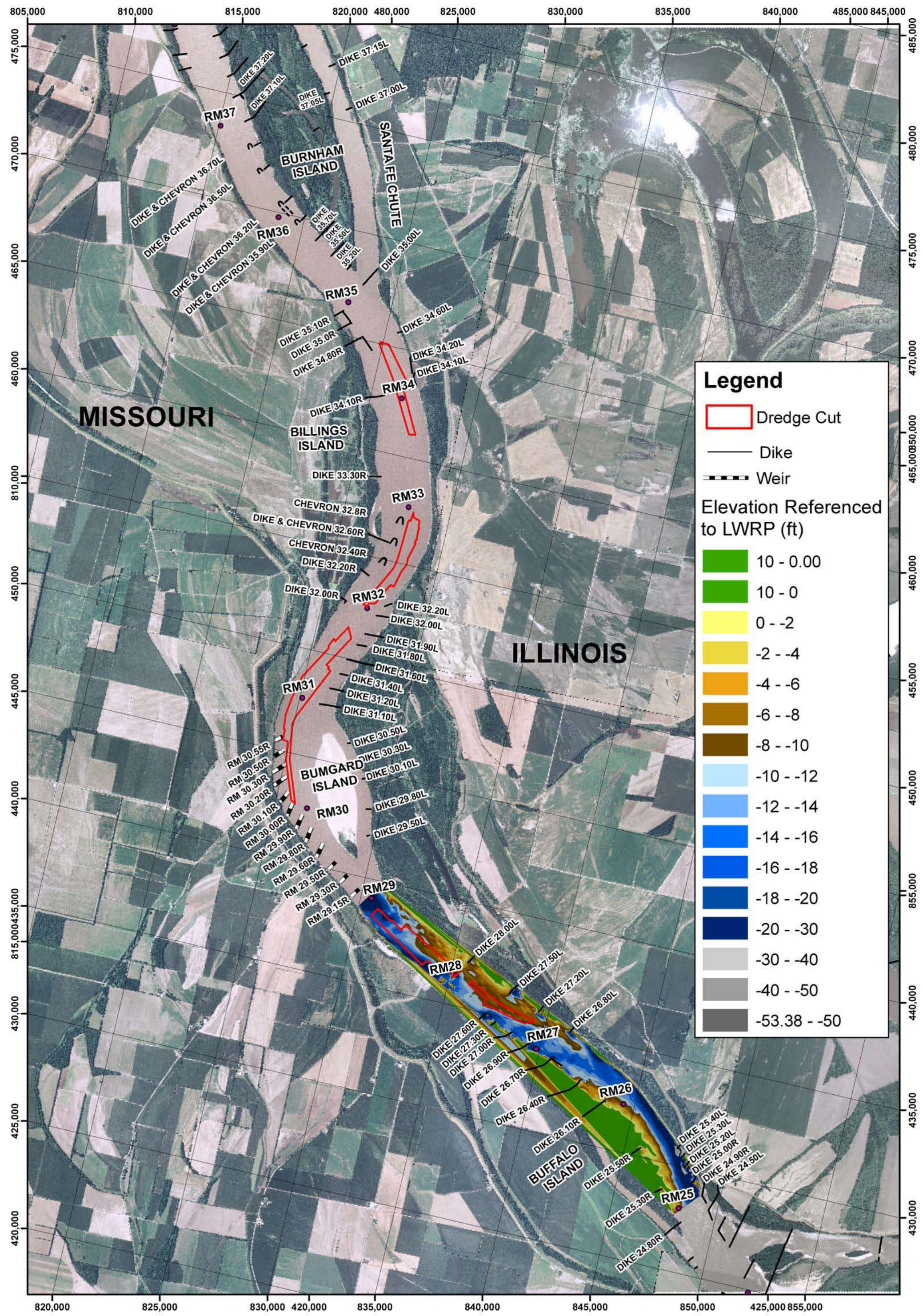
-20 - -30

-30 - -40

-40 - -50

-53.38 - -50





Legend

Dredge Cut

Dike

Weir

Elevation Referenced to LWRP (ft)

10 - 0.00

10 - 0

0 - -2

-2 - -4

-4 - -6

-6 - -8

-8 - -10

-10 - -12

-12 - -14

-14 - -16

-16 - -18

-18 - -20

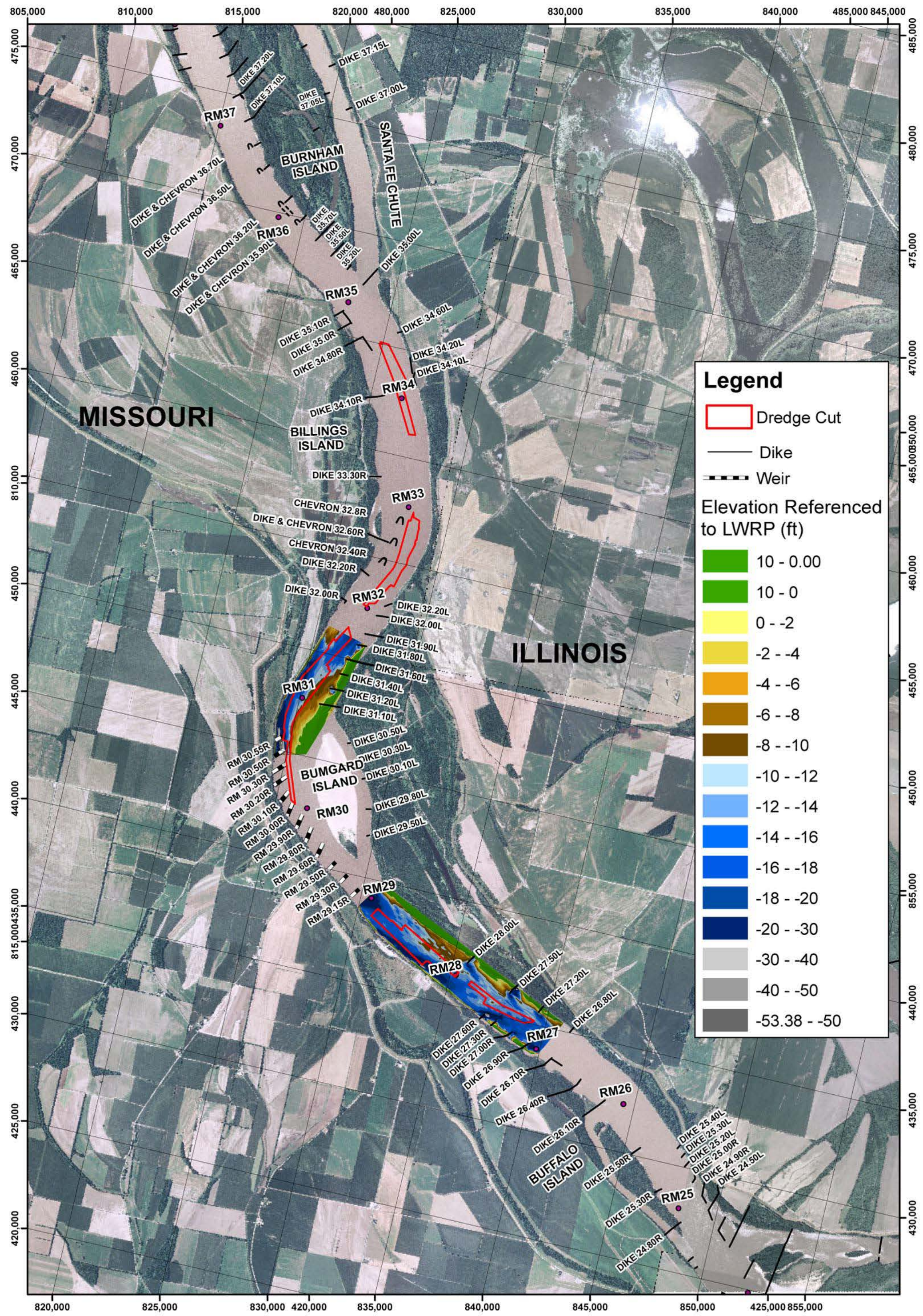
-20 - -30

-30 - -40

-40 - -50

-53.38 - -50





Legend

Dredge Cut

Dike

Weir

Elevation Referenced to LWRP (ft)

10 - 0.00

10 - 0

0 - -2

-2 - -4

-4 - -6

-6 - -8

-8 - -10

-10 - -12

-12 - -14

-14 - -16

-16 - -18

-18 - -20

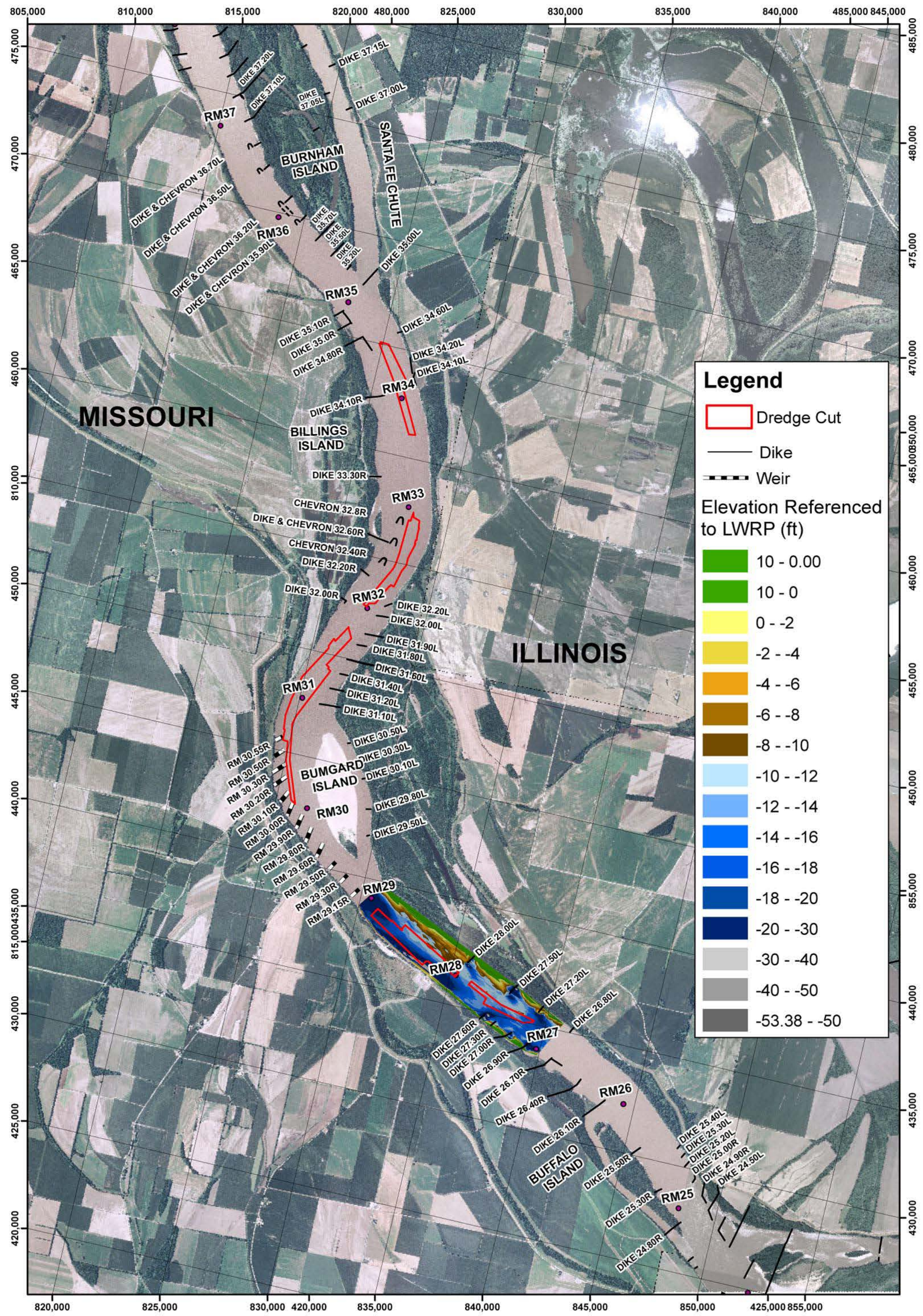
-20 - -30

-30 - -40

-40 - -50

-53.38 - -50





Legend

Dredge Cut

Dike

Weir

Elevation Referenced to LWRP (ft)

10 - 0.00

10 - 0

0 - -2

-2 - -4

-4 - -6

-6 - -8

-8 - -10

-10 - -12

-12 - -14

-14 - -16

-16 - -18

-18 - -20

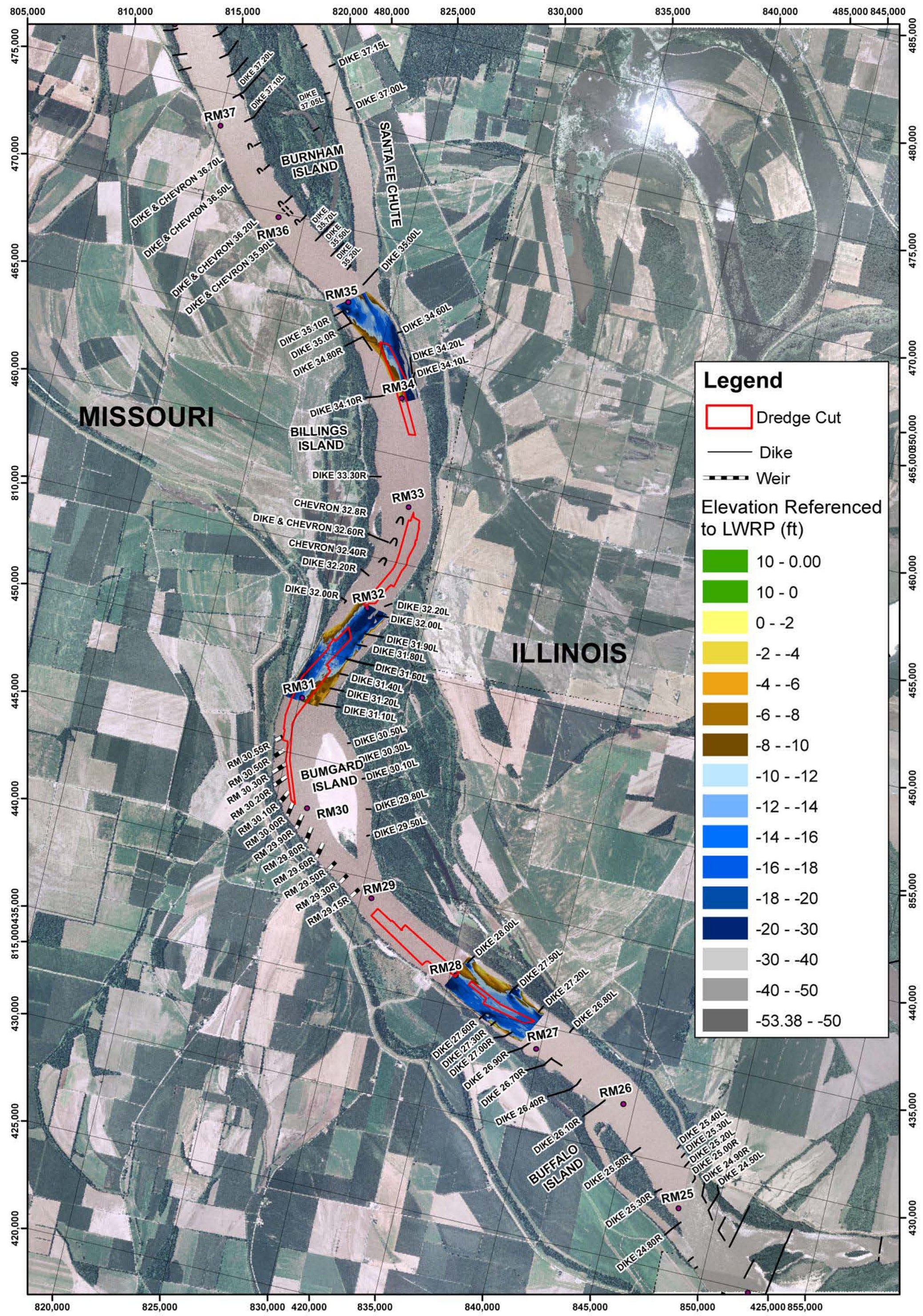
-20 - -30

-30 - -40

-40 - -50

-53.38 - -50





Legend

Dredge Cut

Dike

Weir

Elevation Referenced to LWRP (ft)

10 - 0.00

10 - 0

0 - -2

-2 - -4

-4 - -6

-6 - -8

-8 - -10

-10 - -12

-12 - -14

-14 - -16

-16 - -18

-18 - -20

-20 - -30

-30 - -40

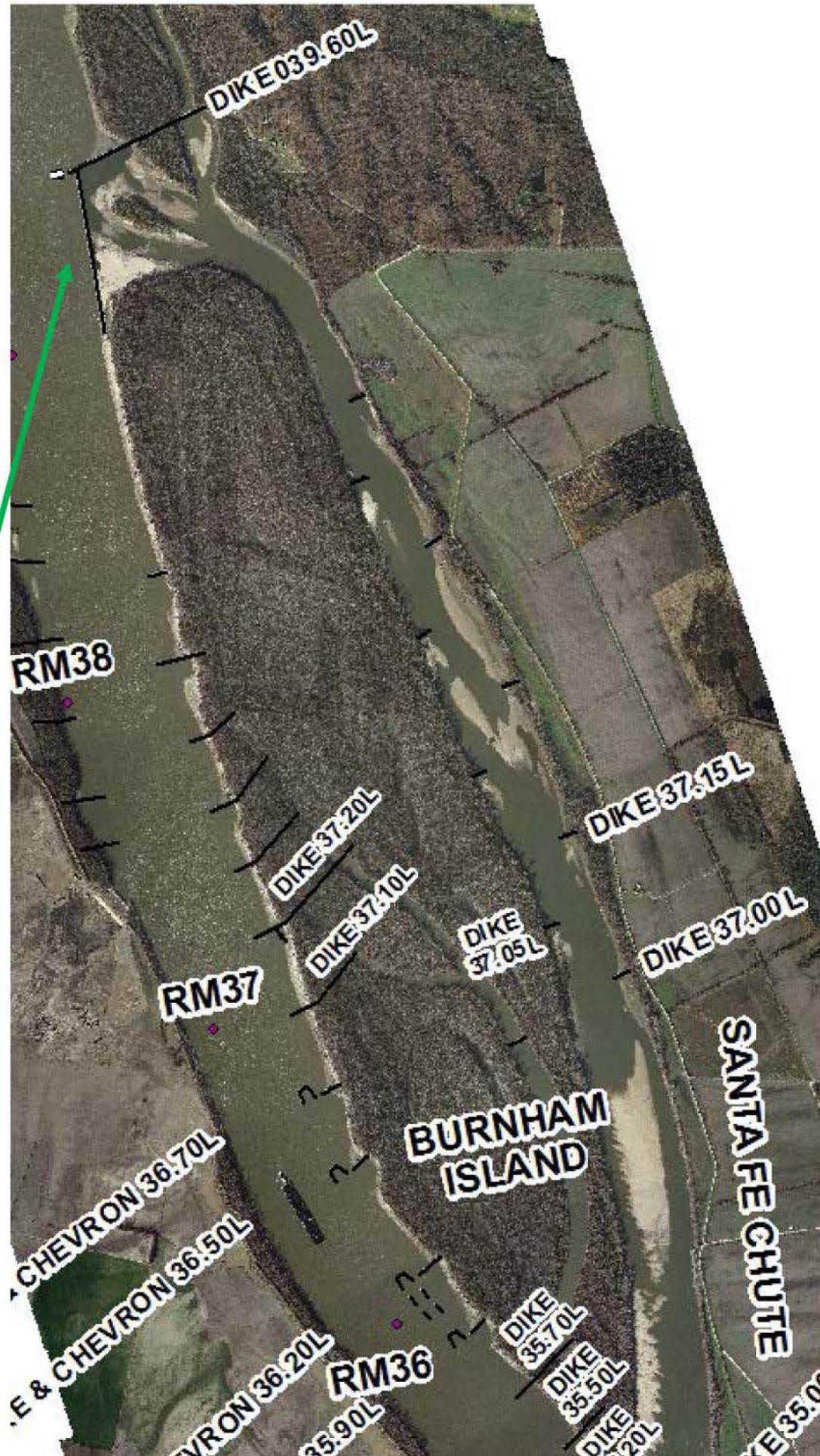
-40 - -50

-53.38 - -50





Looking downstream at Dike 39.60L – This dike is located at the entrance of Santa Fe Chute and keeps most flows from entering the side channel unless there is higher water. The dike has a low spot at which water at low stages can get through. The photo above was taken on April 18 while the photo below was taken May 24, both showing the dike at its low spot. The side channel is mostly very shallow as seen on the 2011 aerial photograph (photo to the right).



REVIEWED BY: J. BROWN, P.E.	DRAWN BY: K. CLANCEY	U.S. ARMY ENGINEER DIVISION CORPS OF ENGINEERS ST. LOUIS, MISSOURI
CHECKED BY: E. BRAUER, P.E.	SUBMITTED BY: K. CLANCEY	APPLIED RIVER ENGINEERING CENTER ST. LOUIS DISTRICT
APPROVED BY: R. DAVINROY, P.E.	DATE: JUNE 2012	
FILE NAME: Z:\Bumgard Island HSR study\Plates		

Bumgard Island
Field Photographs
April 18 and May 24, 2012
Stage (ft): 20.5 & 17.8



Looking upstream at Chevron 32.60 R (left photo) & Chevron 32.80R (right photo) — There is a difference in height between the right and left leg of the chevron, the left leg is lower on both. Chevron 32.40R was in good conditions.



U.S. ARMY ENGINEER DIVISION CORPS OF ENGINEERS ST. LOUIS, MISSOURI	DRAWN BY: K. CLANCEY	REVIEWED BY: J. BROWN, P.E.
	SUBMITTED BY: K. CLANCEY	CHECKED BY: E. BRAUER, P.E.
	PLT DATE: JUNE 2012	APPROVED BY: R. DAVINROY, P.E.
FILE NAME: Z:\Bumgard Island HSR study\Plates		

Bumgard Island
Field Photographs
April 18, 2012
Stage (ft): 20.5



Looking downstream at Dike 32. 20 L - Most dikes and banklines appeared to be in fairly good conditions.

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	SUBMITTED BY: K. CLANCEY	CHECKED BY: E. BRAUER, P.E.
	PLOT DATE: JUNE 2012	APPROVED BY: R. DAVINROY, P.E.
APPLIED RIVER ENGINEERING CENTER ST. LOUIS DISTRICT		
FILE NAME: Z:\Bumgard Island HSR study\Plates		

Bumgard Island
Field Photographs
April 18, 2012
Stage (ft): 20.5



Looking upstream – RM 30.50 - Barge passing through weir field located on the RDB, next to Bumgard Island



Looking downstream at Bumgard Island – RM 30.50 - the upper part of the island is a flat sand bar without any vegetation.



Looking at the soil along Bumgard Island – RM 29.90 - Water rises and cuts a steep slope along the island.



Looking upstream at Bumgard Island – RM 29.50 – the lower part of the island has some vegetation.

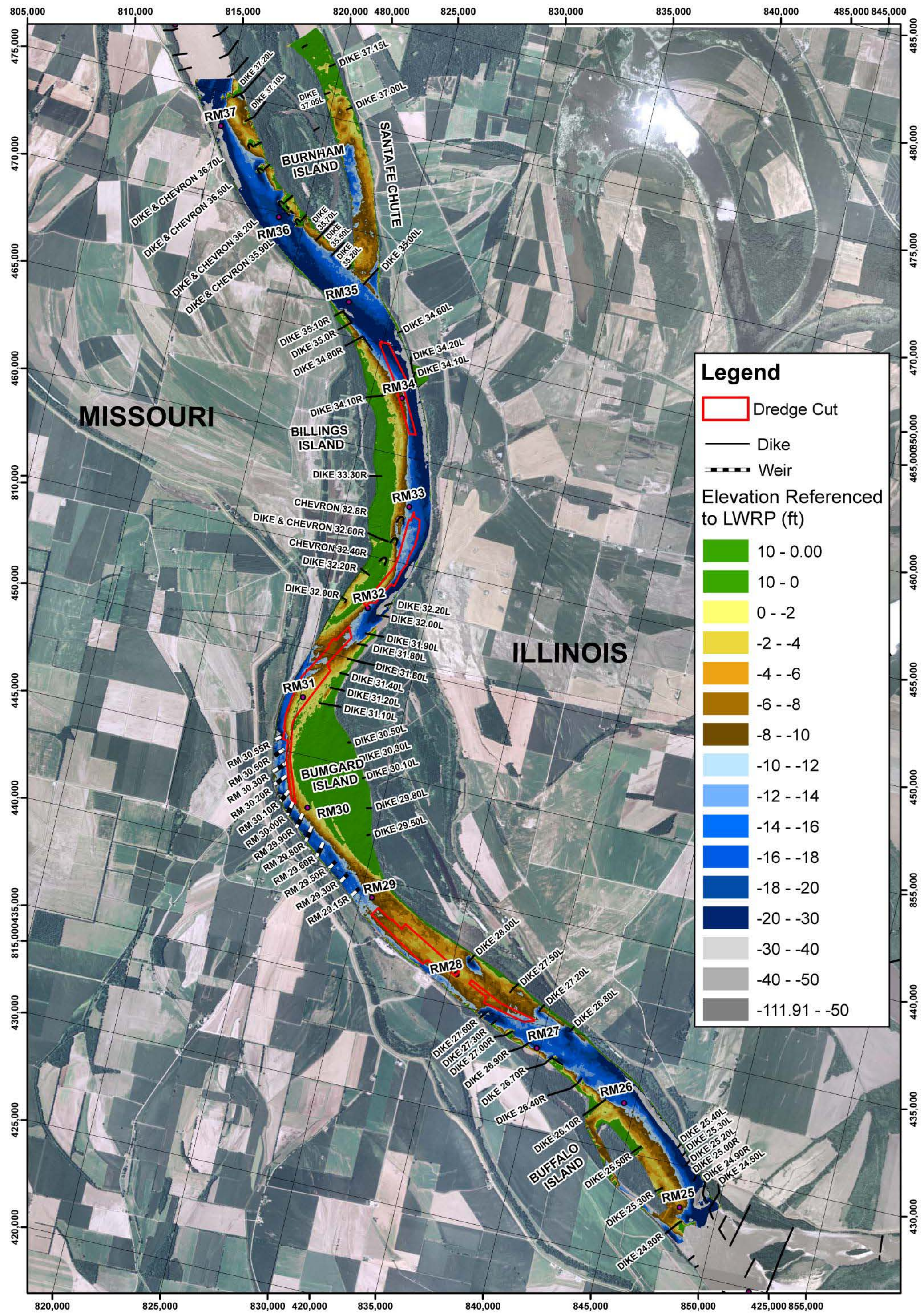
U.S. ARMY ENGINEER DIVISION CORPS OF ENGINEERS ST. LOUIS, MISSOURI	DRAWN BY: K. CLANCEY	REVIEWED BY: J. BROWN, P.E.
APPLIED RIVER ENGINEERING CENTER ST. LOUIS DISTRICT	SUBMITTED BY: K. CLANCEY	CHECKED BY: E. BRAUER, P.E.
	PLOT DATE: JUNE 2012	APPROVED BY: R. DAVINROY, P.E.
	FILE NAME: Z:\Bumgard Island HSR study\Plates	

Bumgard Island
Field Photographs
April 18 and May 24, 2012
Stage (ft): 20.5 & 17.8

PLATE
NUMBER
36



Entrance is on the left of the picture; water flows to the right of the picture to the exit drain.



Legend

Dredge Cut

Dike

Weir

Elevation Referenced to LWRP (ft)

10 - 0.00

10 - 0

0 - -2

-2 - -4

-4 - -6

-6 - -8

-8 - -10

-10 - -12

-12 - -14

-14 - -16

-16 - -18

-18 - -20

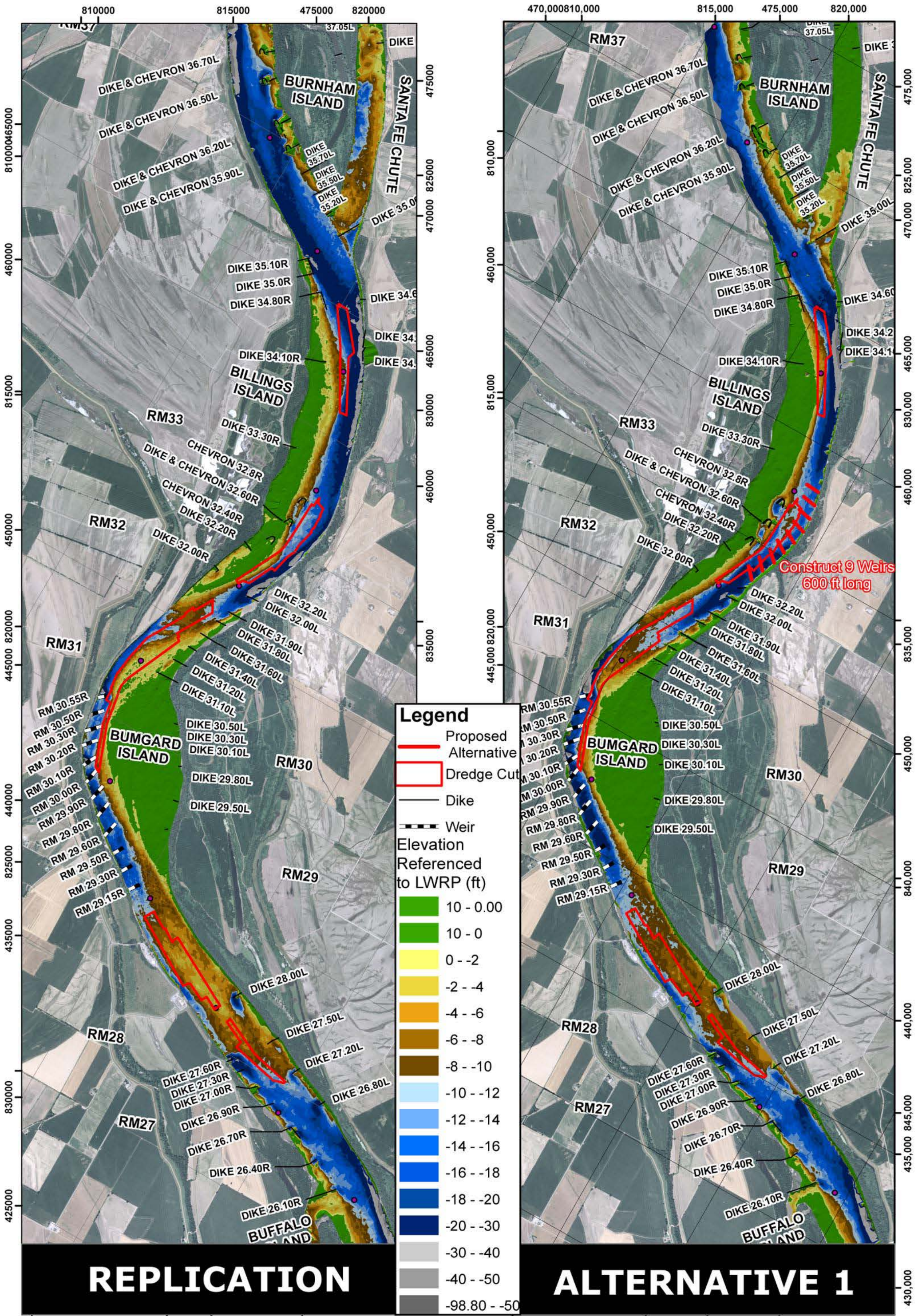
-20 - -30

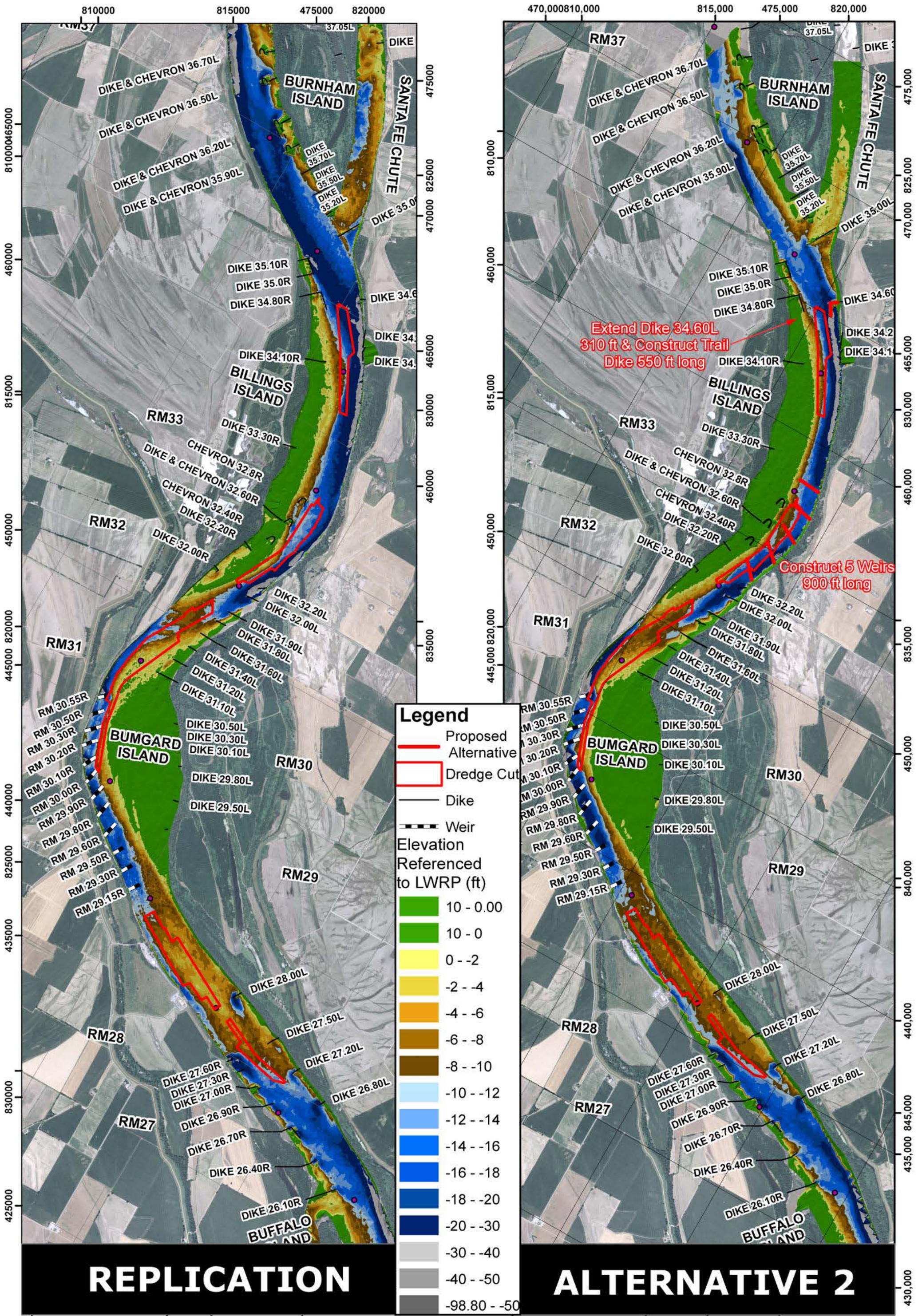
-30 - -40

-40 - -50

-111.91 - -50

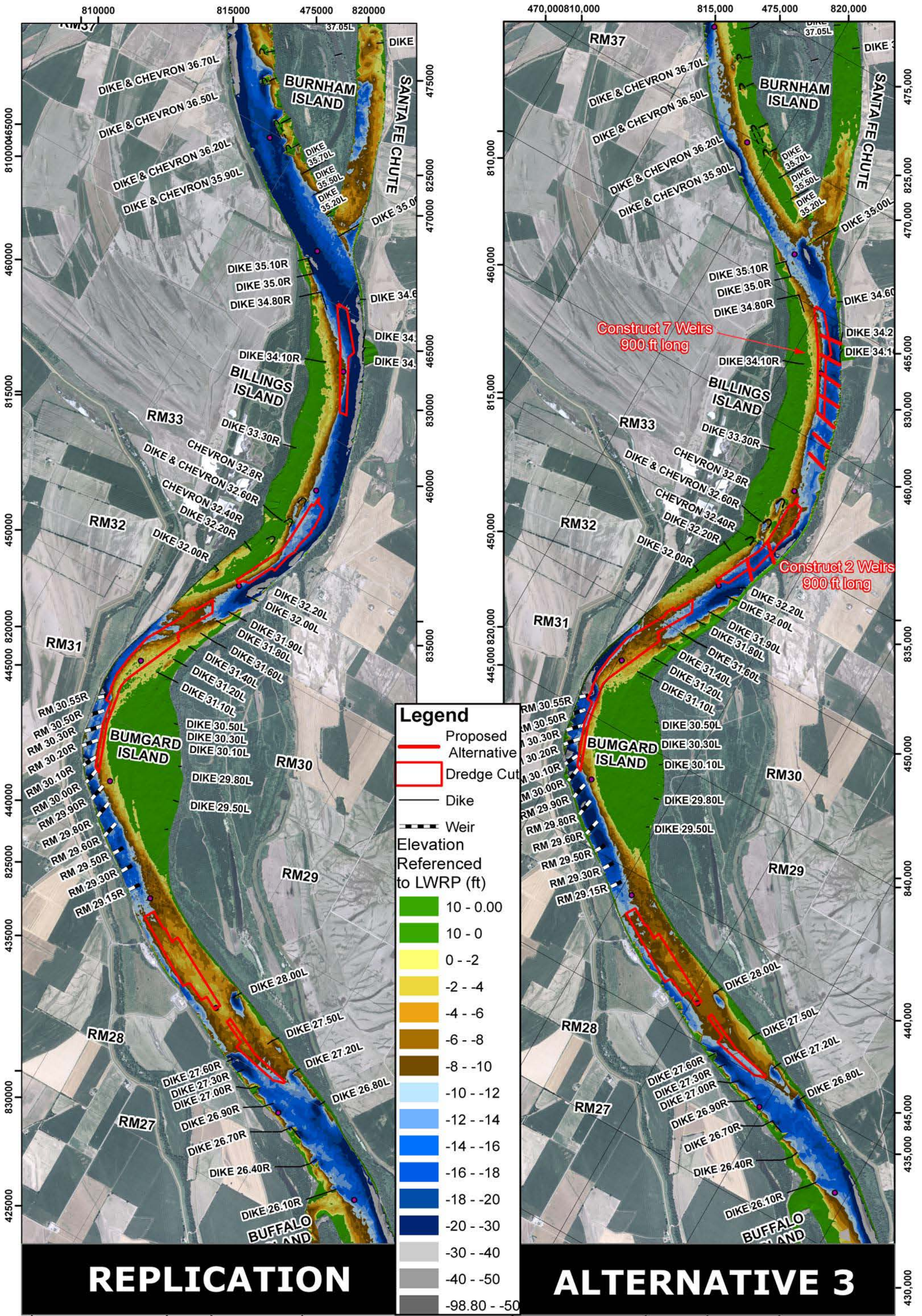






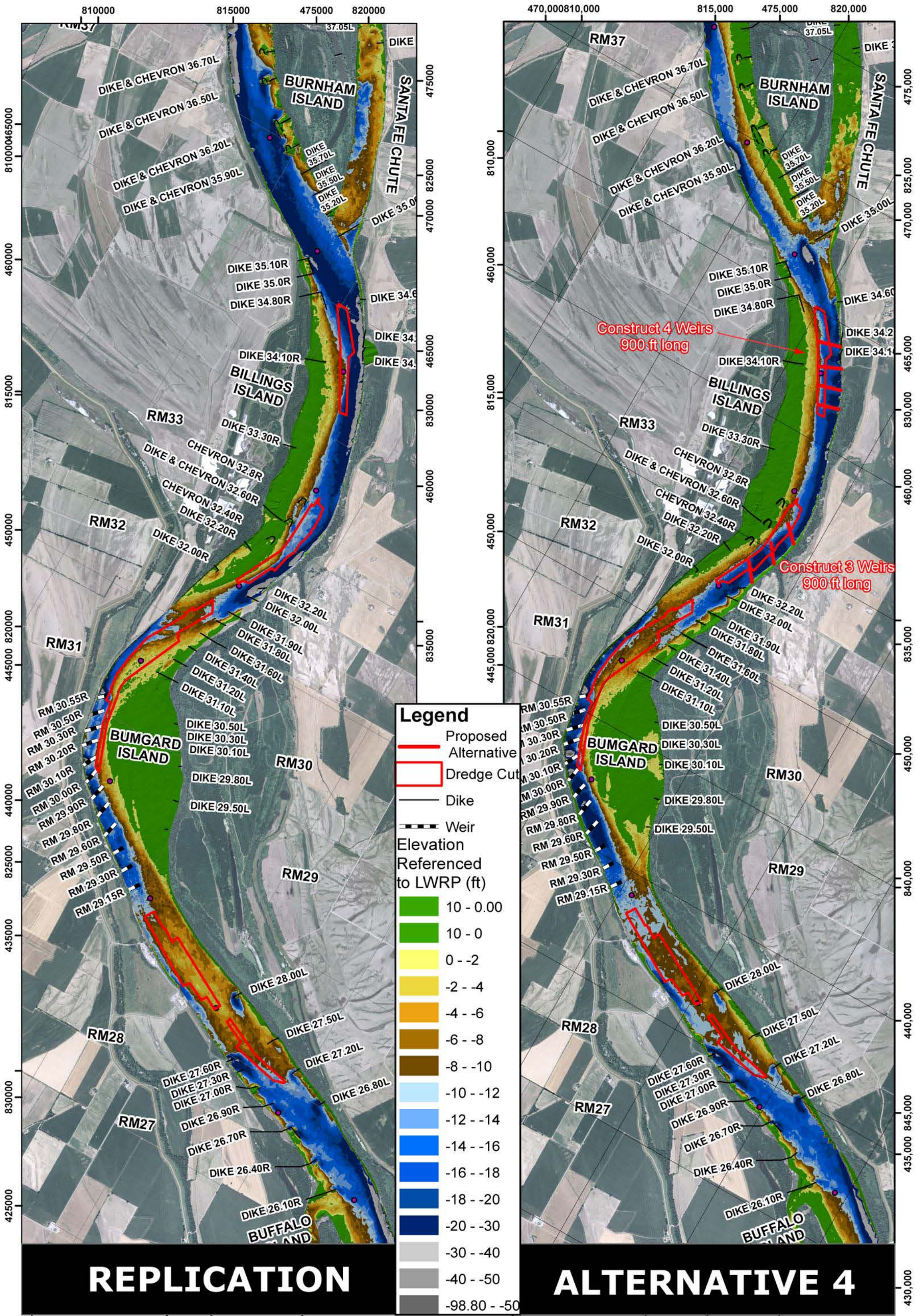
REPLICATION

ALTERNATIVE 2



REPLICATION

ALTERNATIVE 3



REPLICATION

ALTERNATIVE 4

Legend

Proposed

Alternative

Dredge Cut

Dike

Weir

Elevation
Referenced
to LWRP (ft)

10 - 0.00

10 - 0

0 - -2

-2 - -4

-4 - -6

-6 - -8

-8 - -10

-10 - -12

-12 - -14

-14 - -16

-16 - -18

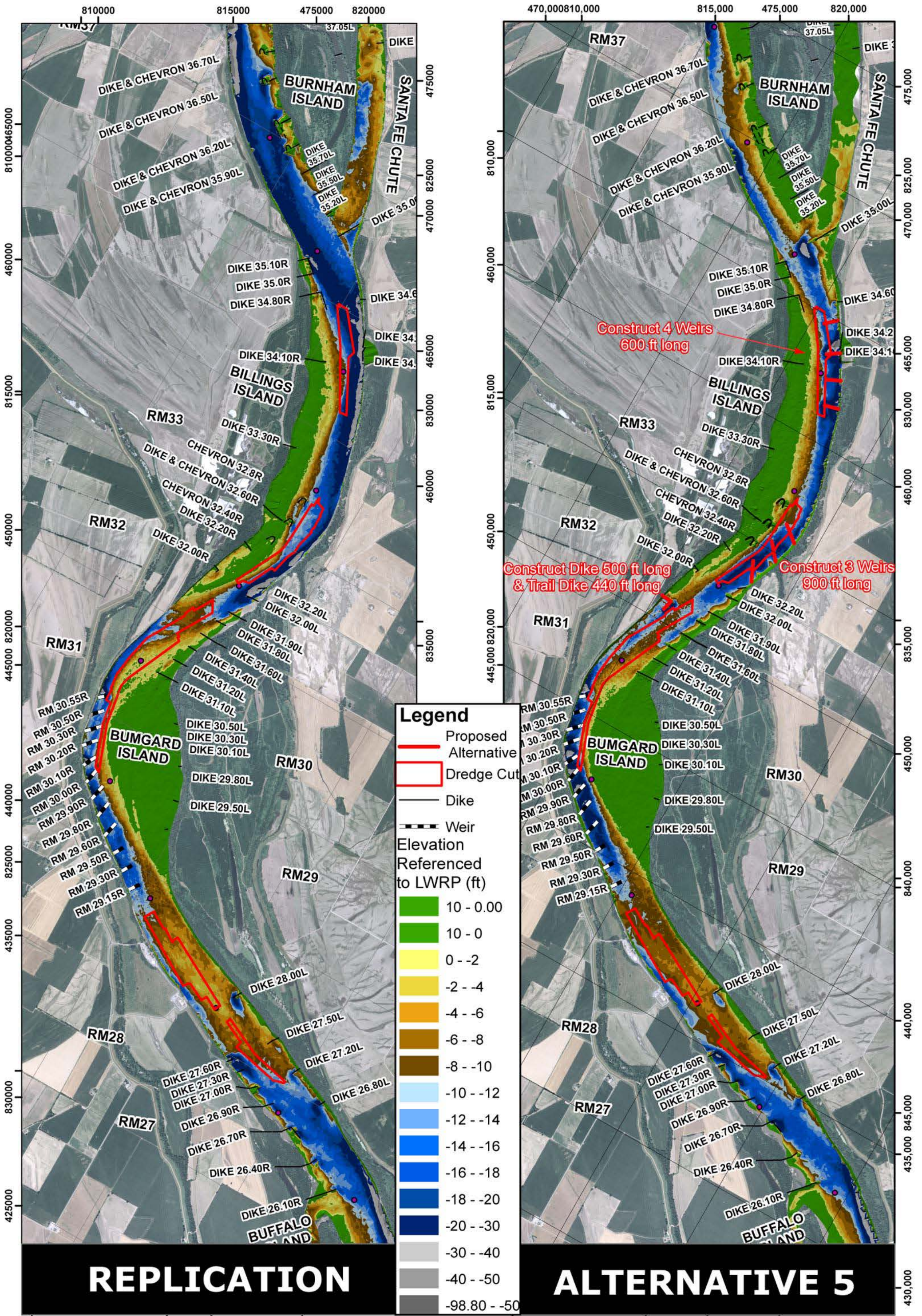
-18 - -20

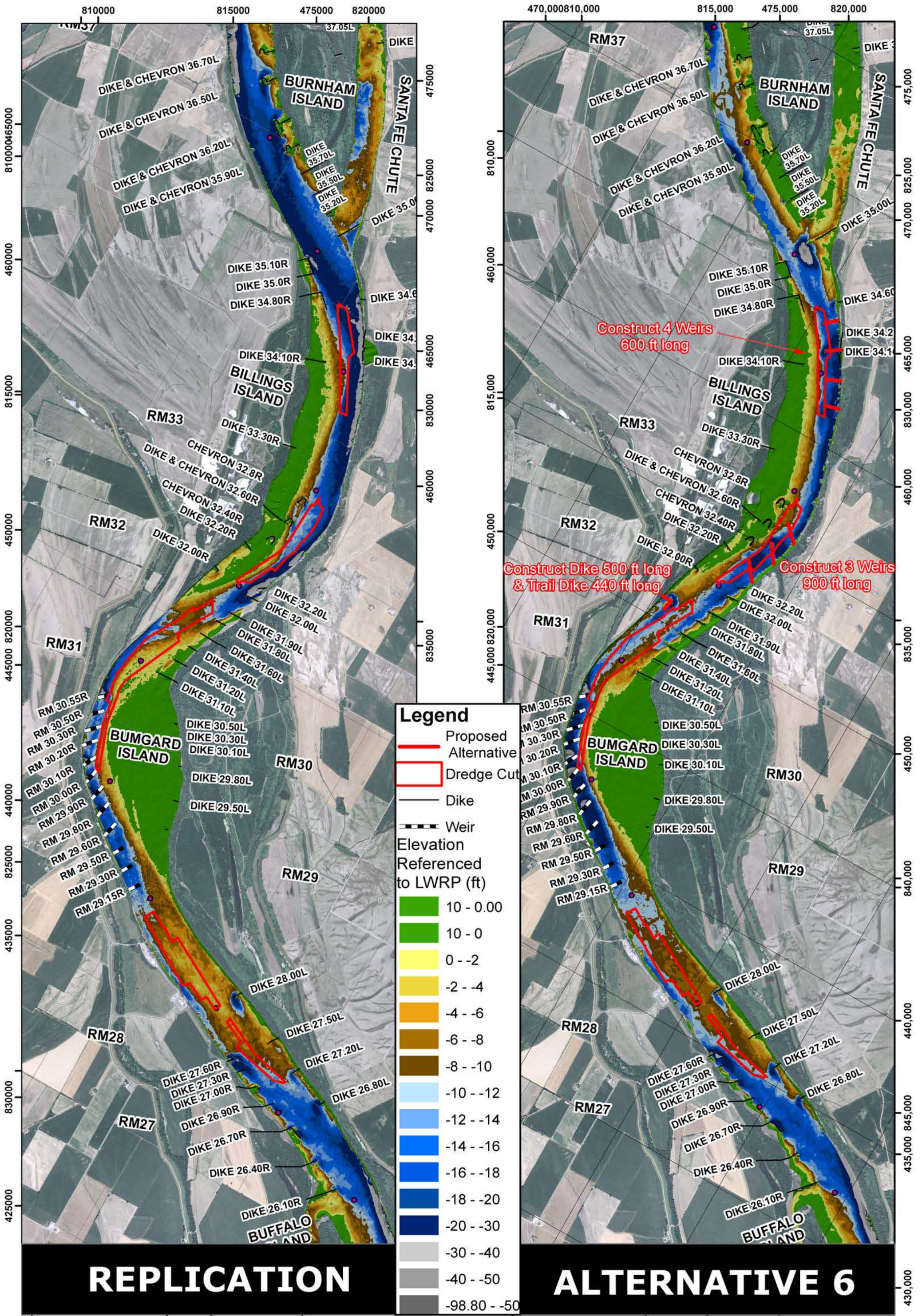
-20 - -30

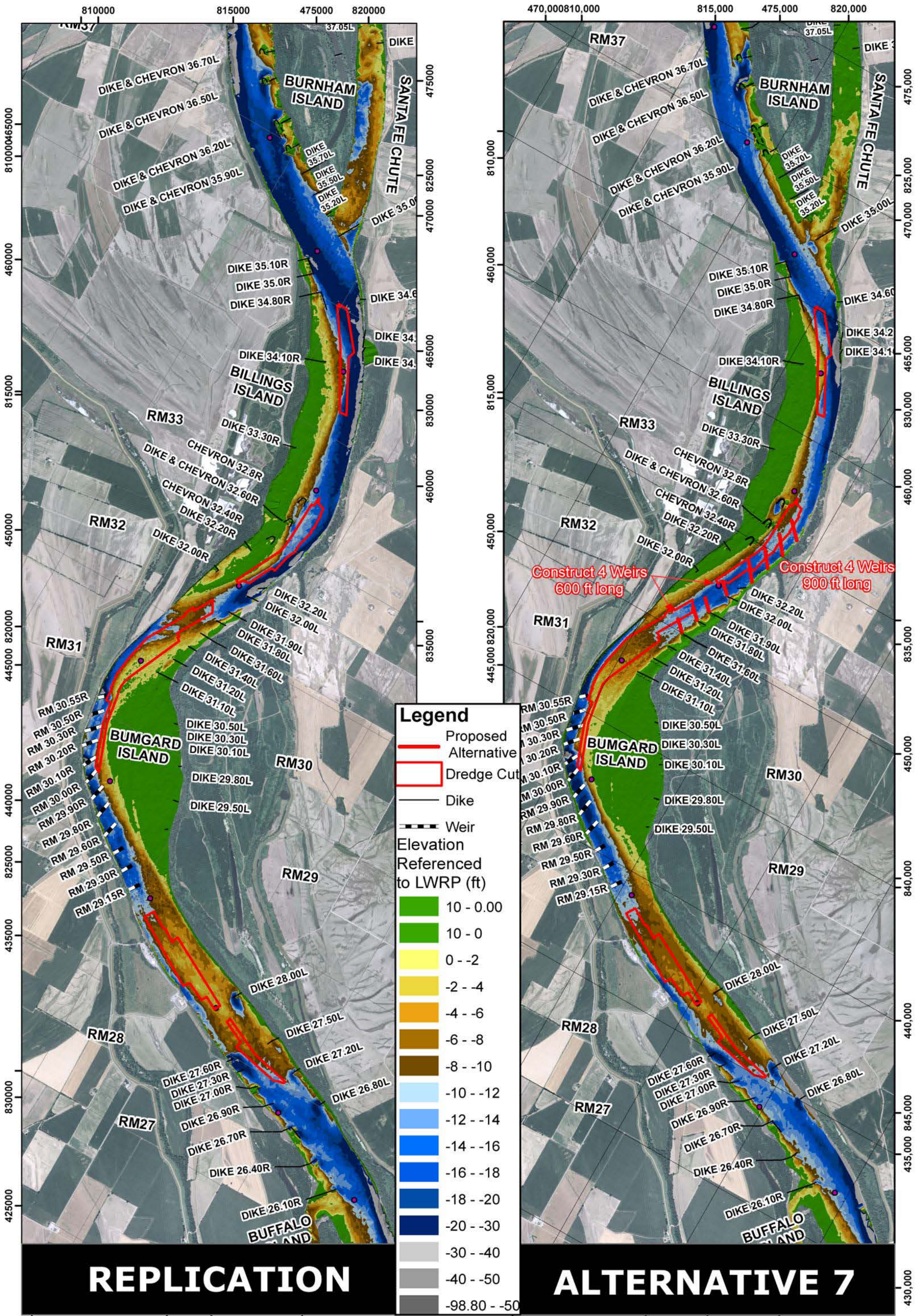
-30 - -40

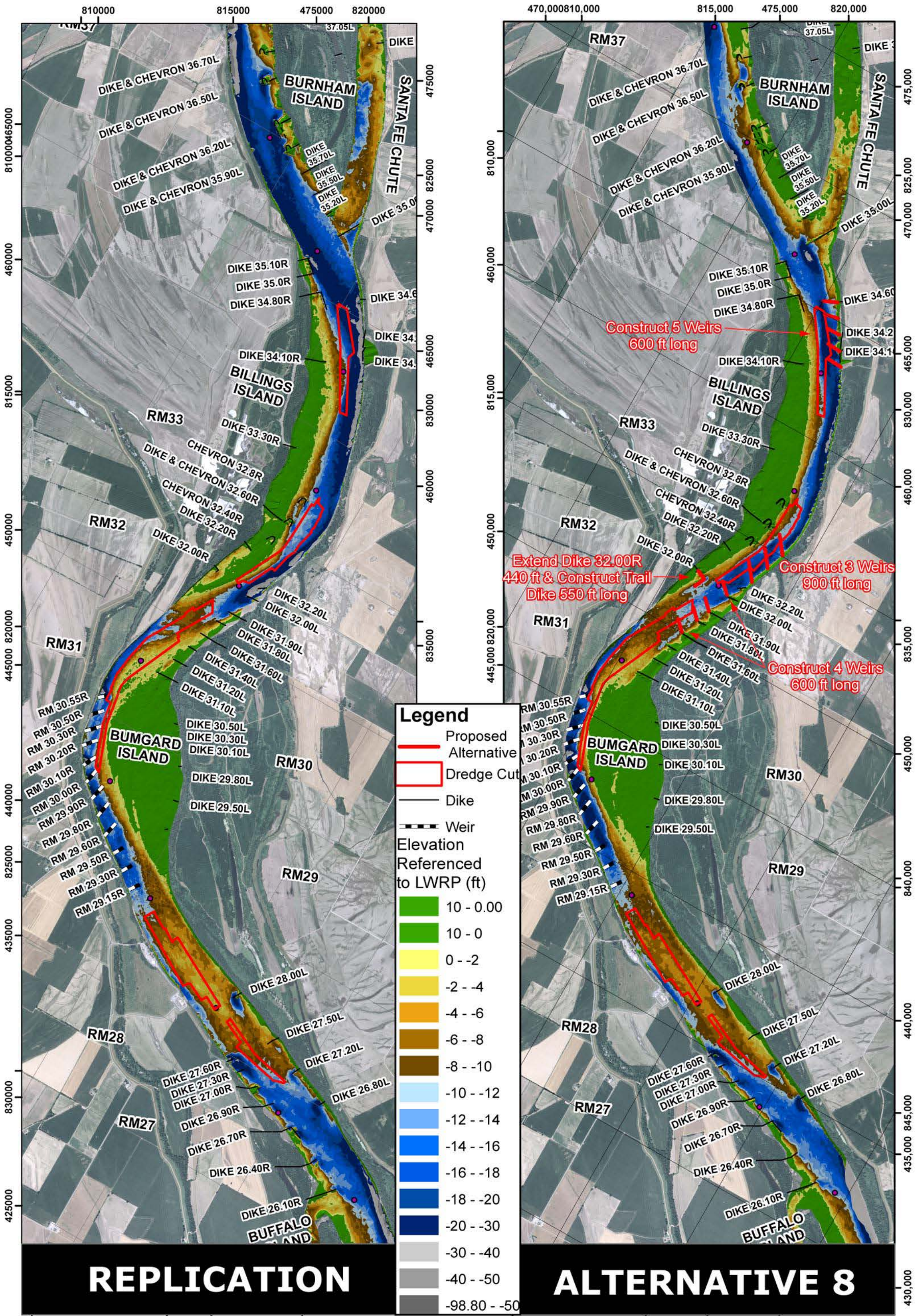
-40 - -50

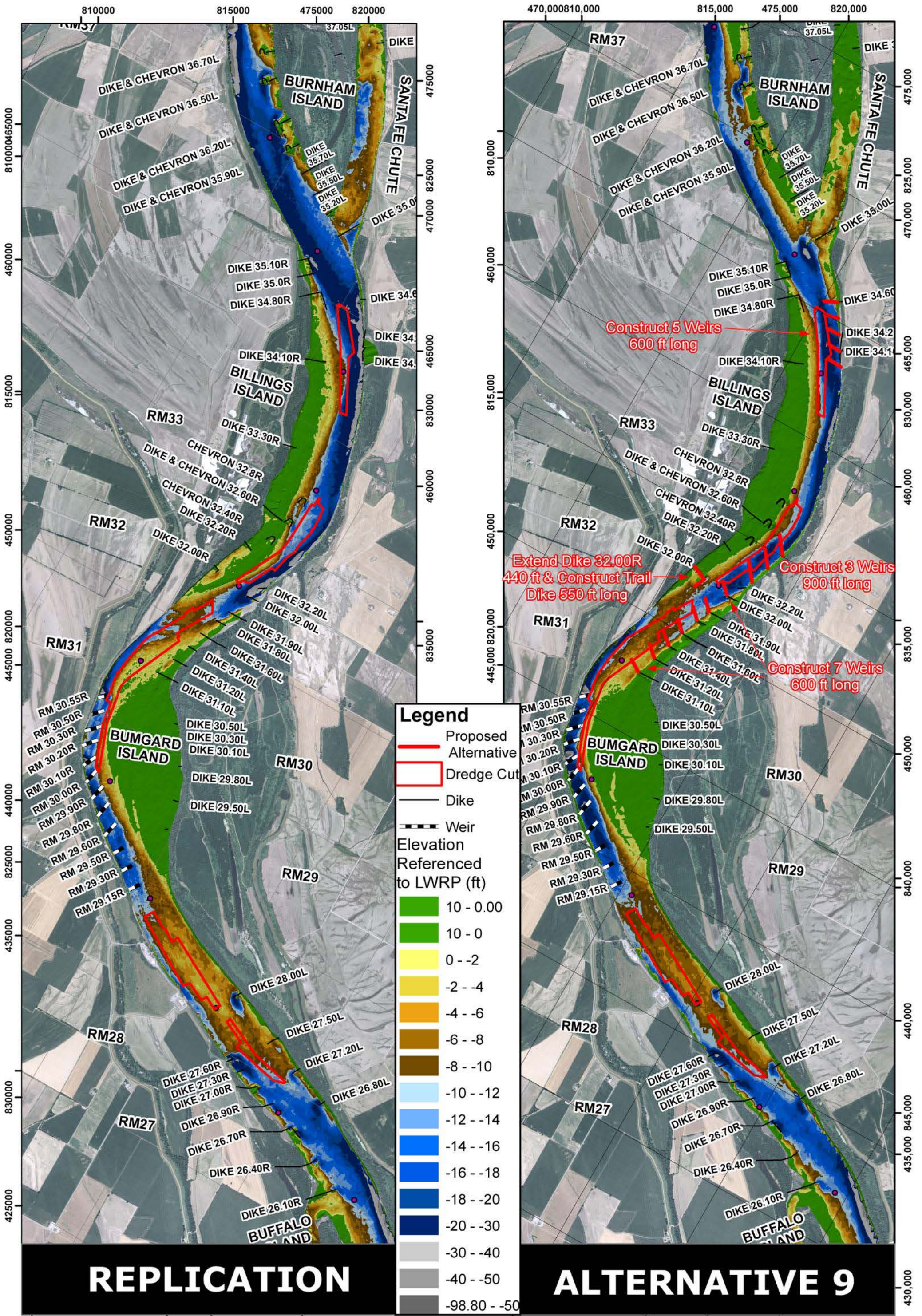
-98.80 - -50

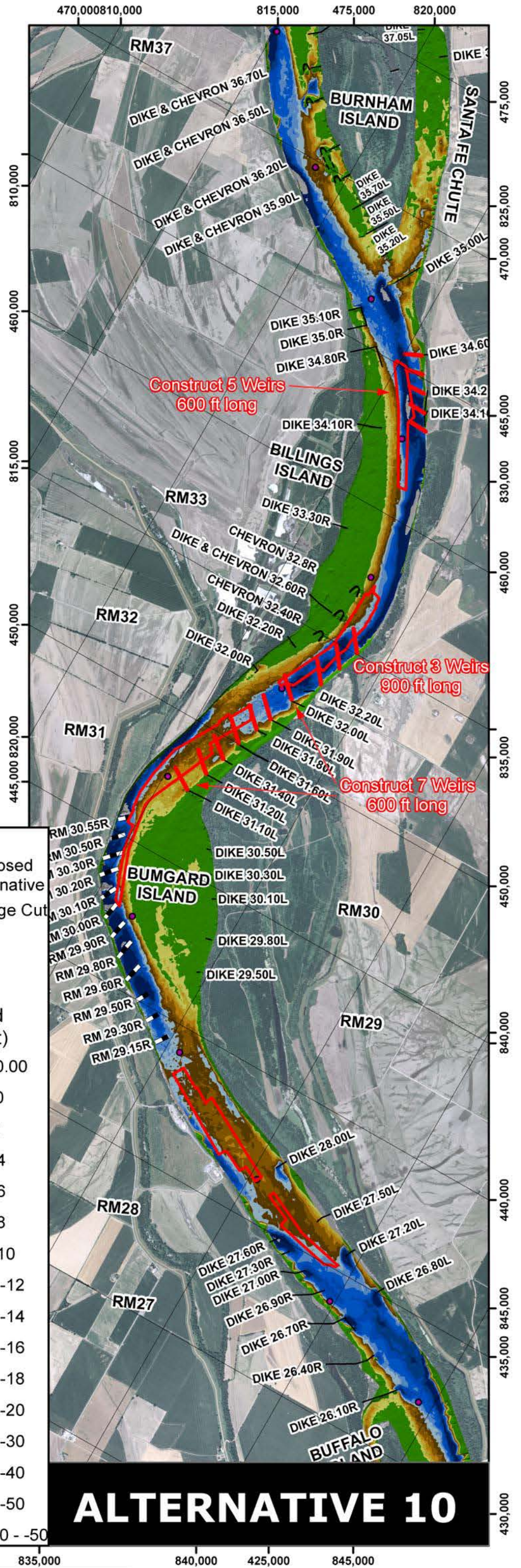
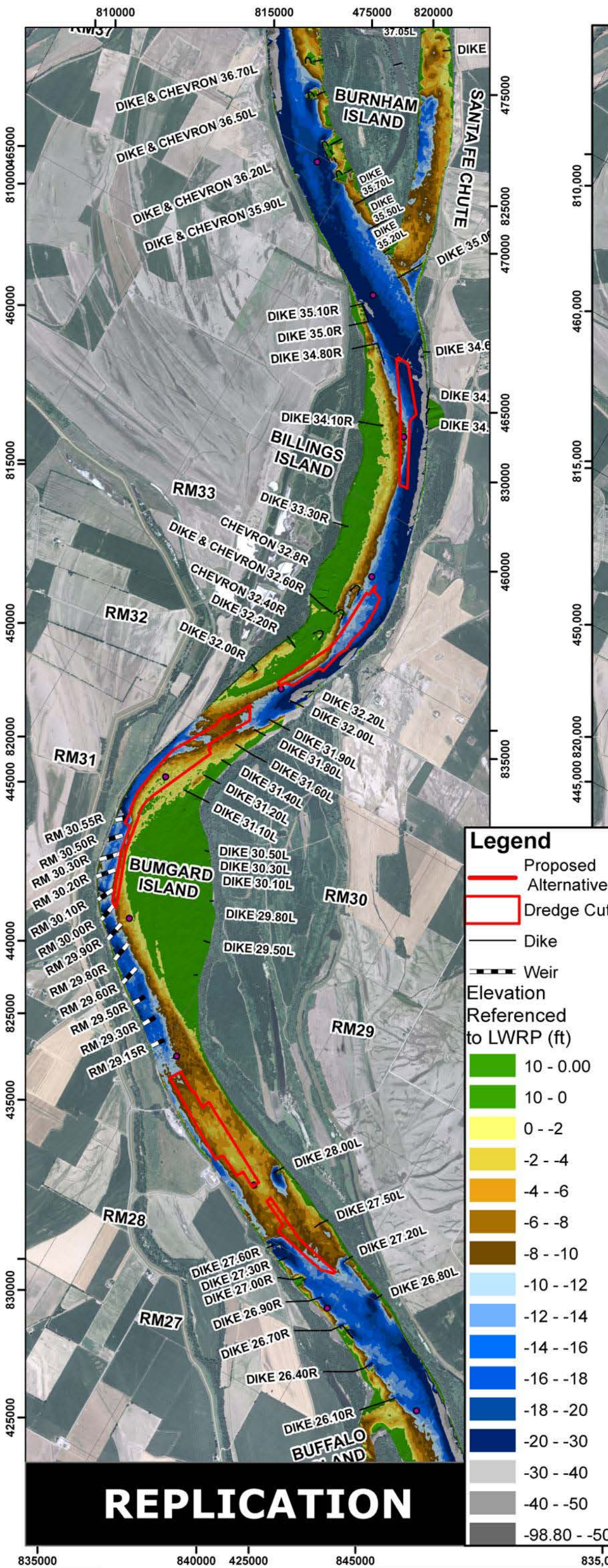


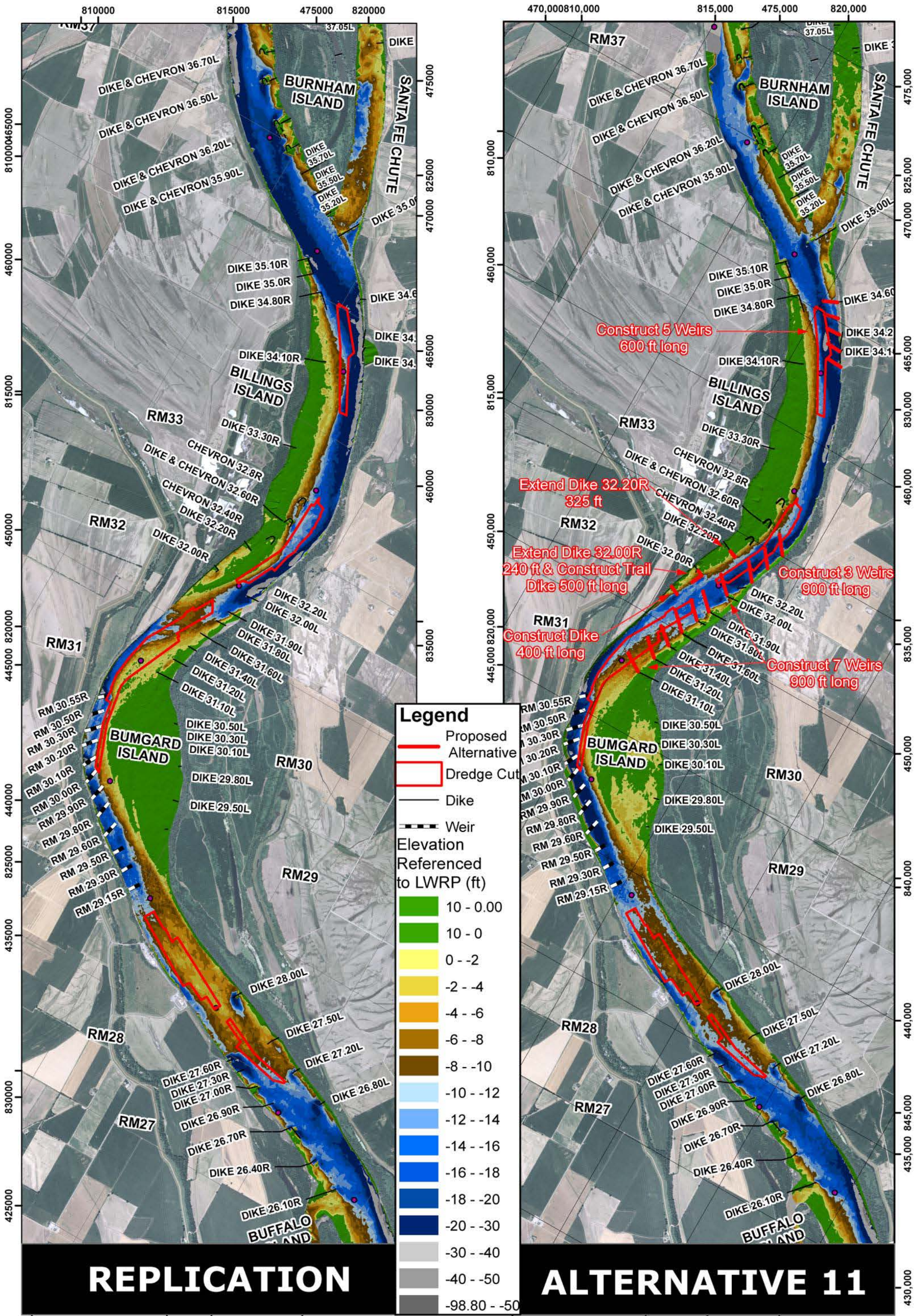


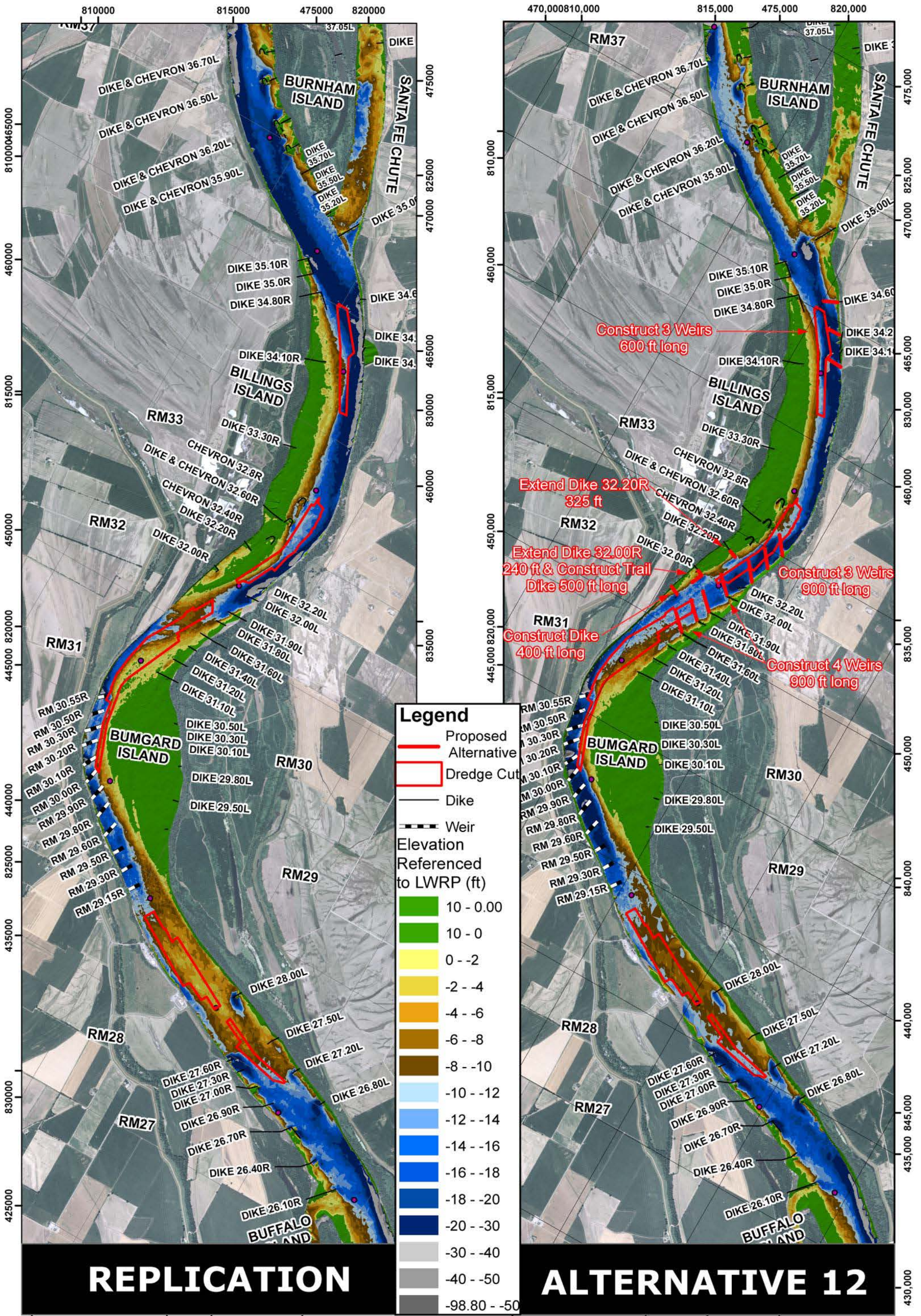


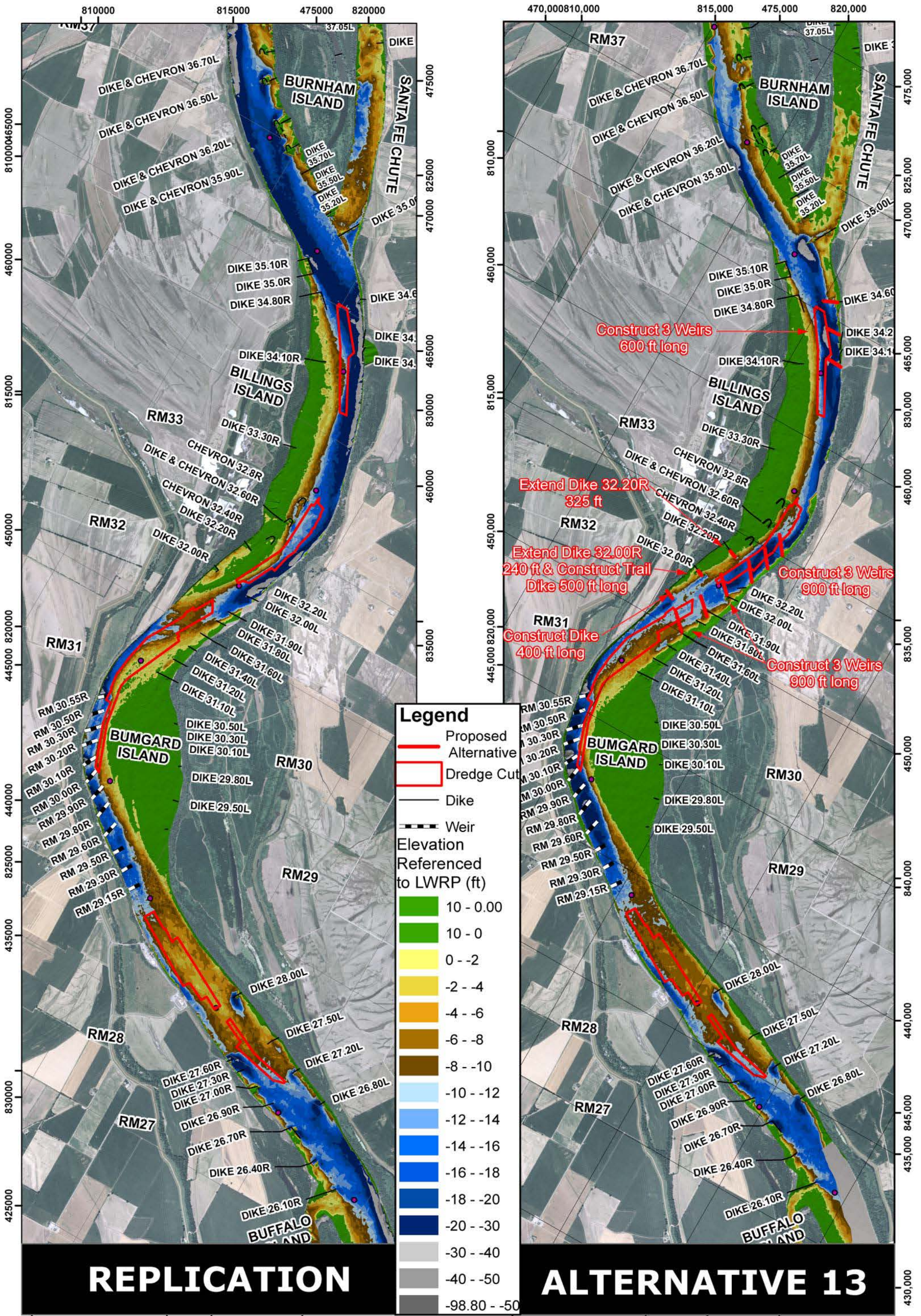












REPLICATION

ALTERNATIVE 13

Legend

Proposed

Alternative

Dredge Cut

Dike

Weir

Elevation
Referenced
to LWRP (ft)

10 - 0.00

10 - 0

0 - -2

-2 - -4

-4 - -6

-6 - -8

-8 - -10

-10 - -12

-12 - -14

-14 - -16

-16 - -18

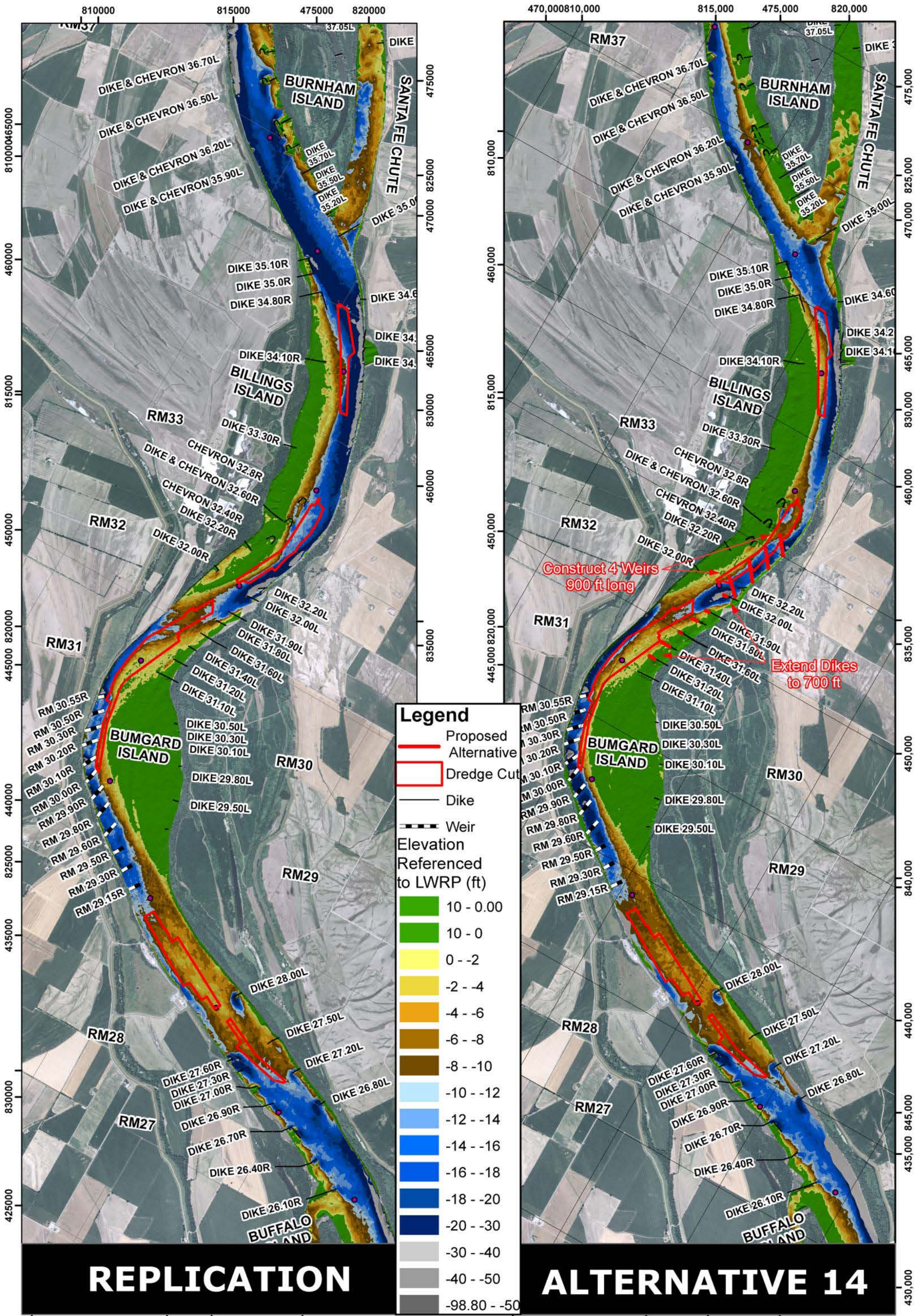
-18 - -20

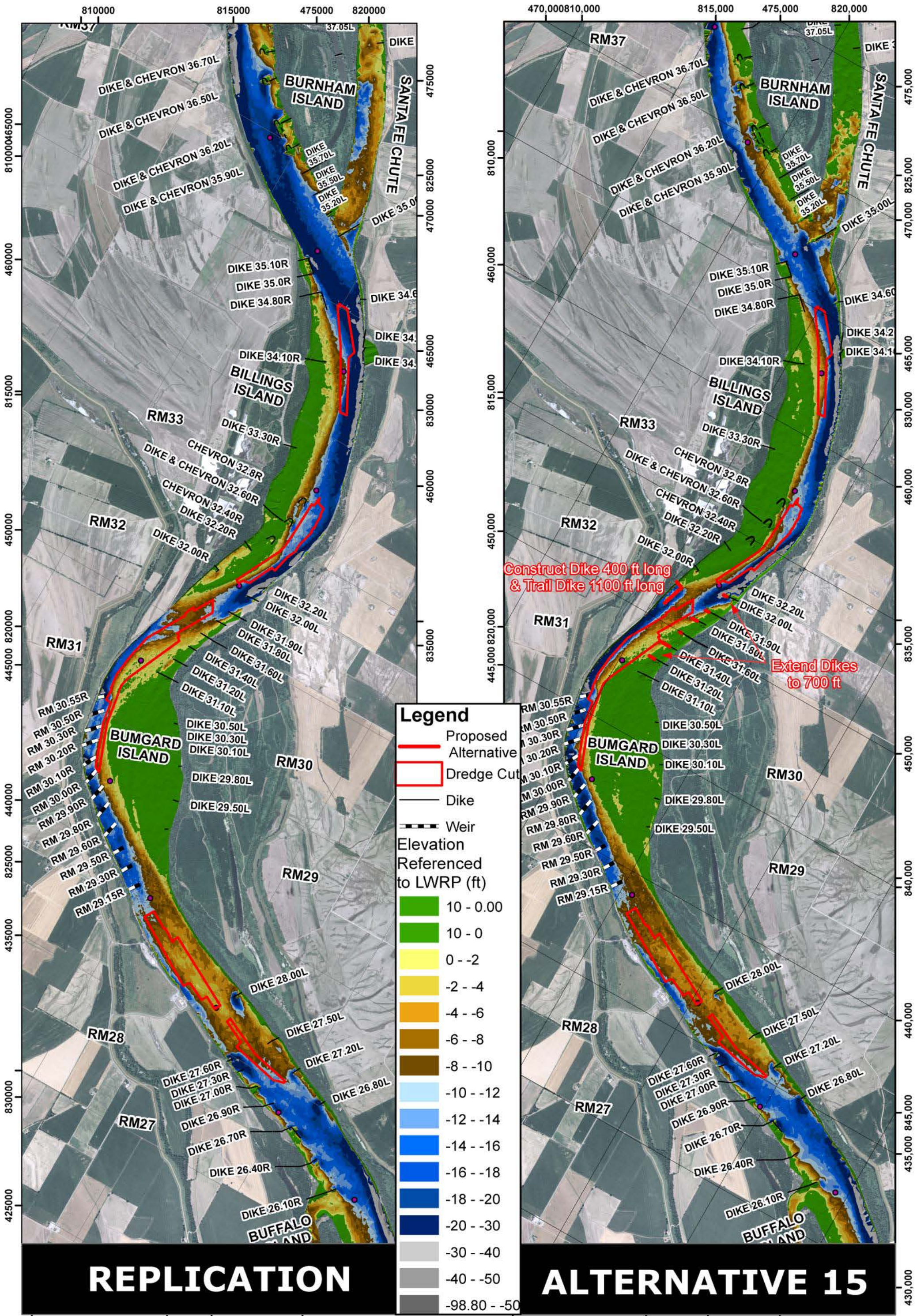
-20 - -30

-30 - -40

-40 - -50

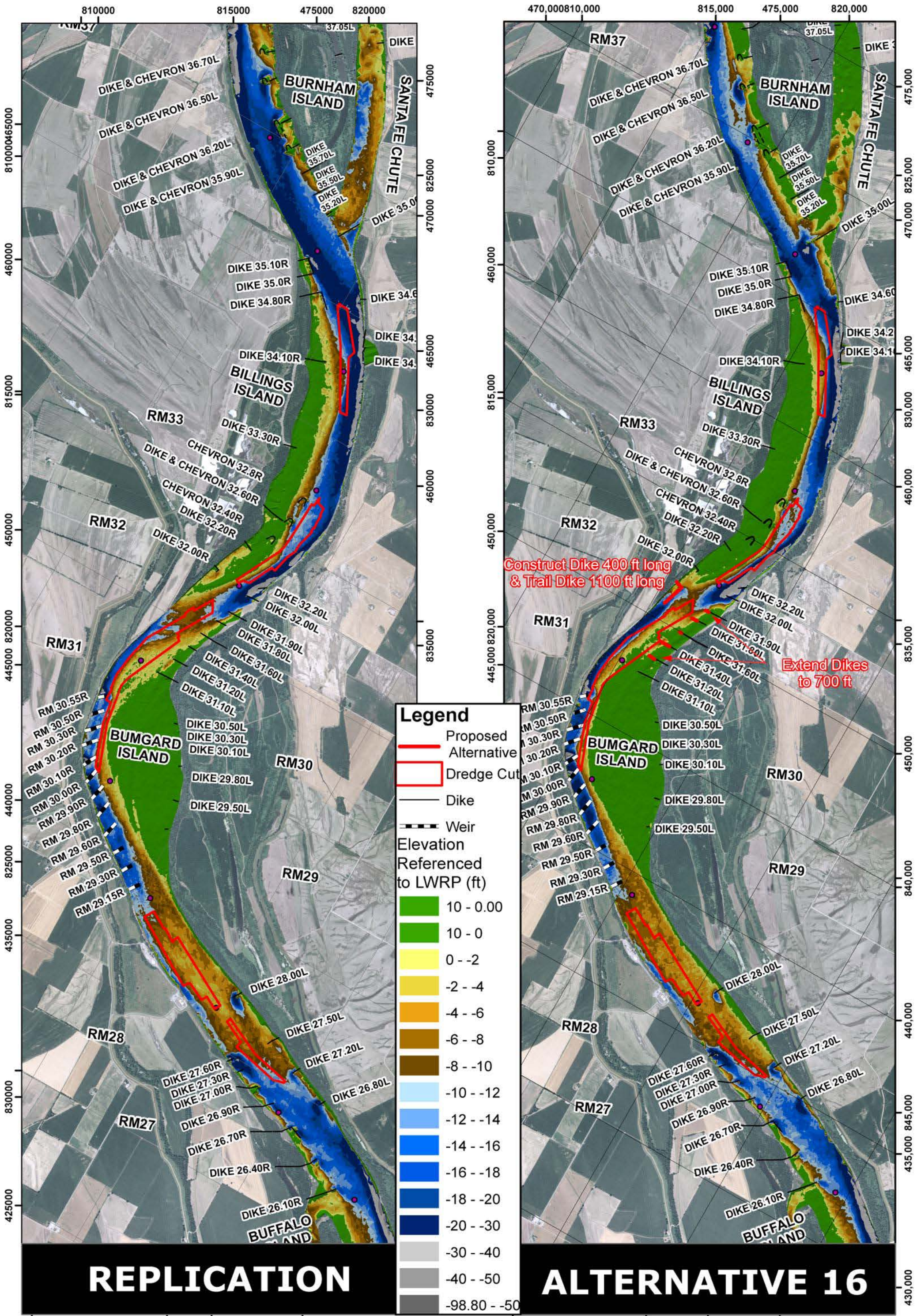
-98.80 - -50

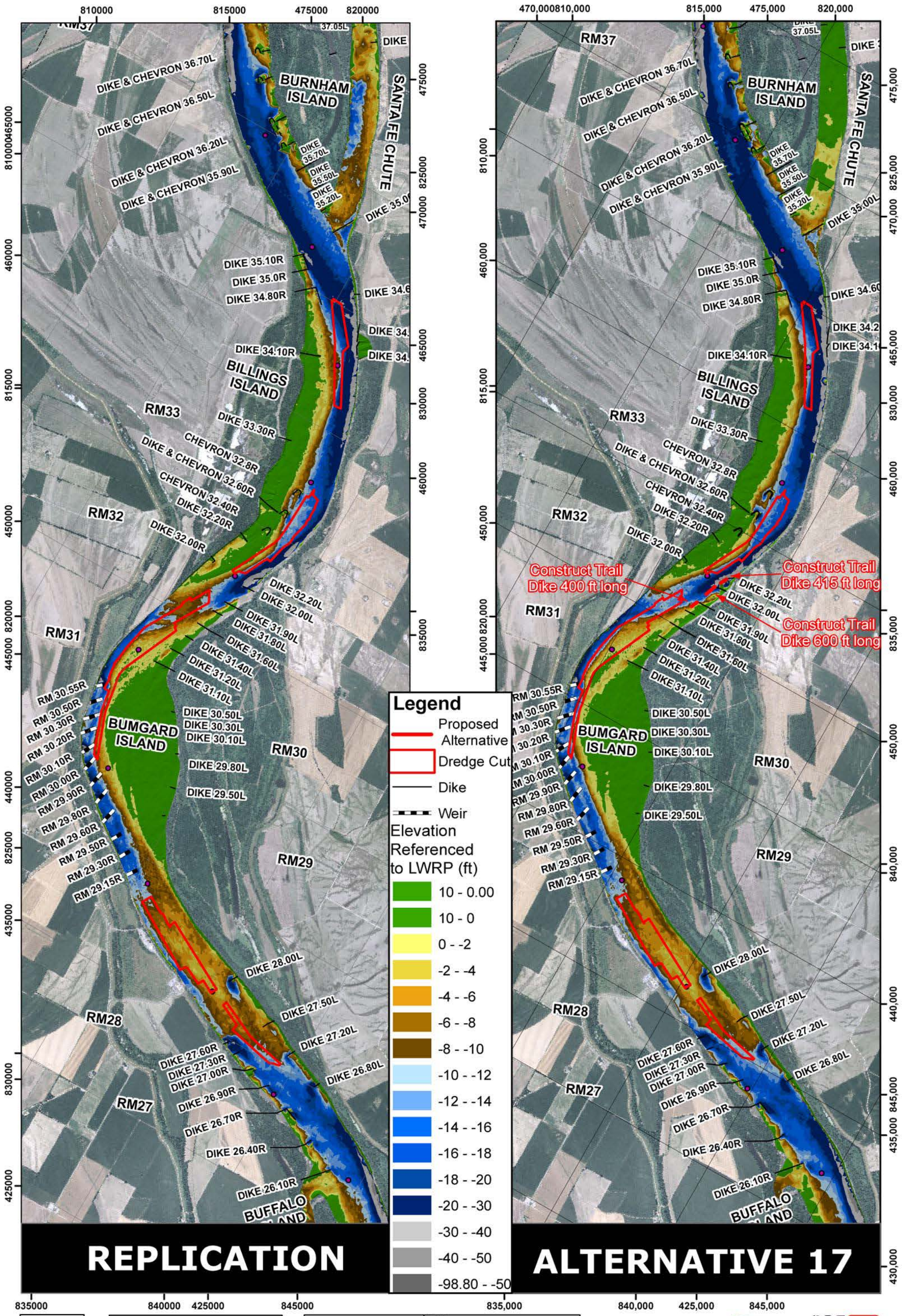


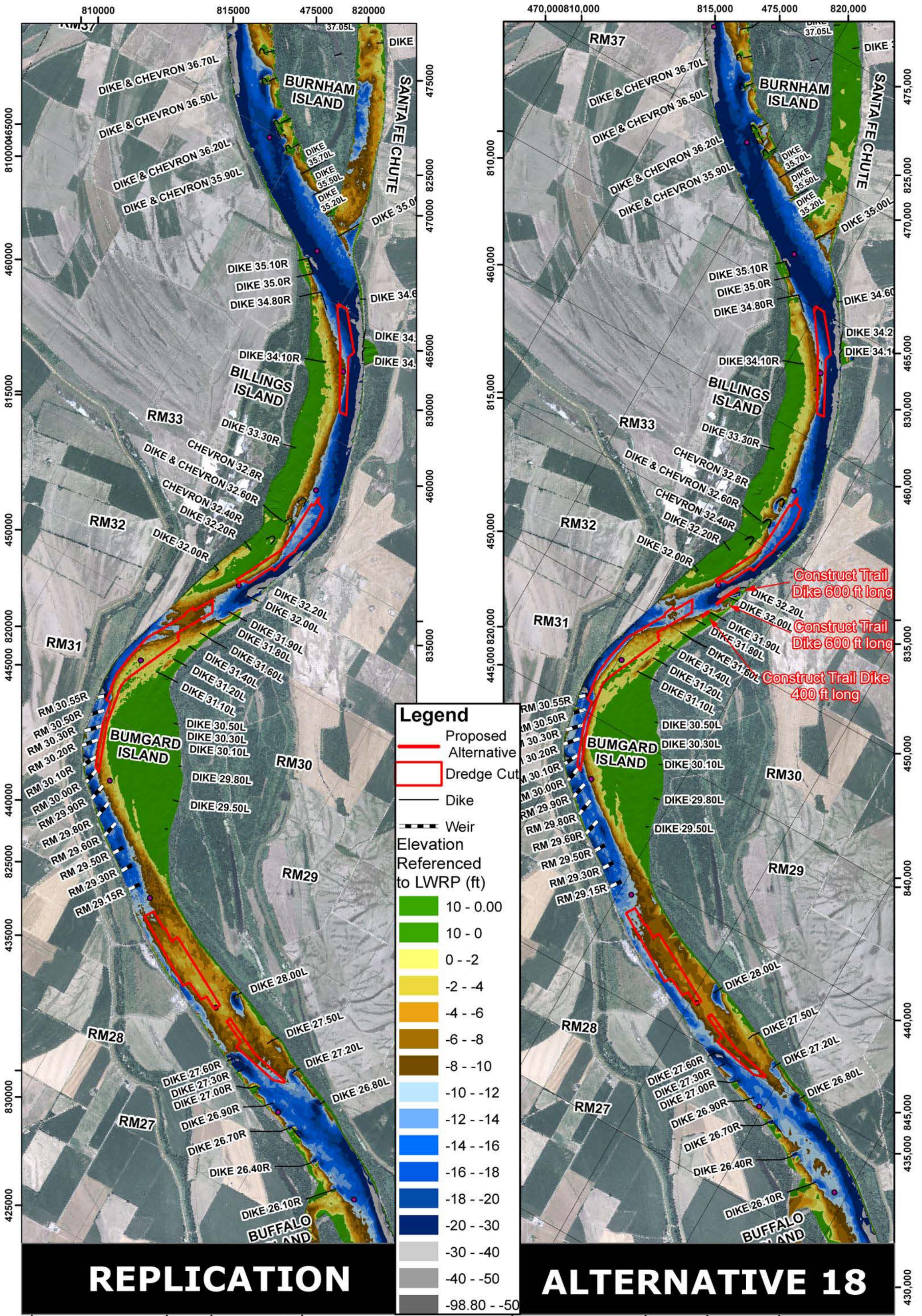


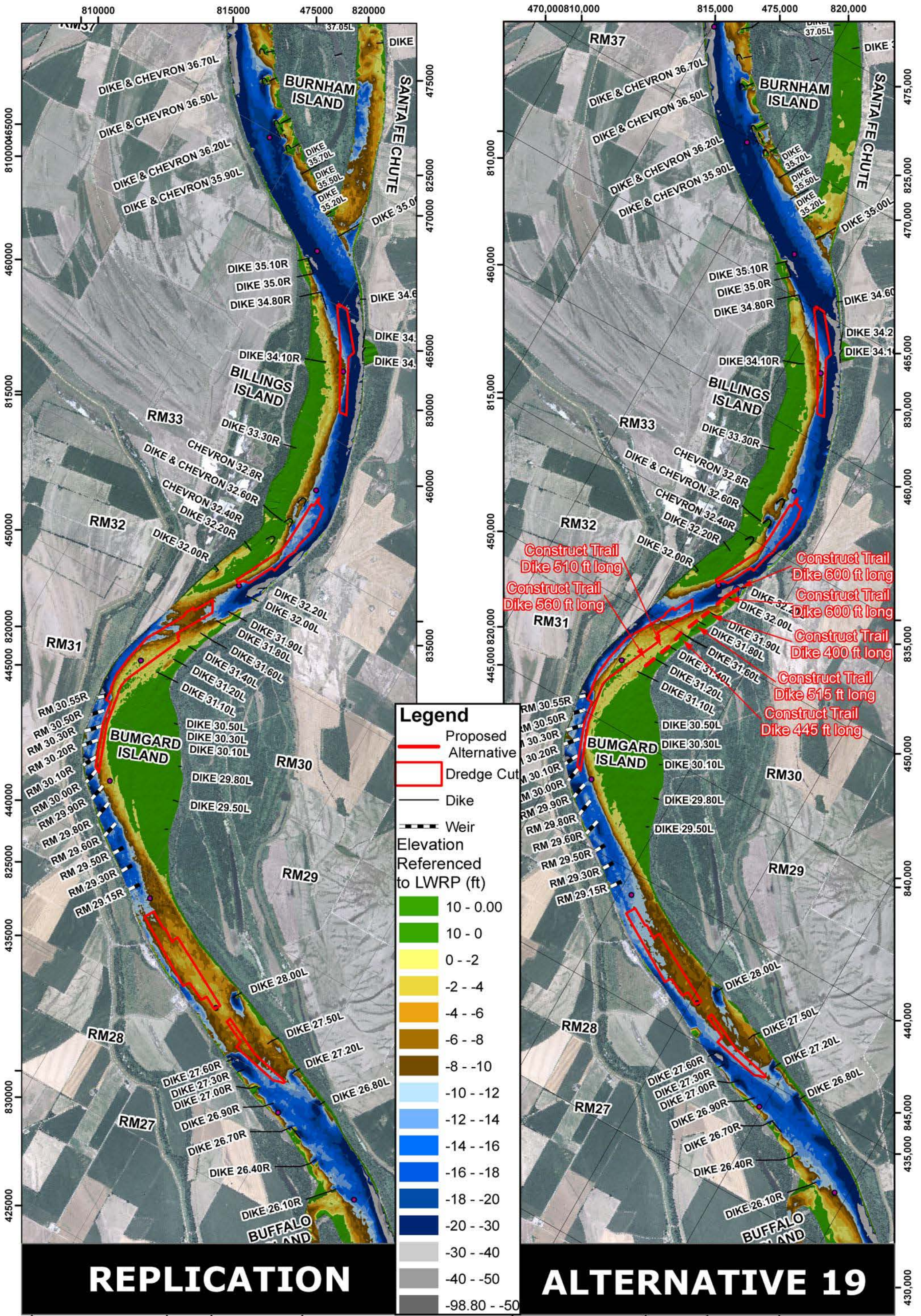
REPLICATION

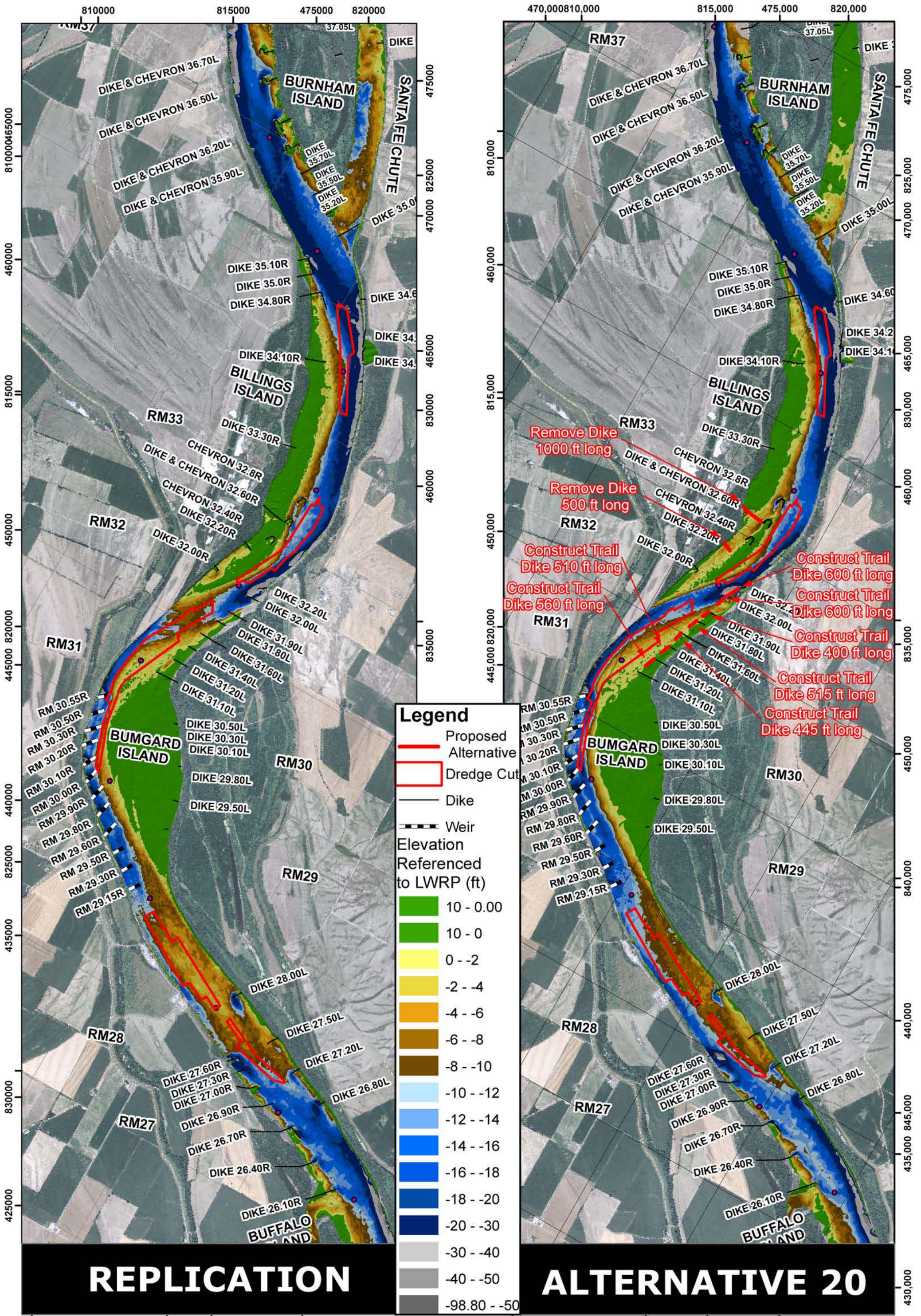
ALTERNATIVE 15











REPLICATION

ALTERNATIVE 20

PLATE
NUMBER
58

0 1,625 3,250 6,500
Feet

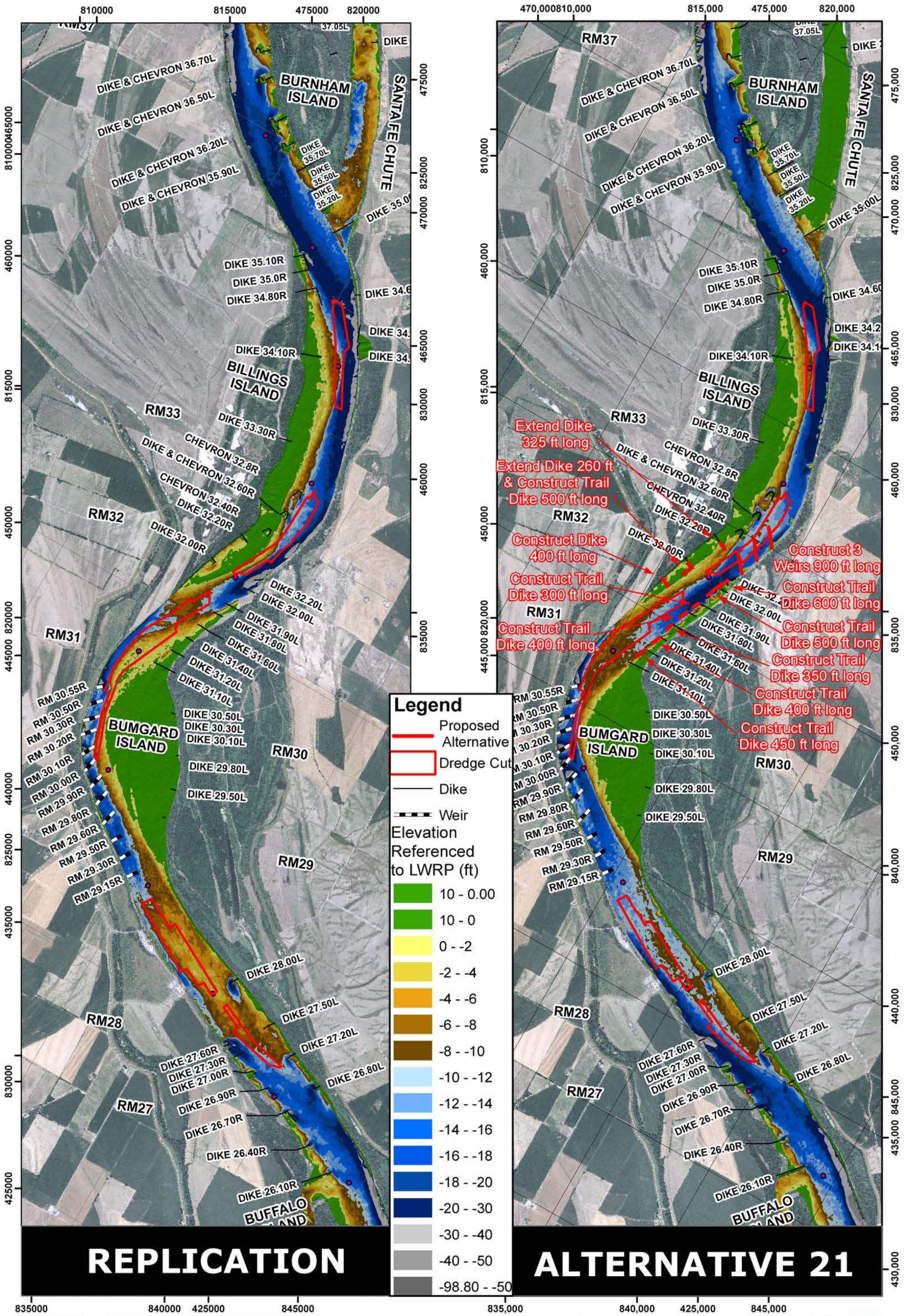
Replication Scan vs. Alternative 20
Bathymetry Results
2007 AERIAL PHOTOGRAPH

U.S. ARMY ENGINEER DIVISION CORPS OF ENGINEERS ST. LOUIS, MISSOURI	DESIGNED BY: K. Clancey		
	DRAWN BY: K. Clancey	REVIEWED BY: E Brauer, P.E.	CHECKED BY: J Brown, P.E.
Mississippi River Basin St. Louis District Bumgard Island HSR Model RM 36.0 - 25.0	SUBMITTED: K. Clancey		APPROVED: Rob Davinroy, P.E.
	FILE NAME: Z:\Bumgard Island HSR study\Plates		



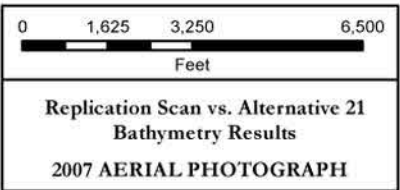
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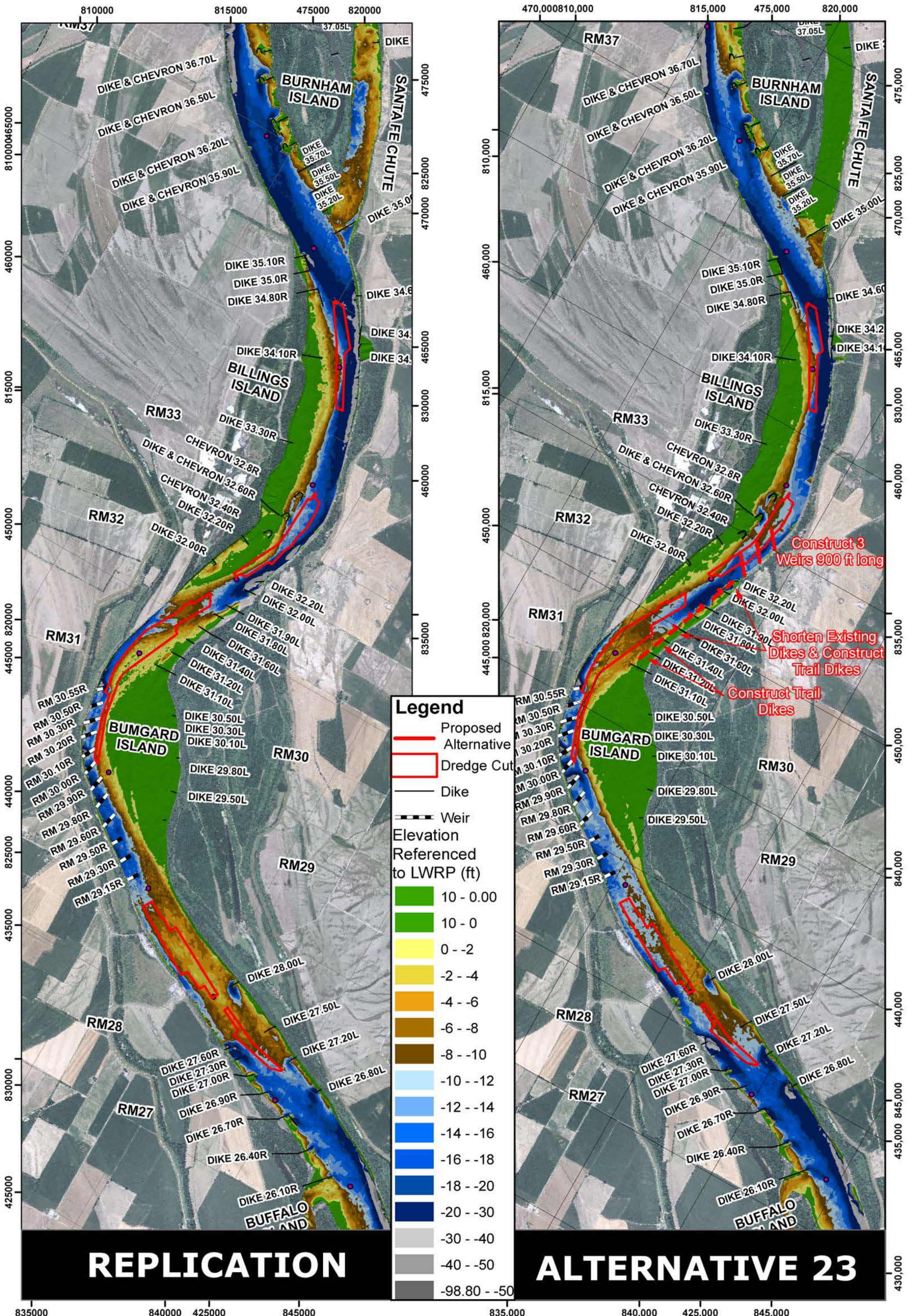
REPLICATION

ALTERNATIVE 21



U.S. ARMY ENGINEER DIVISION CORPS OF ENGINEERS ST. LOUIS, MISSOURI	DESIGNED BY K. Clancey		
	DRAWN BY K. Clancey	REVIEWED BY E Brauer, P.E.	CHECKED BY J Brown, P.E.
	SUBMITTED K. Clancey		
	APPROVED Rob Davinroy, P.E.		
Mississippi River Basin St. Louis District Bumgard Island HSR Model RM 36.0 - 25.0			
FILE NAME Z:\Bumgard Island HSR study\Plates			





REPLICATION

ALTERNATIVE 23

Legend

Proposed

Alternative

Dredge Cut

Dike

Weir

Elevation Referenced to LWRP (ft)

10 - 0.00

10 - 0

0 - -2

-2 - -4

-4 - -6

-6 - -8

-8 - -10

-10 - -12

-12 - -14

-14 - -16

-16 - -18

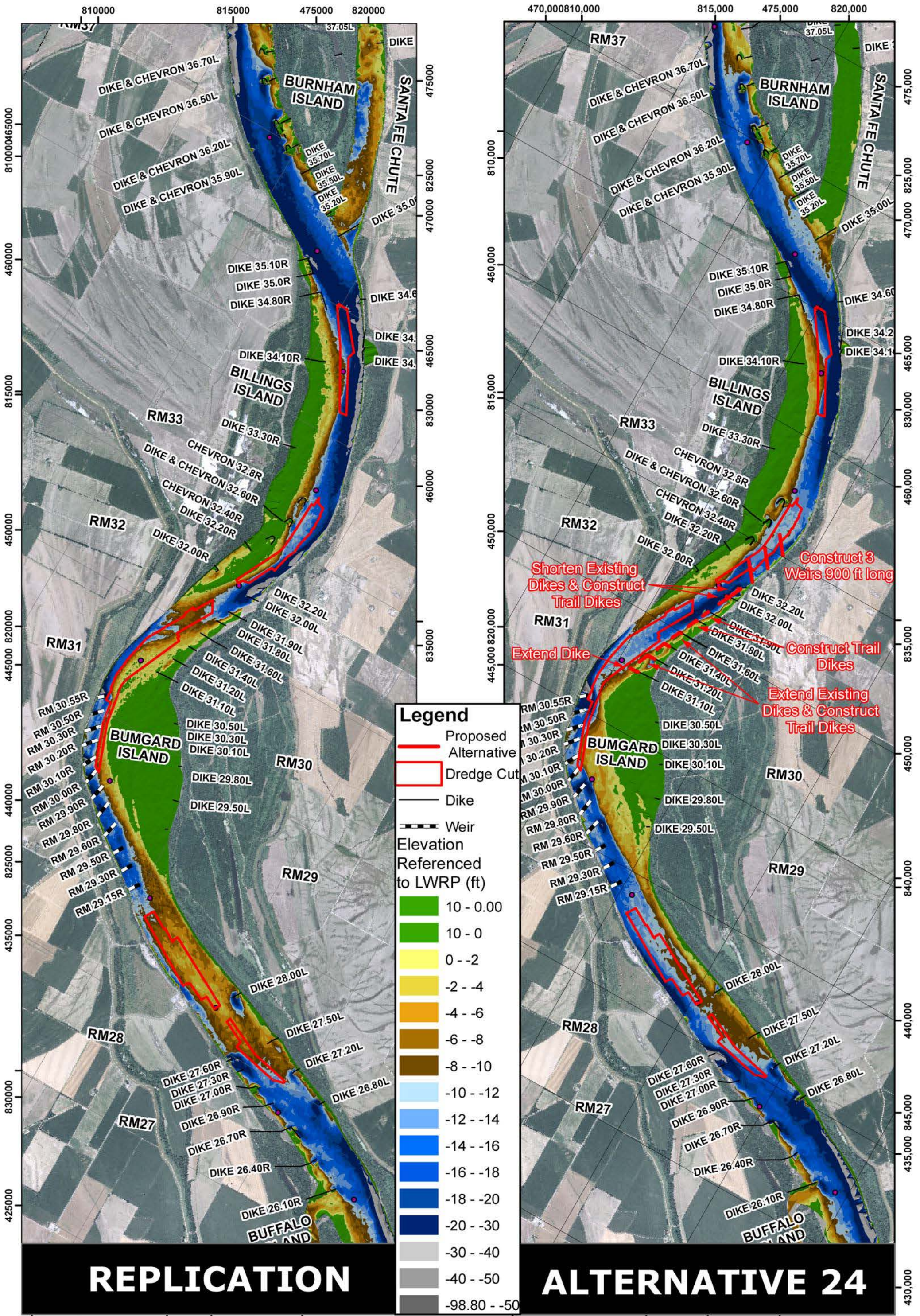
-18 - -20

-20 - -30

-30 - -40

-40 - -50

-98.80 - -50



REPLICATION

ALTERNATIVE 24

PLATE
NUMBER
62

0 1,625 3,250 6,500
Feet

Replication Scan vs. Alternative 24
Bathymetry Results

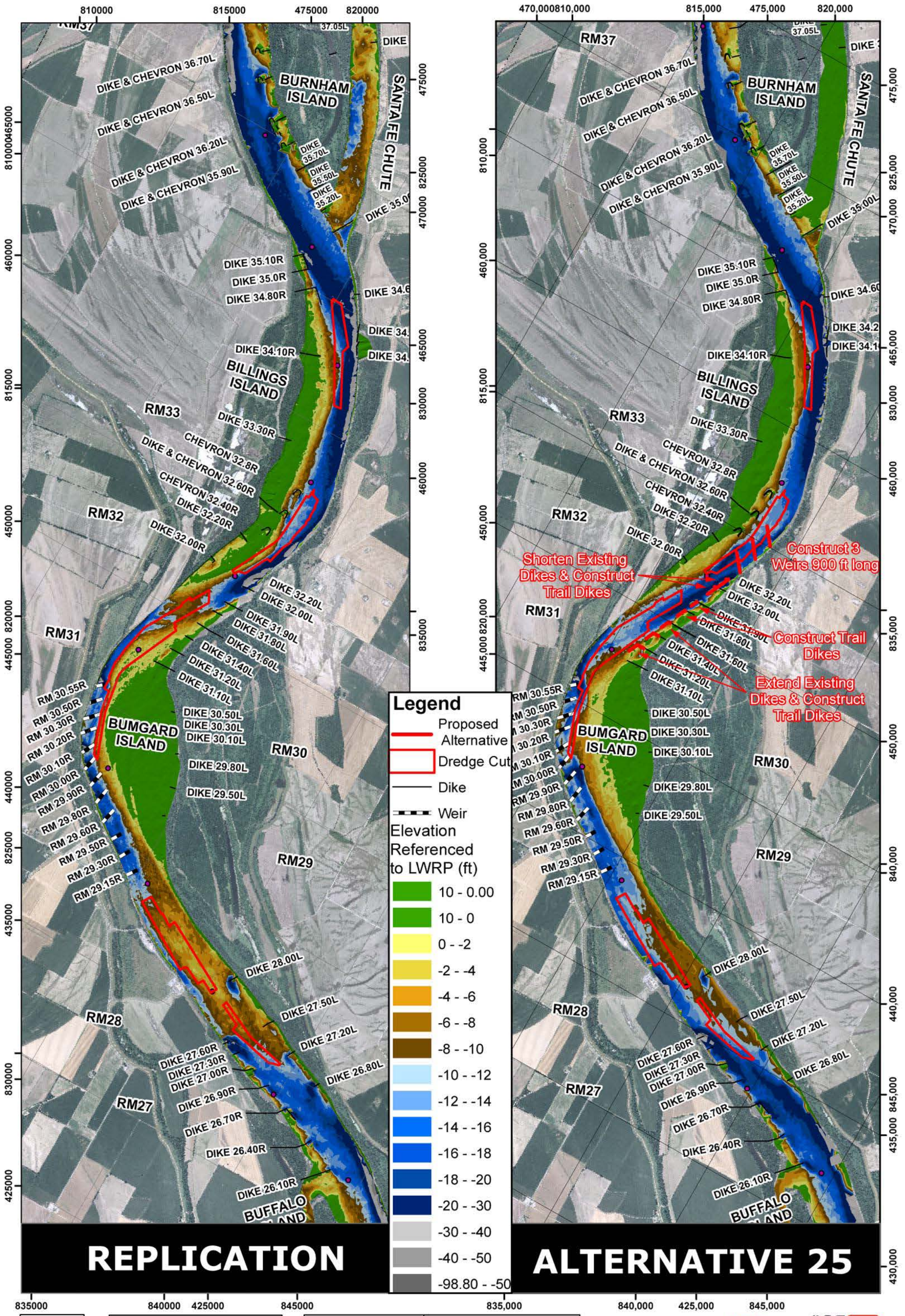
2007 AERIAL PHOTOGRAPH

U.S. ARMY ENGINEER DIVISION CORPS OF ENGINEERS ST. LOUIS, MISSOURI	DESIGNED BY: K. Clancey		
	DRAWN BY: K. Clancey	REVIEWED BY: E Brauer, P.E.	CHECKED BY: J Brown, P.E.
	SUBMITTED: K. Clancey		
Mississippi River Basin St. Louis District Bumgard Island HSR Model RM 36.0 - 25.0	APPROVED: Rob Davinroy, P.E.		
	FILE NAME: Z:\Bumgard Island HSR study\Plates		



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REPLICATION

ALTERNATIVE 25

PLATE
NUMBER
63

01,6253,2506,500

Feet

Replication Scan vs. Alternative 25
Bathymetry Results
2007 AERIAL PHOTOGRAPH

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

Mississippi River Basin
St. Louis District
Bumgard Island
HSR Model
RM 36.0 - 25.0

DESIGNED BY
K. Clancey

DRAWN BY
K. Clancey

SUBMITTED
K. Clancey

FILE NAME
Z:\Bumgard Island HSR study\Plates

REVIEWED BY
E Brauer, P.E.

APPROVED
Rob Davinroy, P.E.

CHECKED BY
J Brown, P.E.

W

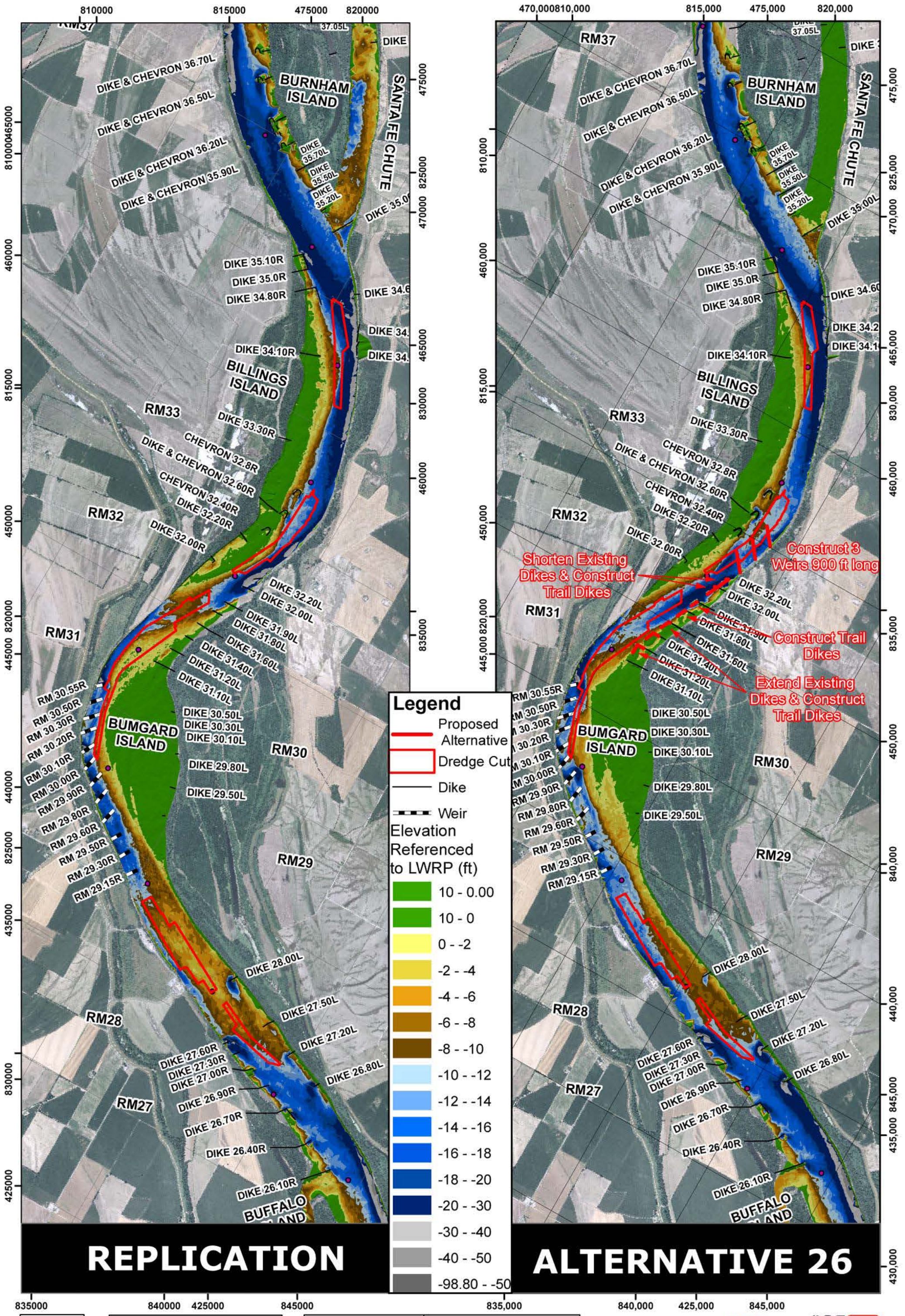
N

S

E

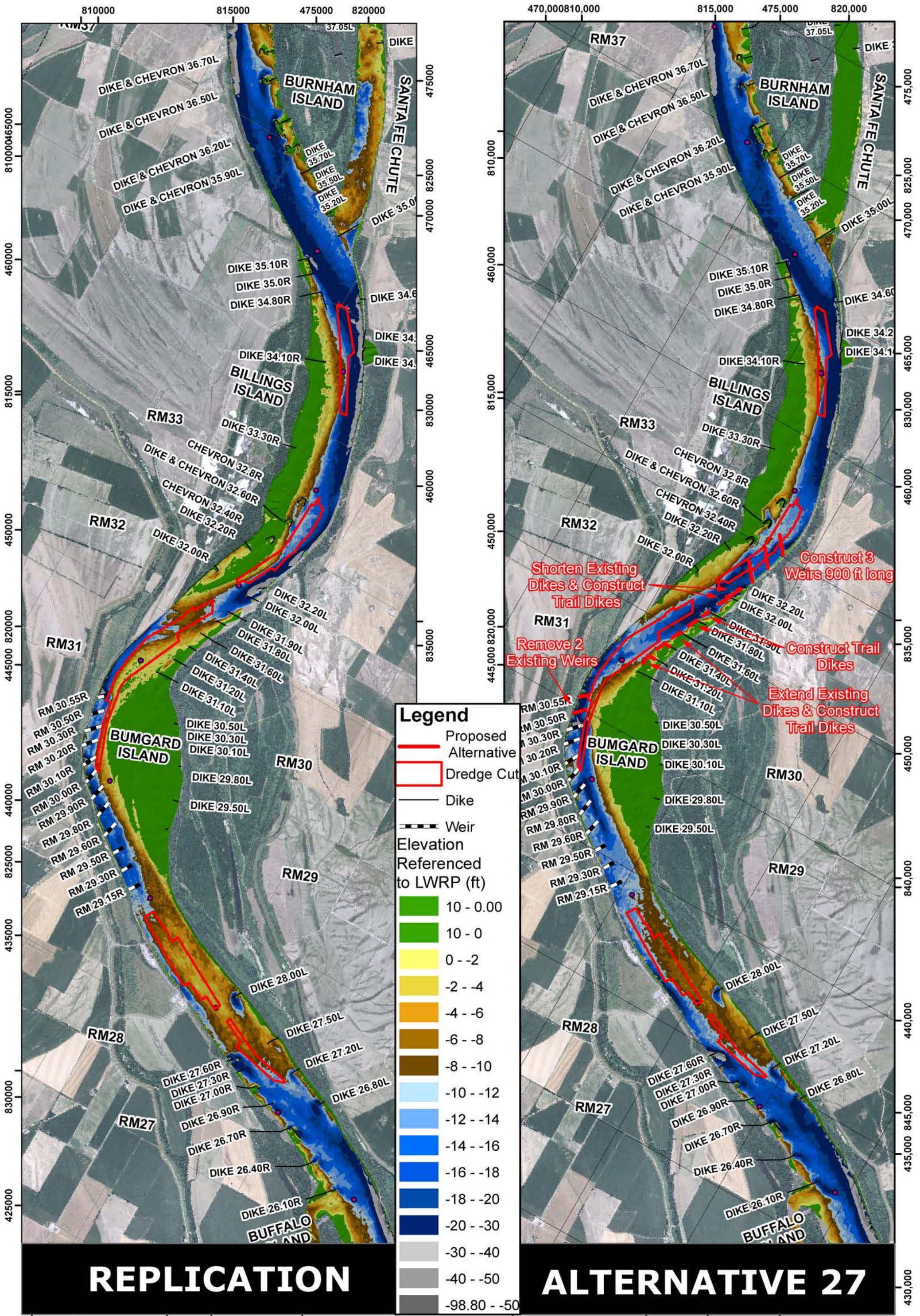
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REPLICATION

ALTERNATIVE 26



REPLICATION

ALTERNATIVE 27

PLATE
NUMBER
65

0 1,625 3,250 6,500
Feet

Replication Scan vs. Alternative 27
Bathymetry Results

2007 AERIAL PHOTOGRAPH

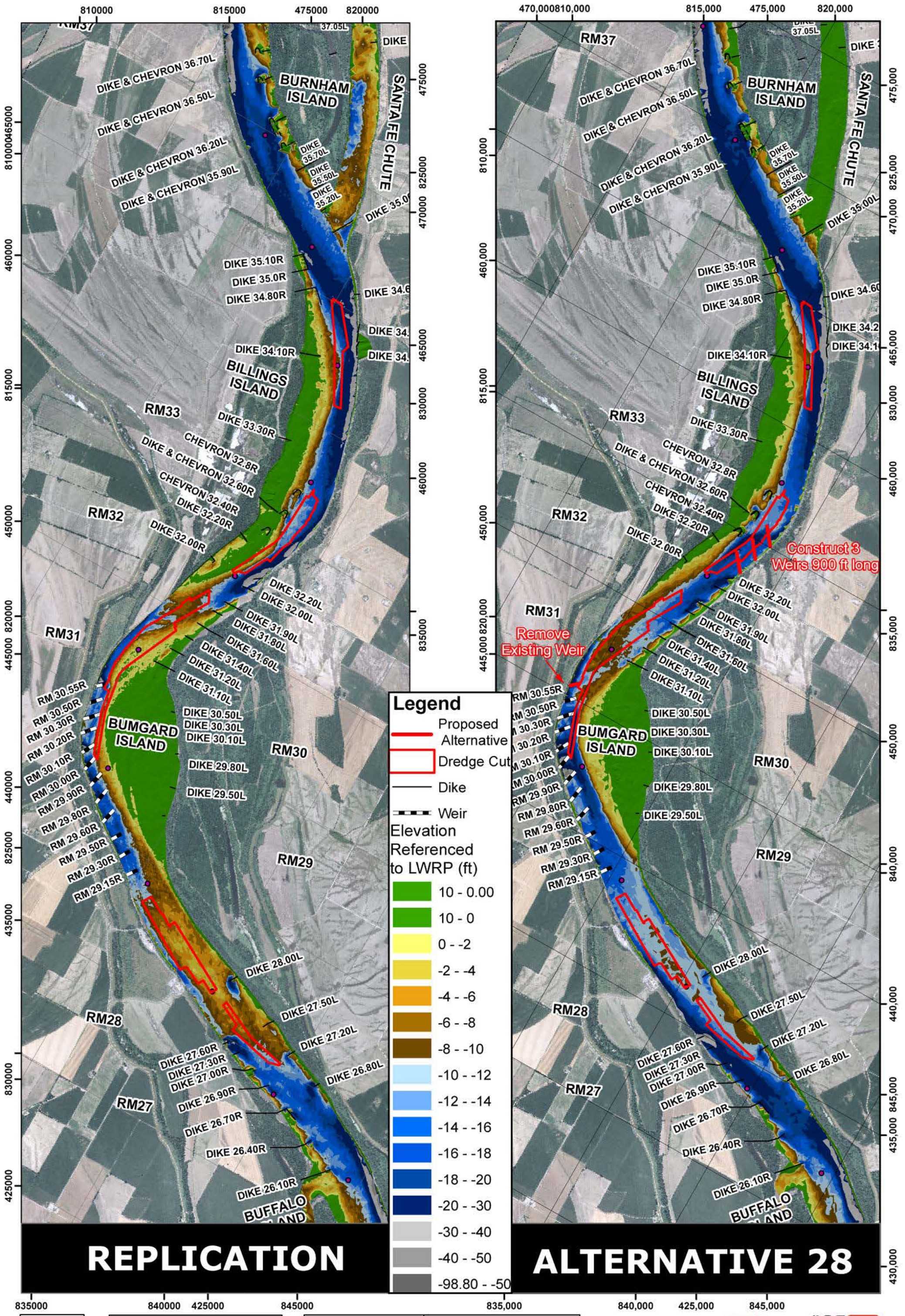
U.S. ARMY ENGINEER DIVISION CORPS OF ENGINEERS ST. LOUIS, MISSOURI	DESIGNED BY: K. Clancey		
	DRAWN BY: K. Clancey	REVIEWED BY: E Brauer, P.E.	CHECKED BY: J Brown, P.E.
	SUBMITTED: K. Clancey		
Mississippi River Basin St. Louis District Bumgard Island HSR Model RM 36.0 - 25.0	APPROVED: Rob Davinroy, P.E.		
	FILE NAME: Z:\Bumgard Island HSR study\Plates		

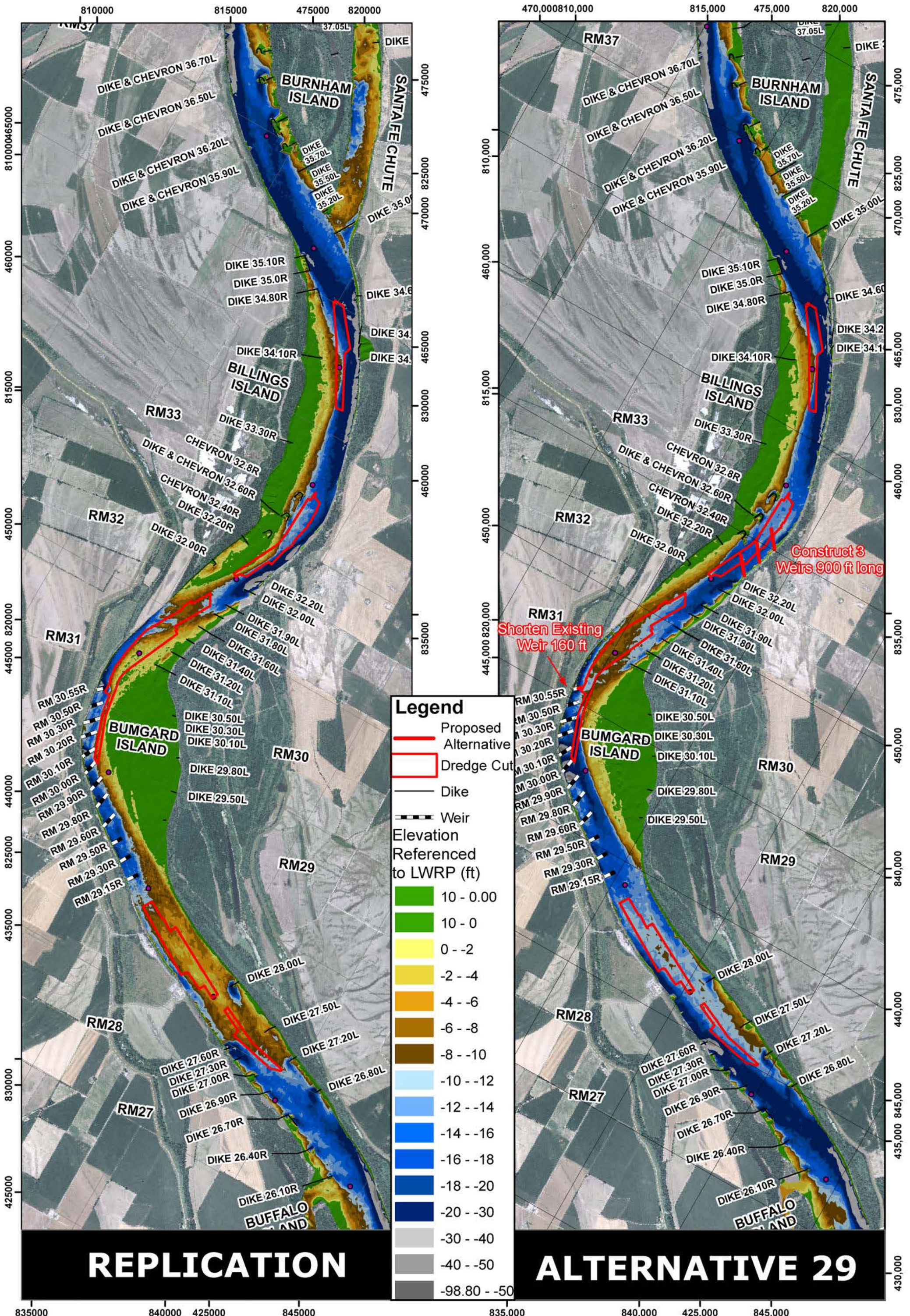


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REPLICATION

ALTERNATIVE 29

PLATE
NUMBER
67

0 1,625 3,250 6,500
Feet

Replication Scan vs. Alternative 29
Bathymetry Results

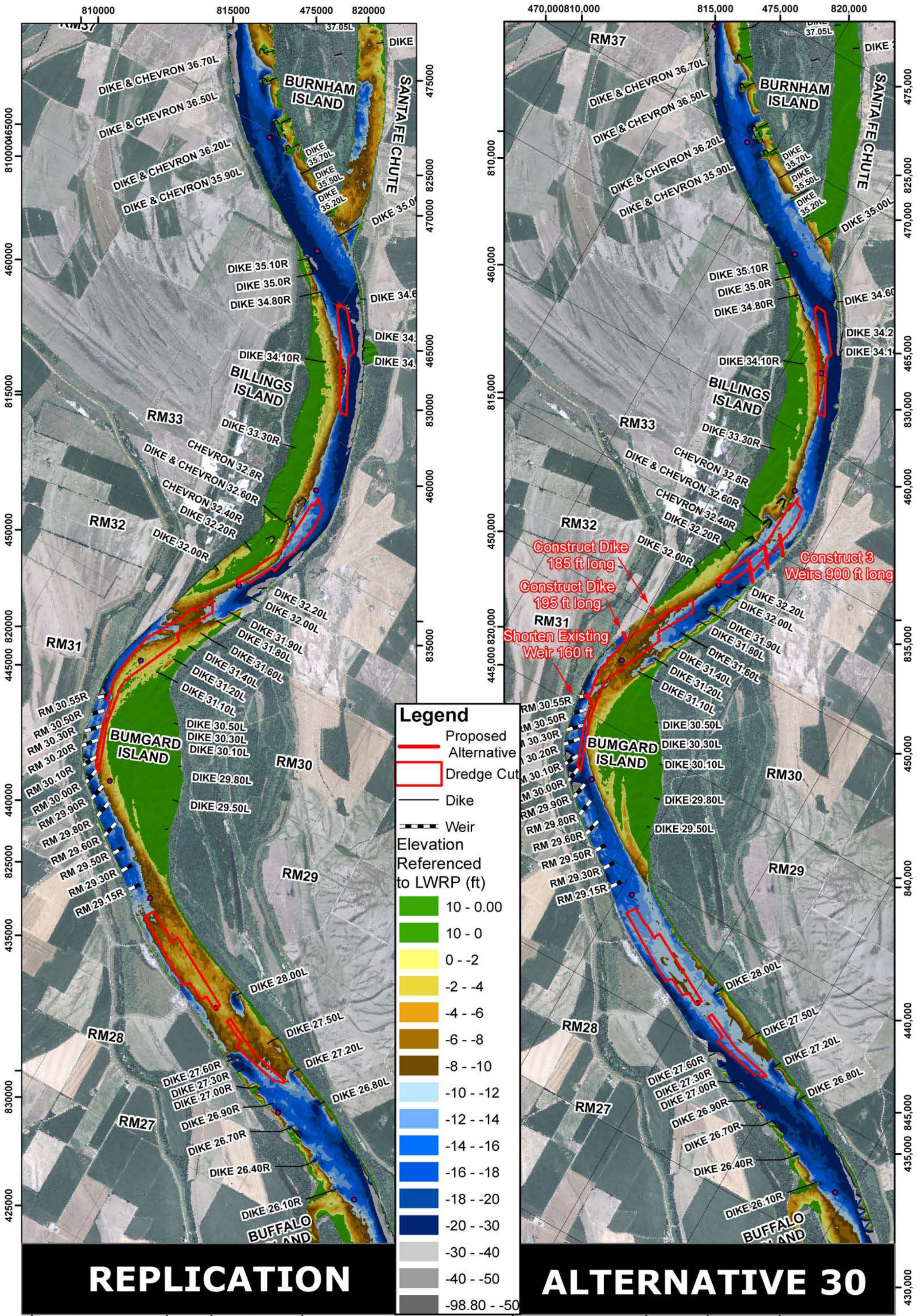
2007 AERIAL PHOTOGRAPH

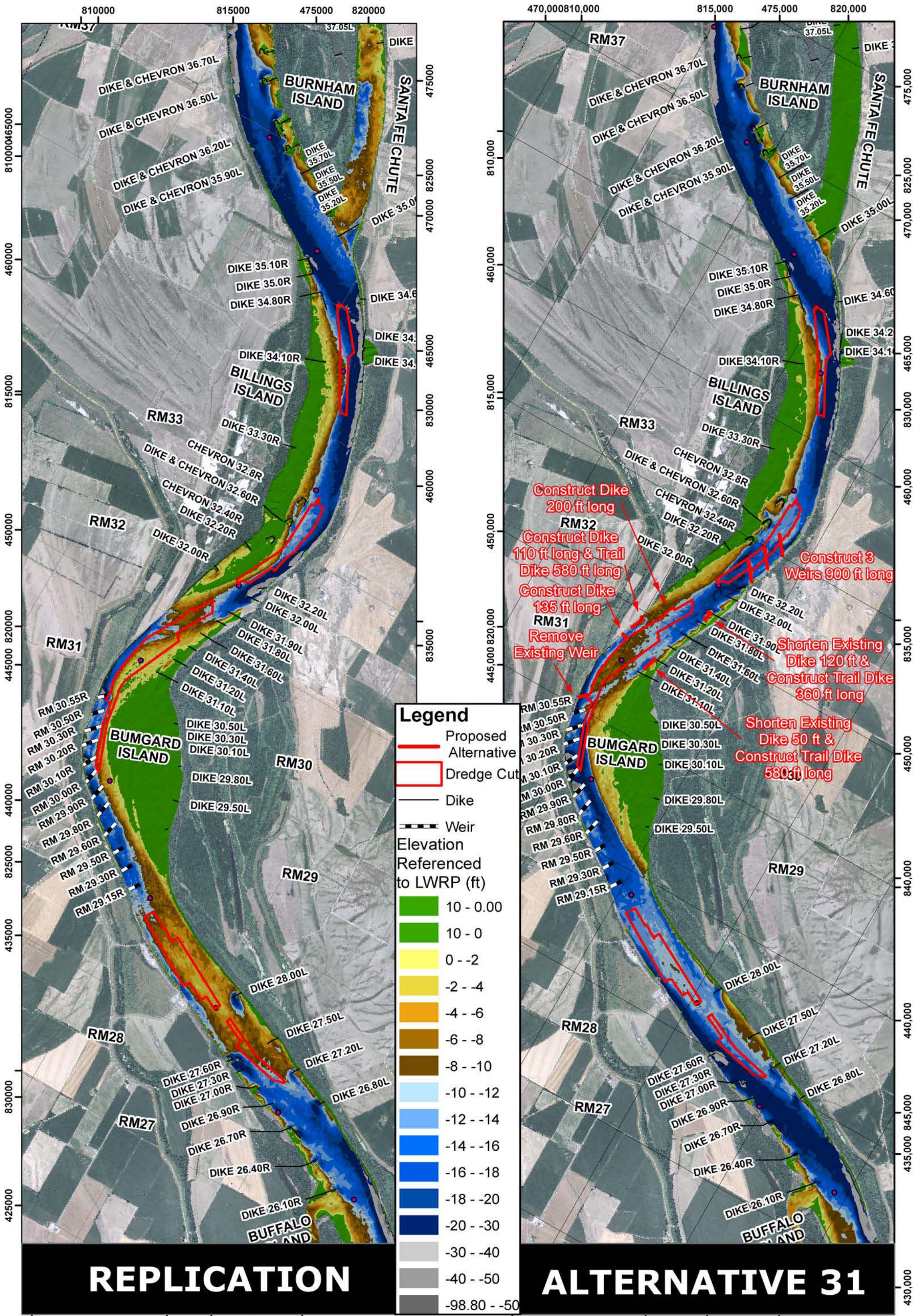
U.S. ARMY ENGINEER DIVISION CORPS OF ENGINEERS ST. LOUIS, MISSOURI	DESIGNED BY: K. Clancey		
	DRAWN BY:	REVIEWED BY:	CHECKED BY:
	K. Clancey	E Brauer, P.E.	J Brown, P.E.
Mississippi River Basin St. Louis District Bumgard Island HSR Model RM 36.0 - 25.0	SUBMITTED:		APPROVED:
	K. Clancey		Rob Davinroy, P.E.
	FILE NAME: Z:\Bumgard Island HSR study\Plates		

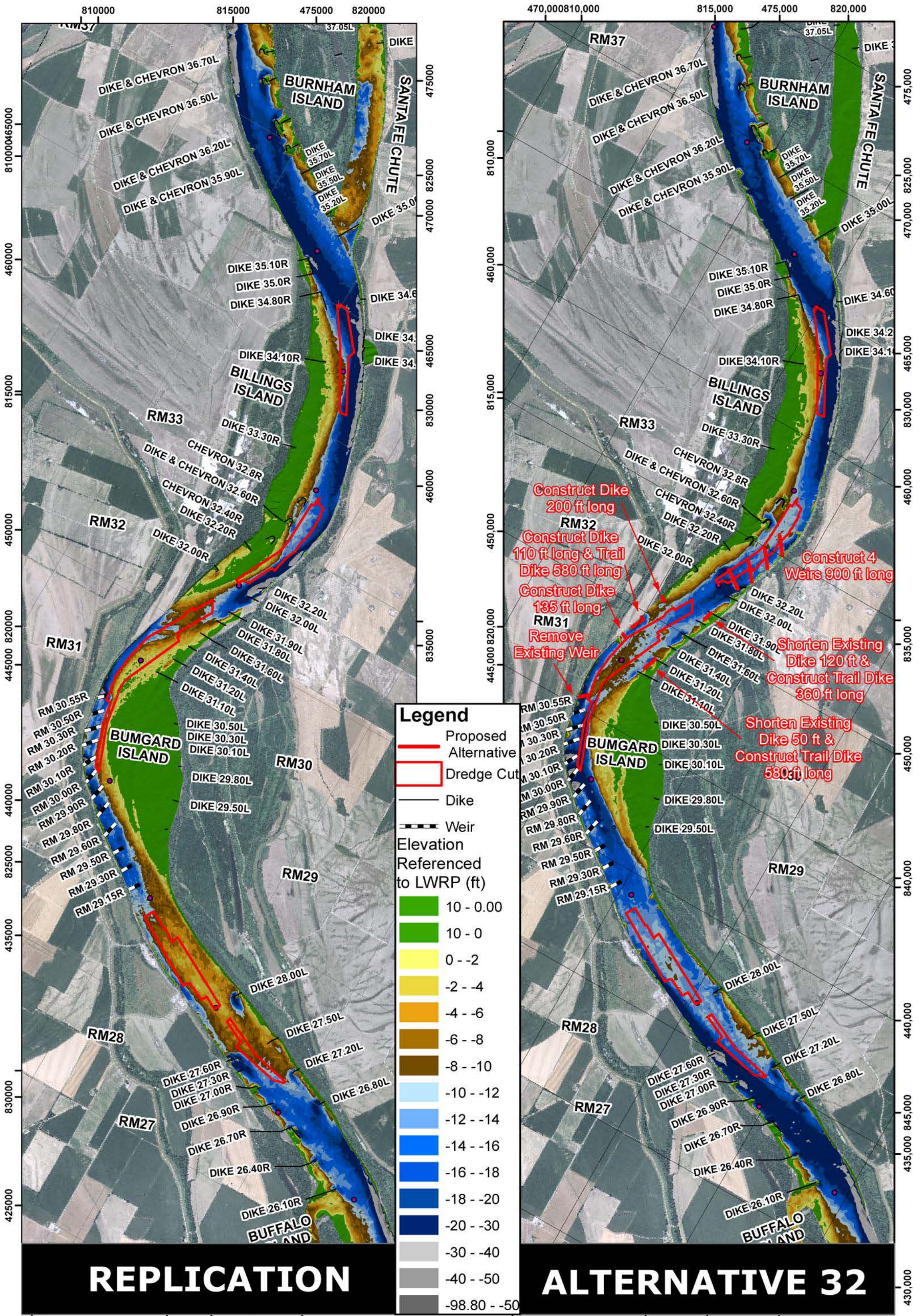


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REPLICATION

ALTERNATIVE 32

PLATE
NUMBER
70

0 1,625 3,250 6,500
Feet

Replication Scan vs. Alternative 32
Bathymetry Results

2007 AERIAL PHOTOGRAPH

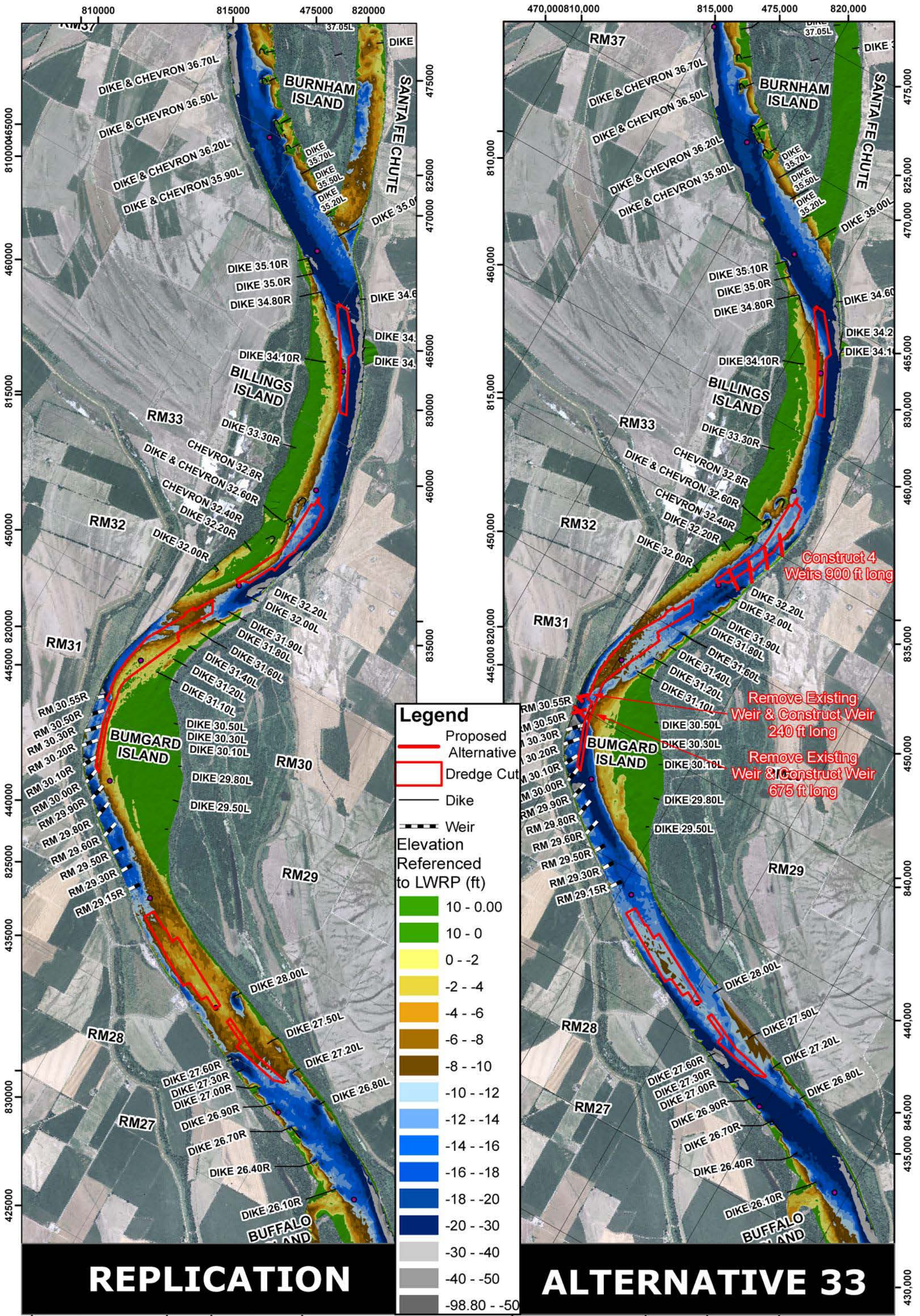
U.S. ARMY ENGINEER DIVISION CORPS OF ENGINEERS ST. LOUIS, MISSOURI	DESIGNED BY: K. Clancey		
	DRAWN BY: K. Clancey	REVIEWED BY: E Brauer, P.E.	CHECKED BY: J Brown, P.E.
	SUBMITTED: K. Clancey		
Mississippi River Basin St. Louis District Bumgard Island HSR Model RM 36.0 - 25.0	APPROVED: Rob Davinroy, P.E.		
	FILE NAME: Z:\Bumgard Island HSR study\Plates		

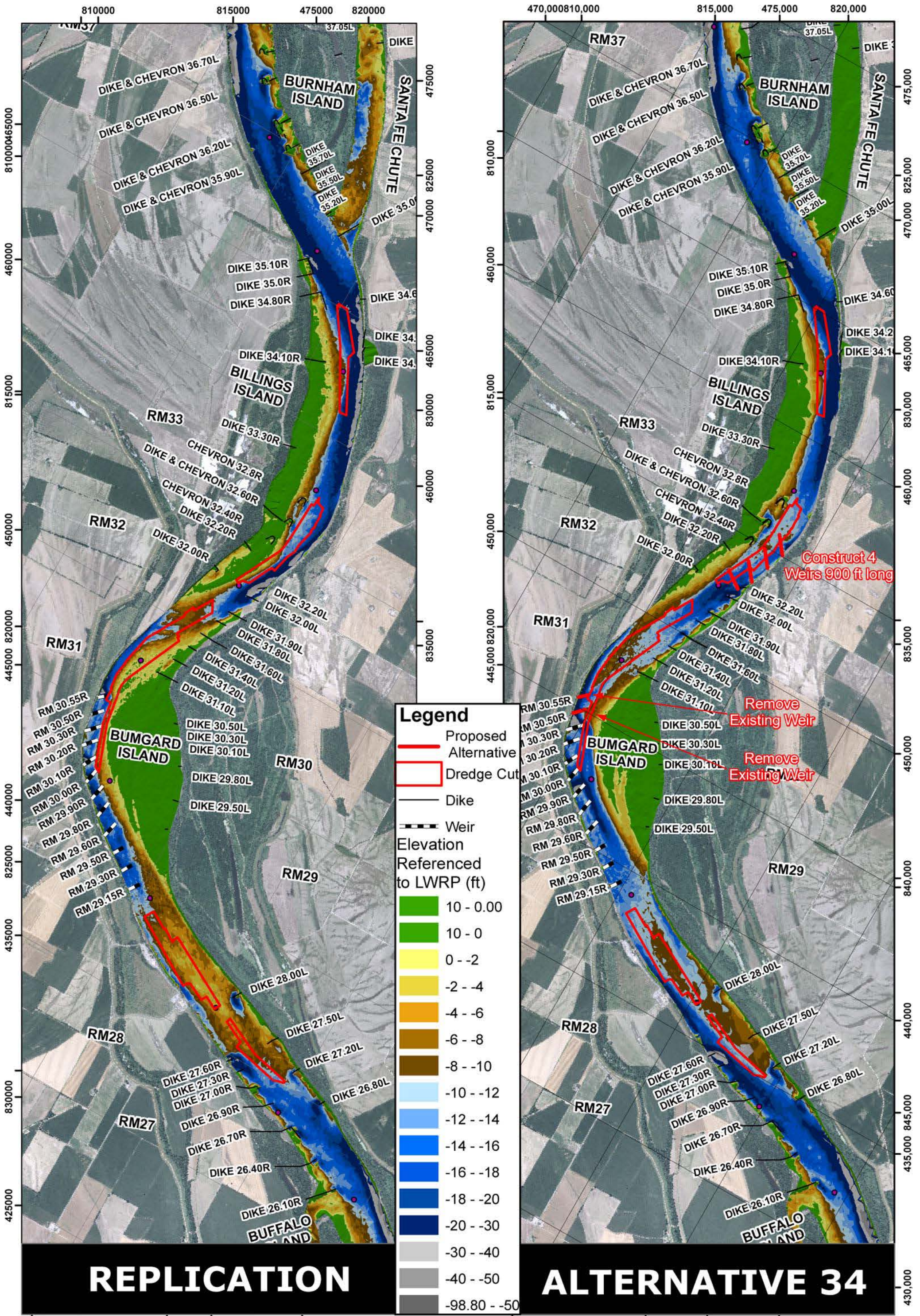


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REPLICATION

ALTERNATIVE 34

PLATE NUMBER
72

0 1,625 3,250 6,500
Feet

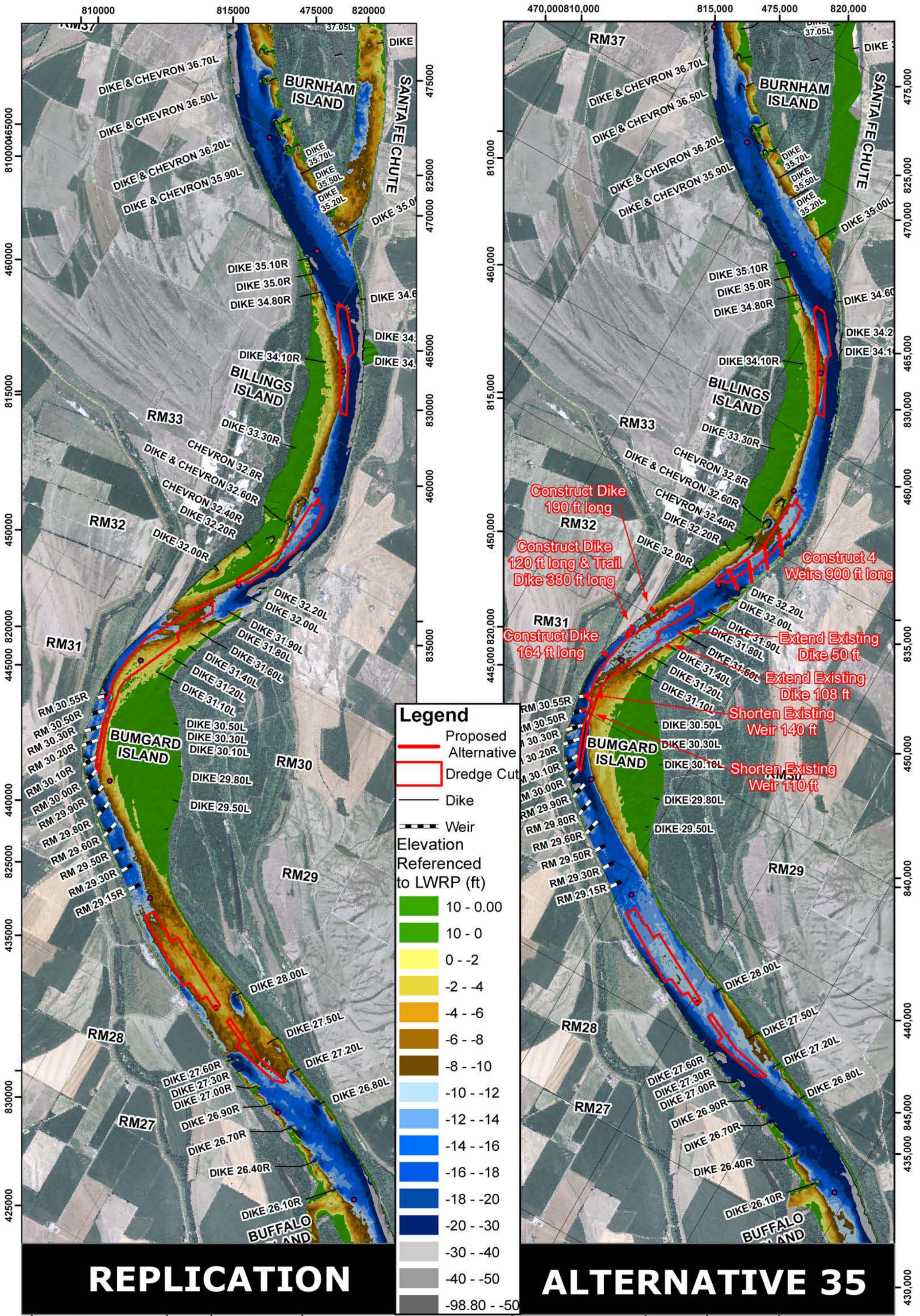
Replication Scan vs. Alternative 34
Bathymetry Results
2007 AERIAL PHOTOGRAPH

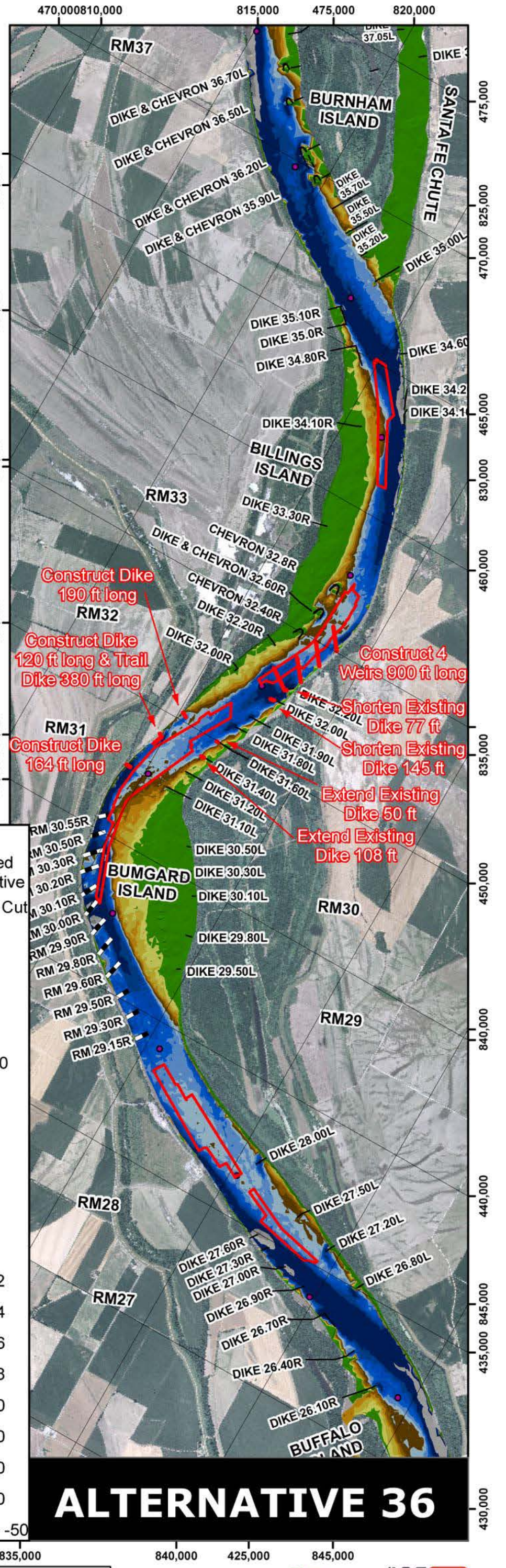
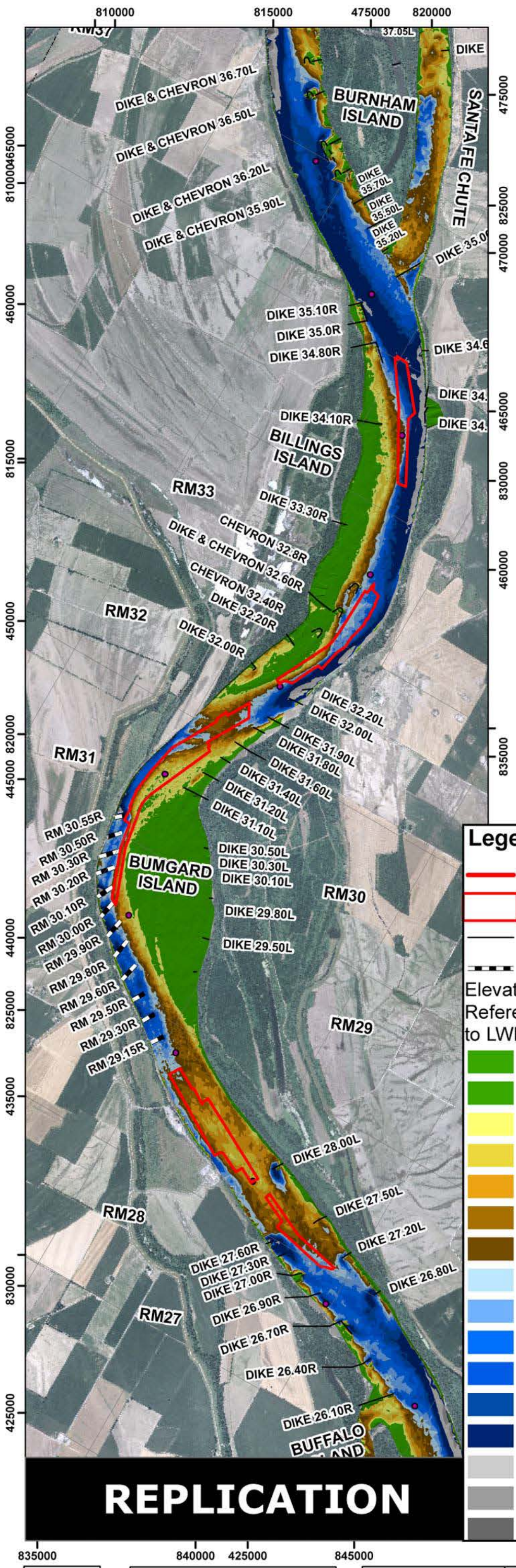
U.S. ARMY ENGINEER DIVISION CORPS OF ENGINEERS ST. LOUIS, MISSOURI		
Mississippi River Basin St. Louis District Bumgard Island HSR Model RM 36.0 - 25.0	DESIGNED BY: K. Clancey	CHECKED BY: J. Brown, P.E.
	REVIEWED BY: E. Brauer, P.E.	
	SUBMITTED BY: K. Clancey	APPROVED BY: Rob Davinroy, P.E.
	FILE NAME: Z:\Bumgard Island HSR study\Plates	

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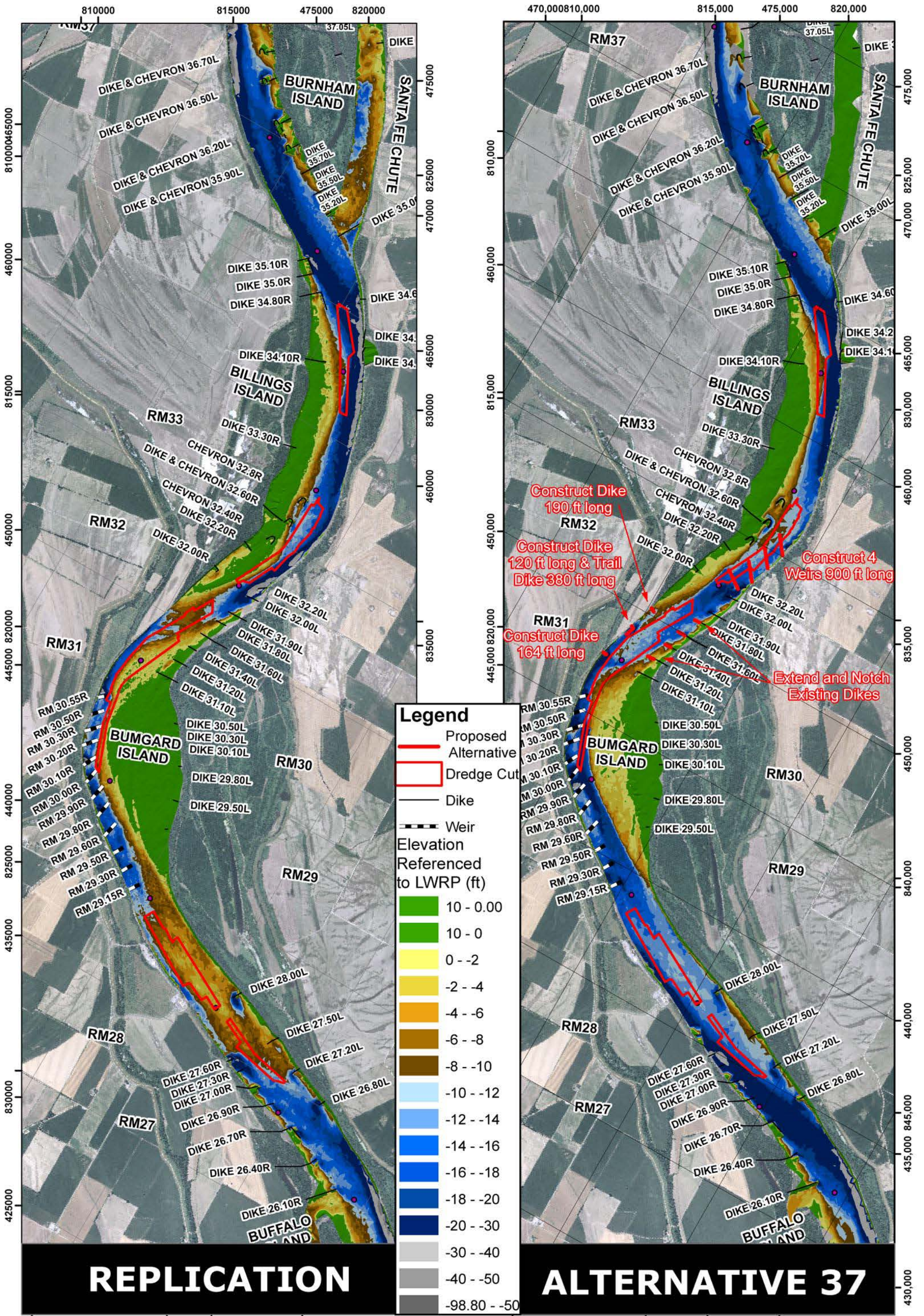


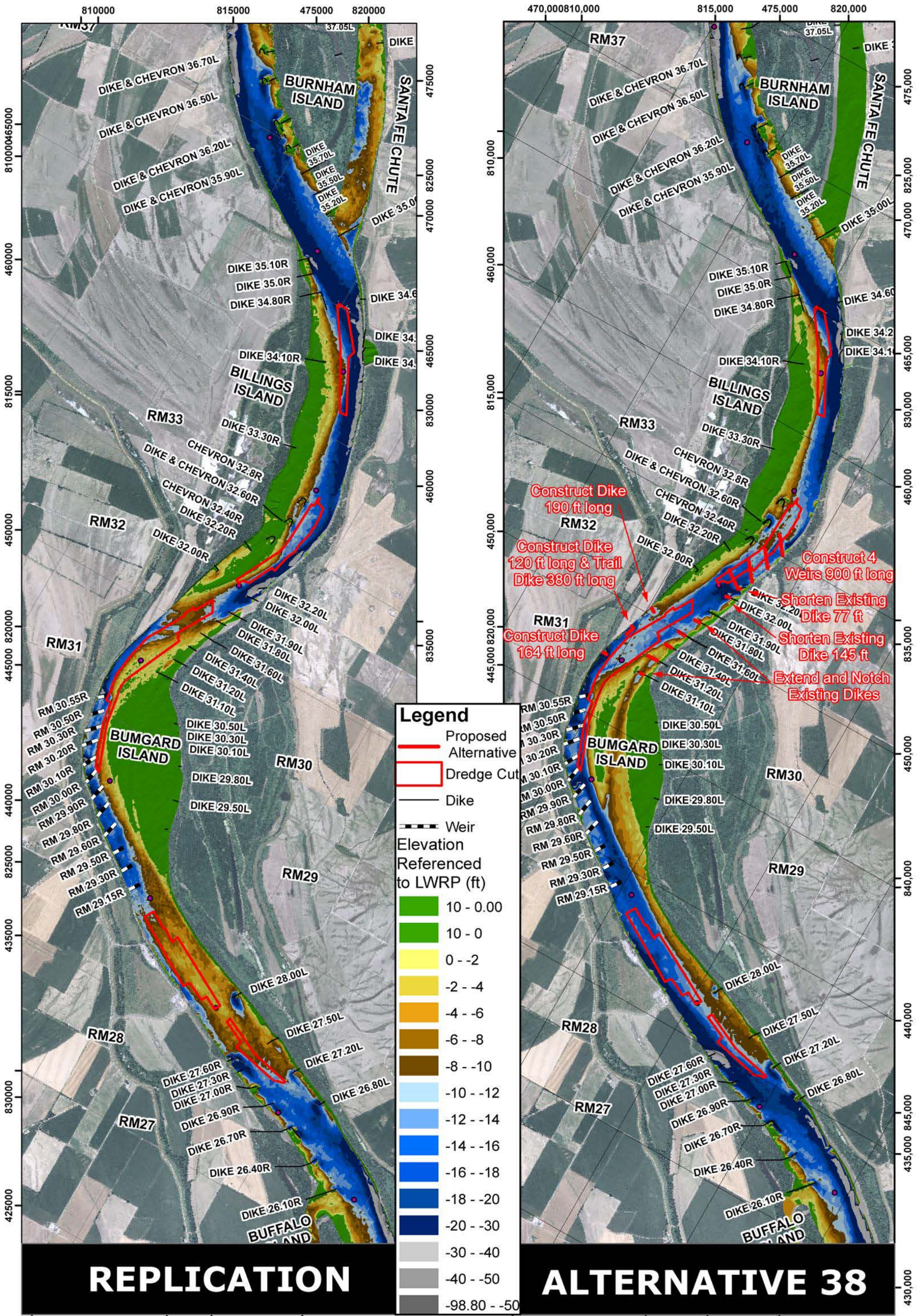


Legend

- Proposed
- Alternative
- Dredge Cut
- Dike
- Weir
- Elevation Referenced to LWRP (ft)

10 - 0.00
10 - 0
0 - -2
-2 - -4
-4 - -6
-6 - -8
-8 - -10
-10 - -12
-12 - -14
-14 - -16
-16 - -18
-18 - -20
-20 - -30
-30 - -40
-40 - -50
-98.80 - -50





REPLICATION

ALTERNATIVE 38

Legend

- Proposed
- Alternative
- Dredge Cut
- Dike
- Weir
- Elevation Referenced to LWRP (ft)

10 - 0.00
10 - 0
0 - -2
-2 - -4
-4 - -6
-6 - -8
-8 - -10
-10 - -12
-12 - -14
-14 - -16
-16 - -18
-18 - -20
-20 - -30
-30 - -40
-40 - -50
-98.80 - -50

PLATE
NUMBER
76

0 1,625 3,250 6,500
Feet

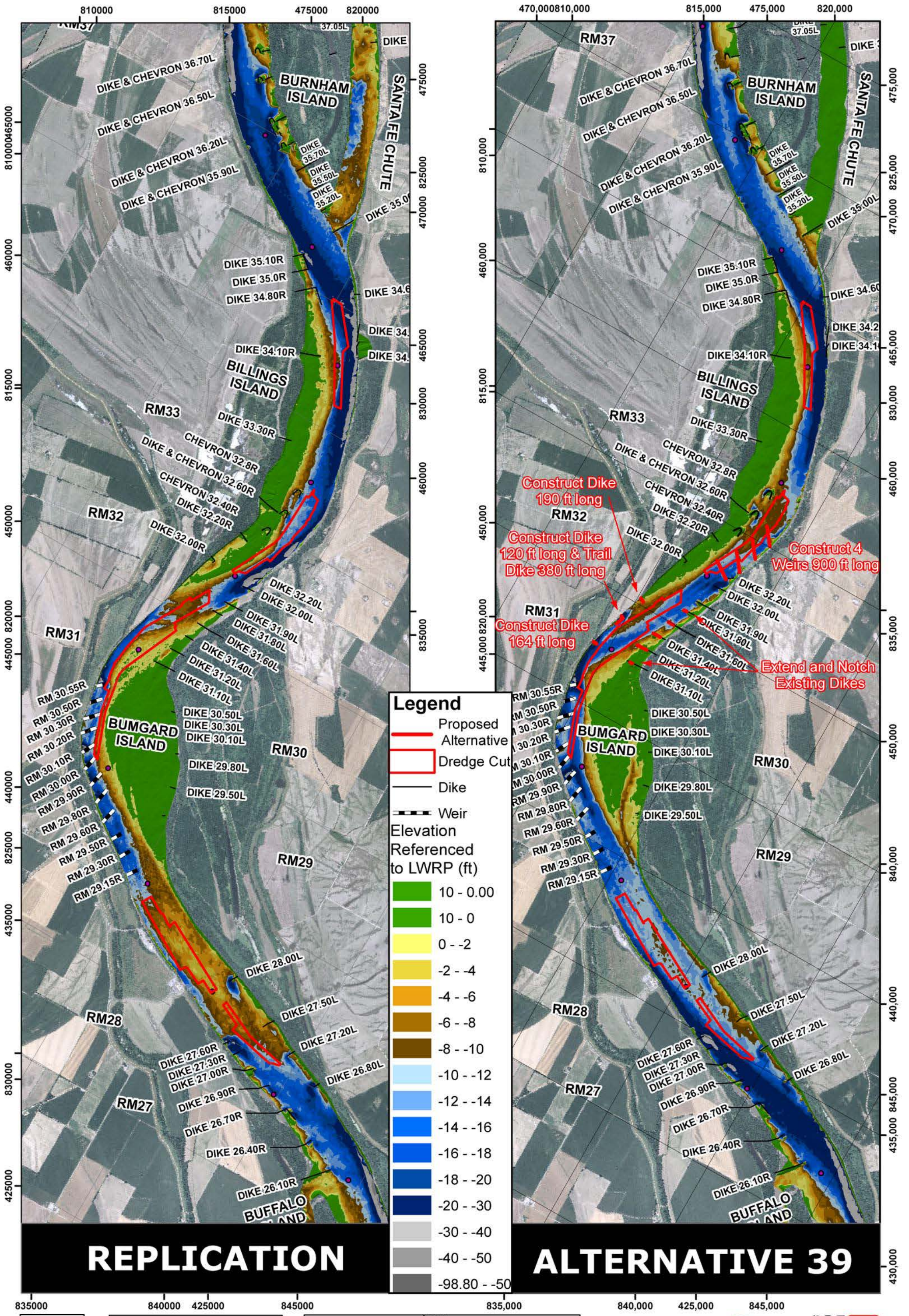
Replication Scan vs. Alternative 38
Bathymetry Results
2007 AERIAL PHOTOGRAPH

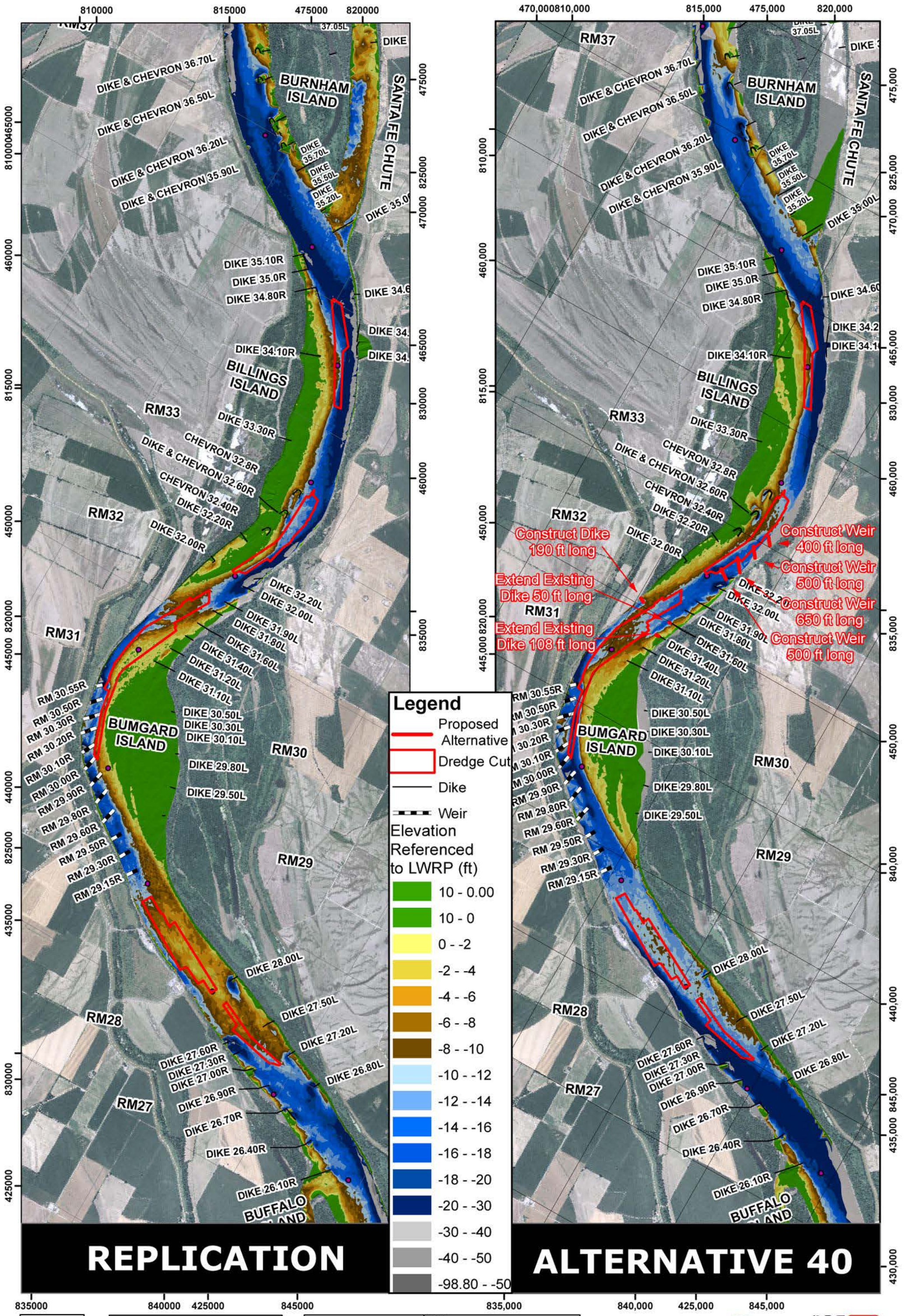
U.S. ARMY ENGINEER DIVISION CORPS OF ENGINEERS ST. LOUIS, MISSOURI	DESIGNED BY K. Clancey		
	DRAWN BY K. Clancey	REVIEWED BY E Brauer, P.E.	CHECKED BY J Brown, P.E.
	SUBMITTED BY K. Clancey		
	APPROVED BY Rob Davinroy, P.E.		
Mississippi River Basin St. Louis District Bumgard Island HSR Model RM 36.0 - 25.0	FILE NAME Z:\Bumgard Island HSR study\Plates		

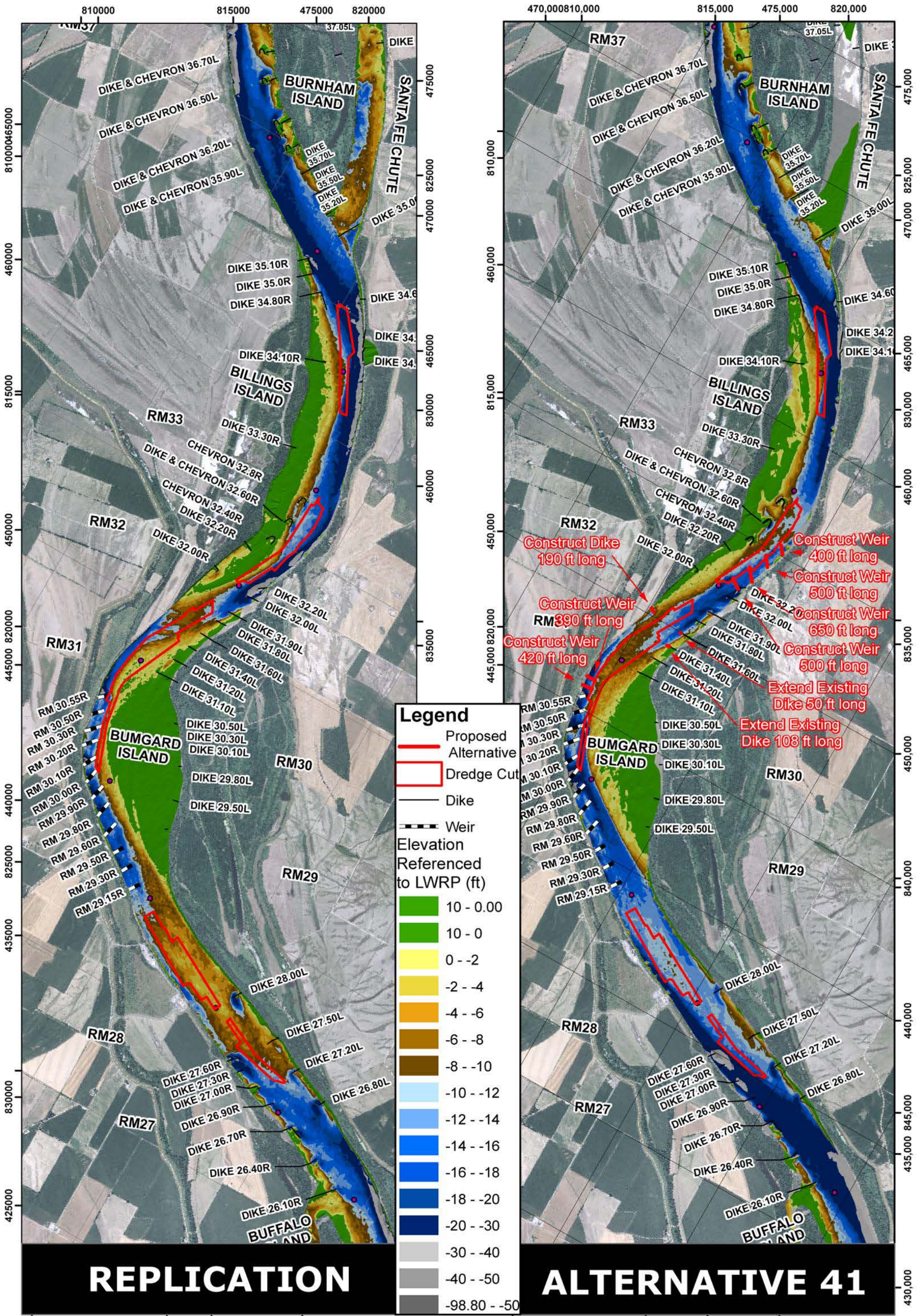


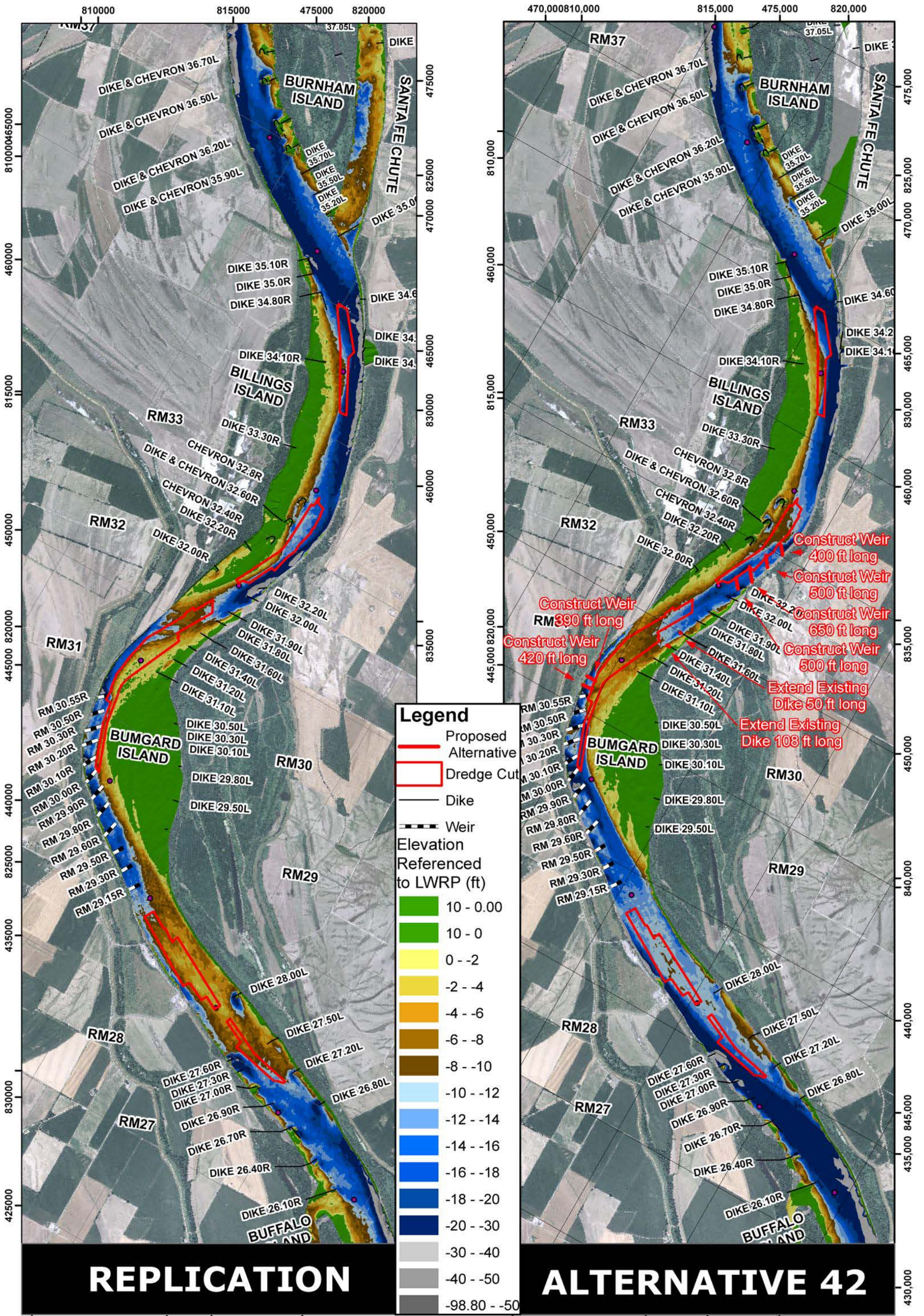
APPLIED
RIVER
ENGINEERING CENTER

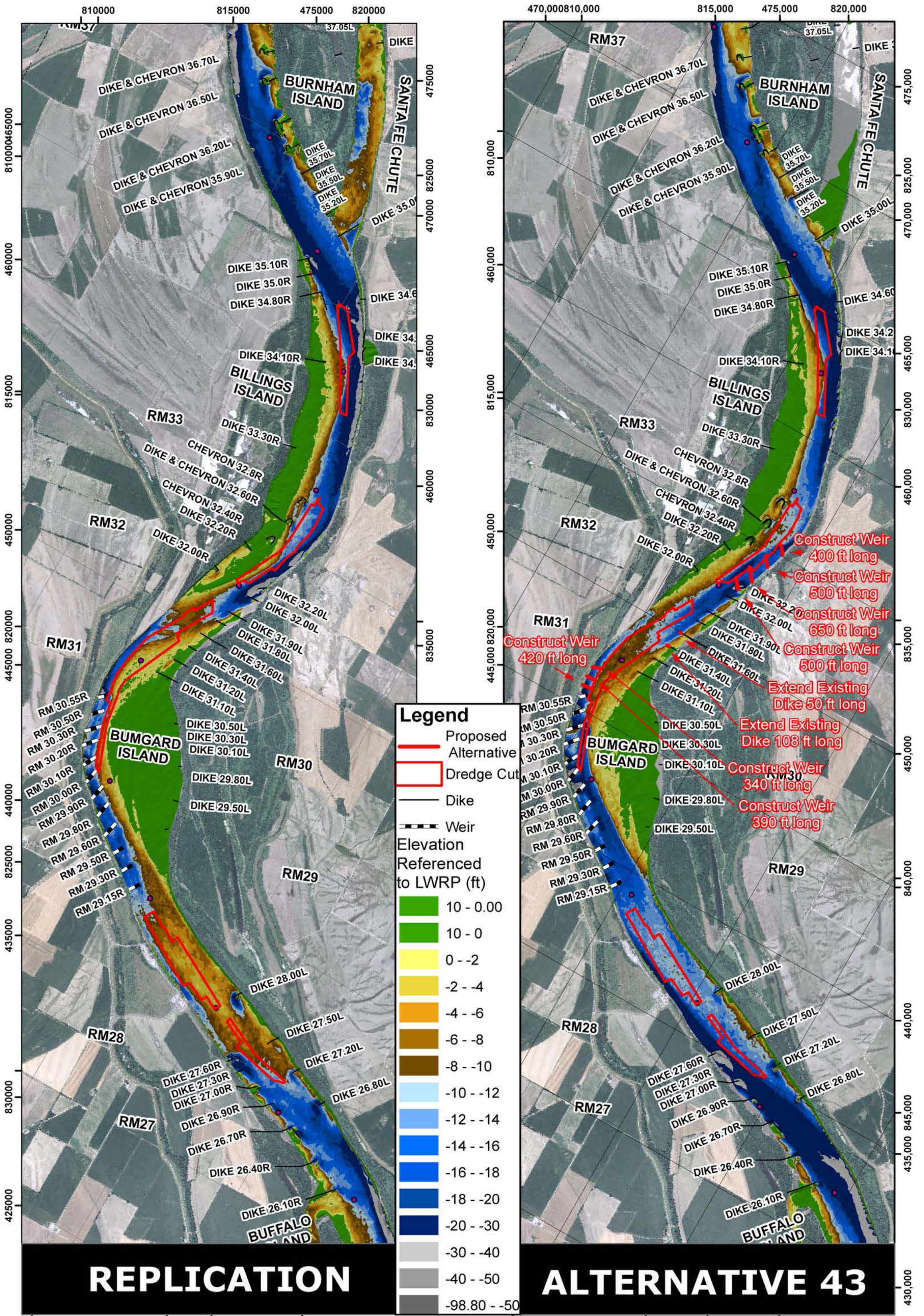
US Army Corps
of Engineers
St. Louis District

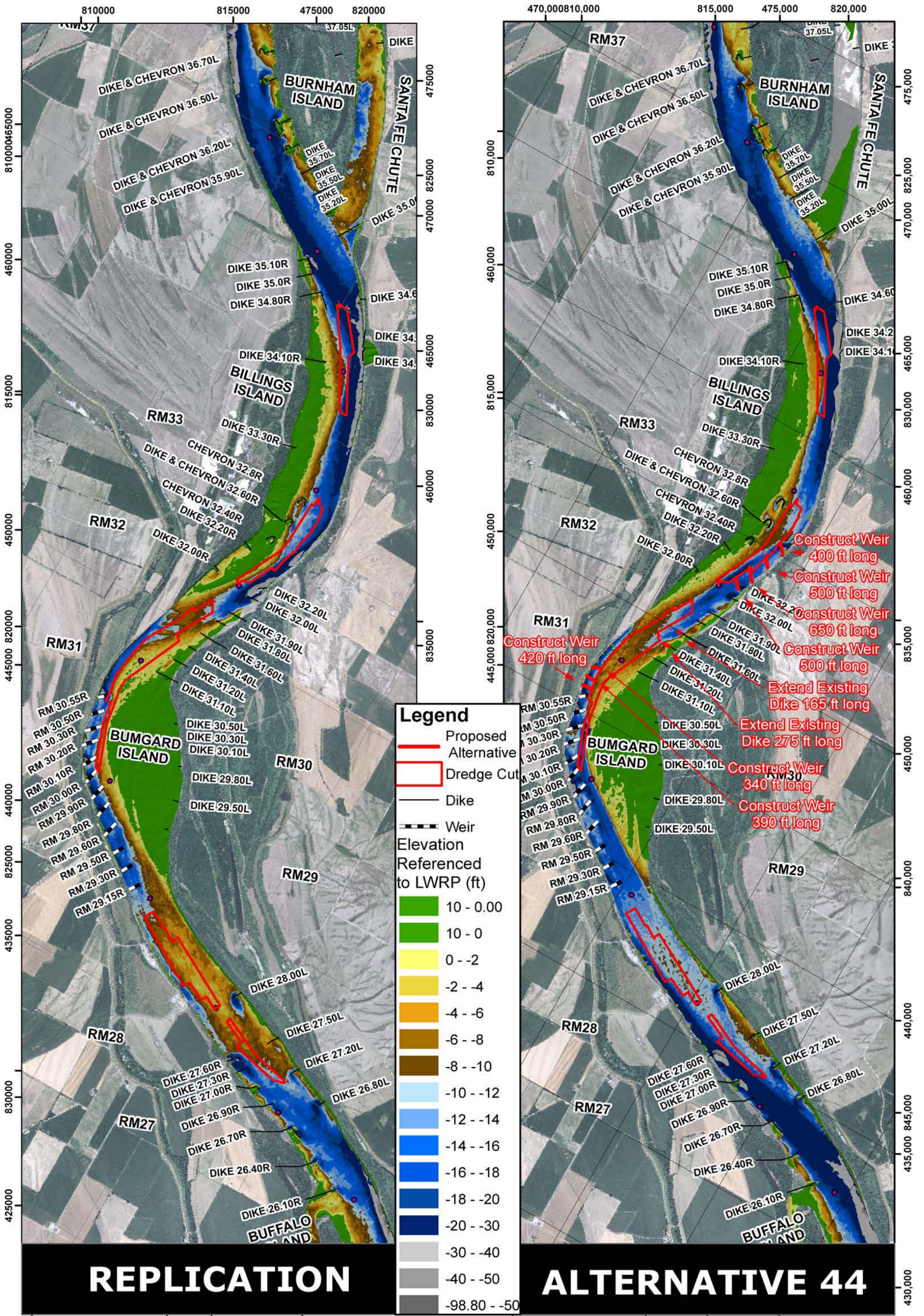


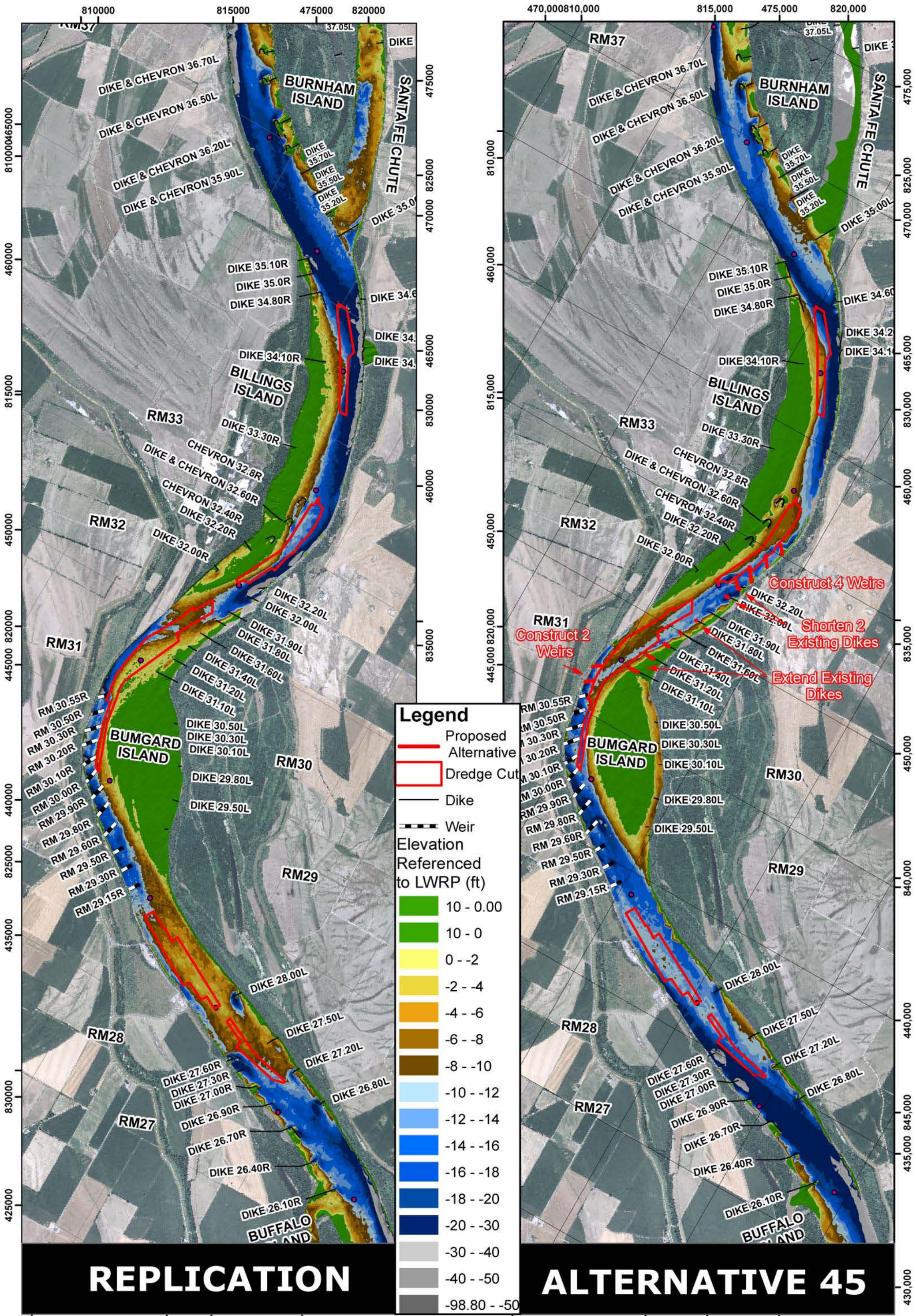


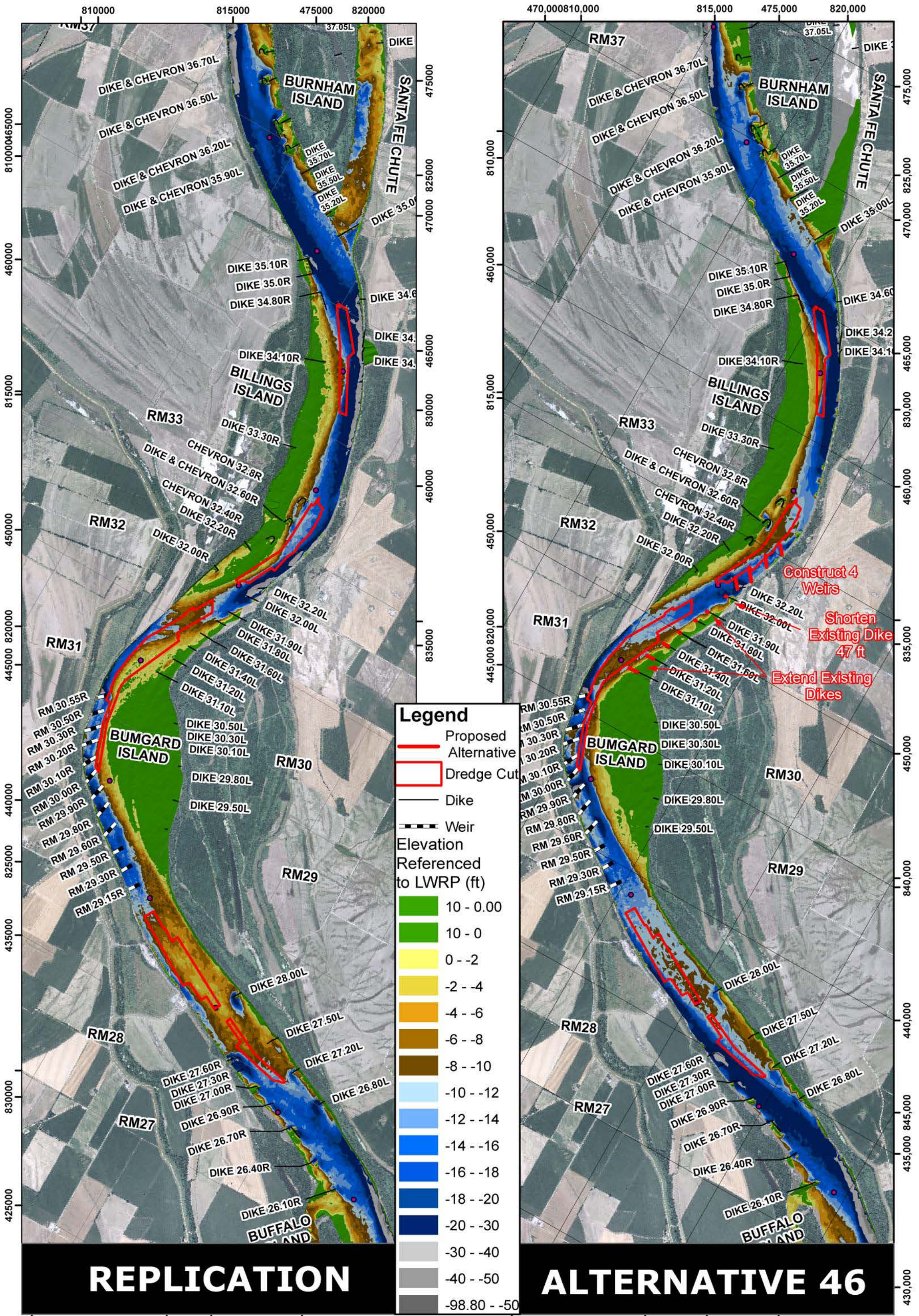


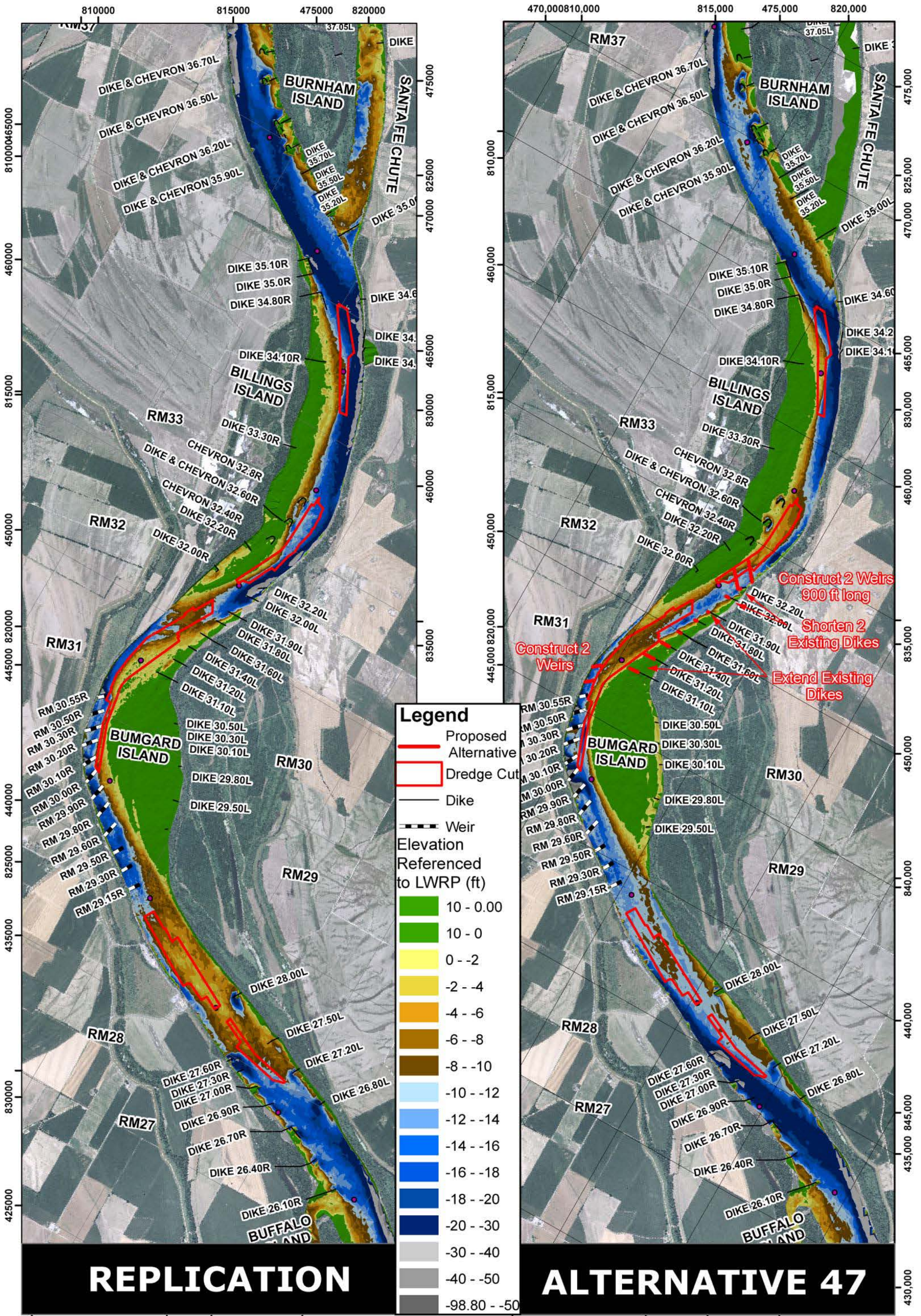


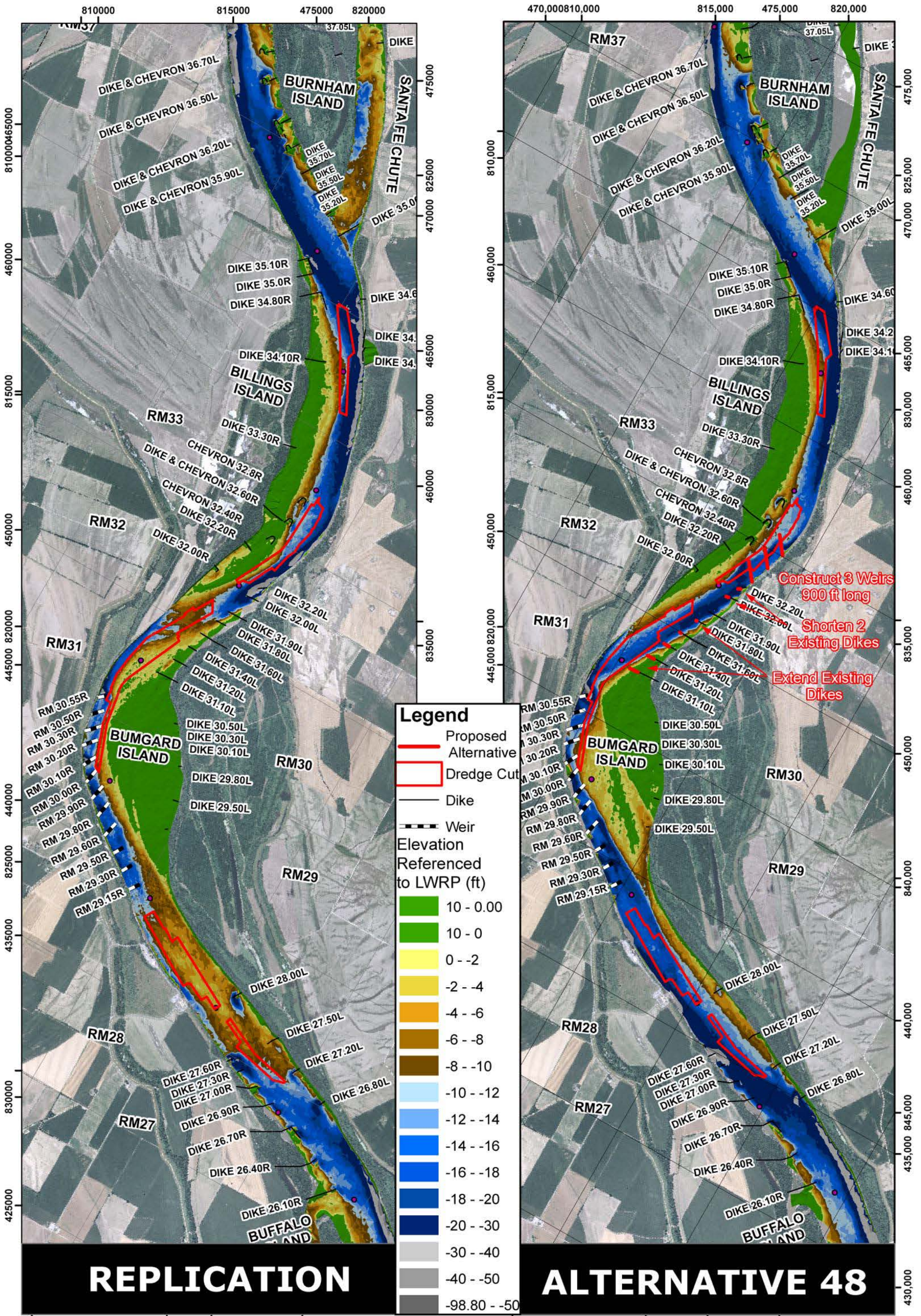












REPLICATION

ALTERNATIVE 48

PLATE
NUMBER
86

0 1,625 3,250 6,500
Feet
Replication Scan vs. Alternative 48
Bathymetry Results
2007 AERIAL PHOTOGRAPH

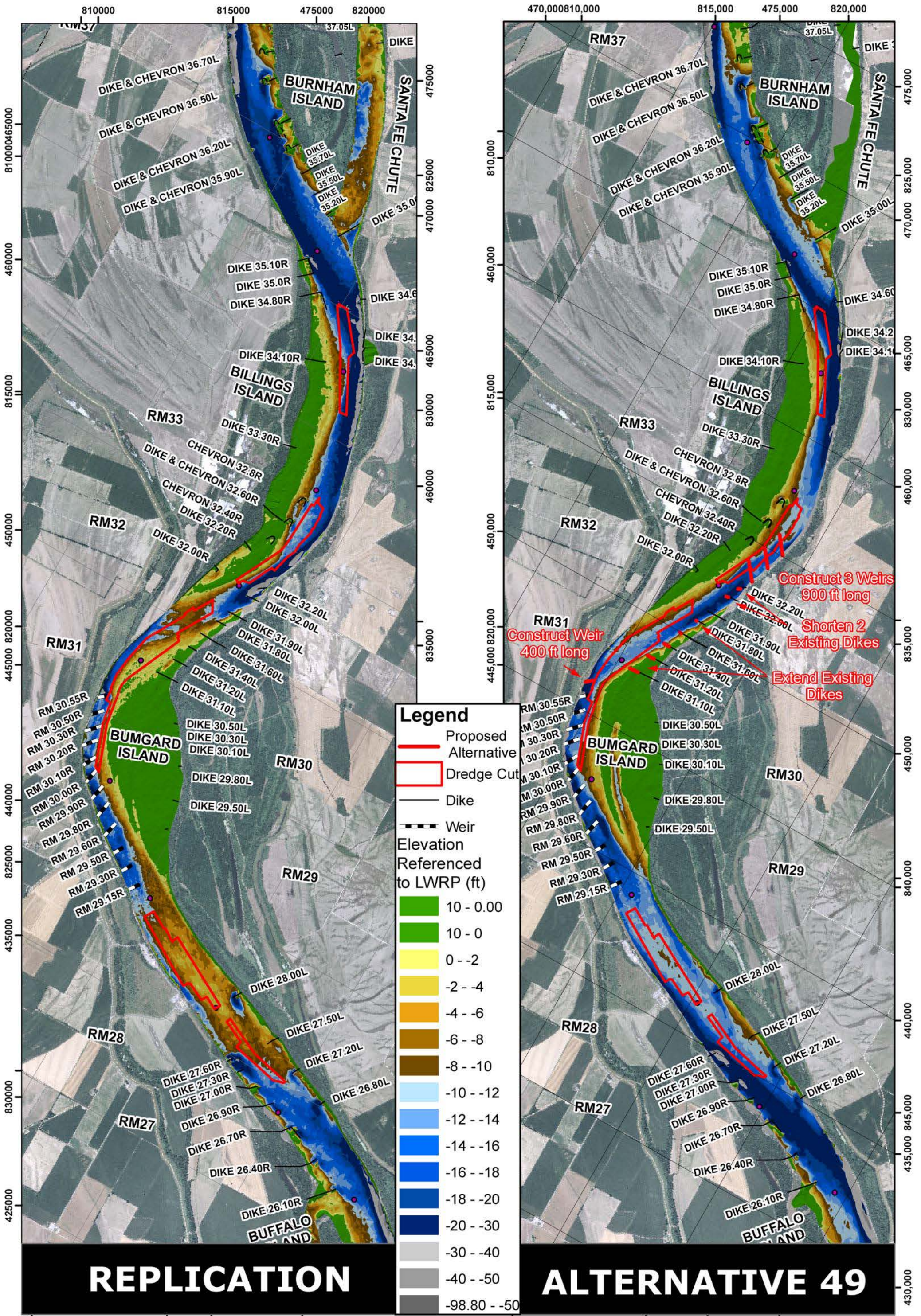
U.S. ARMY ENGINEER DIVISION CORPS OF ENGINEERS ST. LOUIS, MISSOURI	DESIGNED BY K. Clancey		
	DRAWN BY K. Clancey	REVIEWED BY E Brauer, P.E.	CHECKED BY J Brown, P.E.
	SUBMITTED K. Clancey		
	APPROVED Rob Davinroy, P.E.		
Mississippi River Basin St. Louis District Bumgard Island HSR Model RM 36.0 - 25.0	FILE NAME Z:\Bumgard Island HSR study\Plates		

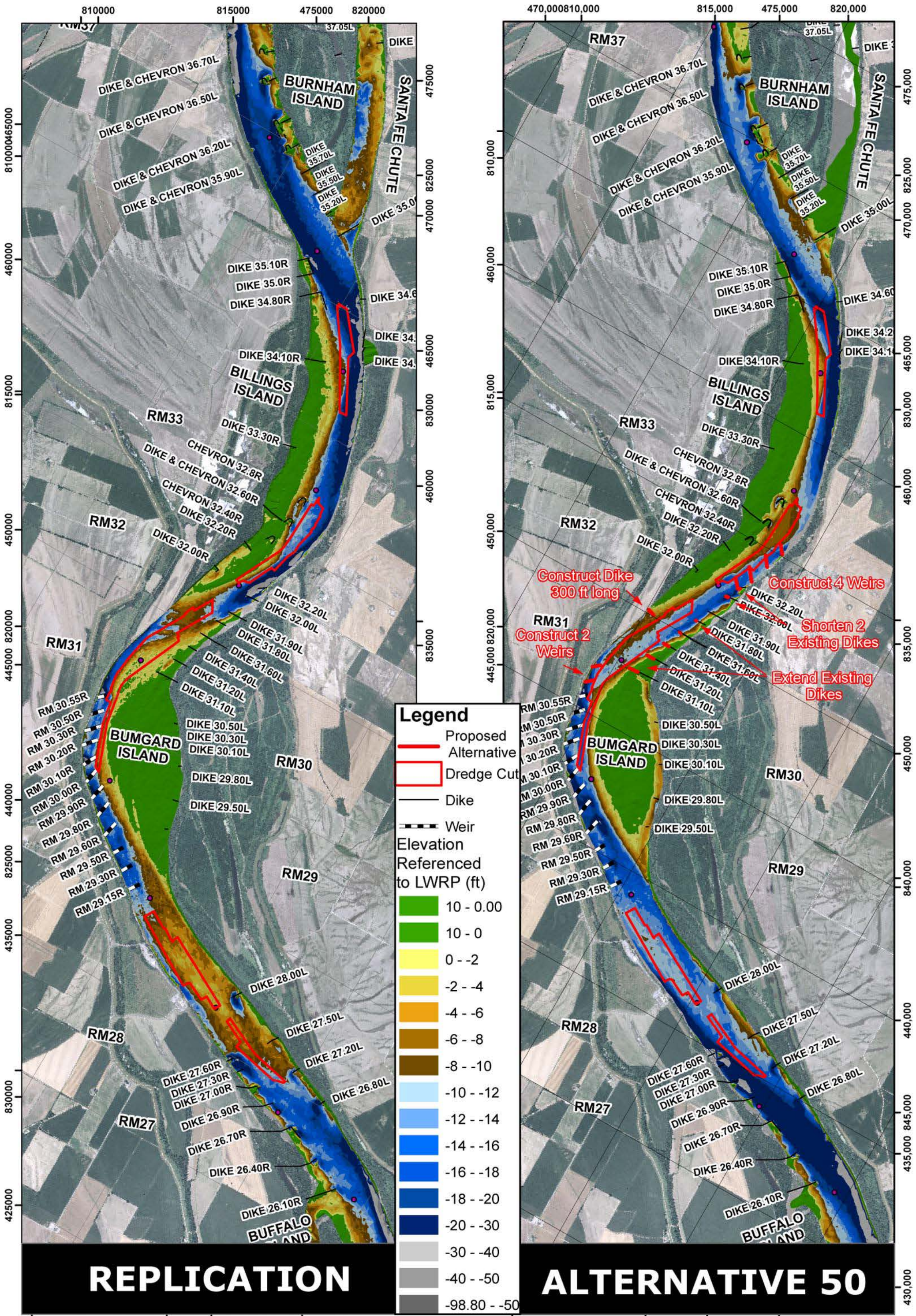


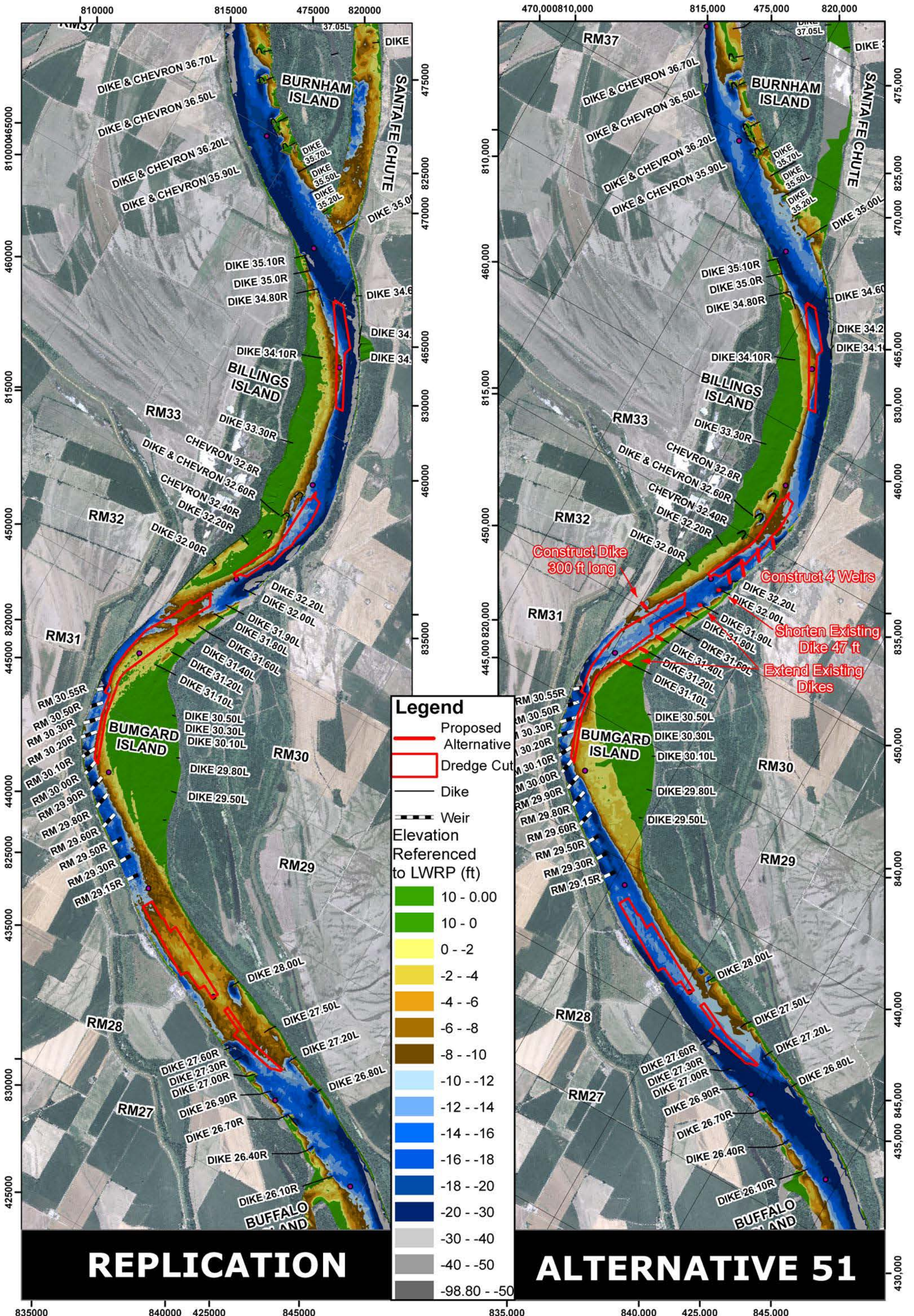
APPLIED
RIVER
ENGINEERING CENTER

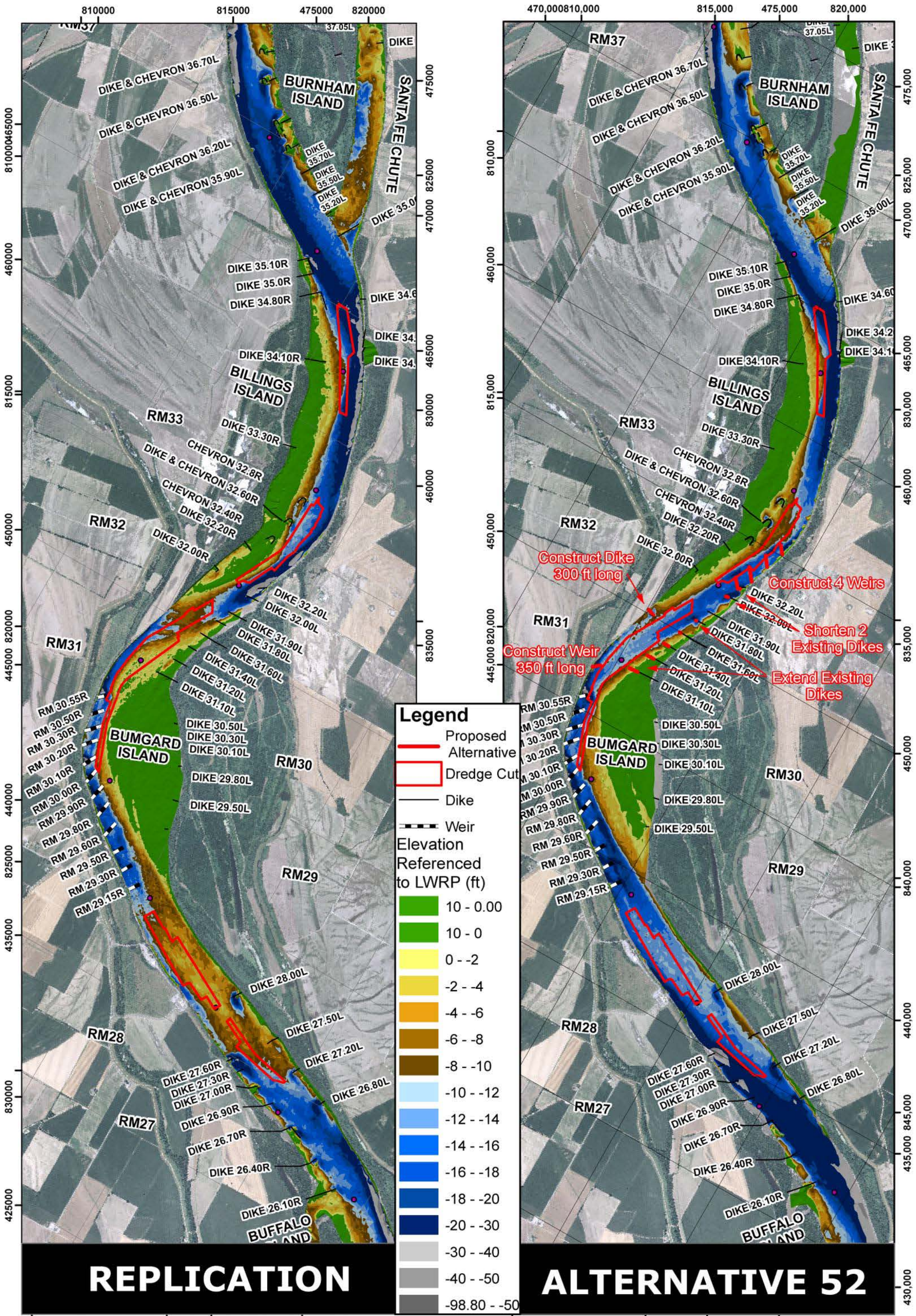
US Army Corps
of Engineers
St. Louis District

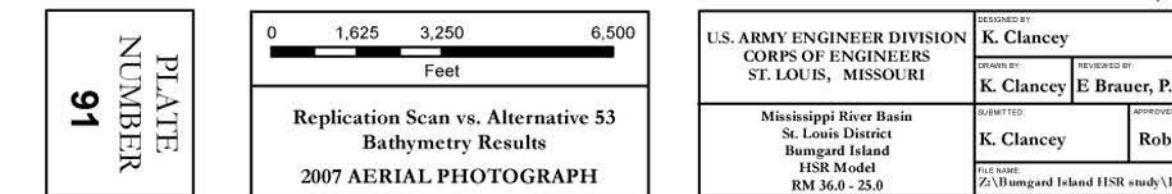


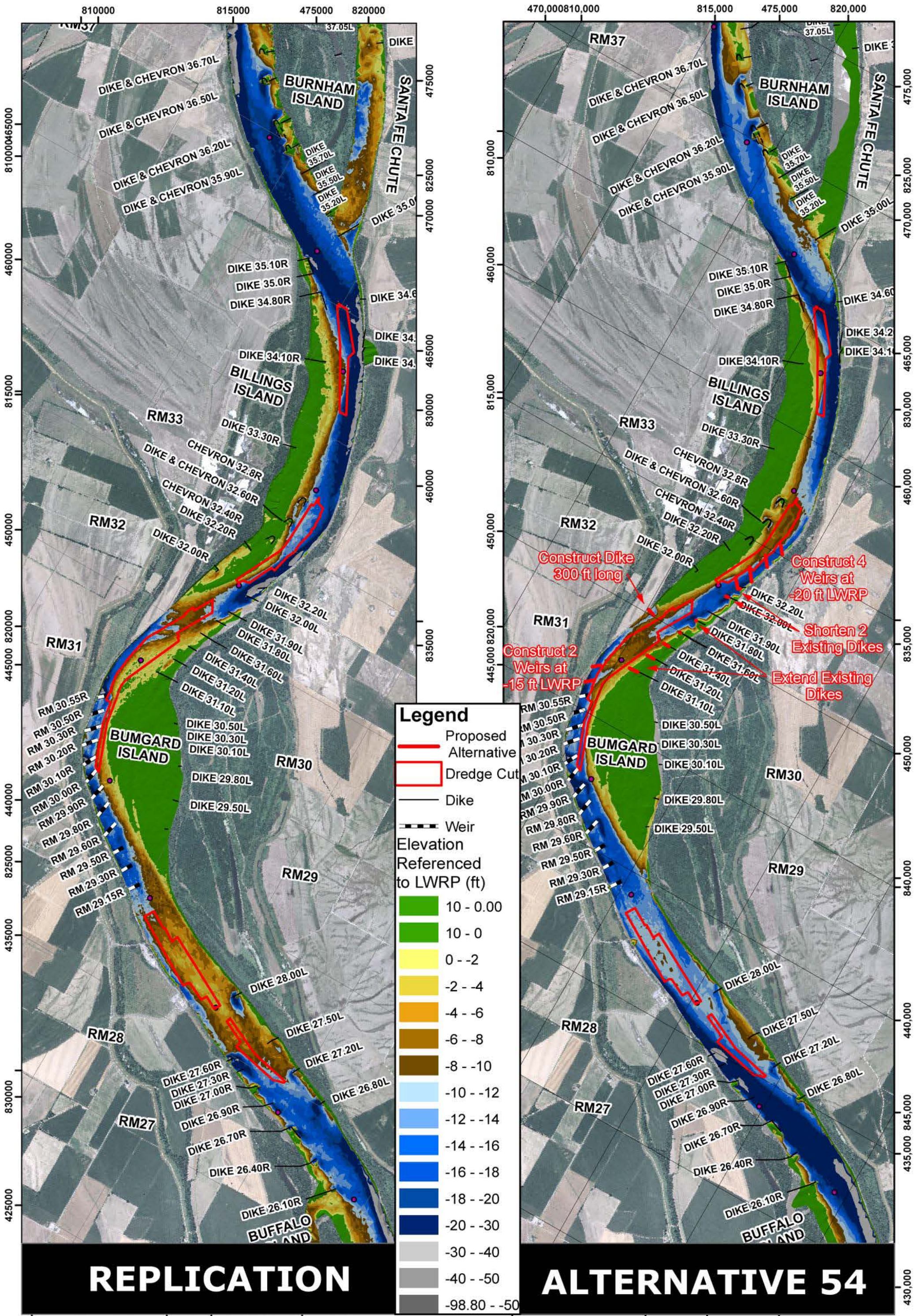


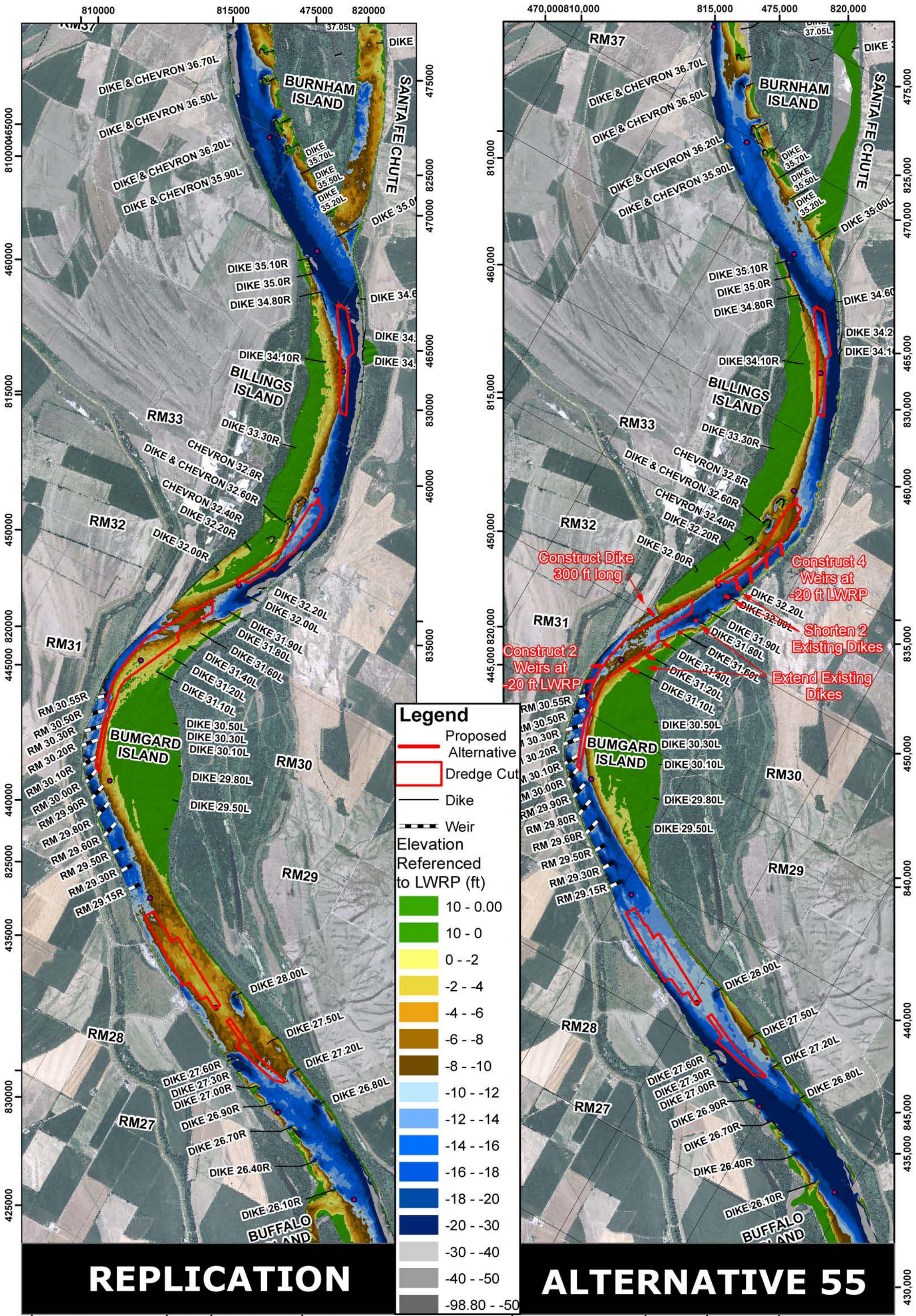


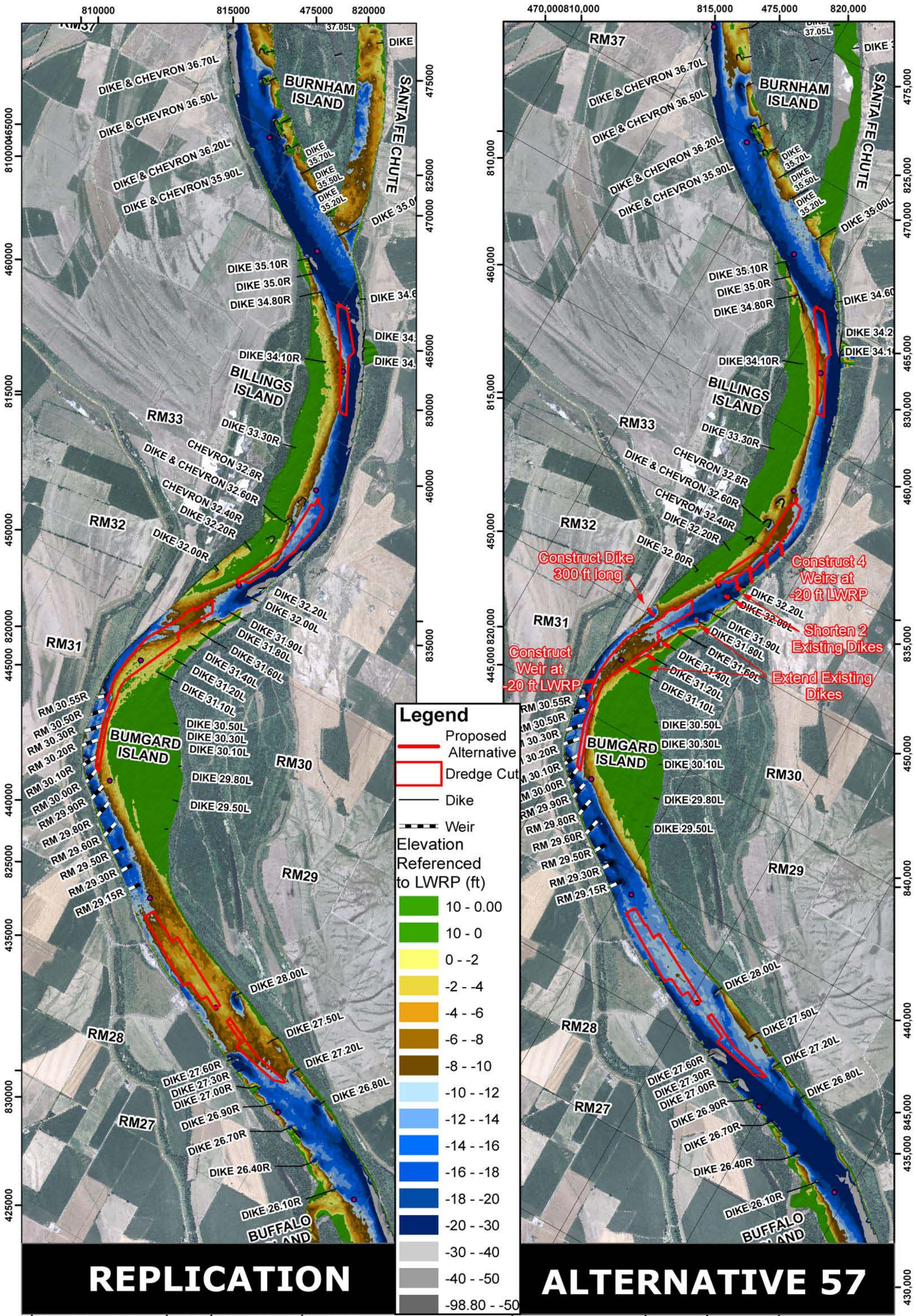


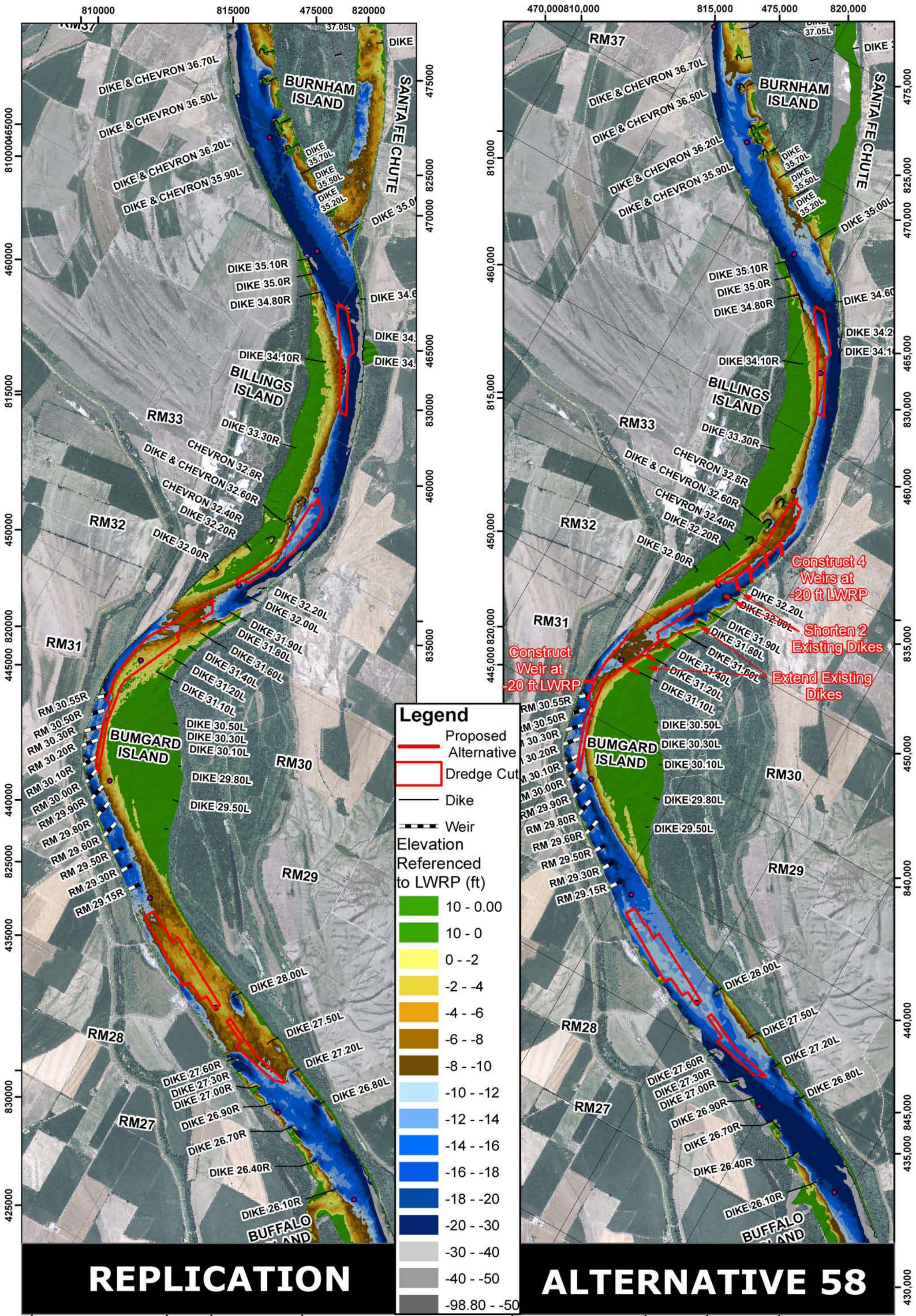


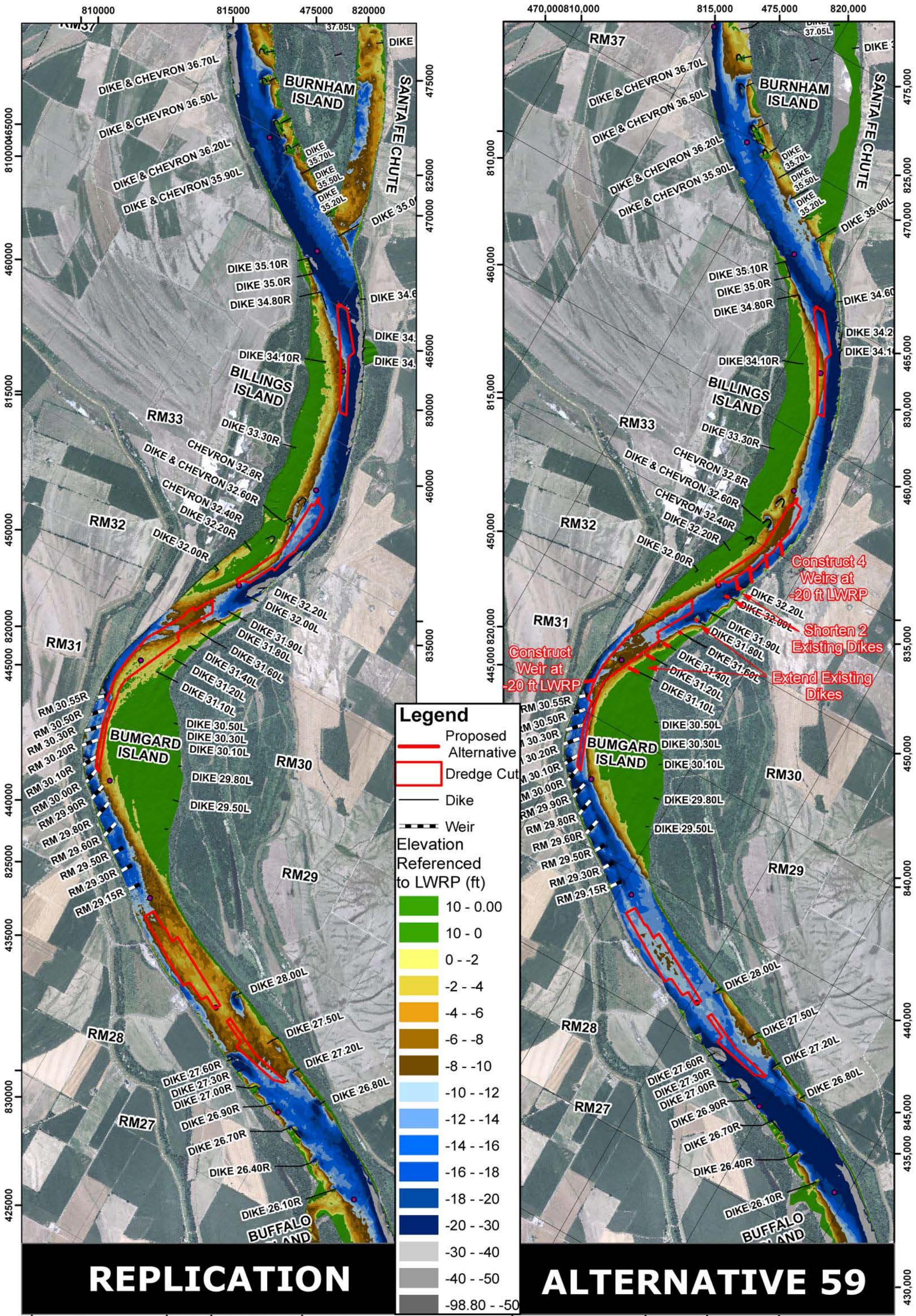












REPLICATION

ALTERNATIVE 59

PLATE NUMBER
97

0 1,625 3,250 6,500
Feet

Replication Scan vs. Alternative 59
Bathymetry Results
2007 AERIAL PHOTOGRAPH

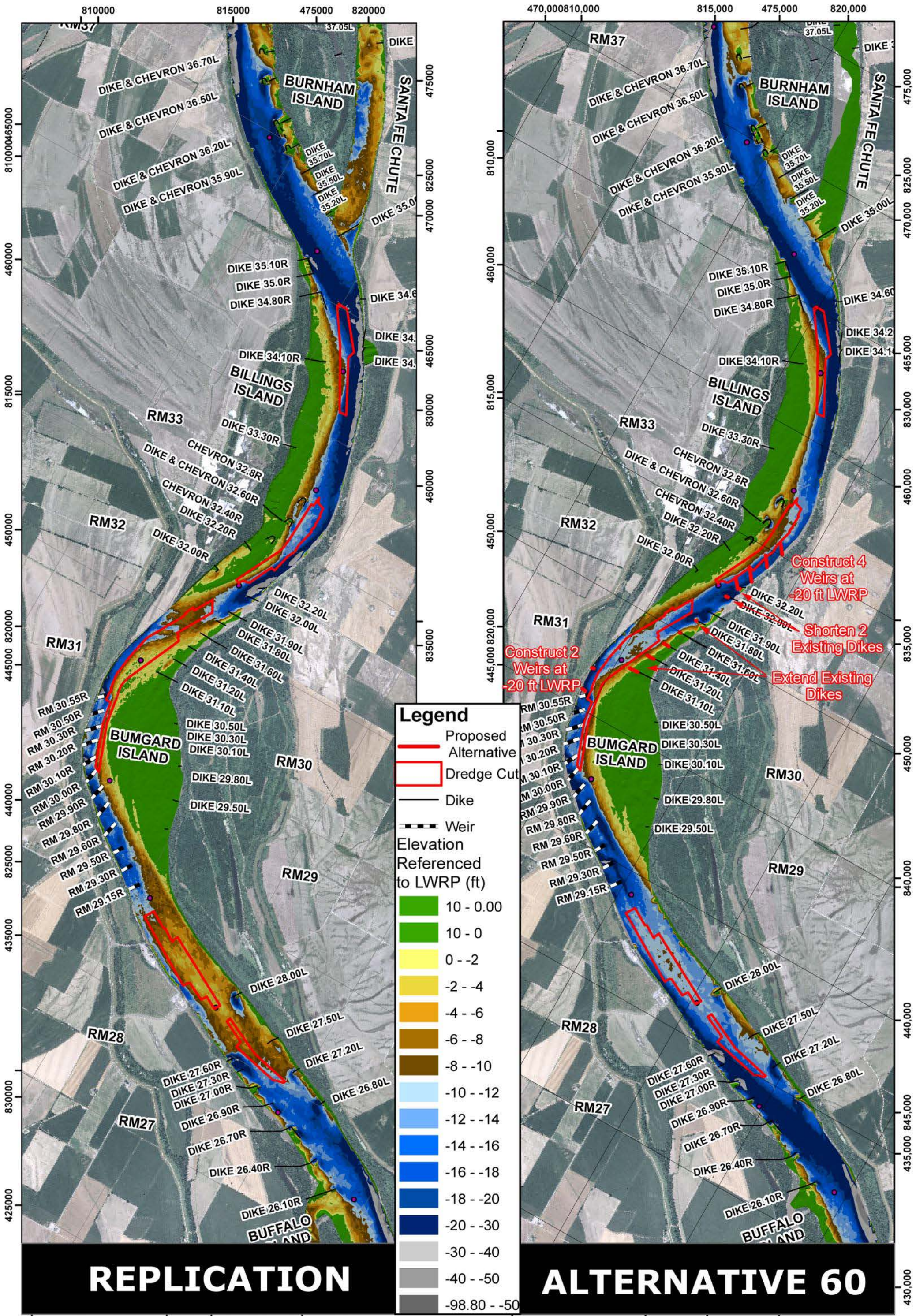
U.S. ARMY ENGINEER DIVISION
CORPS OF ENGINEERS
ST. LOUIS, MISSOURI

Mississippi River Basin
St. Louis District
Bumgard Island
HSR Model
RM 36.0 - 25.0

DESIGNED BY K. Clancey	REVIEWED BY K. Clancey E Brauer, P.E.	CHECKED BY J Brown, P.E.
SUBMITTED K. Clancey	APPROVED Rob Davinroy, P.E.	
FILE NAME Z:\Bumgard Island HSR study\Plates		

APPLIED
RIVER
ENGINEERING CENTER

US Army Corps
of Engineers
St. Louis District



REPLICATION

ALTERNATIVE 60

PLATE NUMBER
98

0 1,625 3,250 6,500
Feet

Replication Scan vs. Alternative 60
Bathymetry Results
2007 AERIAL PHOTOGRAPH

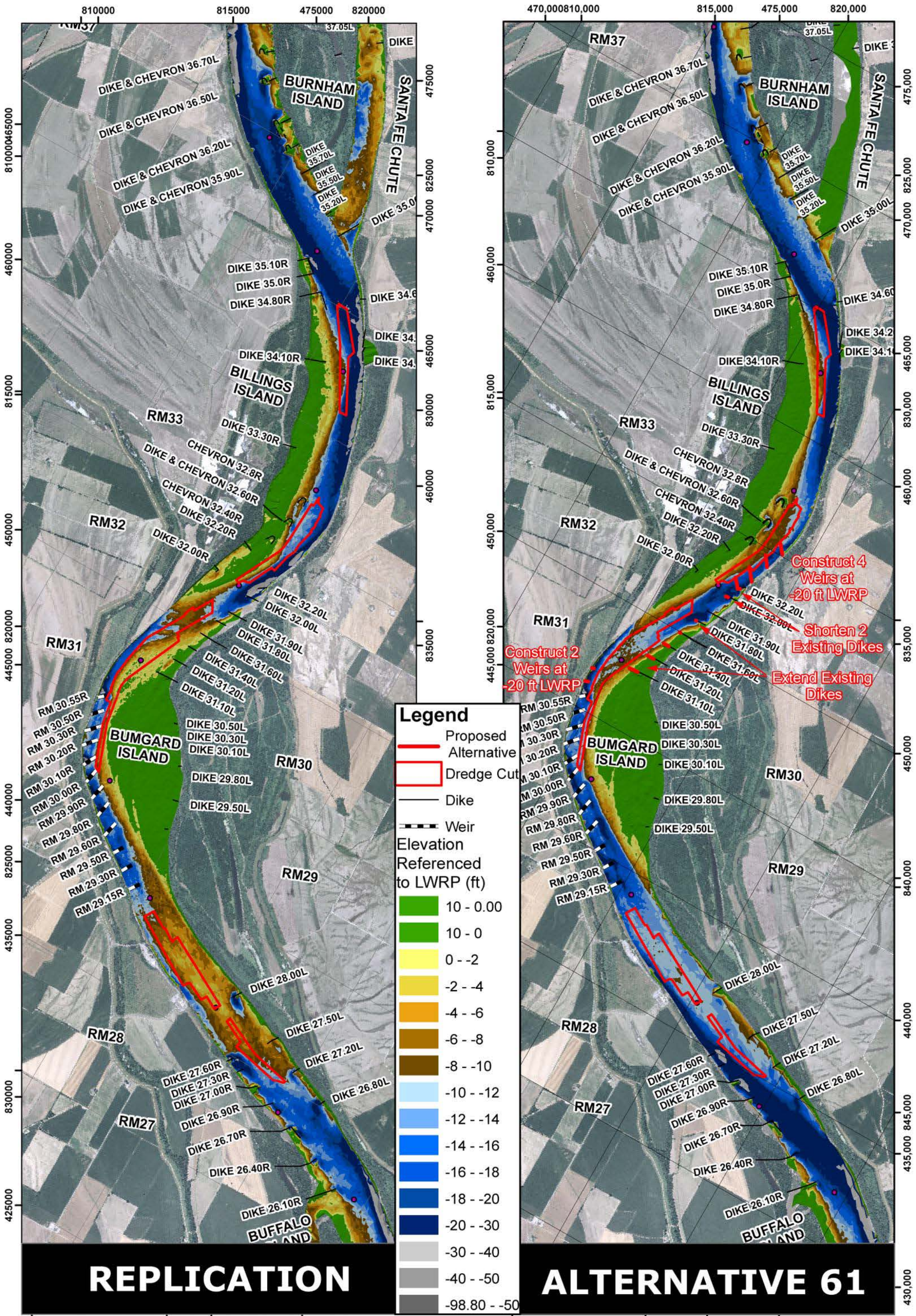
U.S. ARMY ENGINEER DIVISION
CORPS OF ENGINEERS
ST. LOUIS, MISSOURI

Mississippi River Basin
St. Louis District
Bumgard Island
HSR Model
RM 36.0 - 25.0

DESIGNED BY K. Clancey	REVIEWED BY E. Brauer, P.E.	CHECKED BY J. Brown, P.E.
DRAWN BY K. Clancey	APPROVED Rob Davinroy, P.E.	
FILE NAME Z:\Bumgard Island HSR study\Plates		

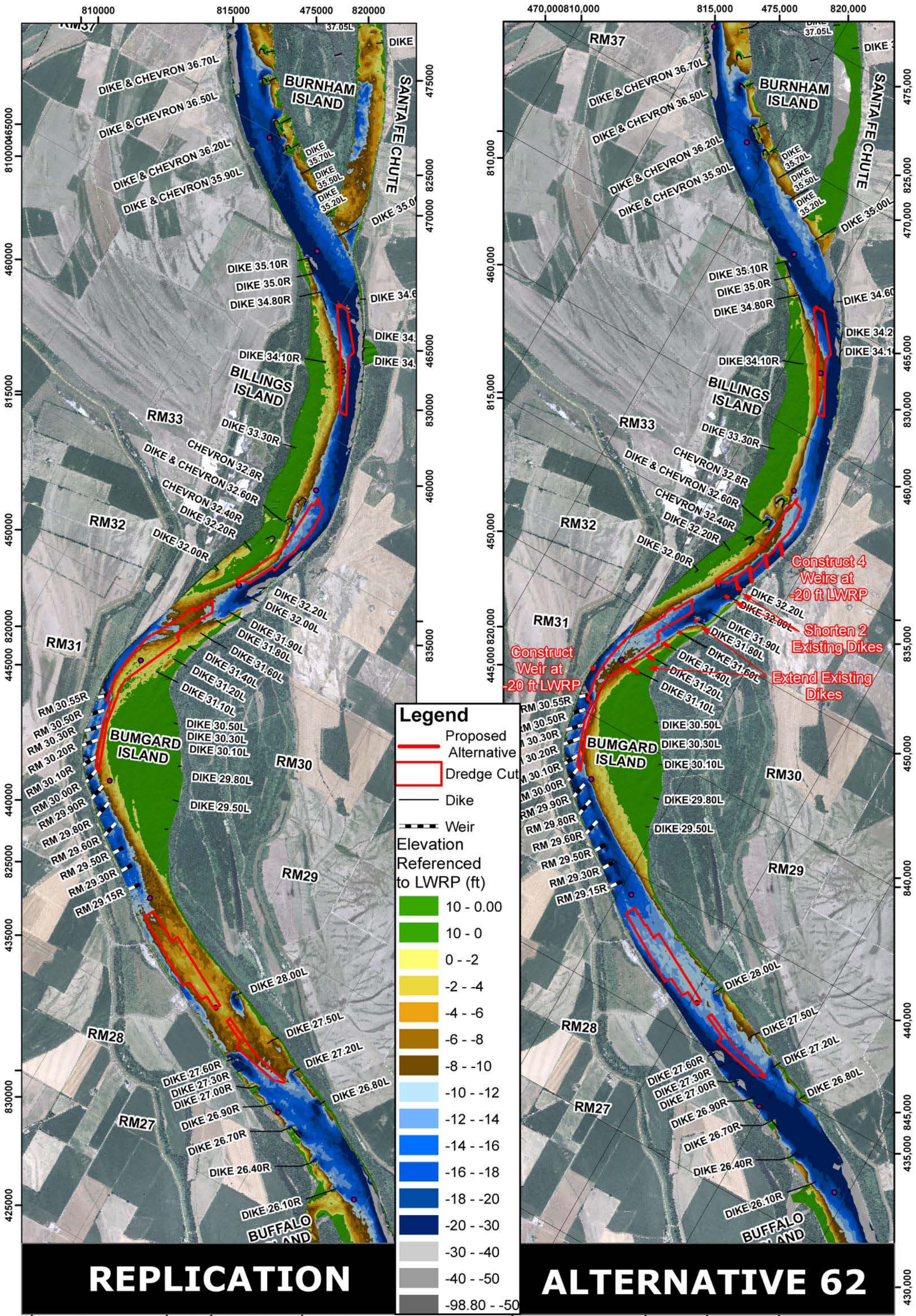
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RIVER
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US Army Corps
of Engineers
St. Louis District



REPLICATION

ALTERNATIVE 61



REPLICATION

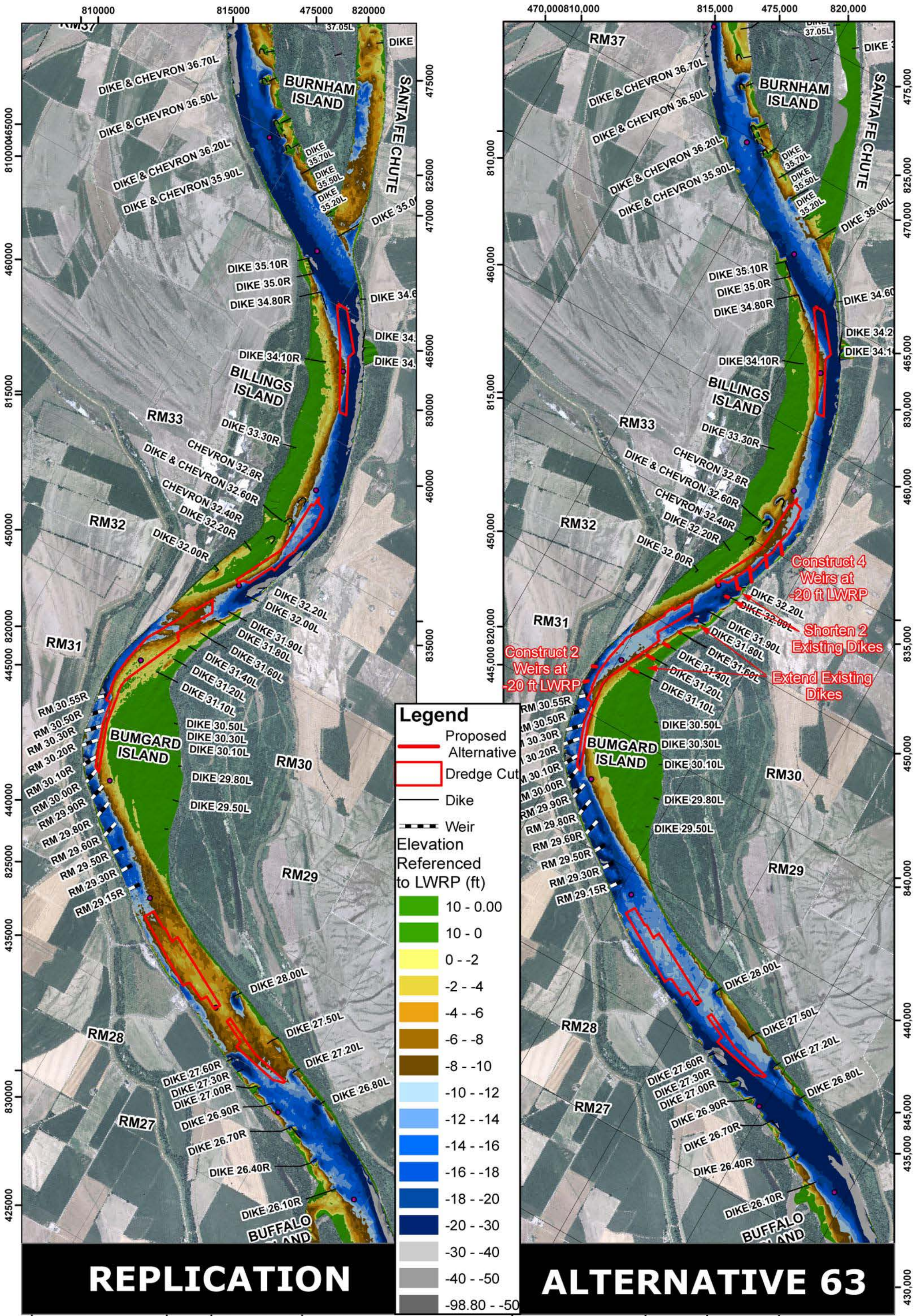
ALTERNATIVE 62

PLATE
NUMBER
100

0 1,625 3,250 6,500
Feet
Replication Scan vs. Alternative 62
Bathymetry Results
2007 AERIAL PHOTOGRAPH

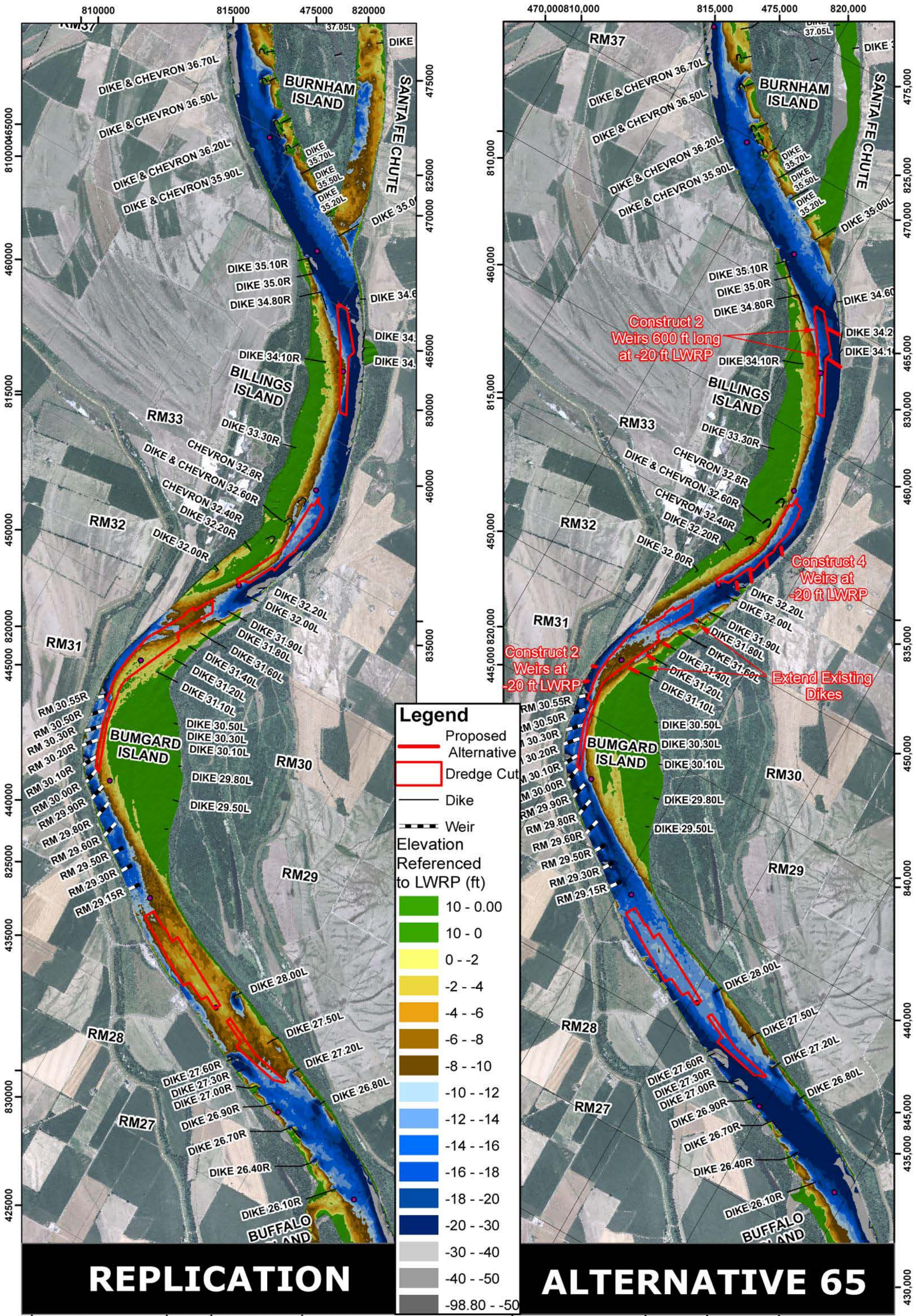
U.S. ARMY ENGINEER DIVISION CORPS OF ENGINEERS ST. LOUIS, MISSOURI Mississippi River Basin St. Louis District Bumgard Island HSR Model RM 36.0 - 25.0	DESIGNED BY K. Clancey	REVIEWED BY K. Clancey E Brauer, P.E. J Brown, P.E.	
	DRAWN BY K. Clancey	CHECKED BY J Brown, P.E.	
	SUBMITTED K. Clancey	APPROVED Rob Davinroy, P.E.	
	FILE NAME Z:\Bumgard Island HSR study\Plates		

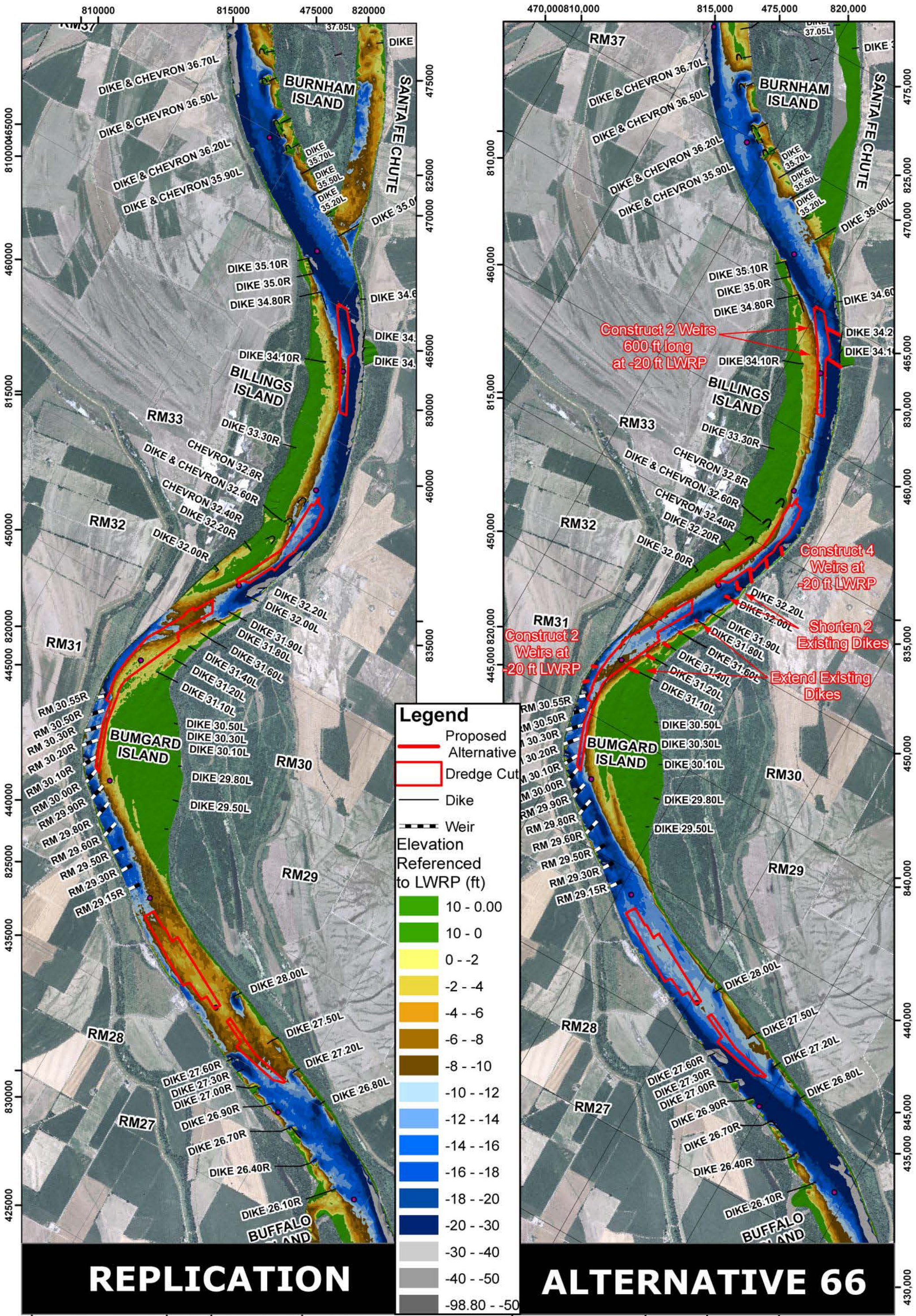


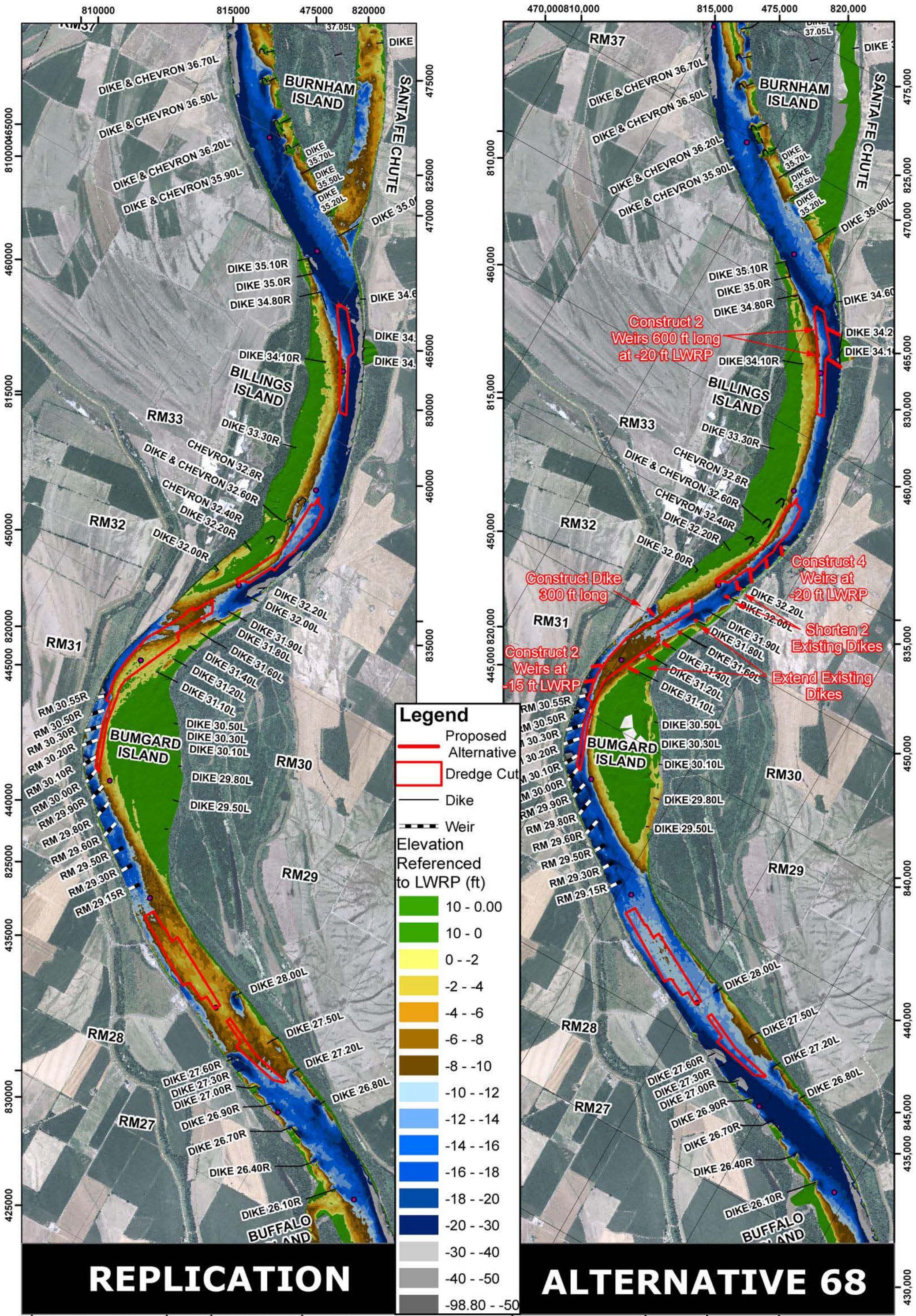


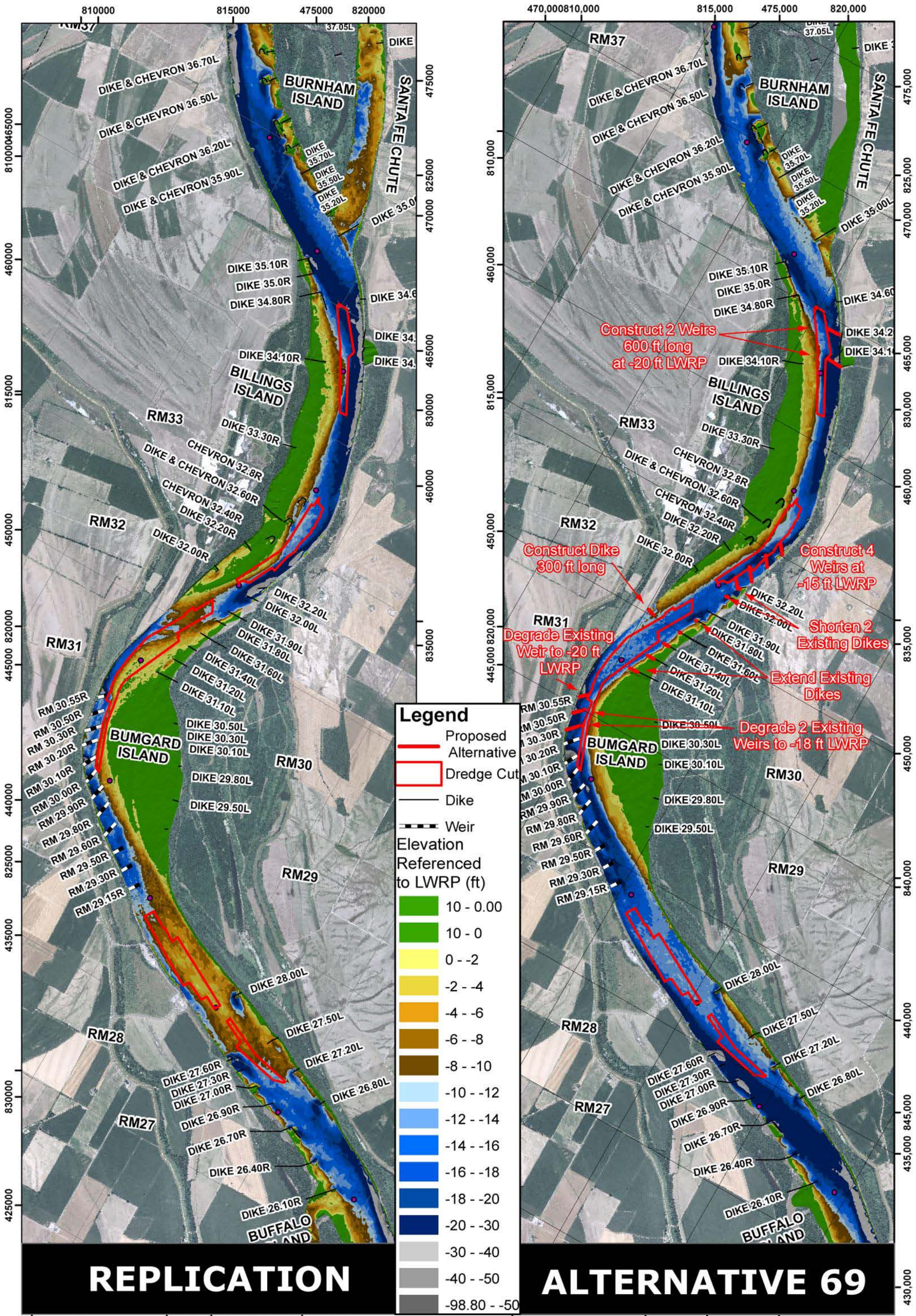
REPLICATION

ALTERNATIVE 63



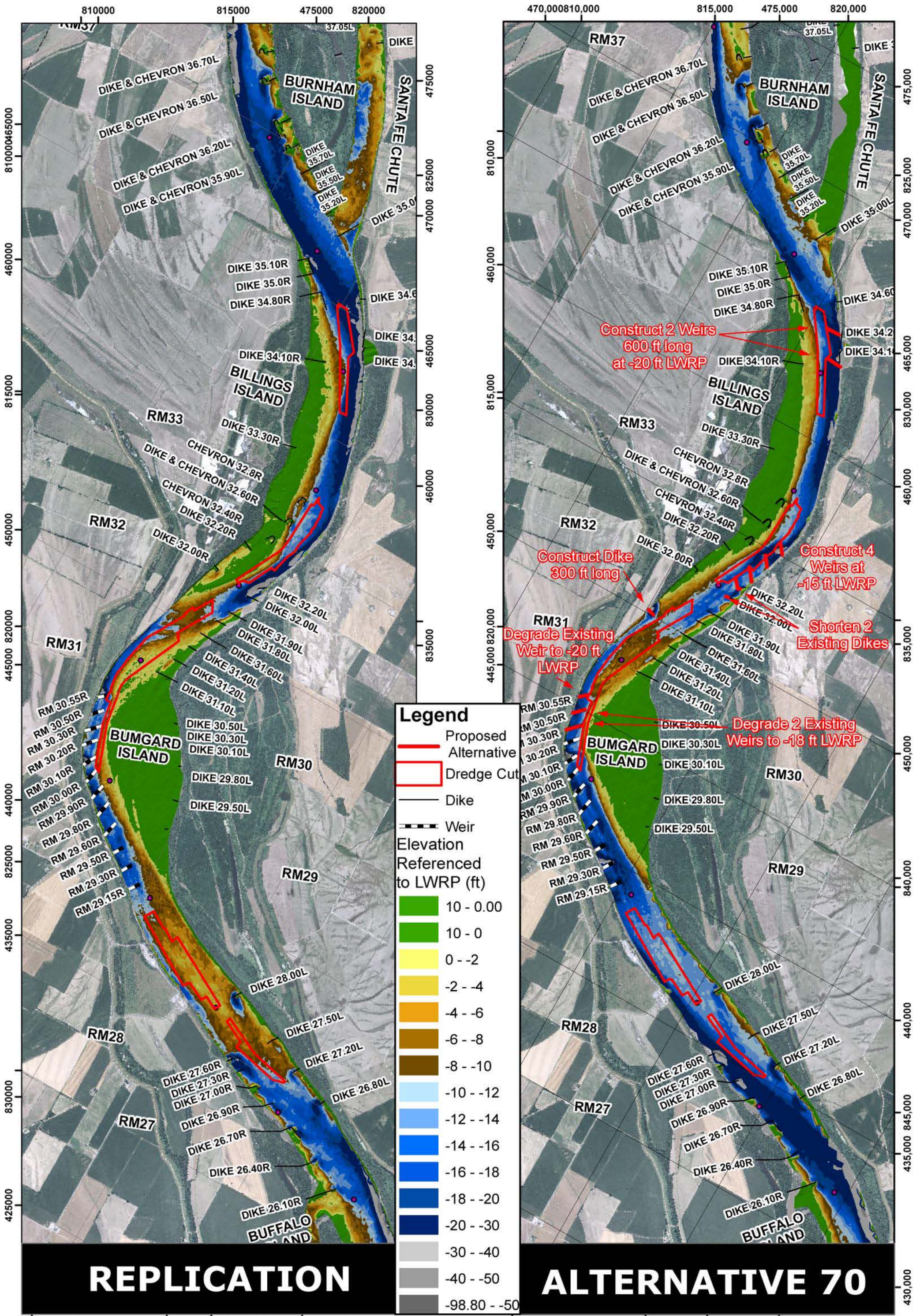


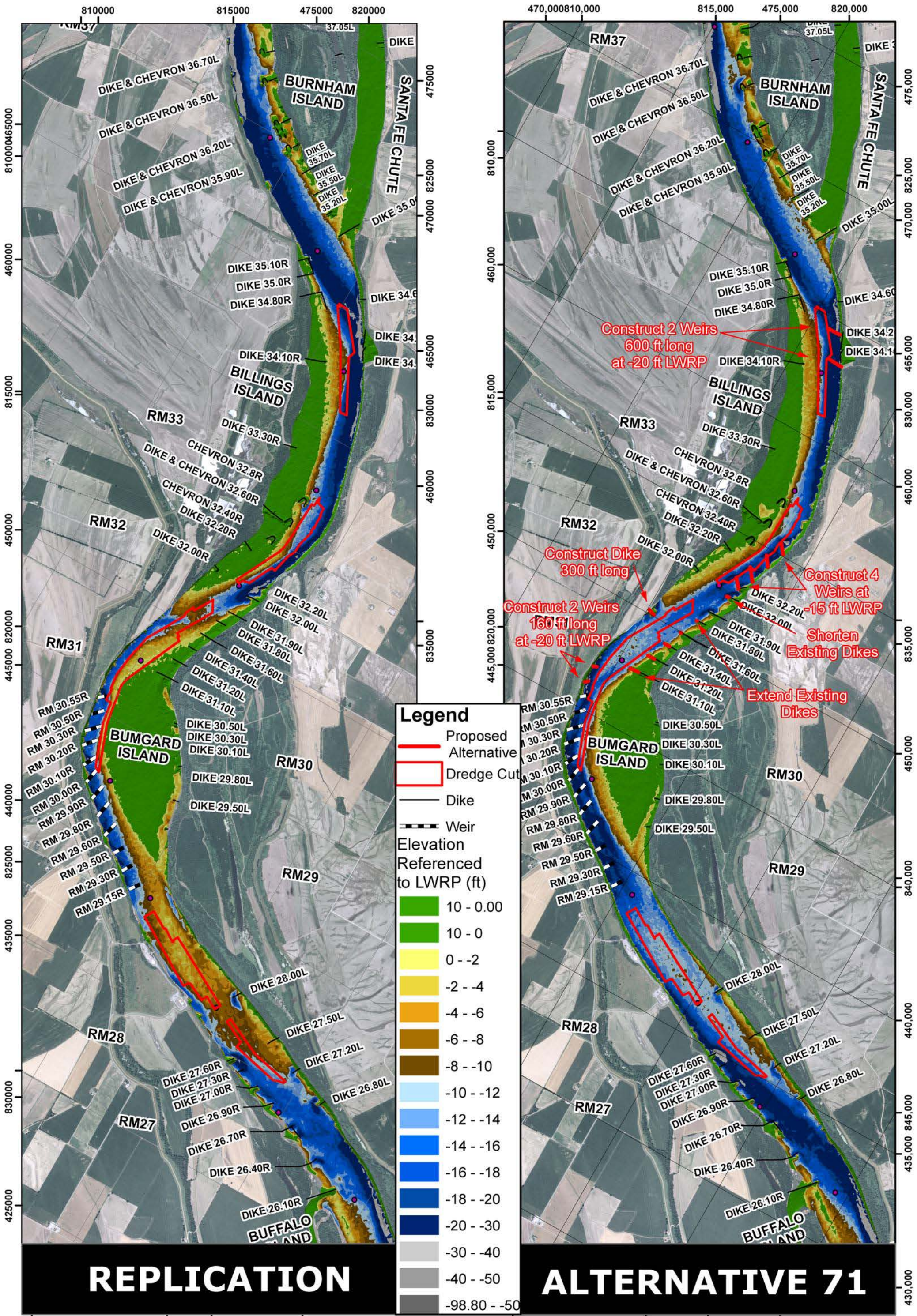




REPLICATION

ALTERNATIVE 69





REPLICATION

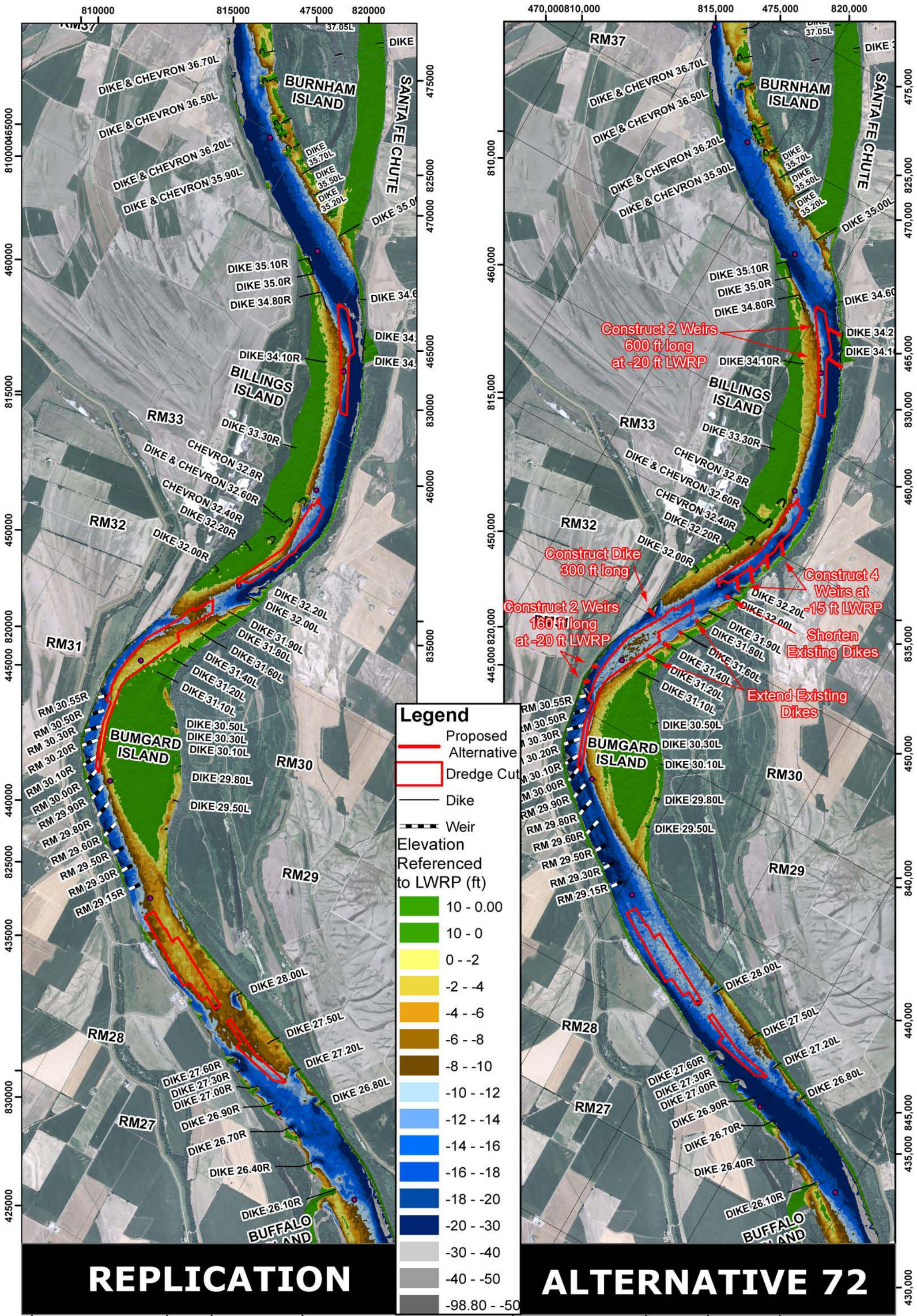
ALTERNATIVE 71

Legend

- Proposed Alternative
- Dredge Cut
- Dike
- Weir

Elevation Referenced to LWRP (ft)

10 - 0.00
10 - 0
0 - -2
-2 - -4
-4 - -6
-6 - -8
-8 - -10
-10 - -12
-12 - -14
-14 - -16
-16 - -18
-18 - -20
-20 - -30
-30 - -40
-40 - -50
-98.80 - -50



REPLICATION

ALTERNATIVE 72

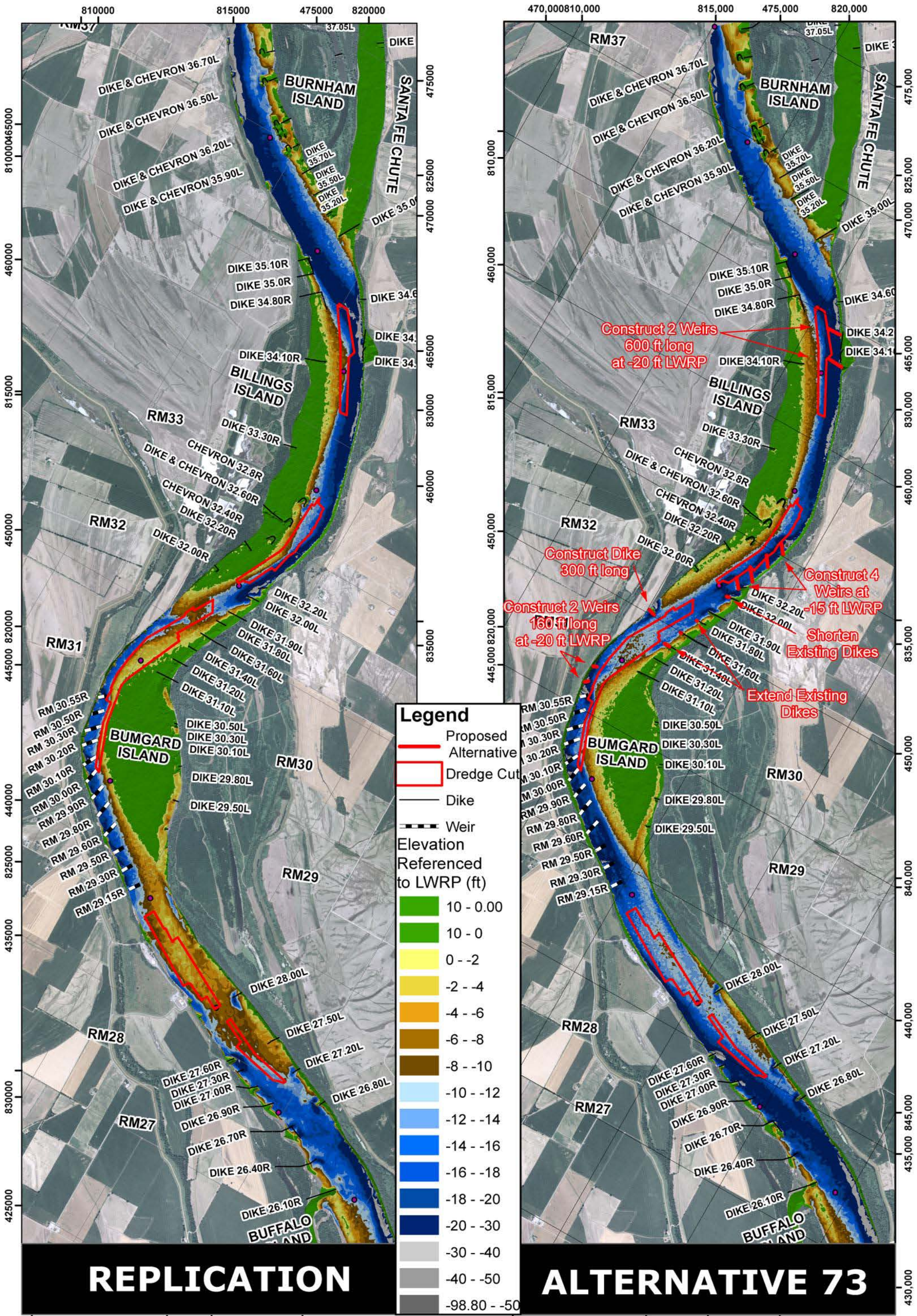
0 1,600 3,200 6,400
Feet

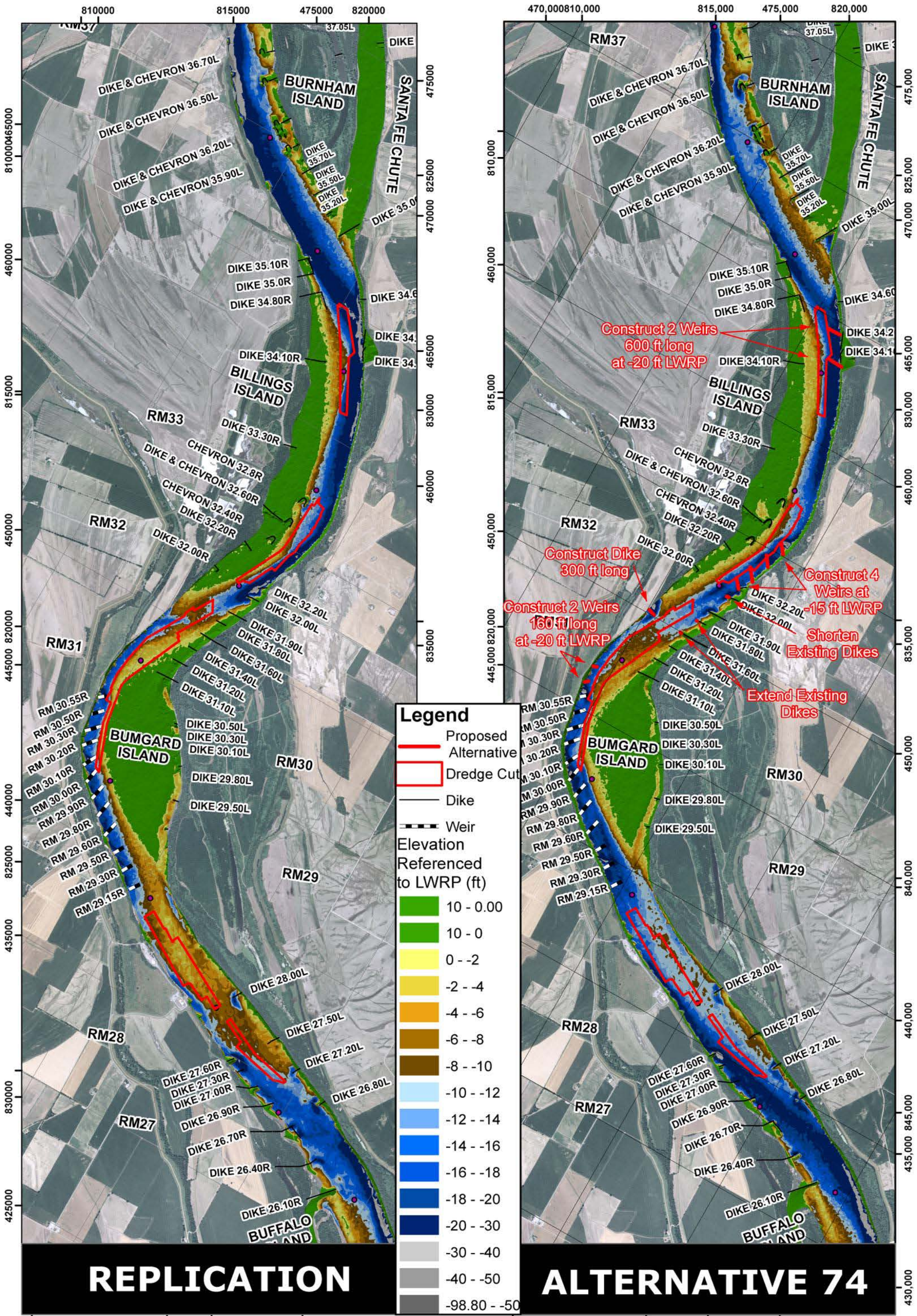
Replication Scan vs. Alternative 72
Bathymetry Results
2007 AERIAL PHOTOGRAPH

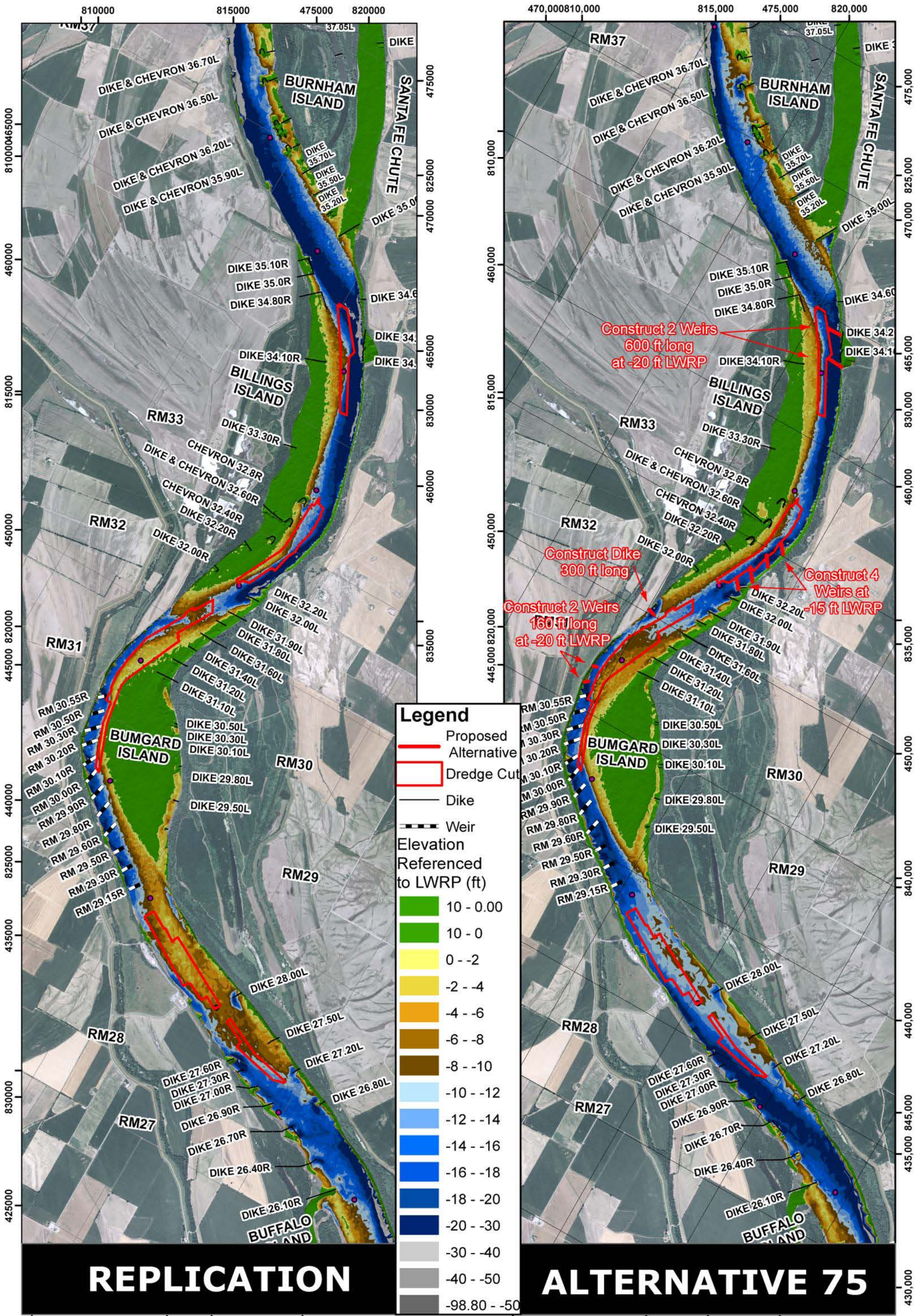
U.S. ARMY ENGINEER DIVISION CORPS OF ENGINEERS ST. LOUIS, MISSOURI	DESIGNED BY K. Clancey	CHECKED BY J. Brown, P.E.	
	REVIEWED BY E. Brauer, P.E.		
	Mississippi River Basin St. Louis District Bumgard Island HSR Model RM 36.0 - 25.0	SUBMITTED BY K. Clancey	APPROVED BY Rob Davinroy, P.E.
	FILE NAME Z:\Bumgard Island HSR study\Plates		



PLATE
NUMBER
110







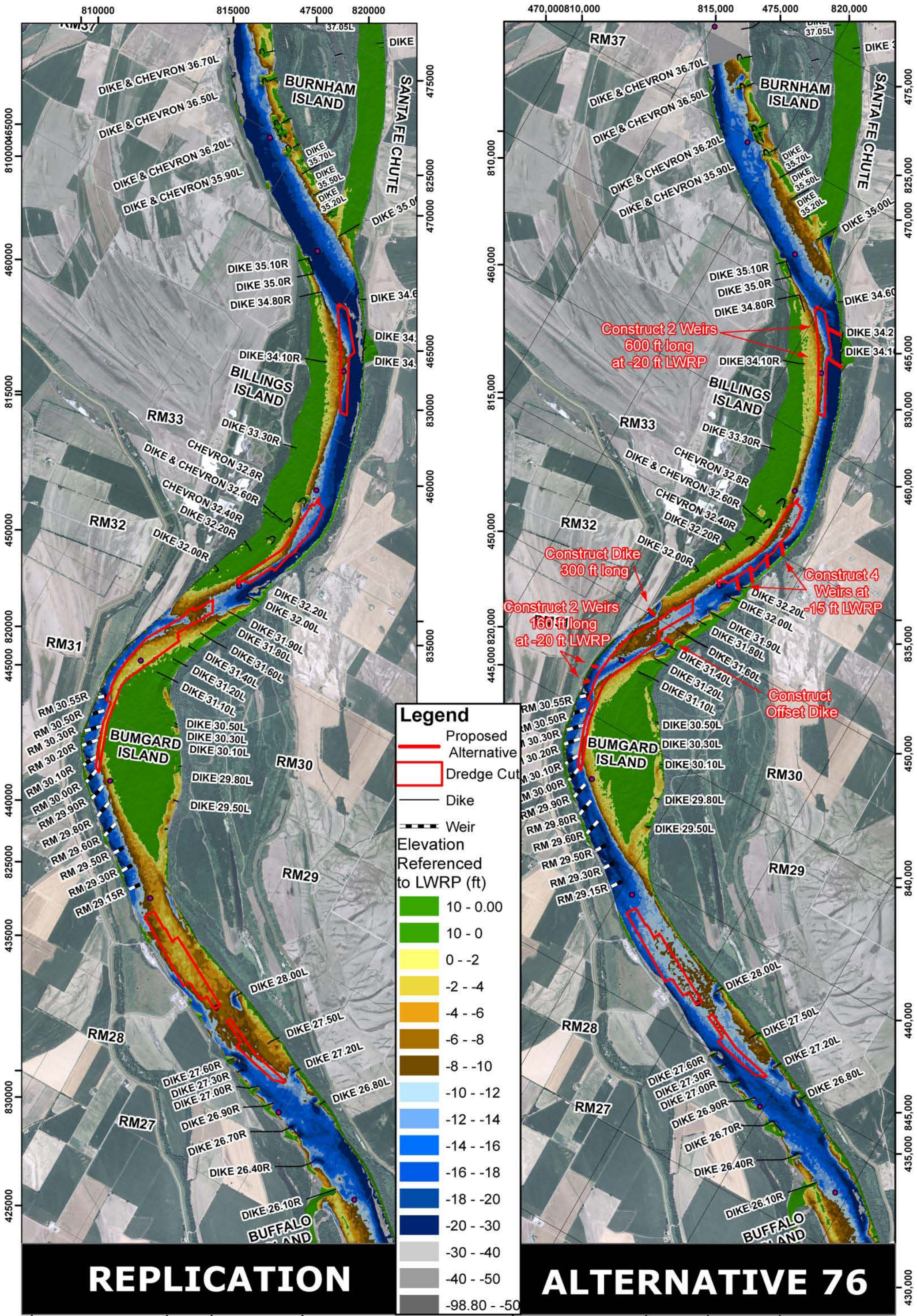
REPLICATION

ALTERNATIVE 75

Legend

- Proposed Alternative
- Dredge Cut
- Dike
- Weir
- Elevation Referenced to LWRP (ft)

10 - 0.00
10 - 0
0 - -2
-2 - -4
-4 - -6
-6 - -8
-8 - -10
-10 - -12
-12 - -14
-14 - -16
-16 - -18
-18 - -20
-20 - -30
-30 - -40
-40 - -50
-98.80 - -50



REPLICATION

ALTERNATIVE 76

Legend

Proposed

Alternative

Dredge Cut

Dike

Weir

Elevation
Referenced
to LWRP (ft)

10 - 0.00

10 - 0

0 - -2

-2 - -4

-4 - -6

-6 - -8

-8 - -10

-10 - -12

-12 - -14

-14 - -16

-16 - -18

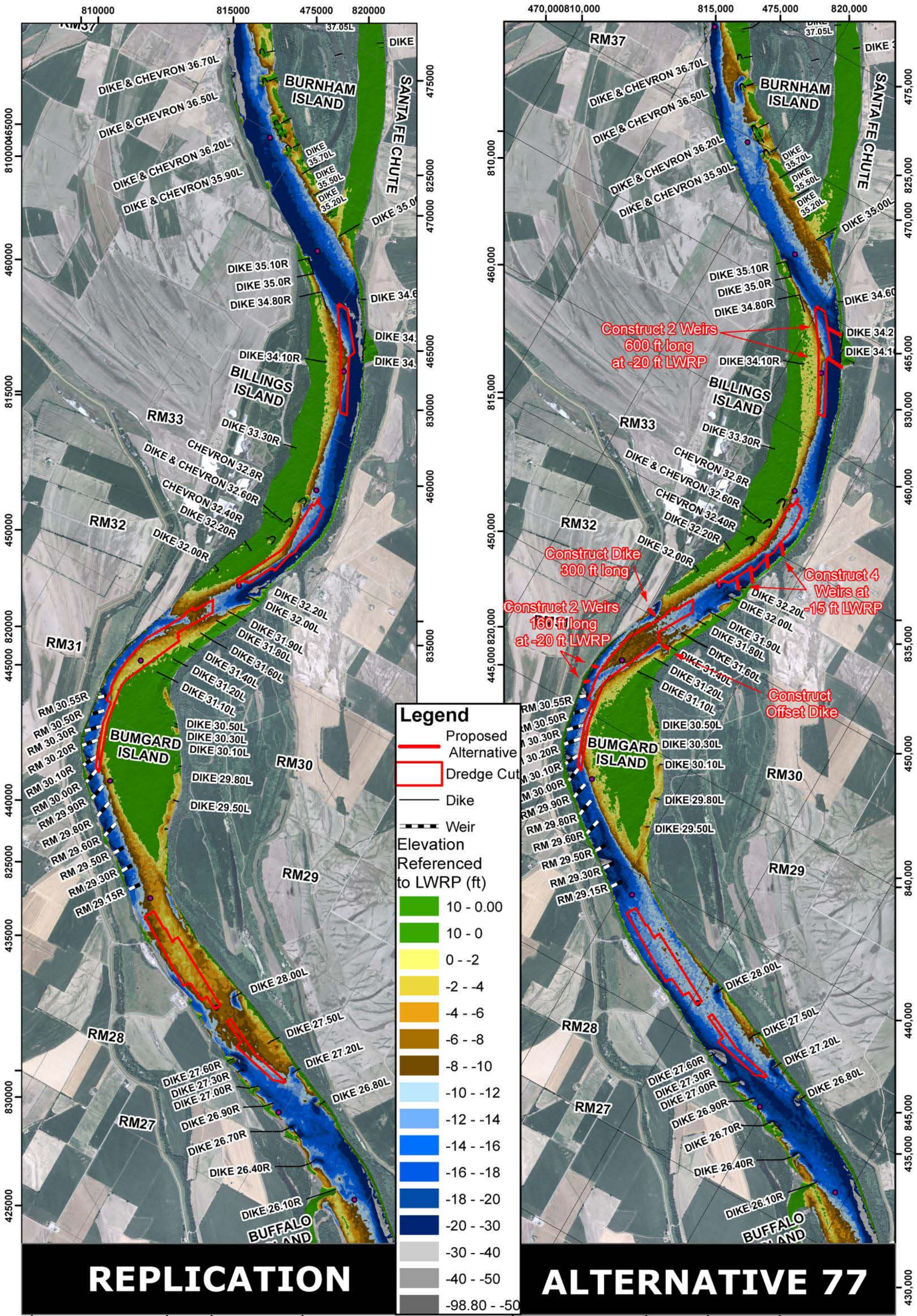
-18 - -20

-20 - -30

-30 - -40

-40 - -50

-98.80 - -50



REPLICATION

ALTERNATIVE 77

PLATE
NUMBER
115

0 1,600 3,200 6,400
Feet
Replication Scan vs. Alternative 77
Bathymetry Results
2007 AERIAL PHOTOGRAPH

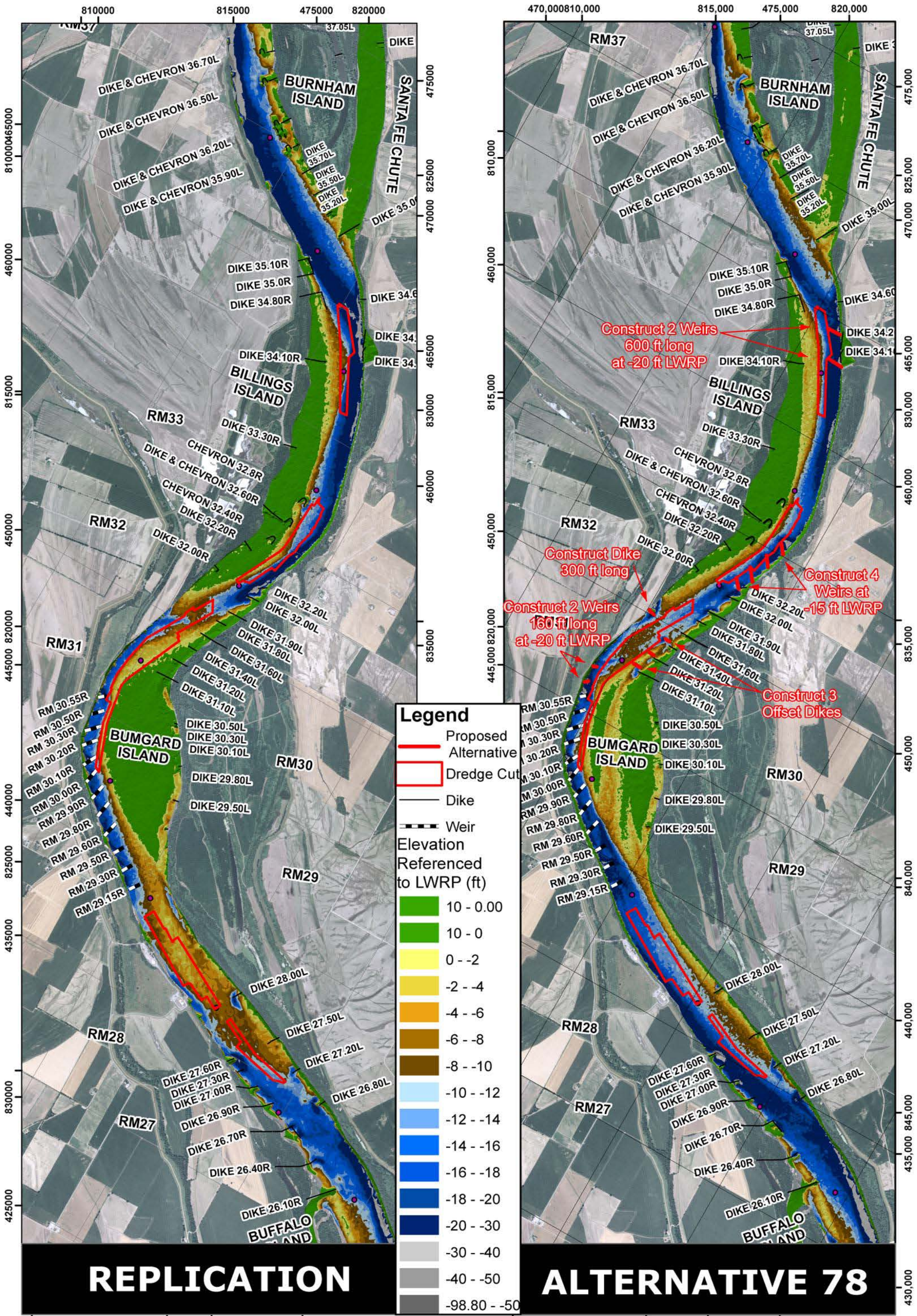
U.S. ARMY ENGINEER DIVISION CORPS OF ENGINEERS ST. LOUIS, MISSOURI	DESIGNED BY K. Clancey	CHECKED BY J. Brown, P.E.
	REVIEWED BY E. Brauer, P.E.	
	SUBMITTED BY K. Clancey	APPROVED BY Rob Davinroy, P.E.
	FILE NAME Z:\Bumgard Island HSR study\Plates	

Mississippi River Basin
St. Louis District
Bumgard Island
HSR Model
RM 36.0 - 25.0



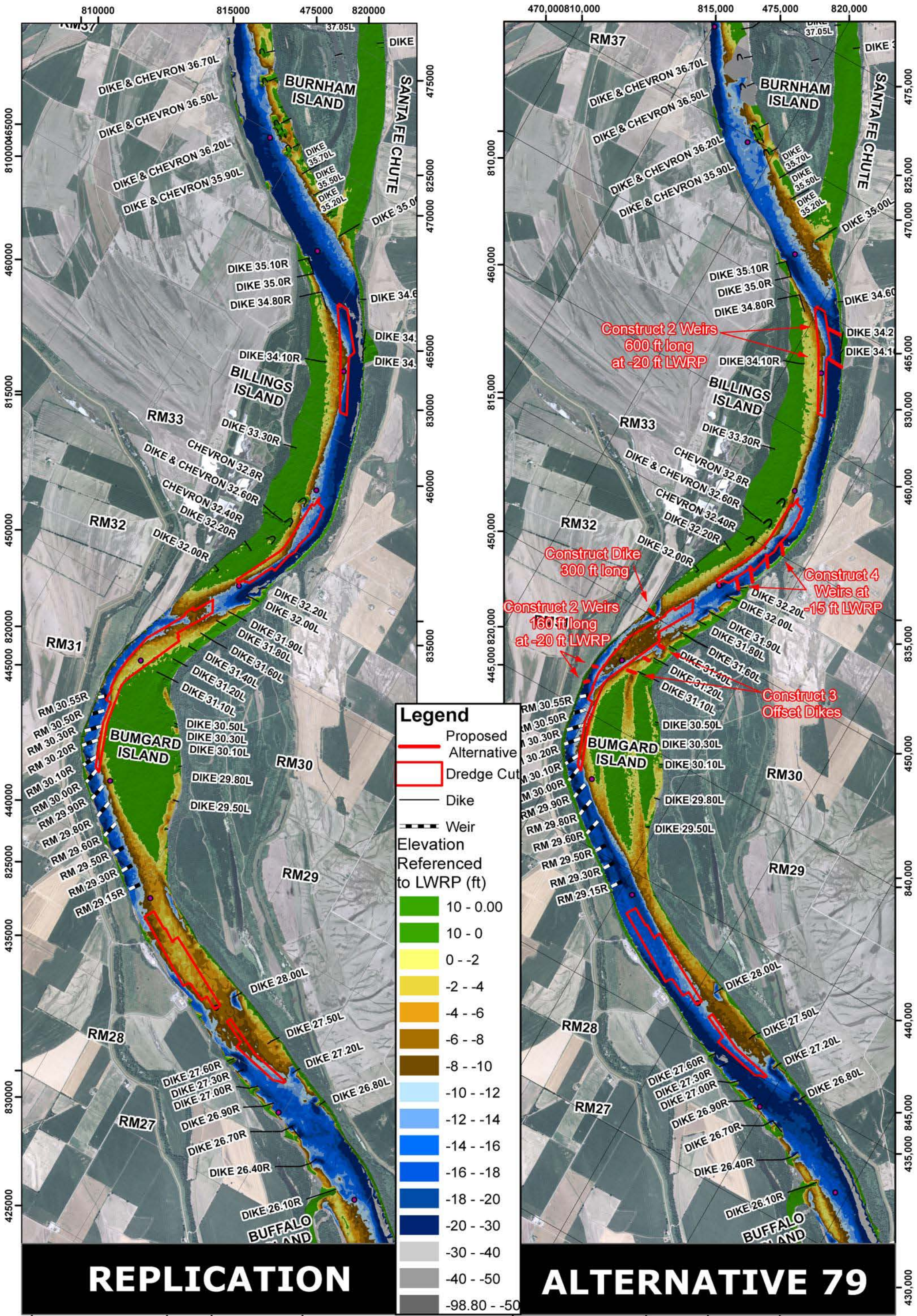
APPLIED
RIVER
ENGINEERING CENTER

US Army Corps
of Engineers
St. Louis District



REPLICATION

ALTERNATIVE 78



REPLICATION

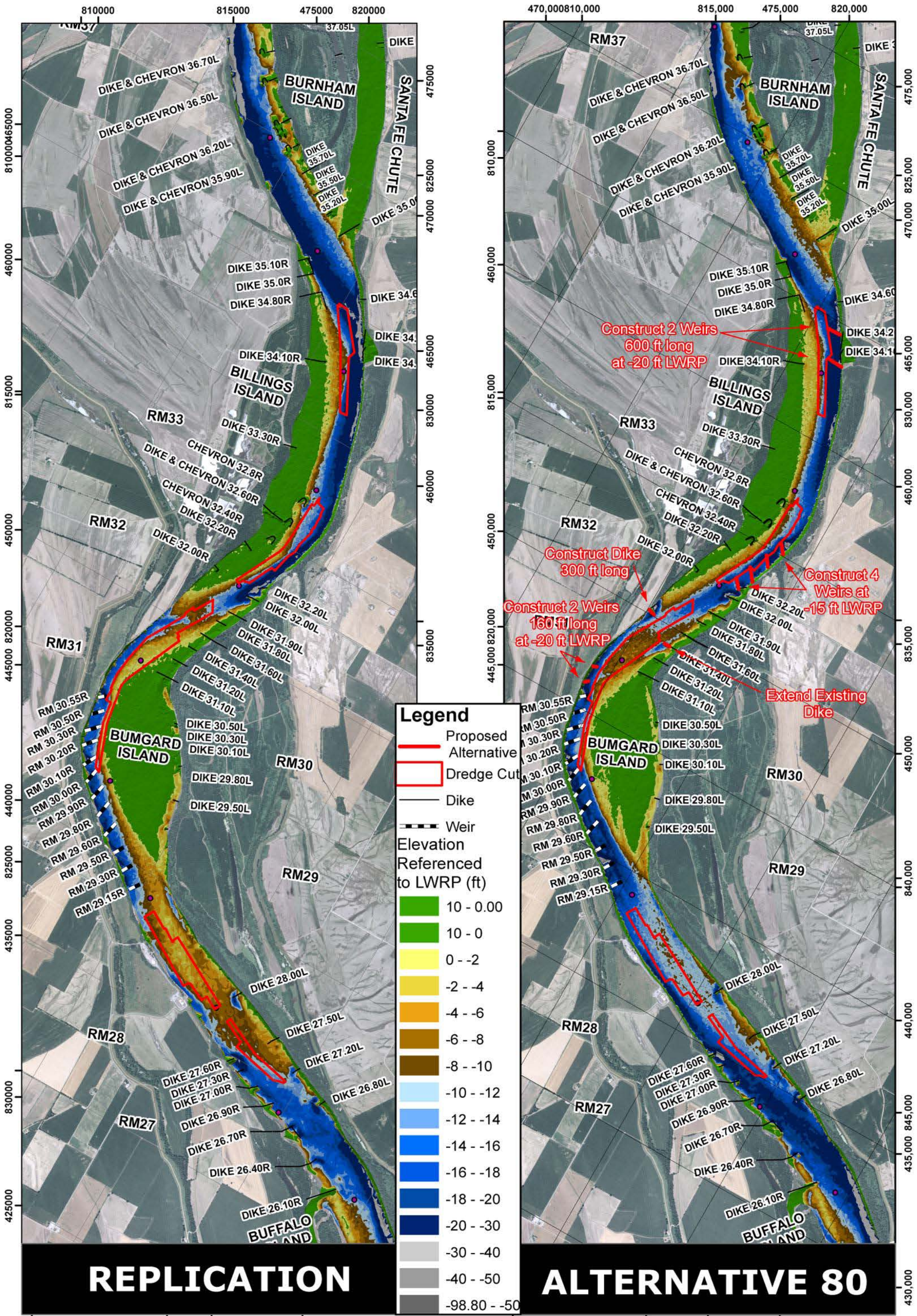
ALTERNATIVE 79

PLATE
NUMBER
117

0 1,600 3,200 6,400
Feet
Replication Scan vs. Alternative 79
Bathymetry Results
2007 AERIAL PHOTOGRAPH

U.S. ARMY ENGINEER DIVISION CORPS OF ENGINEERS ST. LOUIS, MISSOURI	DESIGNED BY K. Clancey	REVIEWED BY E. Brauer, P.E.	CHECKED BY J. Brown, P.E.
	DRAWN BY K. Clancey		
	Mississippi River Basin St. Louis District Bumgard Island HSR Model RM 36.0 - 25.0	SUBMITTED BY K. Clancey	APPROVED BY Rob Davinroy, P.E.
	FILE NAME Z:\Bumgard Island HSR study\Plates		





REPLICATION

ALTERNATIVE 80

0 1,600 3,200 6,400
Feet

Replication Scan vs. Alternative 80
Bathymetry Results
2007 AERIAL PHOTOGRAPH

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

Mississippi River Basin
St. Louis District
Bumgard Island
HSR Model
RM 36.0 - 25.0

DESIGNED BY
K. Clancey

DRAWN BY
K. Clancey

REVIEWED BY
E. Brauer, P.E.

CHECKED BY
J. Brown, P.E.

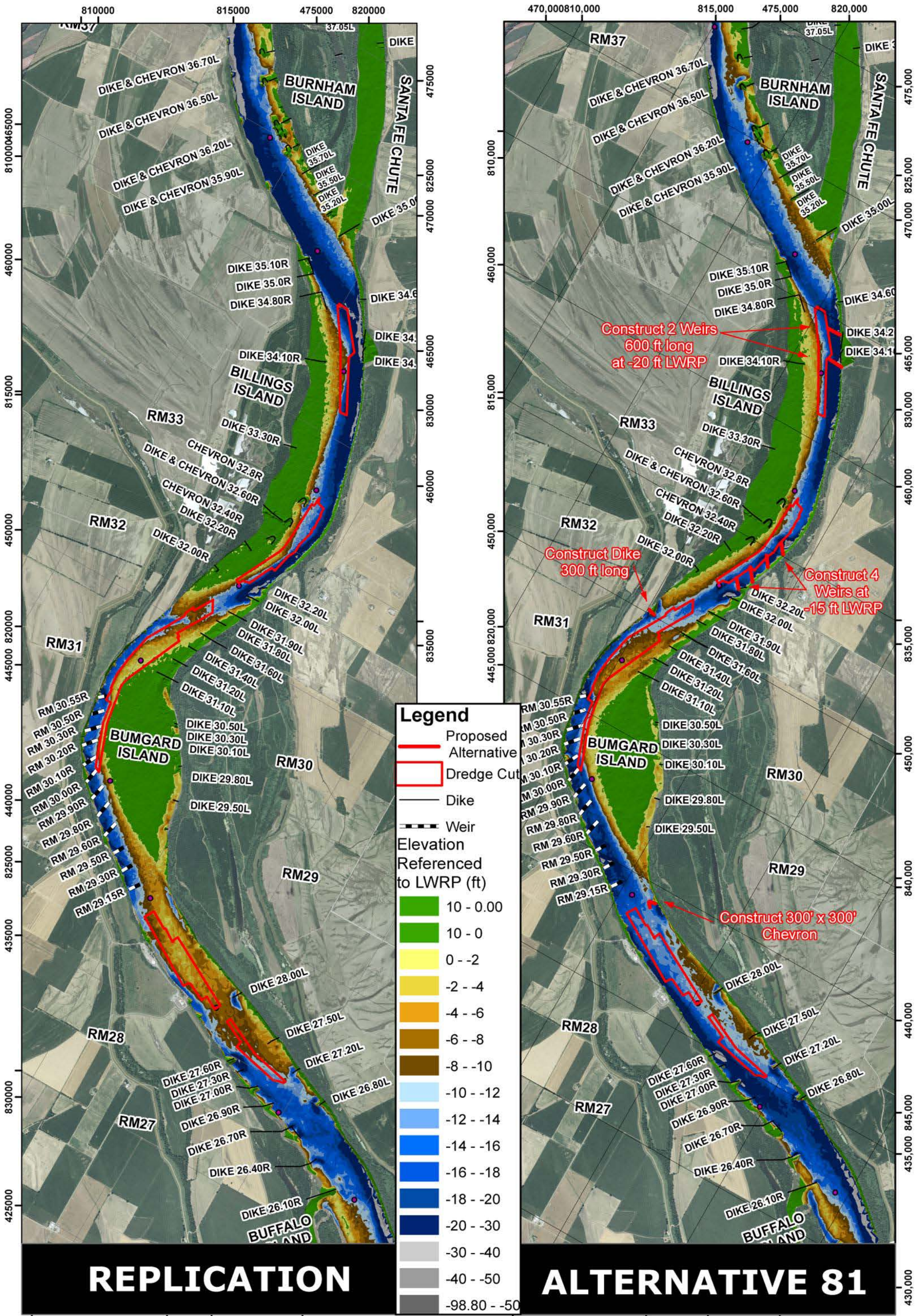
SUBMITTED BY
K. Clancey

APPROVED BY
Rob Davinroy, P.E.

FILE NAME
Z:\Bumgard Island HSR study\Plates



PLATE
NUMBER
118



REPLICATION

ALTERNATIVE 81

0 1,600 3,200 6,400
Feet

Replication Scan vs. Alternative 81
Bathymetry Results
2007 AERIAL PHOTOGRAPH

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

Mississippi River Basin
St. Louis District
Bumgard Island
HSR Model
RM 36.0 - 25.0

DESIGNED BY
K. Clancey

DRAWN BY
K. Clancey

REVIEWED BY
E. Brauer, P.E.

CHECKED BY
J. Brown, P.E.

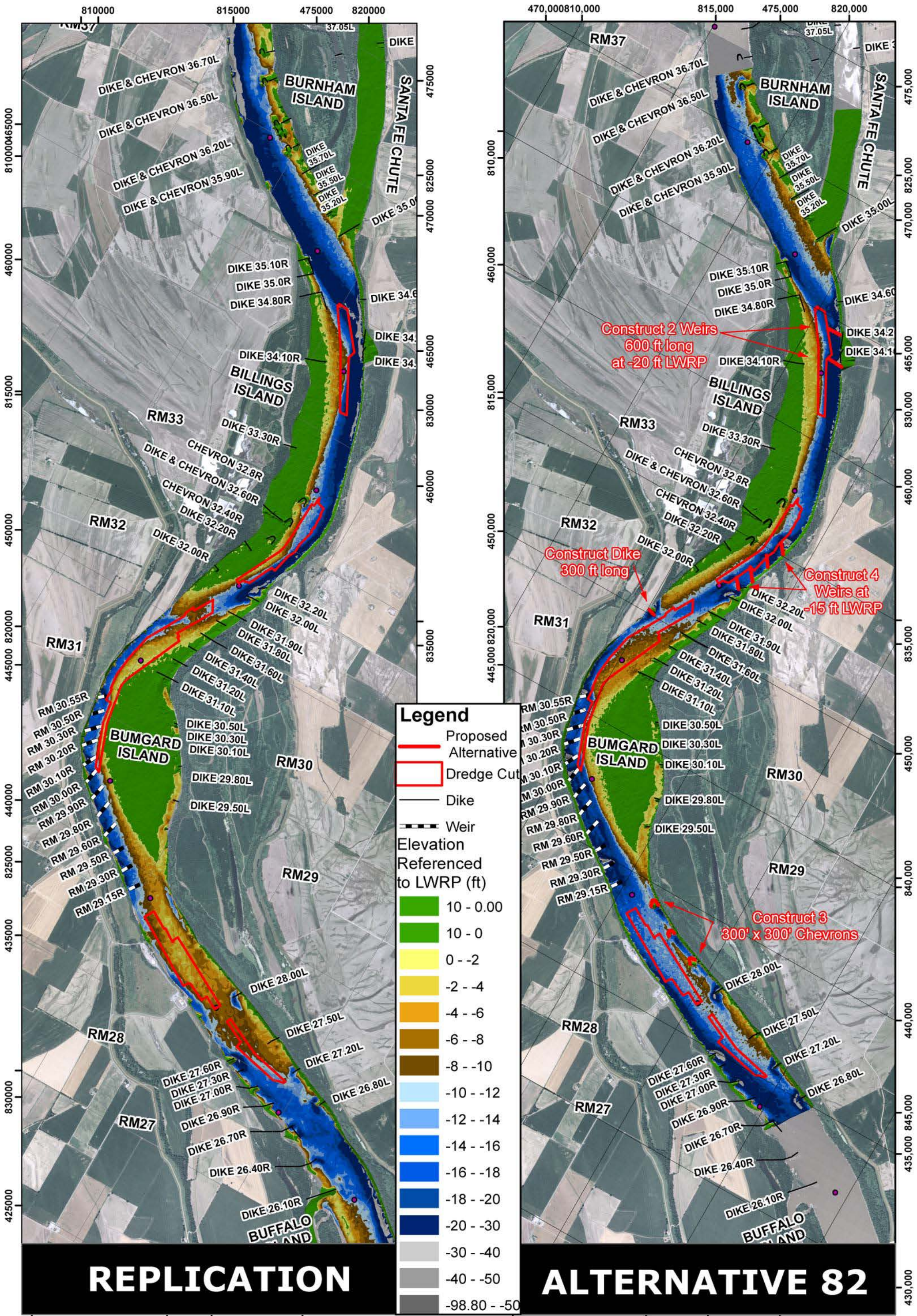
SUBMITTED BY
K. Clancey

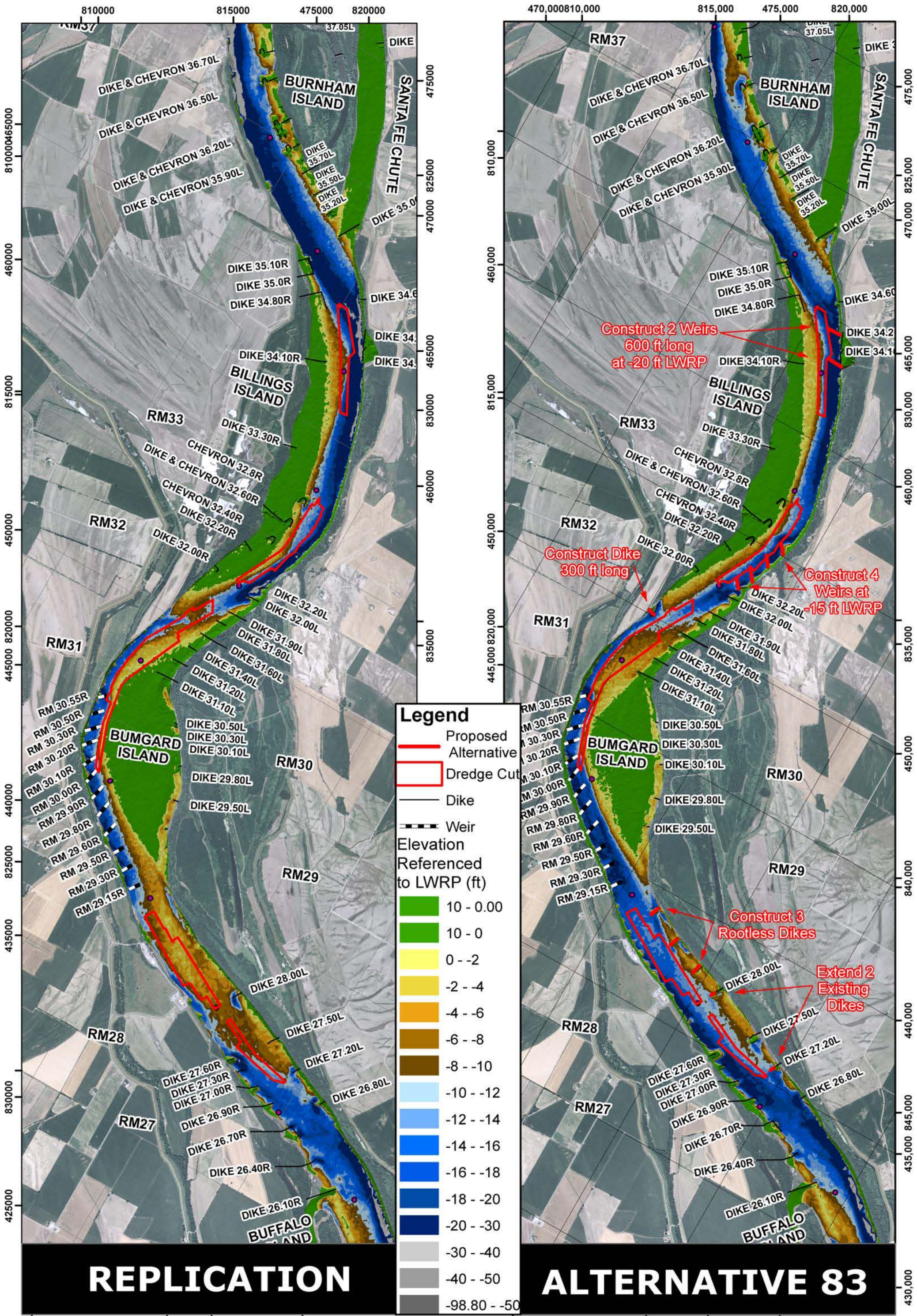
APPROVED BY
Rob Davinroy, P.E.

FILE NAME
Z:\Bumgard Island HSR study\Plates



PLATE
NUMBER
119





REPLICATION

ALTERNATIVE 83

