

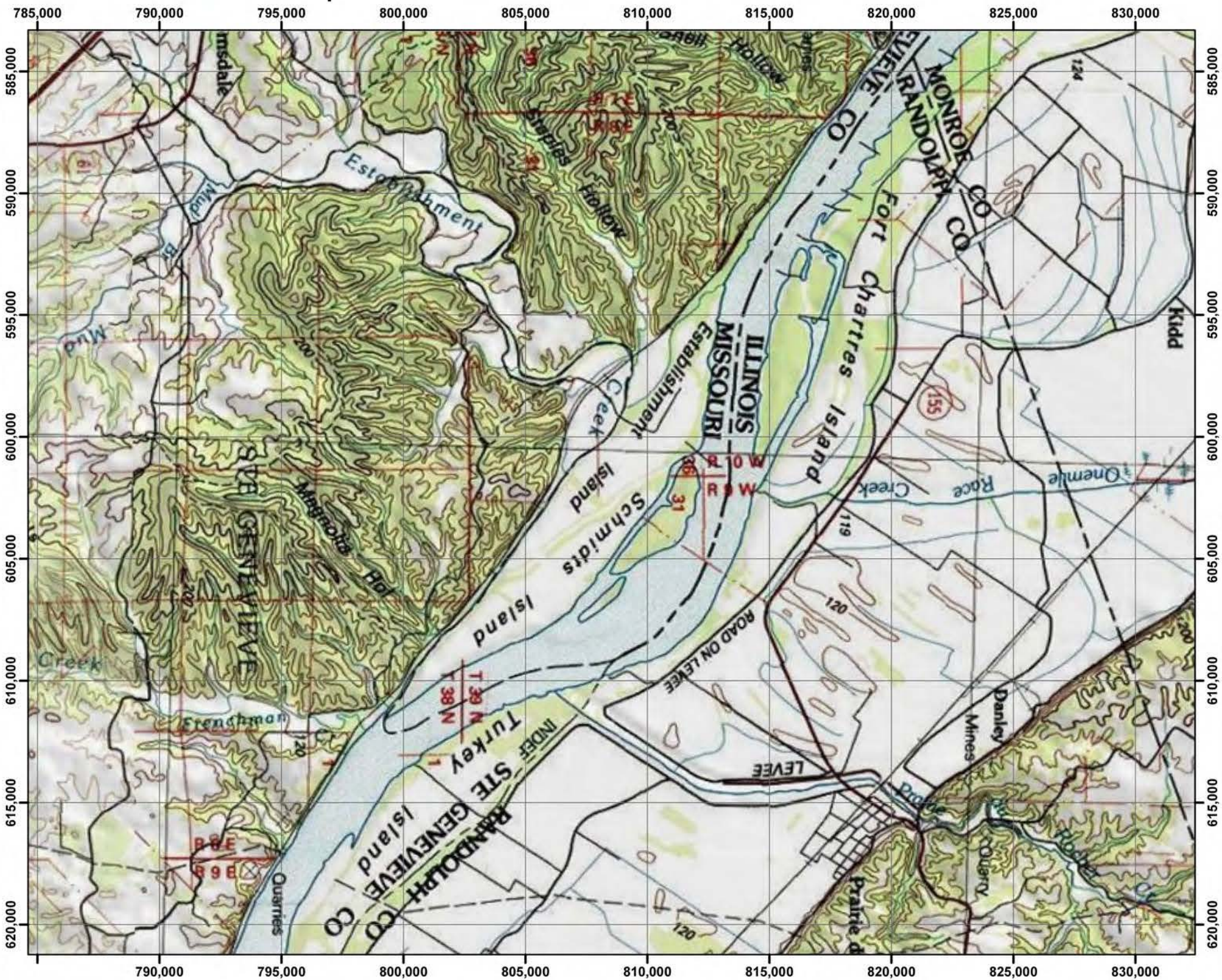


PLATE
NUMBER
1

**Location and Vicinity
Map**

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

UPPER MISSISSIPPI RIVER BASIN
Establishment Chute HSR Model
River Miles 134.0-128.0

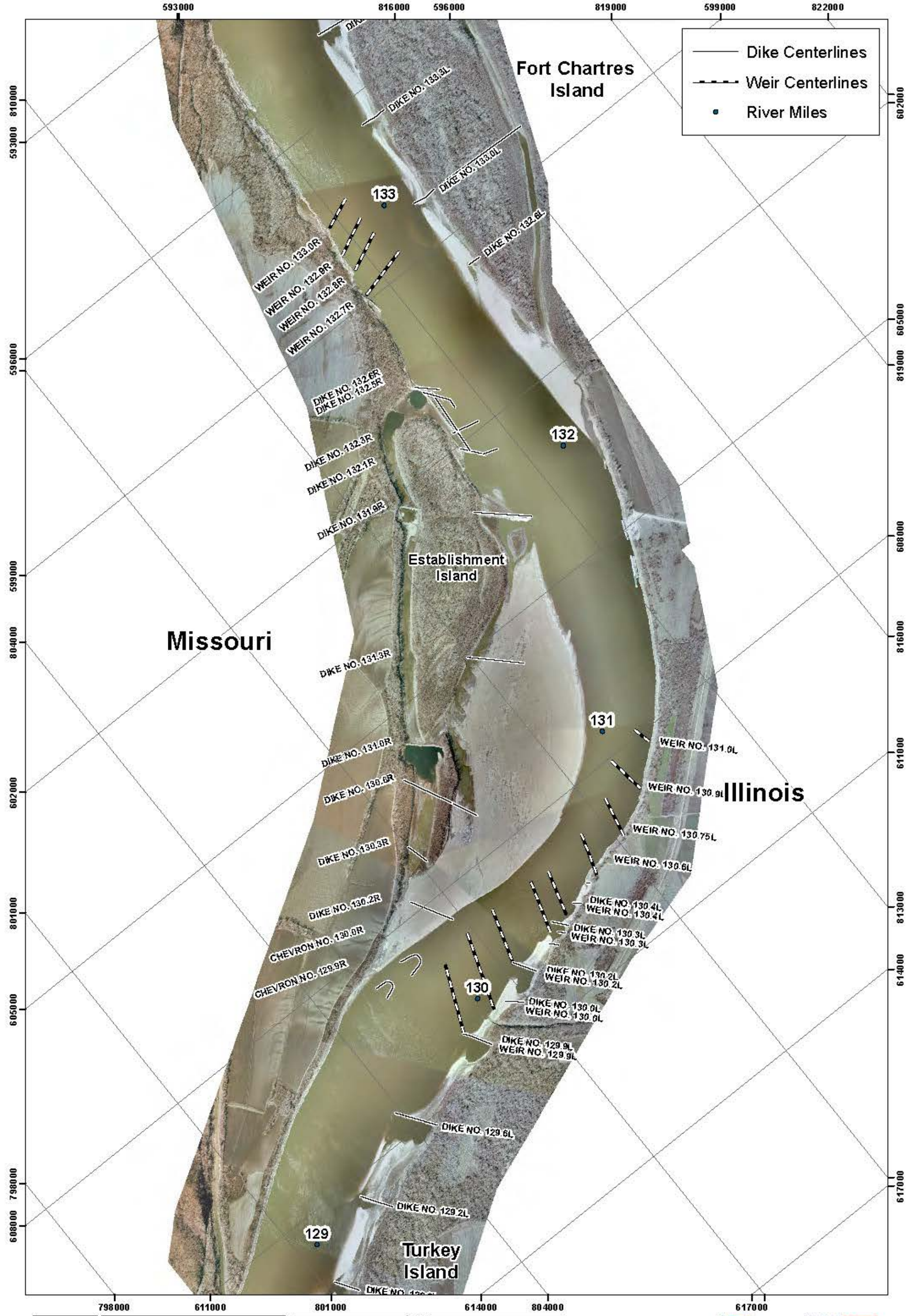
DESIGNED BY B Krischel	REVIEWED BY A Cox	CHECKED BY J Brown, P.E.
DRAWN BY B Krischel	SUBMITTED B Krischel	APPROVED R Davinroy, P.E.
FILE NAME L:\Krishel\Establishment\Establishment 11X17.mxd		PLOT DATE



APPLIED
RIVER
ENGINEERING CENTER



**US Army Corps
of Engineers®**
St. Louis District
Center of Expertise for
Photogrammetric Mapping



—

Dike Centerlines

- - -

Weir Centerlines

•

River Miles

PLATE
NUMBER
2

0 750 1,500 3,000

Feet

2006 Aerial Photograph

U.S. ARMY ENGINEER DIVISION CORPS OF ENGINEERS ST. LOUIS, MISSOURI			DESIGNED BY B Erschel
UPPER MISSISSIPPI RIVER BASIN Establishment Check HSR Model River Miles 134.0-139.0	DESIGNED BY B Erschel	DESIGNED BY A Cox	DESIGNED BY J Brown, PE.
	DESIGNED BY B Erschel	DESIGNED BY R Davidson, PE.	
PROJECT NO. U.S. Project 134.0-139.0			REV. NO. 11/17/2006





Looking downstream at the entrance of Establishment Chute.



Looking upstream at Dike 131.0R. The left hand side of the picture shows the lower tip of Establishment Island, and the right hand side of the picture shows the small, unnamed island.



Typical condition of the left descending bank (LDB) of Establishment Chute.



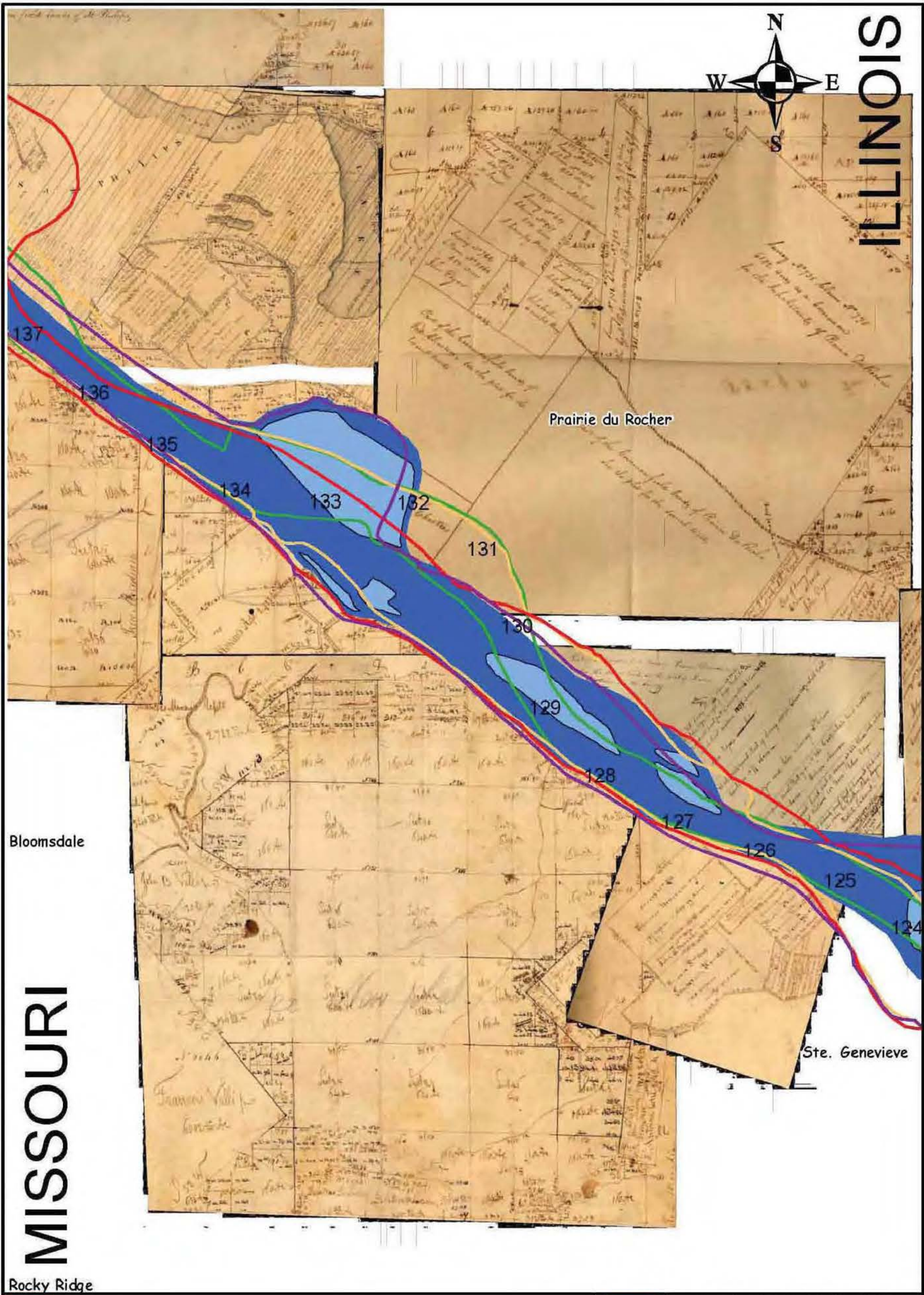
Typical condition of the right descending bank (RDB) of Establishment Chute.



DESIGNED BY B Krischel	DRAWN BY B Krischel	REVIEWED BY A Cox	CHECKED BY J Brown, P.E.		
U.S. ARMY ENGINEER DIVISION CORPS OF ENGINEERS ST. LOUIS, MISSOURI			APPROVED R Davinroy, P.E. NOT DATE		
UPPER MISSISSIPPI RIVER BASIN Establishment Chute HSR Model River Miles 134.0-128.0			U.S. Army Corps of Engineers Establishment LINT.mxd		

**Site Visit Pictures
August 24, 2010**

PLATE
NUMBER
3



2003

1928

1881

1866

1817

0

5,280

10,560

21,120

Feet

SOURCE: 1817-1820 Government Land Office Surveys

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

RIVER MILES 137-124

FLATE NO. 20

4	PLATE NUMBER	Geomorphology (1817 - 2003)		DESIGNED BY B Krischel			
				U.S. ARMY ENGINEER DIVISION CORPS OF ENGINEERS ST. LOUIS, MISSOURI			
				DRAWN BY B Krischel	REVIEWED BY A Cox	CHECKED BY J Brown, P.E.	
				SUBMITTED B Krischel			
		UPPER MISSISSIPPI RIVER BASIN Establishment Chute HSR Model River Miles 134.0-128.0		APPROVED R Davinroy, P.E.			
				PLOT DATE			
				FILE NAME E:\Krischel\Establishment\Establishment HSR.mxd			

U.S. Army Corps
of Engineers
St. Louis District

APPLIED
RIVER
ENGINEERING CENTER

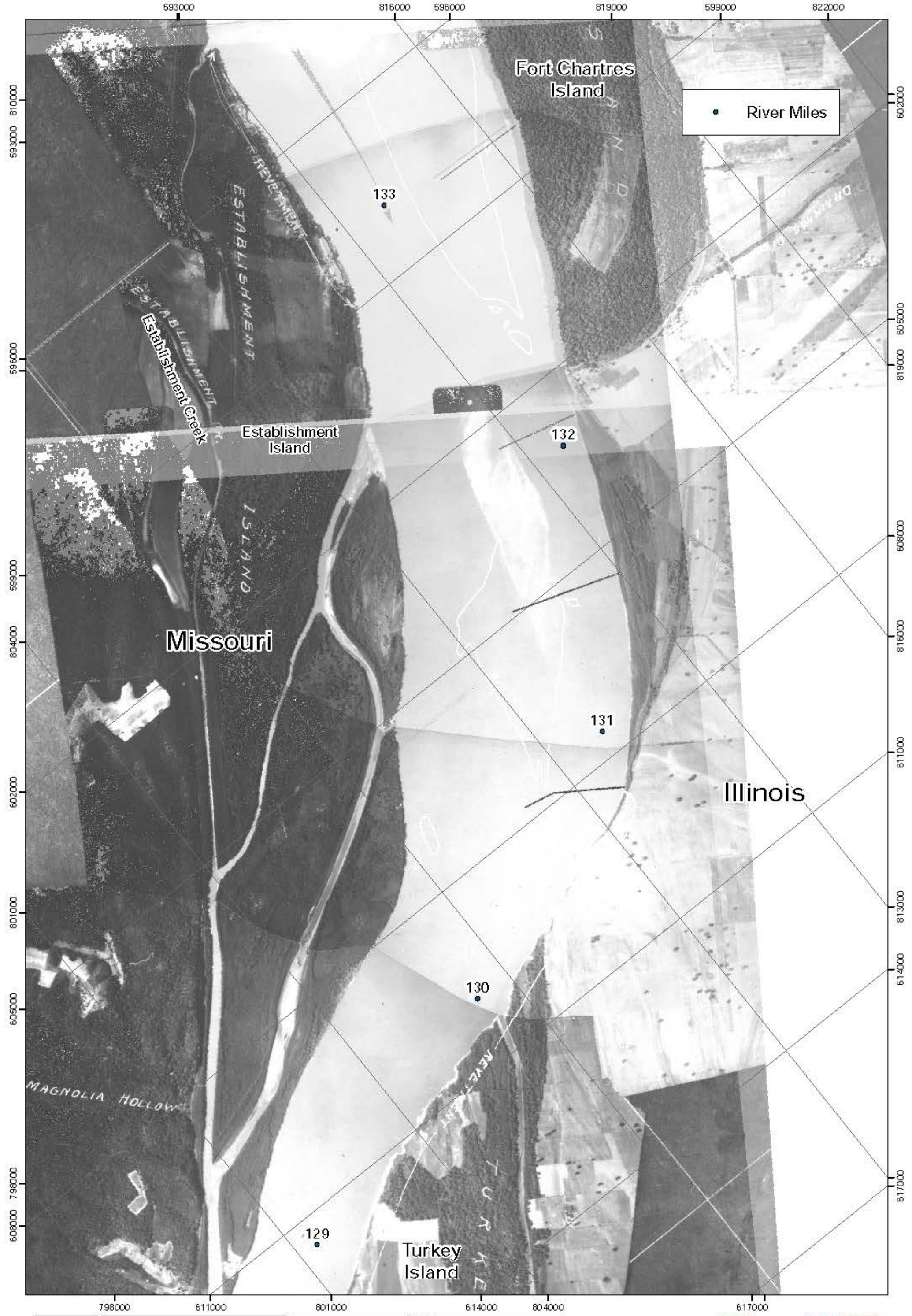


PLATE
NUMBER
5

015003000

Feet

1928 Aerial Map

U.S. ARMY ENGINEER DIVISION CORPS OF ENGINEERS ST. LOUIS, MISSOURI			DESIGNED BY B Erischel	APPROVED BY J Brown, PE.
UPPER MISSISSIPPI RIVER BASIN Establishment Creek HSR Model River Miles 134.0-139.0		DESIGNED BY B Erischel	APPROVED BY R Davidson, PE.	
FOR MORE INFORMATION, CONTACT THE DESIGNER AT THE FOLLOWING ADDRESS:			NOT FOR CONSTRUCTION	



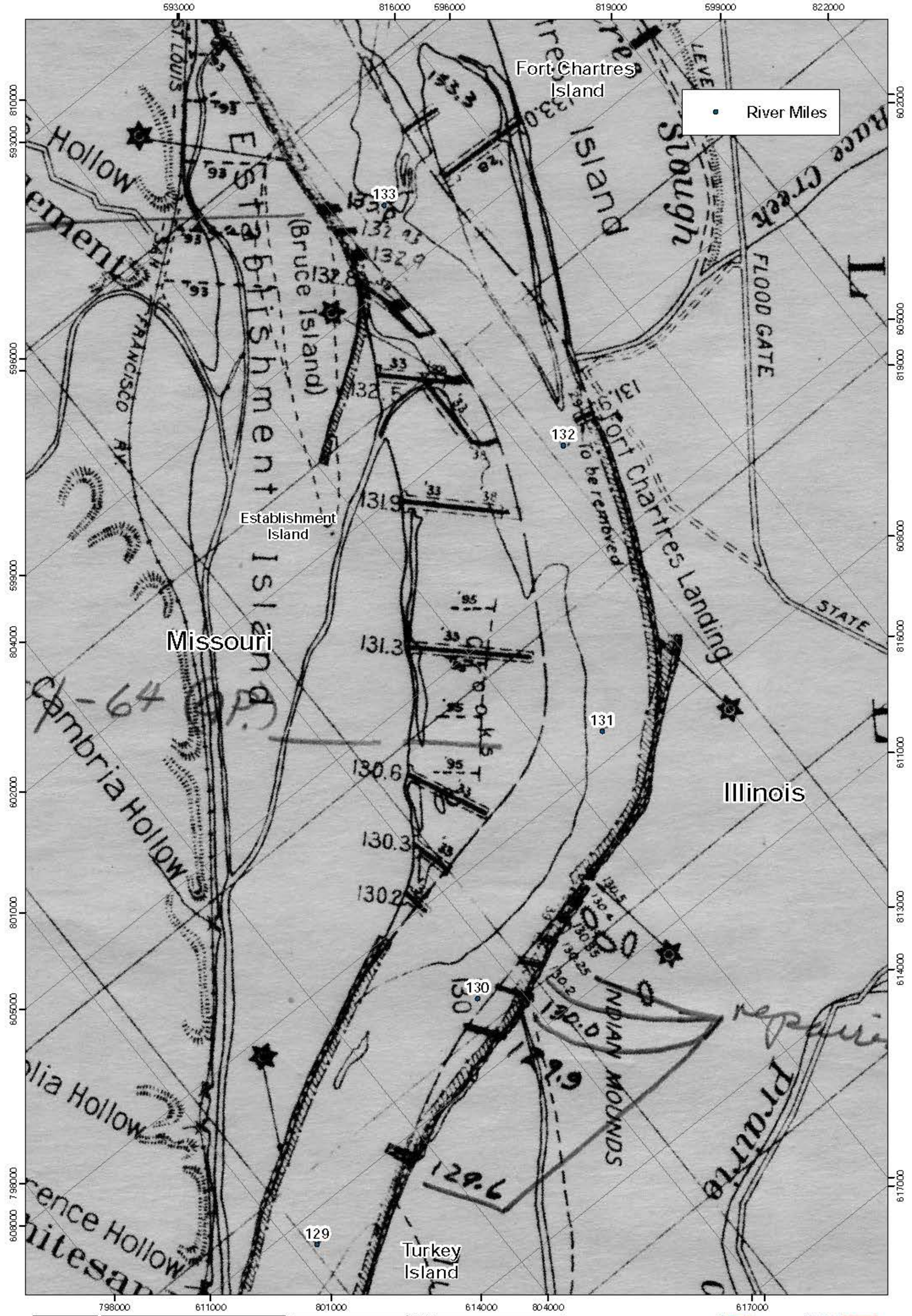


PLATE
NUMBER
6

0 750 1,500 3,000
Feet
1942 Planform Map

U.S. ARMY ENGINEER DIVISION CORPS OF ENGINEERS ST. LOUIS, MISSOURI		
DESIGNED BY B Erischel	DRAWN BY B Erischel	CHECKED BY A Cox
APPROVED BY J Brown, P.E.		
SUBMITTED BY B Erischel		APPROVED BY R Davidson, P.E.
UPPER MISSISSIPPI RIVER BASIN Establishment Creek HSR Model River Miles 134.0-139.0		



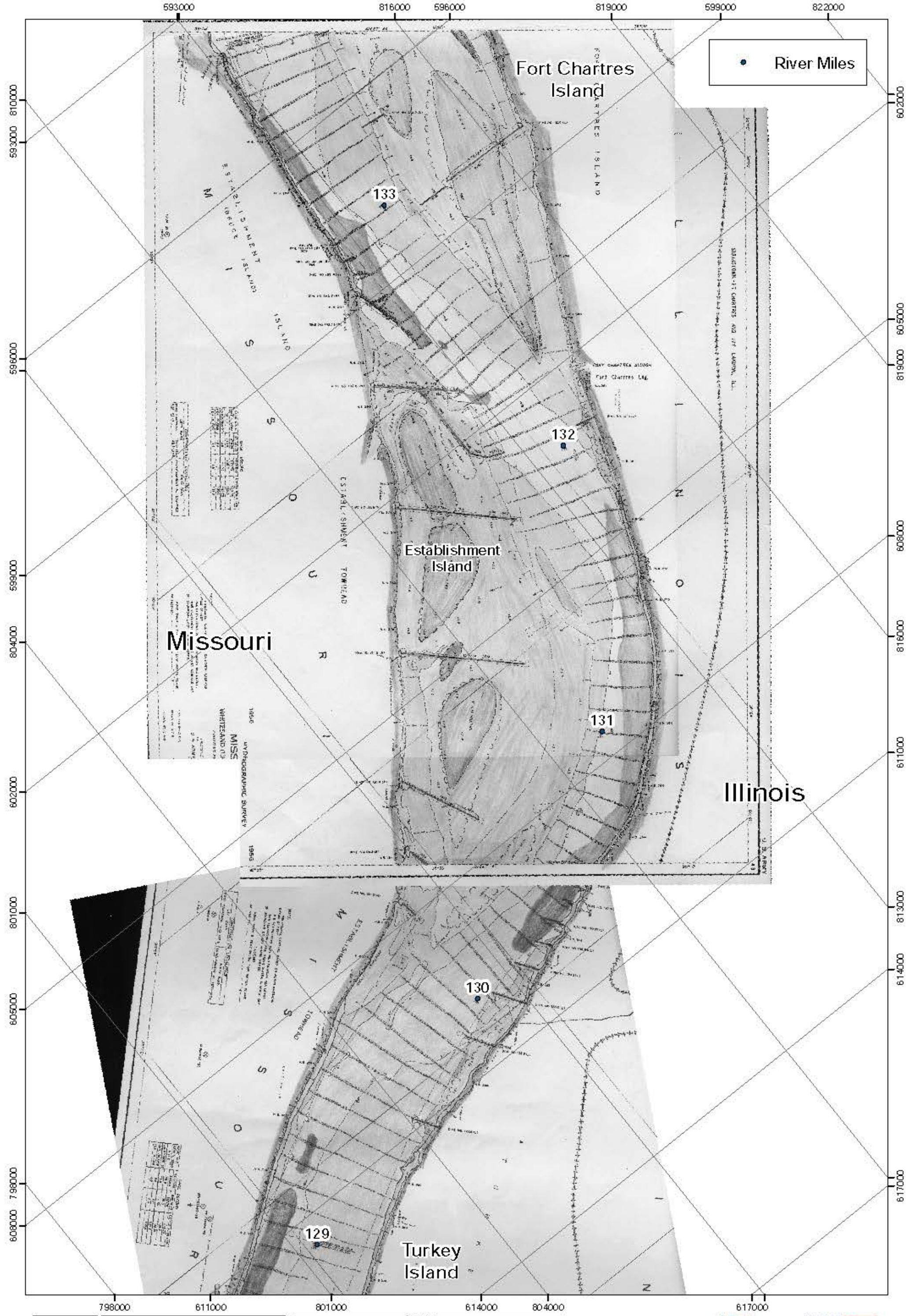


PLATE
NUMBER
7

015003000

Foot

1956 Planform Map

U.S. ARMY ENGINEER DIVISION CORPS OF ENGINEERS ST. LOUIS, MISSOURI	DESIGNED BY B Erischel		
	DRAWN BY B Erischel	INSTRUMENTED BY A Cox	CHECKED BY J Brown, P.E.
	APPROVED BY B Erischel		
	R Dawson, P.E.		
UPPER MISSISSIPPI RIVER BASIN Establishment Creek HSR Model River Miles 134.0-135.0			



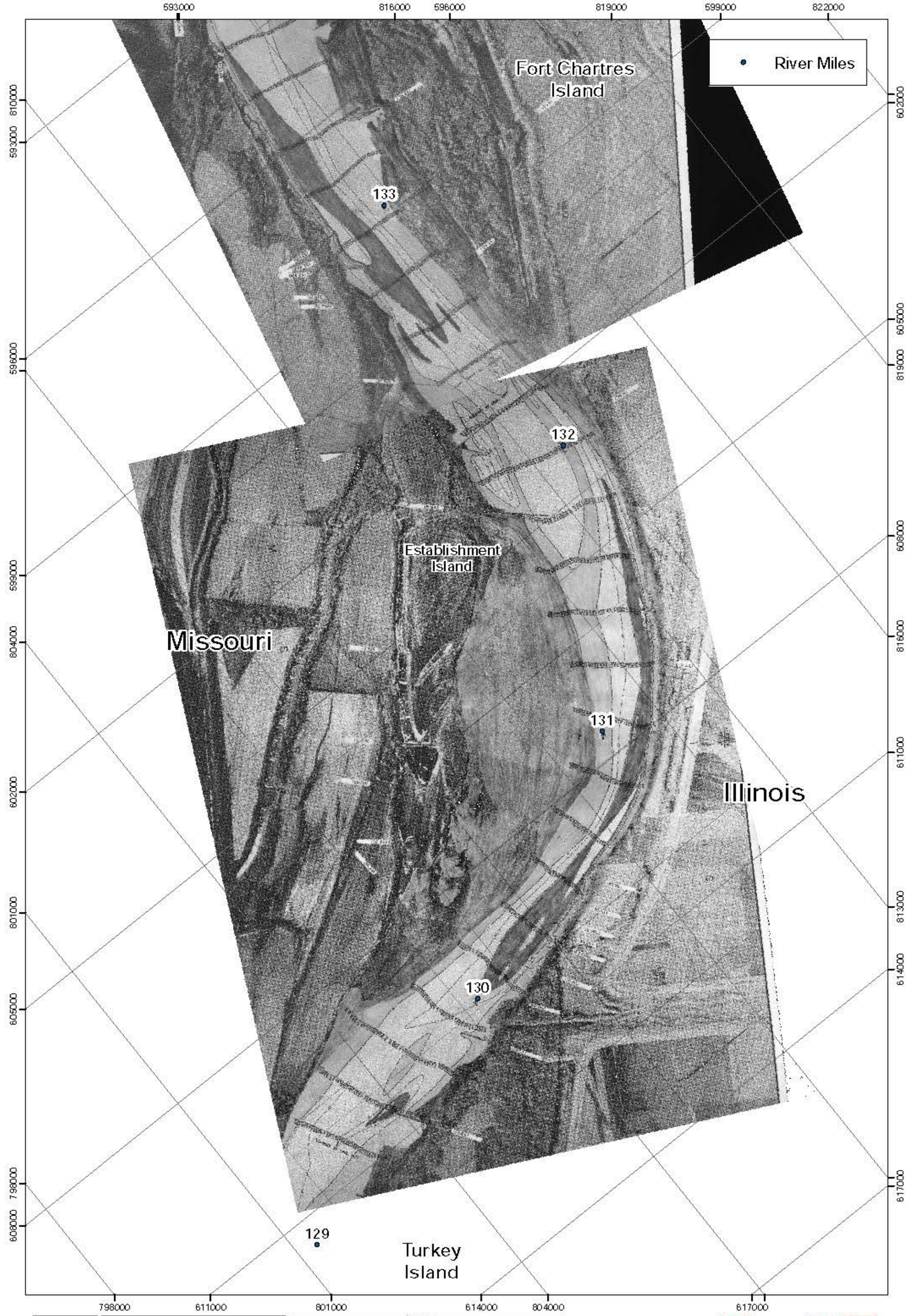


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8

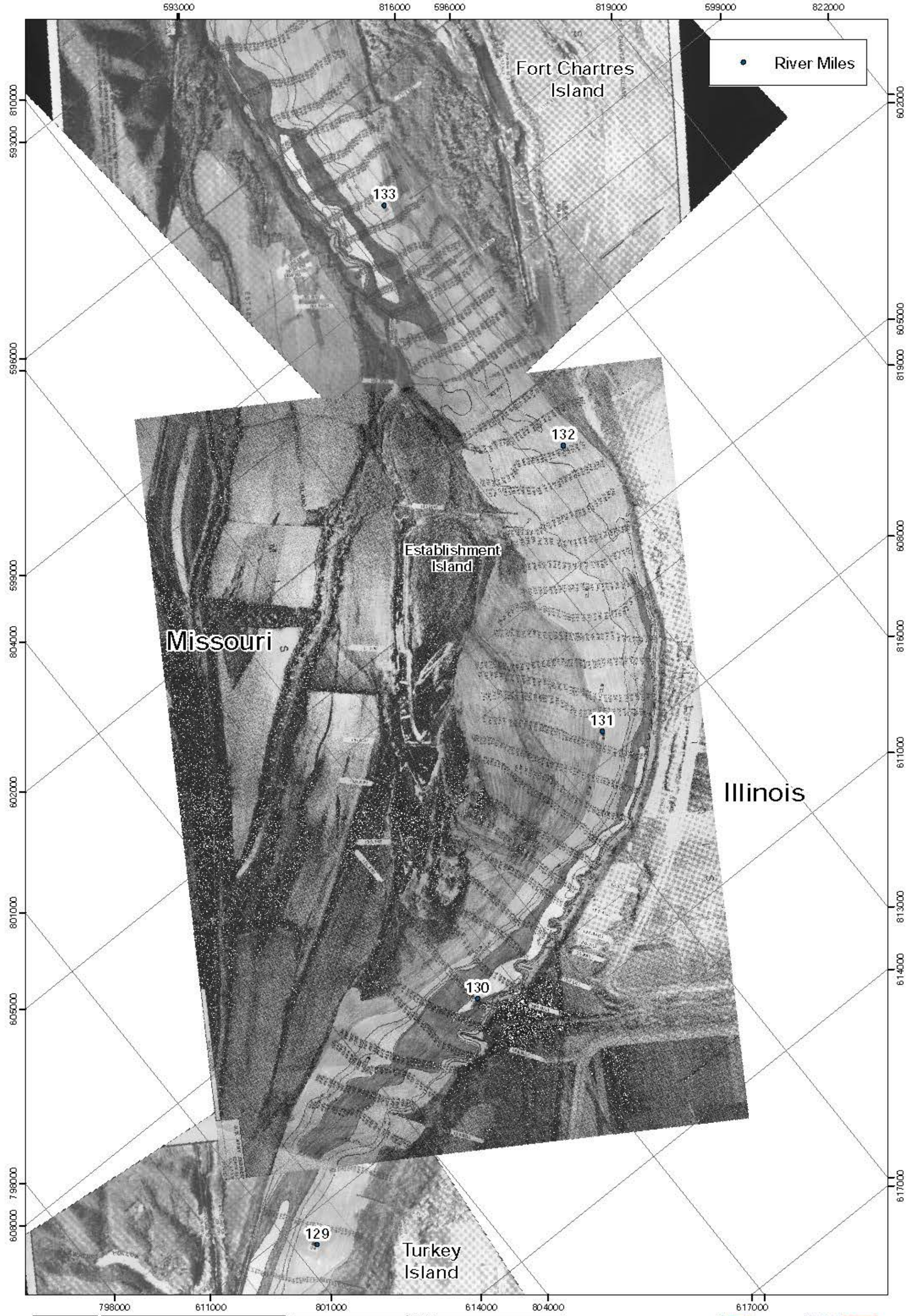
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Foot

1977 Aerial Photograph

U.S. ARMY ENGINEER DIVISION CORPS OF ENGINEERS ST. LOUIS, MISSOURI	DESIGNED BY B Erischel		
	DRAWN BY B Erischel	REVIEWED BY A Cox	DATE J Brown, P.E.
UPPER MISSISSIPPI RIVER BASIN Establishment Creek HSR Model River Miles 134.0-139.0	SUBMITTED BY B Erischel		APPROVED BY R Davidson, P.E.
	FOR NAME U.S. Project 134.0-139.0 Establishment Creek HSR Model		FOR DATE 11/17/2022





• River Miles

Fort Chartres
Island

133

132

Establishment
Island

Missouri

131

Illinois

130

Turkey
Island

129

PLATE
NUMBER
9

0 750 1,500 3,000
Feet

1982 Aerial Photograph

U.S. ARMY ENGINEER DIVISION CORPS OF ENGINEERS ST. LOUIS, MISSOURI	DRAWN BY B Erischel		
	DRAWN BY B Erischel	APPROVED BY A Cox	DESIGNED BY J Brown, PE.
UPPER MISSISSIPPI RIVER BASIN Establishment Creek HSR Model River Miles 134.0-135.0	SUBMITTED BY B Erischel		APPROVED BY R Davidson, PE.
	FOR MORE INFORMATION, CONTACT THE ENGINEERING CENTER		FOR MORE INFORMATION, CONTACT THE ENGINEERING CENTER



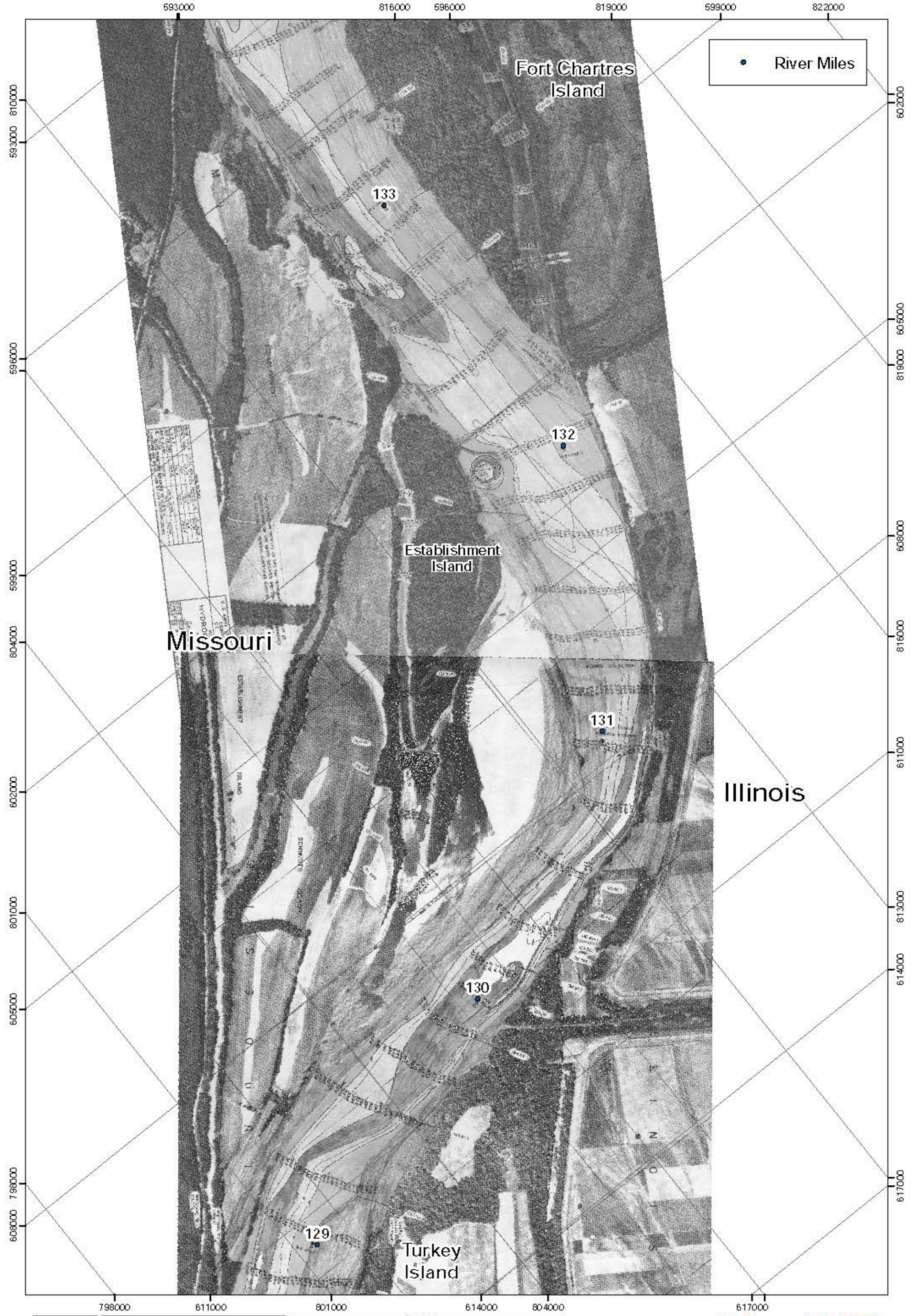


PLATE
NUMBER
10

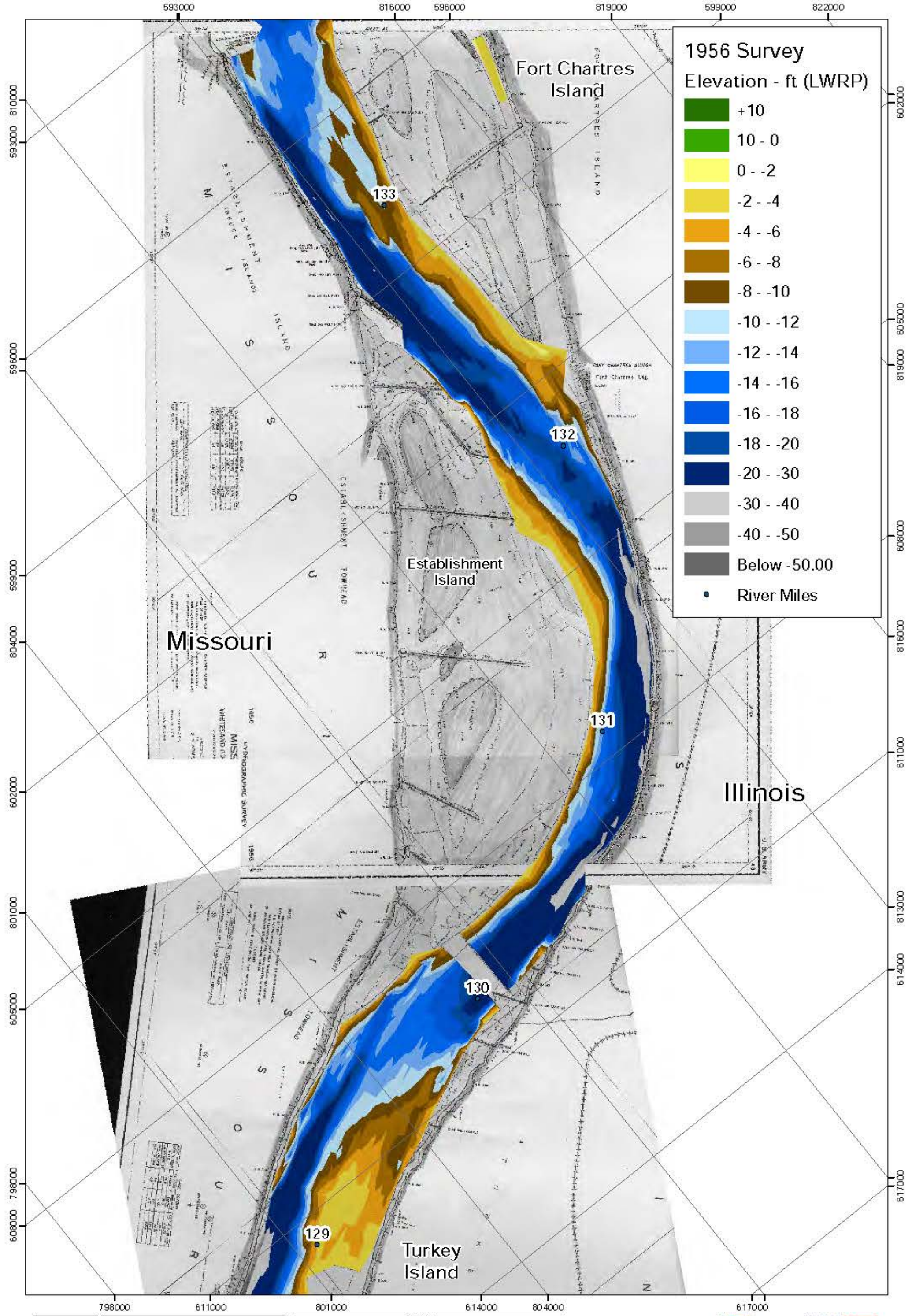
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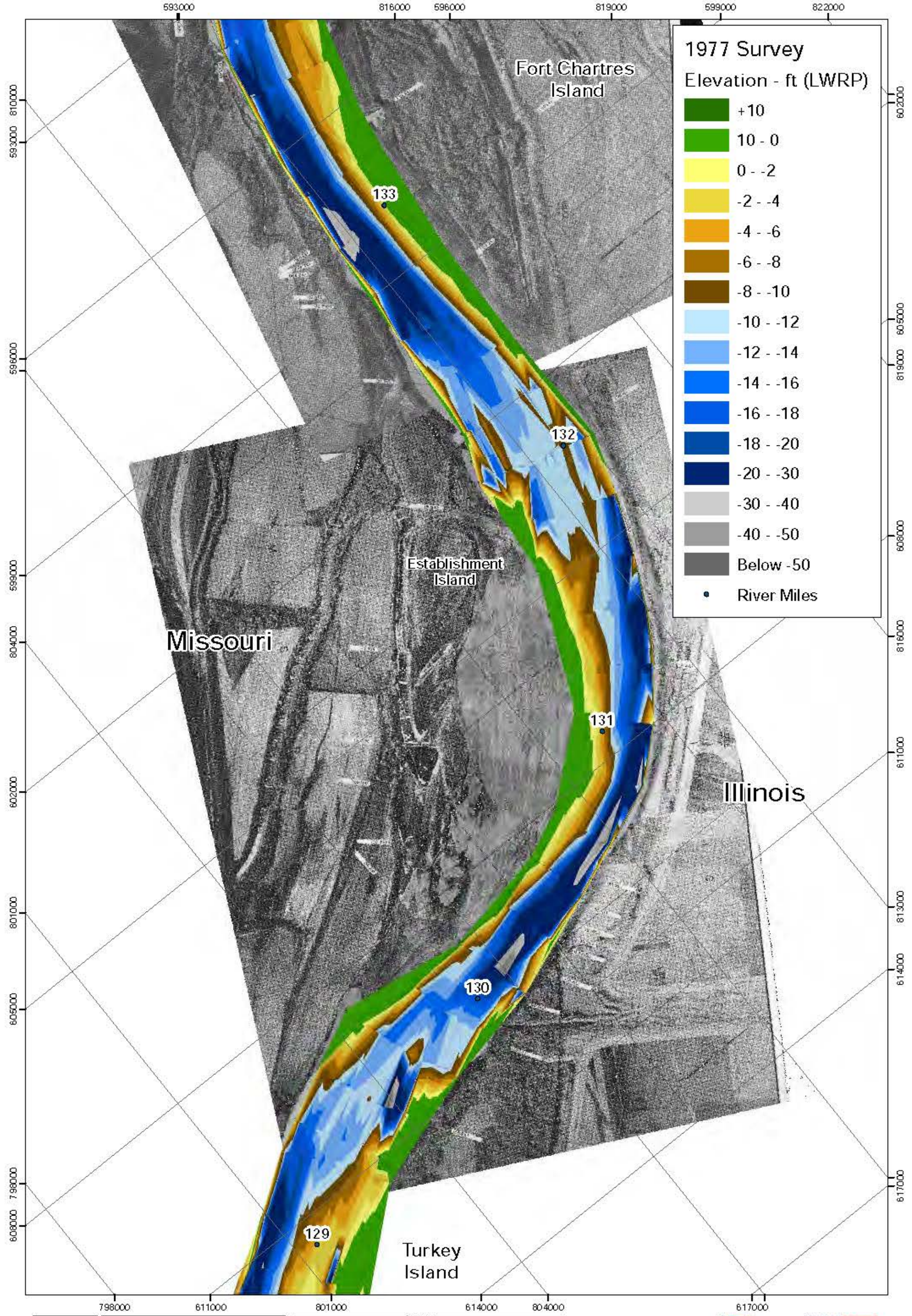
Foot

1987 Aerial Photograph

U.S. ARMY ENGINEER DIVISION CORPS OF ENGINEERS ST. LOUIS, MISSOURI			DESIGNED BY B Erischel	DESIGNED BY B Erischel	DESIGNED BY J Brown, PE.
UPPER MISSISSIPPI RIVER BASIN Establishment Creek HSR Model River Miles 134.0-135.0			DESIGNED BY B Erischel	DESIGNED BY A Cox	DESIGNED BY R Davanzo, PE.
FOR MORE INFORMATION CONTACT THE DESIGNER			FOR MORE INFORMATION CONTACT THE DESIGNER		







1977 Survey
Elevation - ft (LWRP)

Dark Green	+10
Green	10 - 0
Yellow	0 - -2
Light Yellow	-2 - -4
Orange	-4 - -6
Brown	-6 - -8
Dark Brown	-8 - -10
Light Blue	-10 - -12
Blue	-12 - -14
Dark Blue	-14 - -16
Very Dark Blue	-16 - -18
Dark Blue	-18 - -20
Dark Blue	-20 - -30
Grey	-30 - -40
Dark Grey	-40 - -50
Black	Below -50

• River Miles

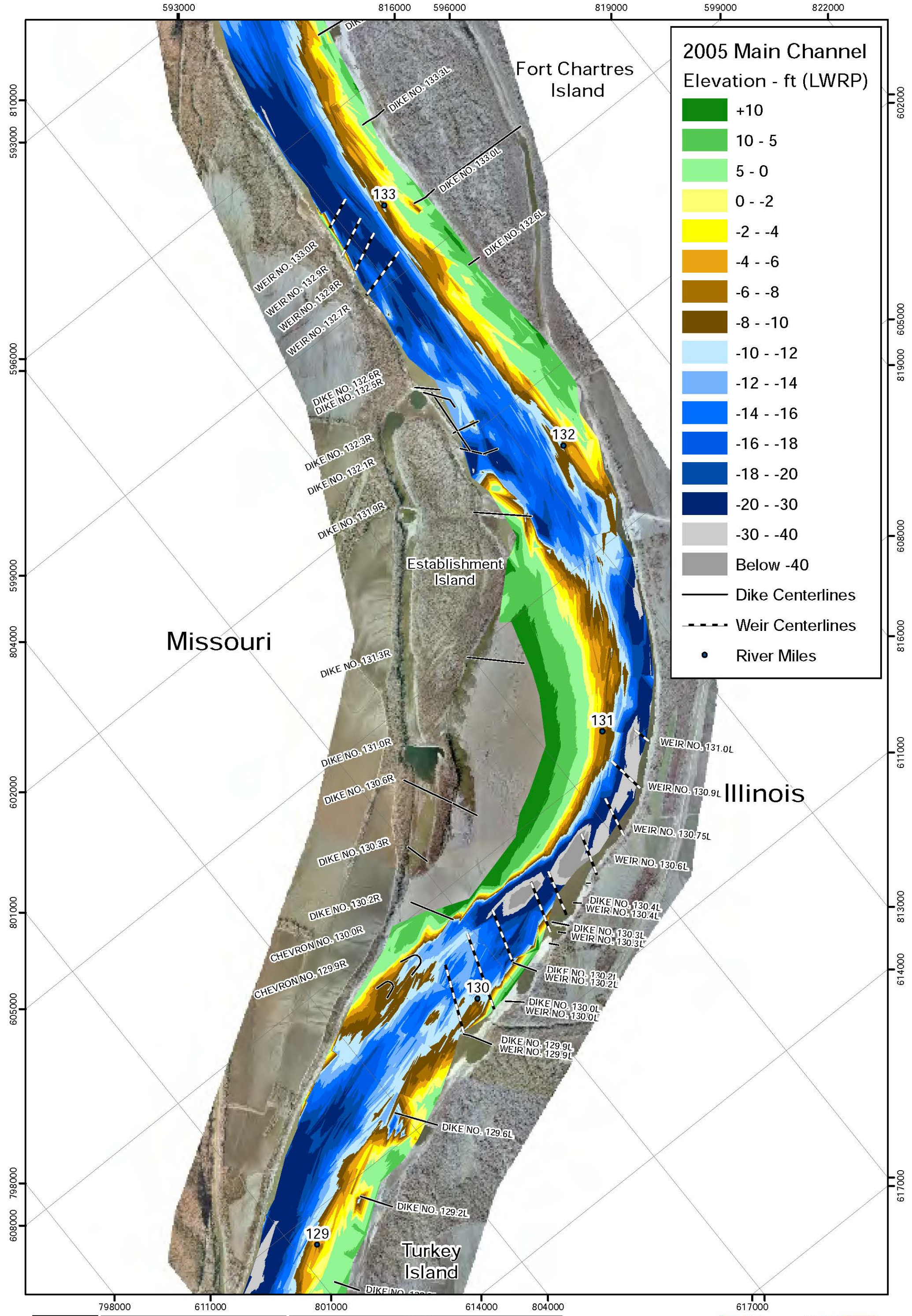


PLATE
NUMBER
14

0 750 1,500 3,000
Feet

2005 Hydrographic Survey

2006 Aerial Photograph

U.S. ARMY ENGINEER DIVISION CORPS OF ENGINEERS ST. LOUIS, MISSOURI	DESIGNED BY: B Krischel		
	DRAWN BY:	REVIEWED BY:	CHECKED BY:
	B Krischel	A Cox	J Brown, P.E.
	SUBMITTED:		
UPPER MISSISSIPPI RIVER BASIN Establishment Chute HSR Model River Miles 134.0-128.0	B Krischel		APPROVED: R Davinroy, P.E.
	FILE NAME: C:\Krischel\Establishment\Establishment 11X17.mxd		PLOT DATE:



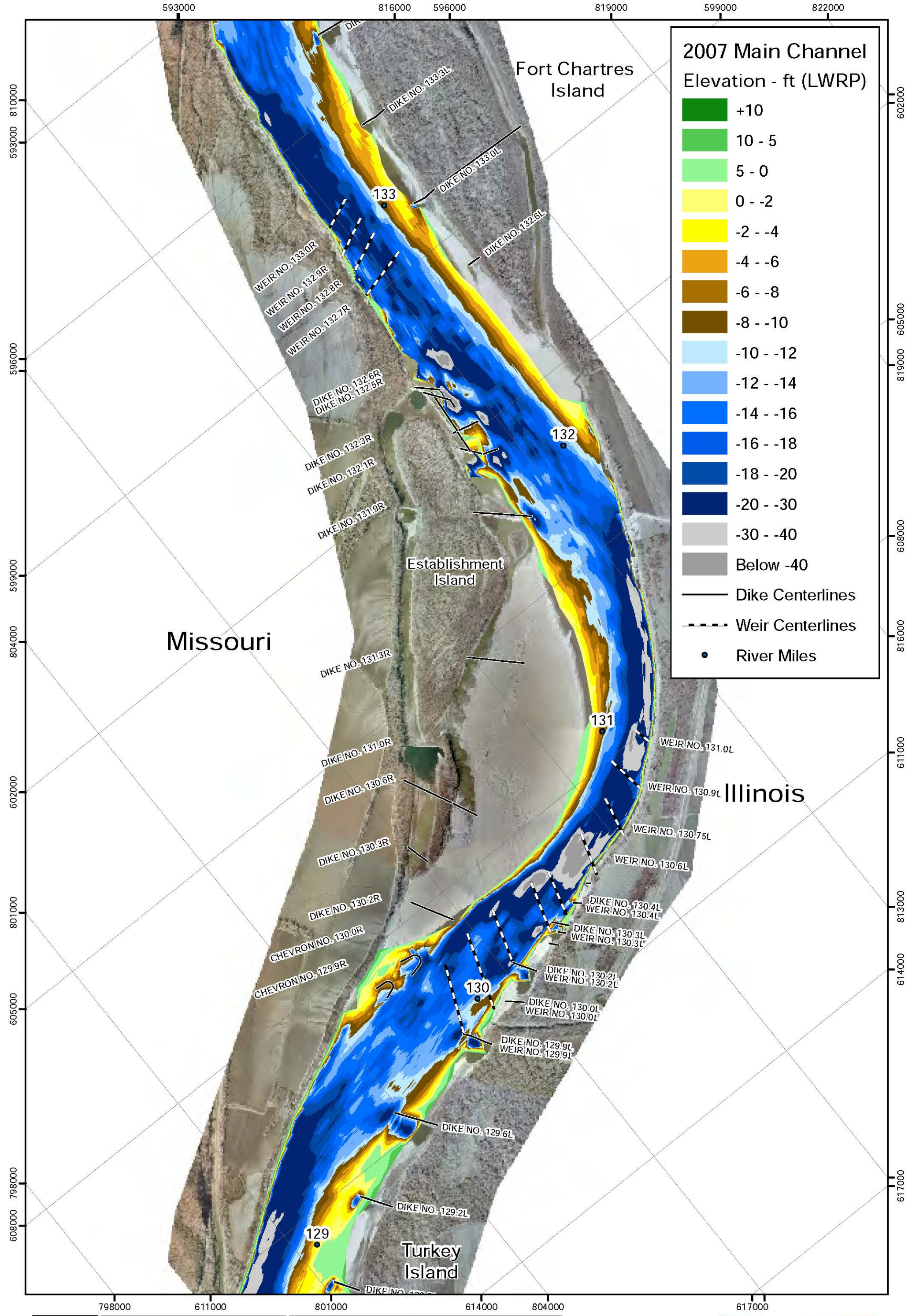


PLATE
NUMBER
15

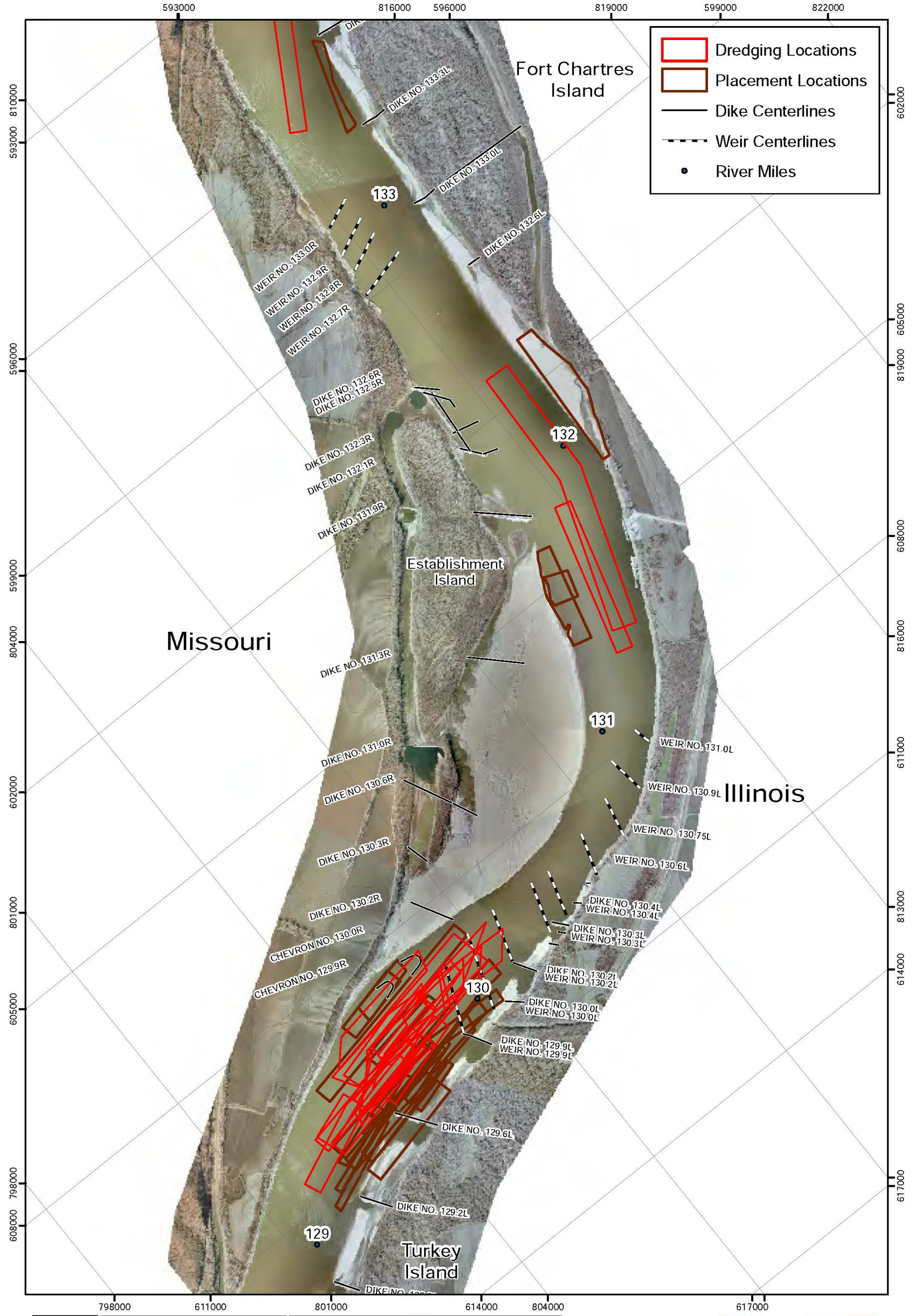
0 750 1,500 3,000
Feet

2007 Hydrographic Survey

2006 Aerial Photograph

U.S. ARMY ENGINEER DIVISION CORPS OF ENGINEERS ST. LOUIS, MISSOURI		
DESIGNED BY: B Krischel	REVIEWED BY: A Cox	CHECKED BY: J Brown, P.E.
SUBMITTED BY: B Krischel		APPROVED BY: R Davinroy, P.E.
FILE NAME: Establishment\Establishment\Establishment 11117.mxd		





Dredging Locations

Placement Locations

Dike Centerlines

Weir Centerlines

River Miles

PLATE
NUMBER
17

07501,5003,000

Feet

Dredging Locations

2006 Aerial Photograph

DESIGNED BY: B Krischel		
DRAWN BY: B Krischel		
REVIEWED BY: A Cox		
CHECKED BY: J Brown, P.E.		
SUBMITTED: B Krischel		
APPROVED: R Davinroy, P.E.		
FILE NAME: C:\Krischel\Establishment\Establishment 11X17.mxd		PLOT DATE:

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

UPPER MISSISSIPPI RIVER BASIN
Establishment Chute HSR Model
River Miles 134.0-128.0





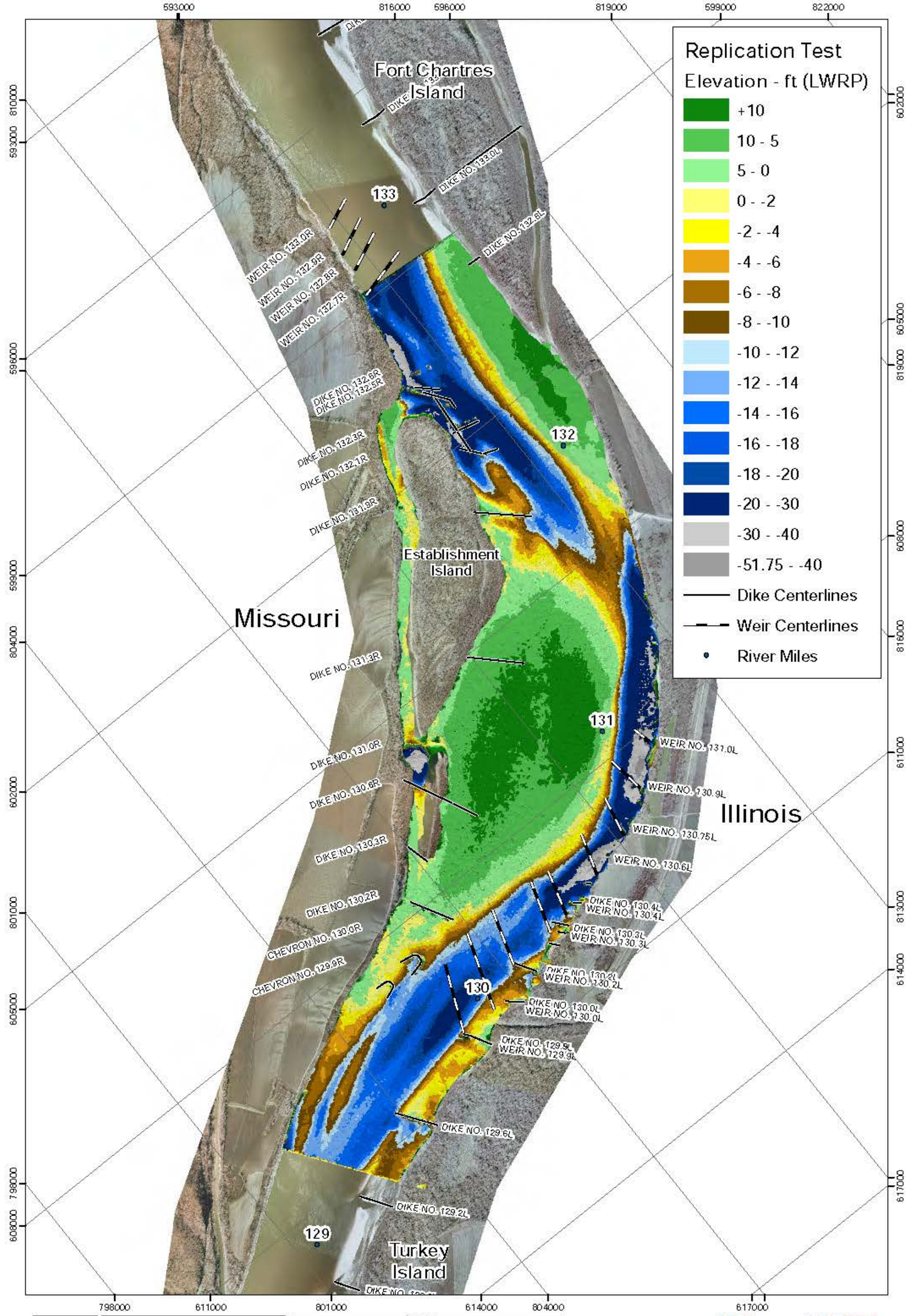
A view of the Establishment Chute HSR Model. The entrance is located on the right hand side of the picture, while the drain is located on the left hand side of the picture.



This is a view of the Establishment Chute HSR Model taken from above. Again, the entrance is located on the right hand side of the picture, while the drain is located on the left hand side of the picture.

DESIGNED BY B Krischel	REVIEWED BY A Cox	DESIGNED BY J Brown, P.E.
DRAWN BY B Krischel	APPROVED R Davinroy, P.E.	
SUBMITTED		
U.S. ARMY ENGINEER DIVISION CORPS OF ENGINEERS ST. LOUIS, MISSOURI		
UPPER MISSISSIPPI RIVER BASIN Establishment Chute HSR Model River Miles 134.0-128.0		

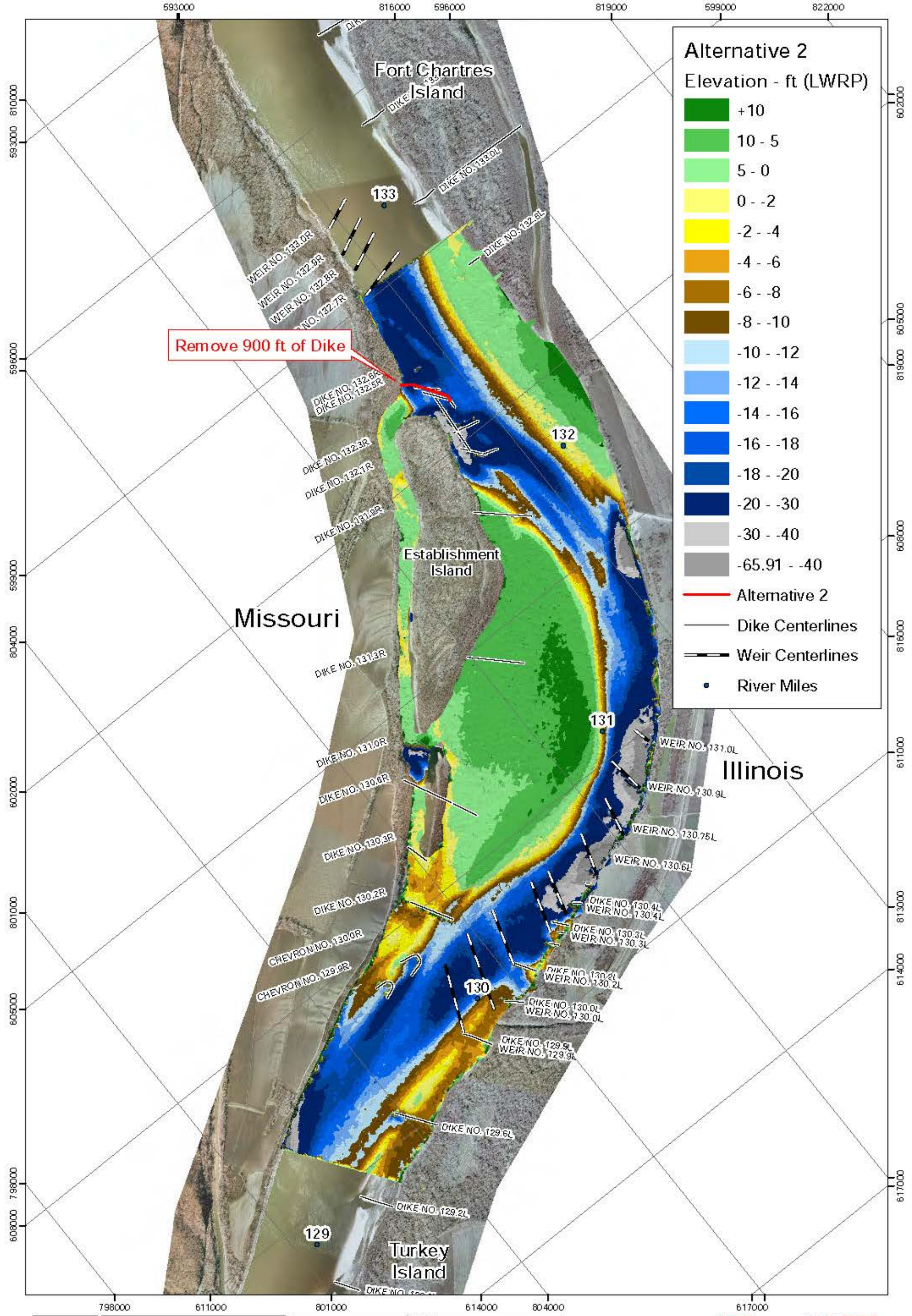
Establishment HSR Model



Replication Test
Elevation - ft (LWRP)

Dark Green	+10
Light Green	10 - 5
Yellow-Green	5 - 0
Yellow	0 - -2
Orange	-2 - -4
Dark Orange	-4 - -6
Brown	-6 - -8
Dark Brown	-8 - -10
Light Blue	-10 - -12
Blue	-12 - -14
Dark Blue	-14 - -16
Very Dark Blue	-16 - -18
Black	-18 - -20
Dark Grey	-20 - -30
Light Grey	-30 - -40
Dark Grey	-51.75 - -40

— Dike Centerlines
— Weir Centerlines
• River Miles



Remove 900 ft of Dike

Alternative 2

Elevation - ft (LWRP)

+10

10 - 5

5 - 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

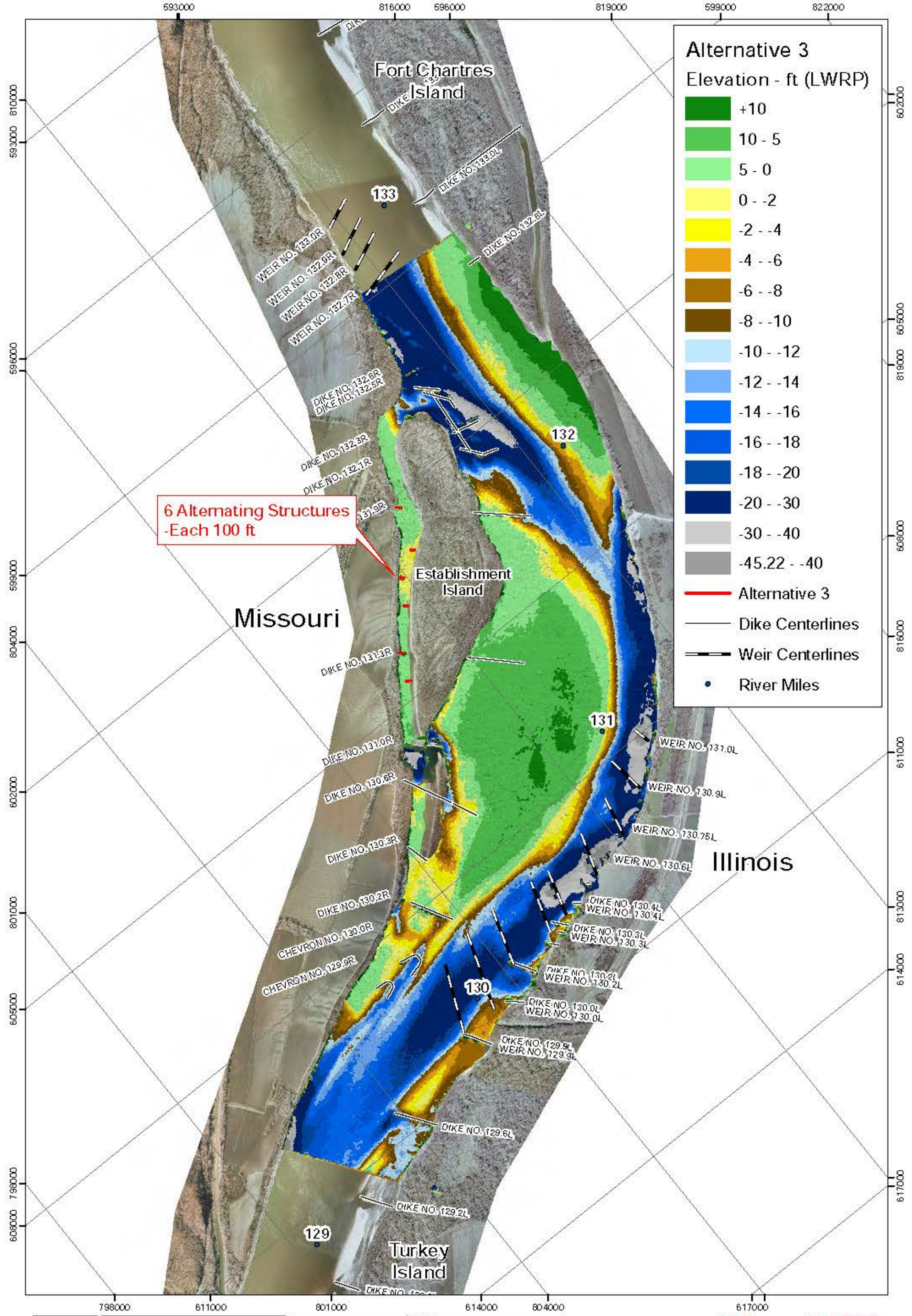
-65.91 - -40

Alternative 2

Dike Centerlines

Weir Centerlines

River Miles

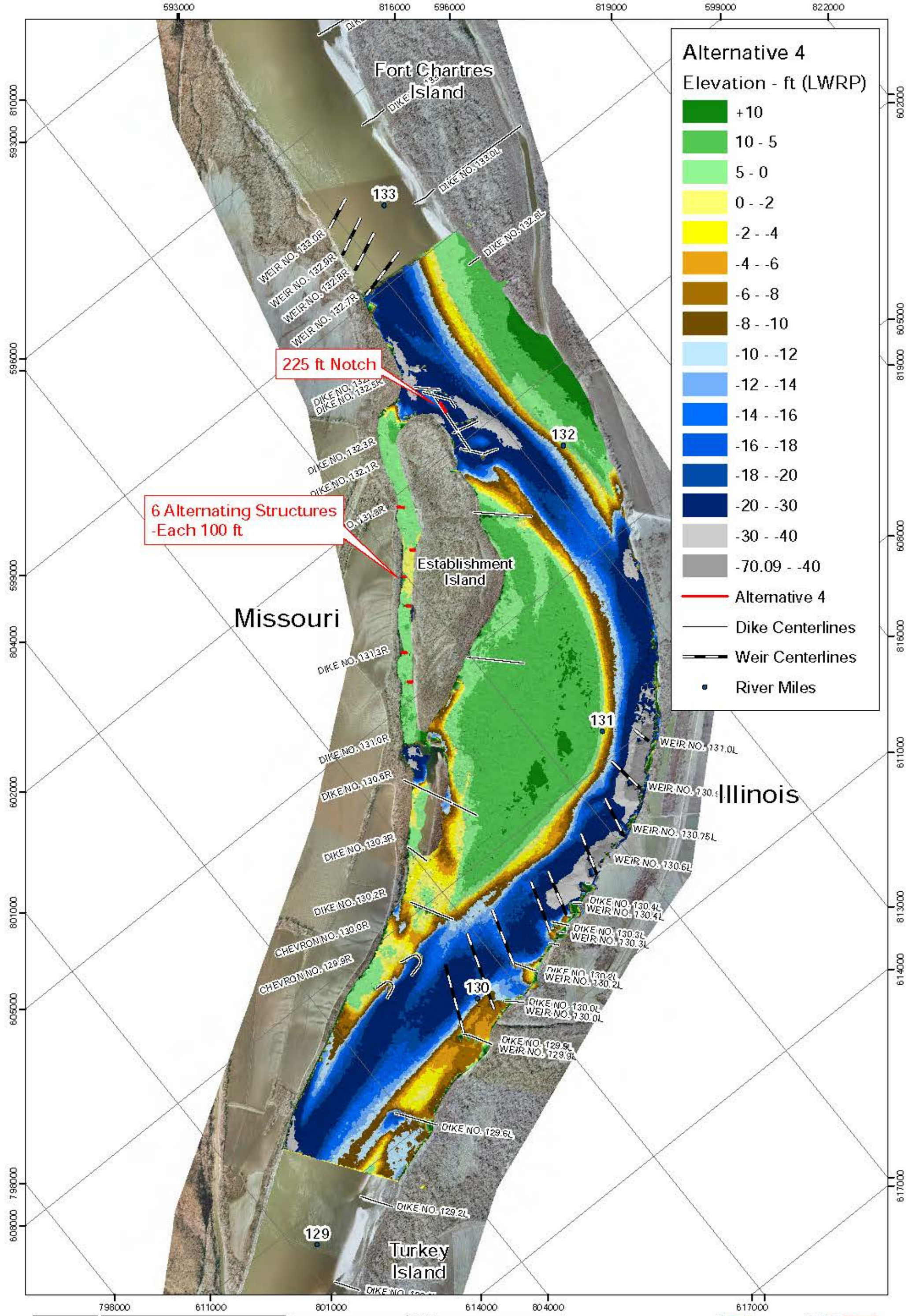


6 Alternating Structures
-Each 100 ft

Alternative 3
Elevation - ft (LWRP)

Dark Green	+10
Light Green	10 - 5
Yellow-Green	5 - 0
Yellow	0 - -2
Orange	-2 - -4
Dark Orange	-4 - -6
Brown	-6 - -8
Dark Brown	-8 - -10
Light Blue	-10 - -12
Medium Blue	-12 - -14
Dark Blue	-14 - -16
Very Dark Blue	-16 - -18
Black	-18 - -20
Dark Grey	-20 - -30
Light Grey	-30 - -40
Dark Grey	-45.22 - -40

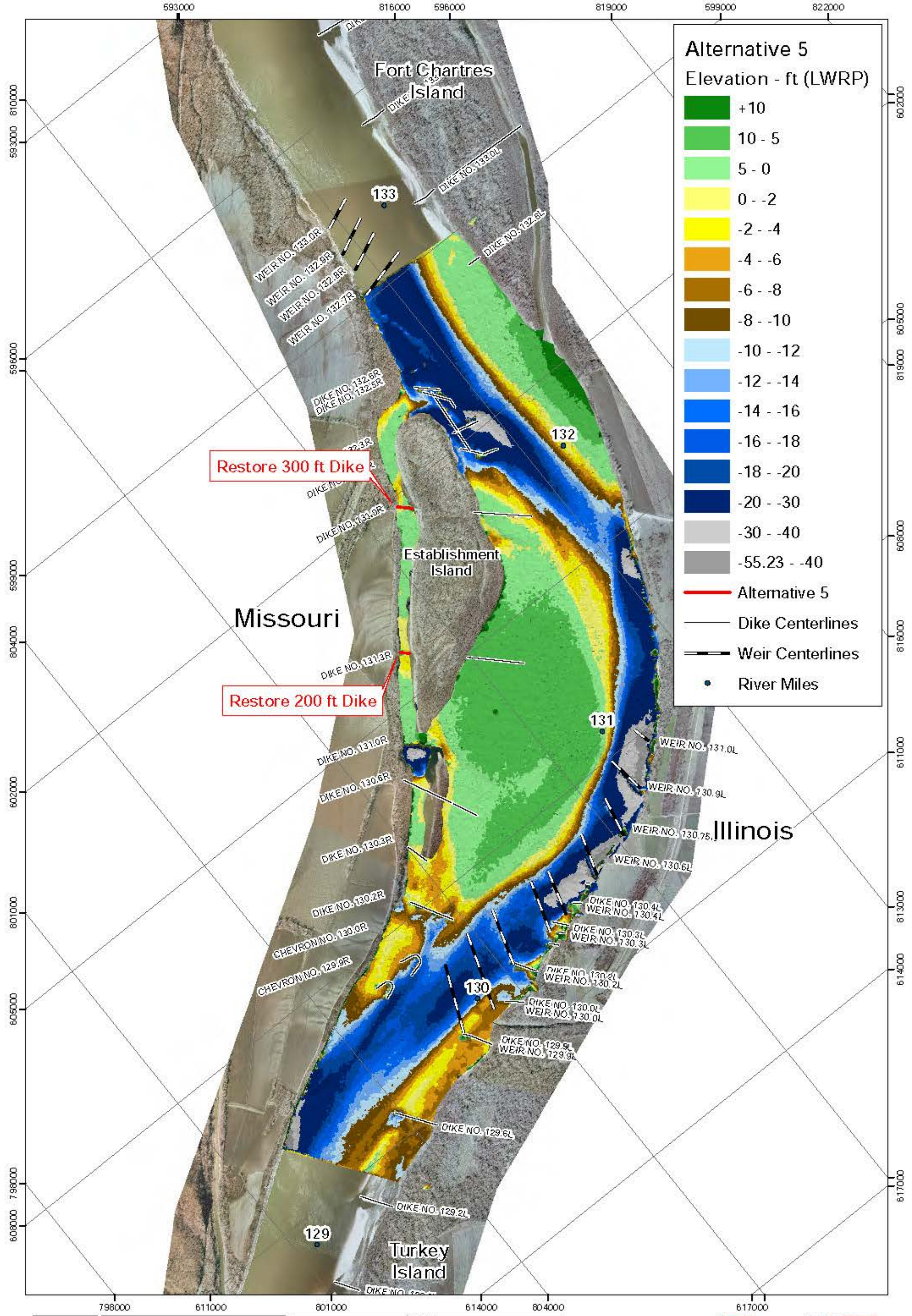
— Alternative 3
— Dike Centerlines
— Weir Centerlines
• River Miles



Alternative 4
Elevation - ft (LWRP)

Dark Green	+10
Light Green	10 - 5
Yellow-Green	5 - 0
Yellow	0 - -2
Orange	-2 - -4
Brown	-4 - -6
Dark Brown	-6 - -8
Dark Blue	-8 - -10
Light Blue	-10 - -12
Medium Blue	-12 - -14
Dark Blue	-14 - -16
Very Dark Blue	-16 - -18
Black	-18 - -20
Black	-20 - -30
Grey	-30 - -40
Dark Grey	-70.09 - -40

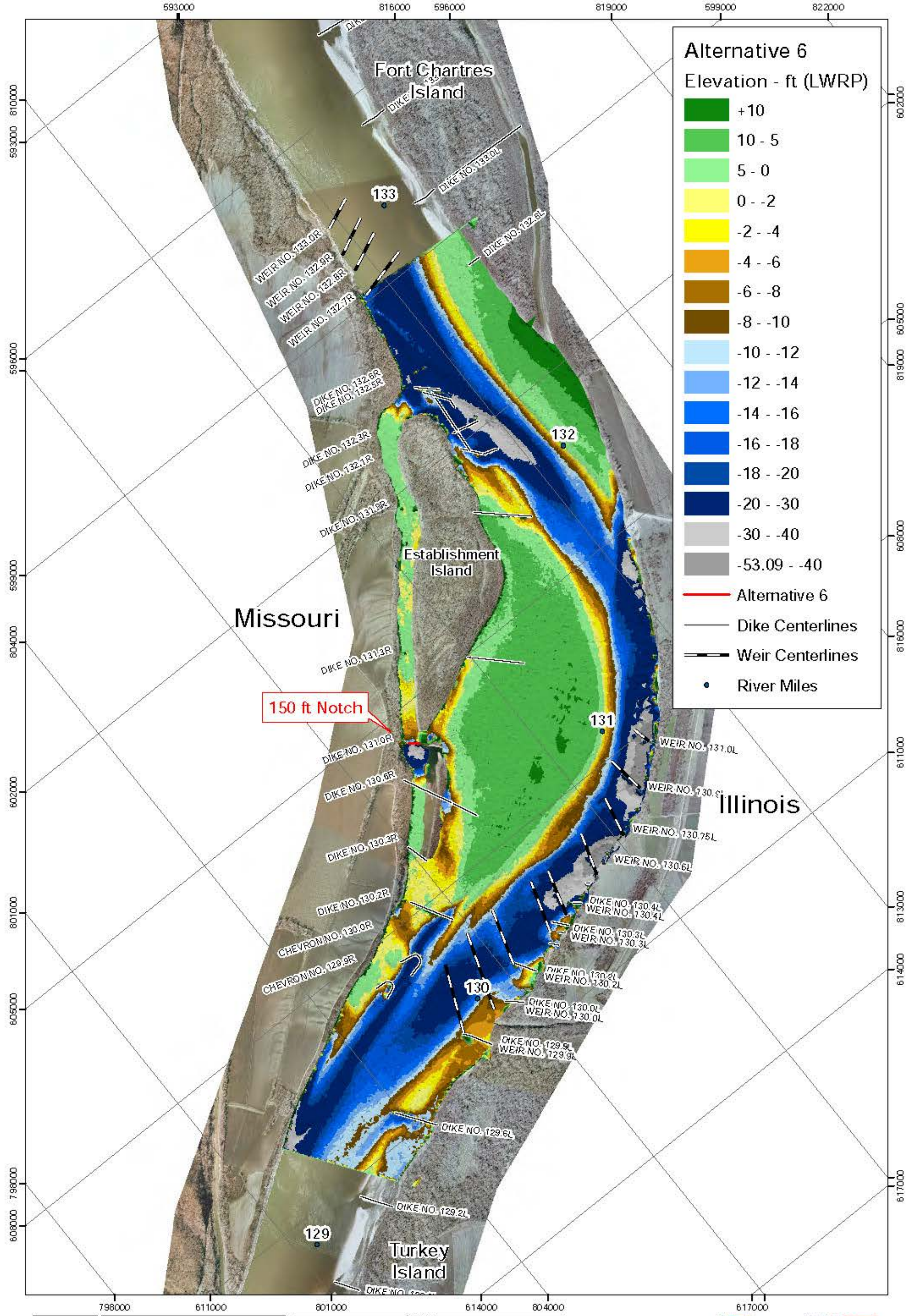
— Alternative 4
— Dike Centerlines
— Weir Centerlines
• River Miles



Alternative 5
Elevation - ft (LWRP)

Dark Green	+10
Light Green	10 - 5
Yellow-Green	5 - 0
Yellow	0 - -2
Orange	-2 - -4
Dark Orange	-4 - -6
Brown	-6 - -8
Dark Brown	-8 - -10
Light Blue	-10 - -12
Medium Blue	-12 - -14
Dark Blue	-14 - -16
Very Dark Blue	-16 - -18
Black	-18 - -20
Dark Grey	-20 - -30
Light Grey	-30 - -40
Dark Grey	-55.23 - -40

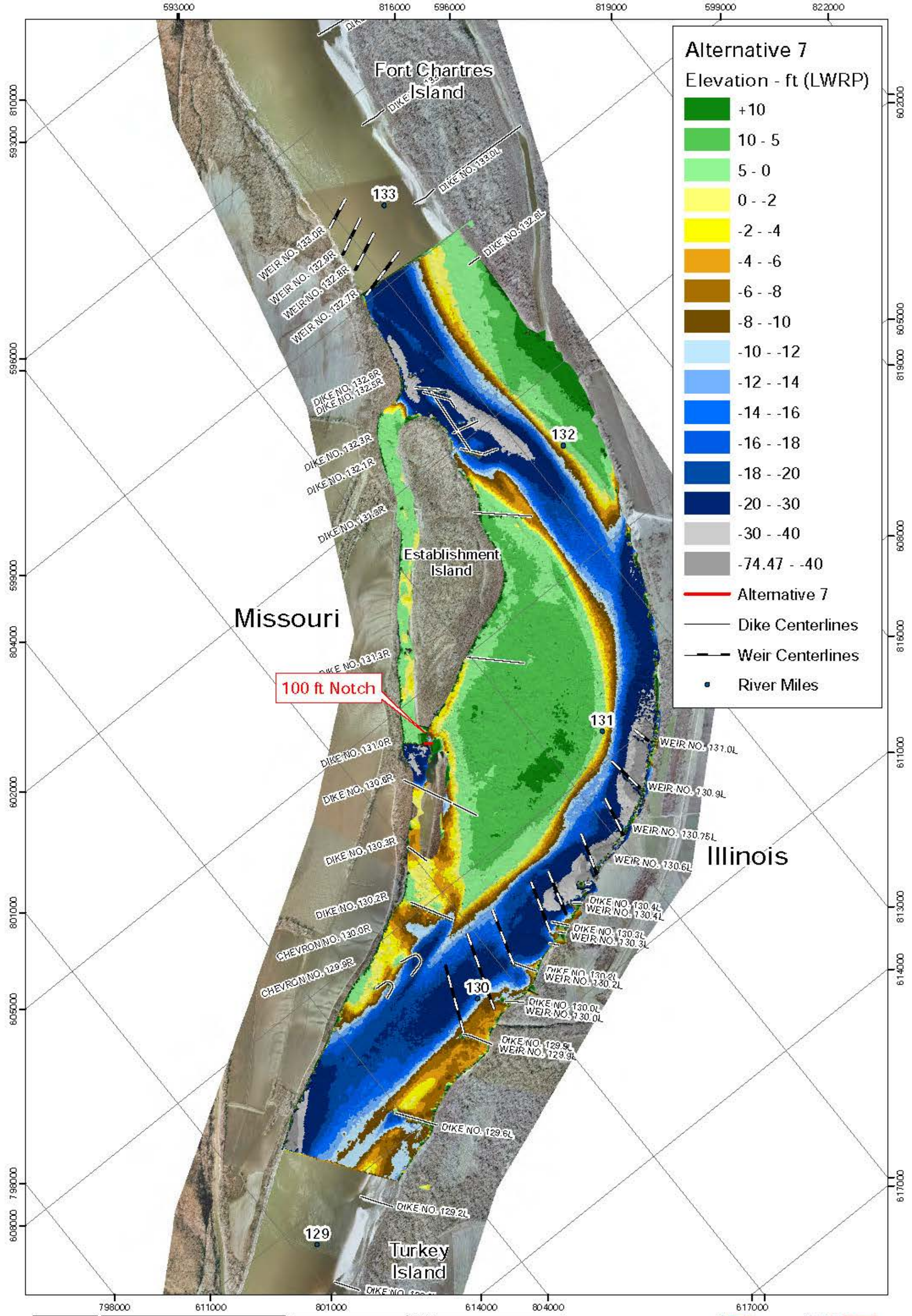
— Alternative 5
— Dike Centerlines
— Weir Centerlines
• River Miles



Alternative 6
Elevation - ft (LWRP)

Dark Green	+10
Light Green	10 - 5
Yellow-Green	5 - 0
Yellow	0 - -2
Orange	-2 - -4
Dark Orange	-4 - -6
Brown	-6 - -8
Dark Brown	-8 - -10
Light Blue	-10 - -12
Blue	-12 - -14
Dark Blue	-14 - -16
Very Dark Blue	-16 - -18
Black	-18 - -20
Dark Grey	-20 - -30
Light Grey	-30 - -40
Dark Grey	-53.09 - -40

— Alternative 6
— Dike Centerlines
— Weir Centerlines
• River Miles

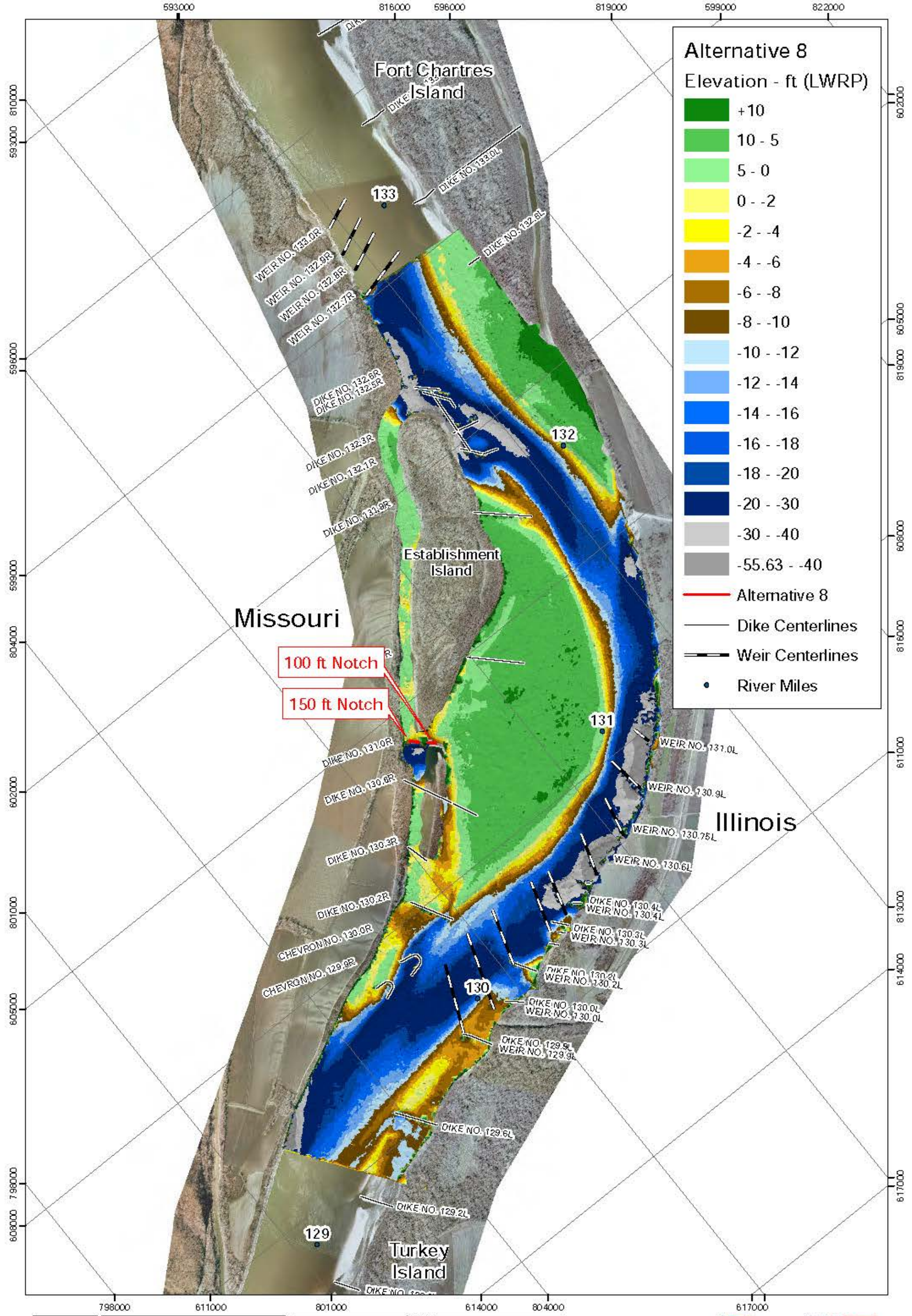


Alternative 7
Elevation - ft (LWRP)

Dark Green	+10
Light Green	10 - 5
Yellow-Green	5 - 0
Yellow	0 - -2
Orange	-2 - -4
Dark Orange	-4 - -6
Brown	-6 - -8
Dark Brown	-8 - -10
Light Blue	-10 - -12
Blue	-12 - -14
Dark Blue	-14 - -16
Very Dark Blue	-16 - -18
Dark Blue	-18 - -20
Dark Blue	-20 - -30
Grey	-30 - -40
Dark Grey	-74.47 - -40

— Alternative 7
— Dike Centerlines
— Weir Centerlines
• River Miles

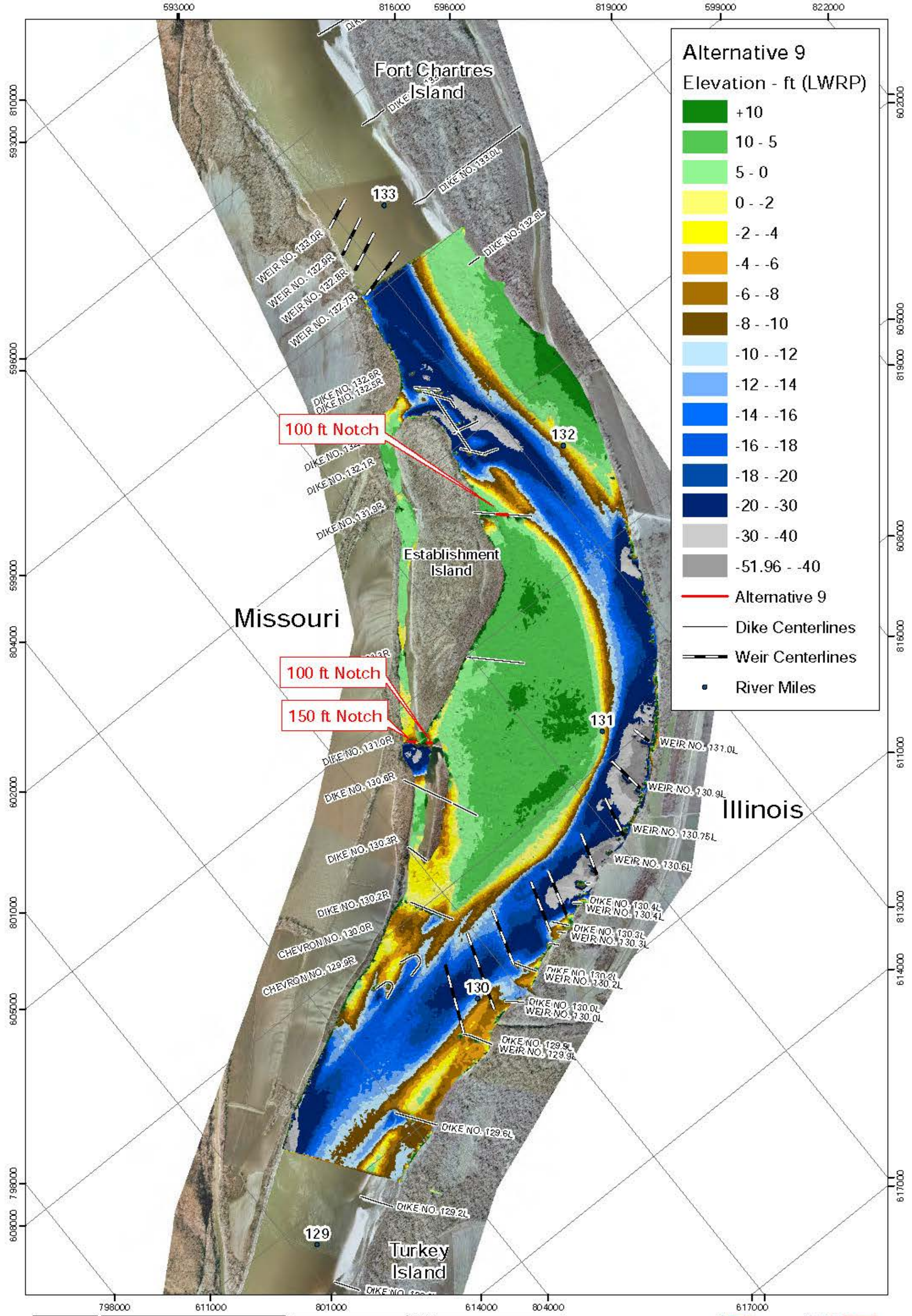




Alternative 8
Elevation - ft (LWRP)

Dark Green	+10
Light Green	10 - 5
Yellow-Green	5 - 0
Yellow	0 - -2
Orange	-2 - -4
Dark Orange	-4 - -6
Brown	-6 - -8
Dark Brown	-8 - -10
Light Blue	-10 - -12
Blue	-12 - -14
Dark Blue	-14 - -16
Very Dark Blue	-16 - -18
Dark Blue	-18 - -20
Dark Blue	-20 - -30
Grey	-30 - -40
Dark Grey	-55.63 - -40

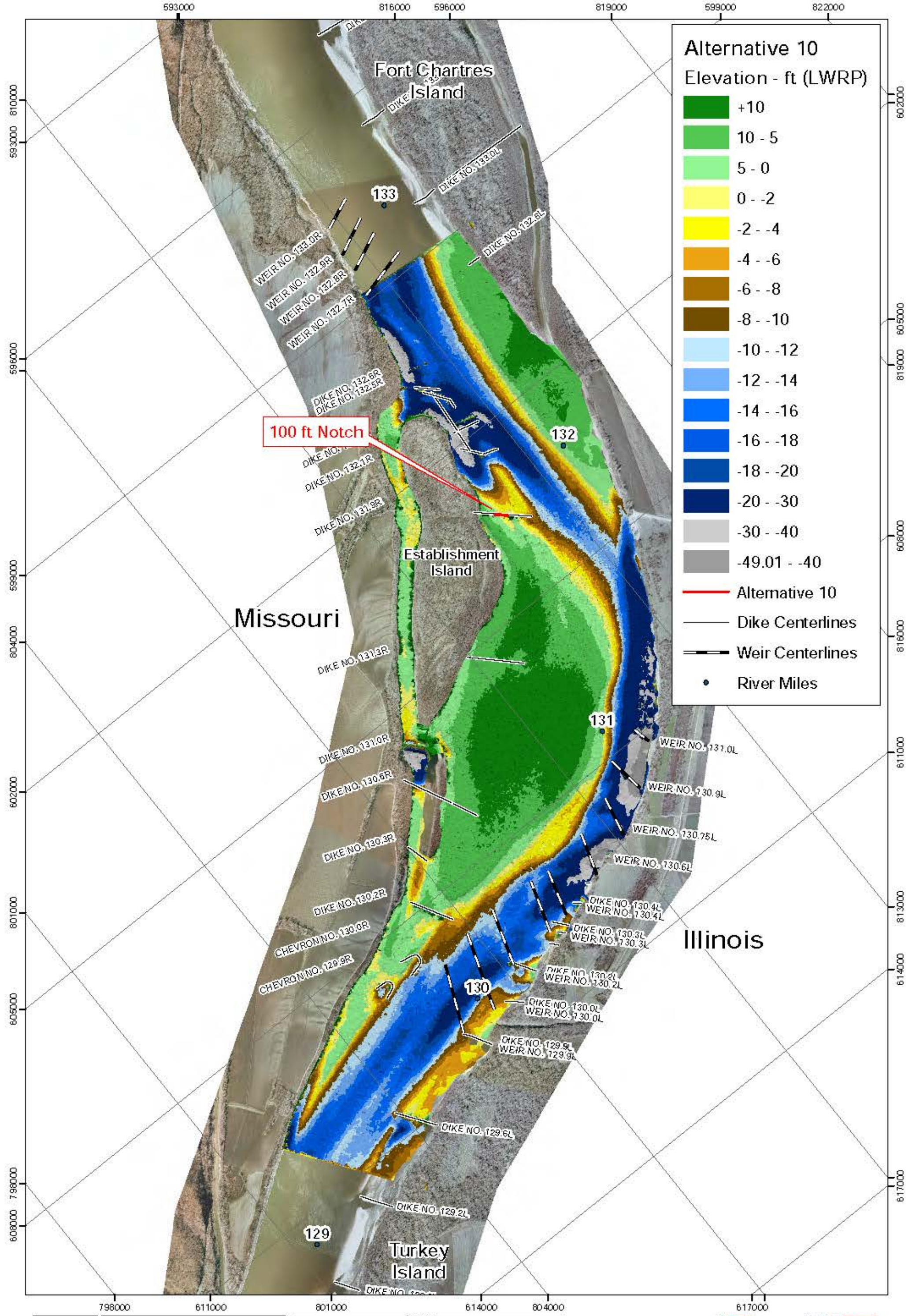
— Alternative 8
— Dike Centerlines
— Weir Centerlines
• River Miles

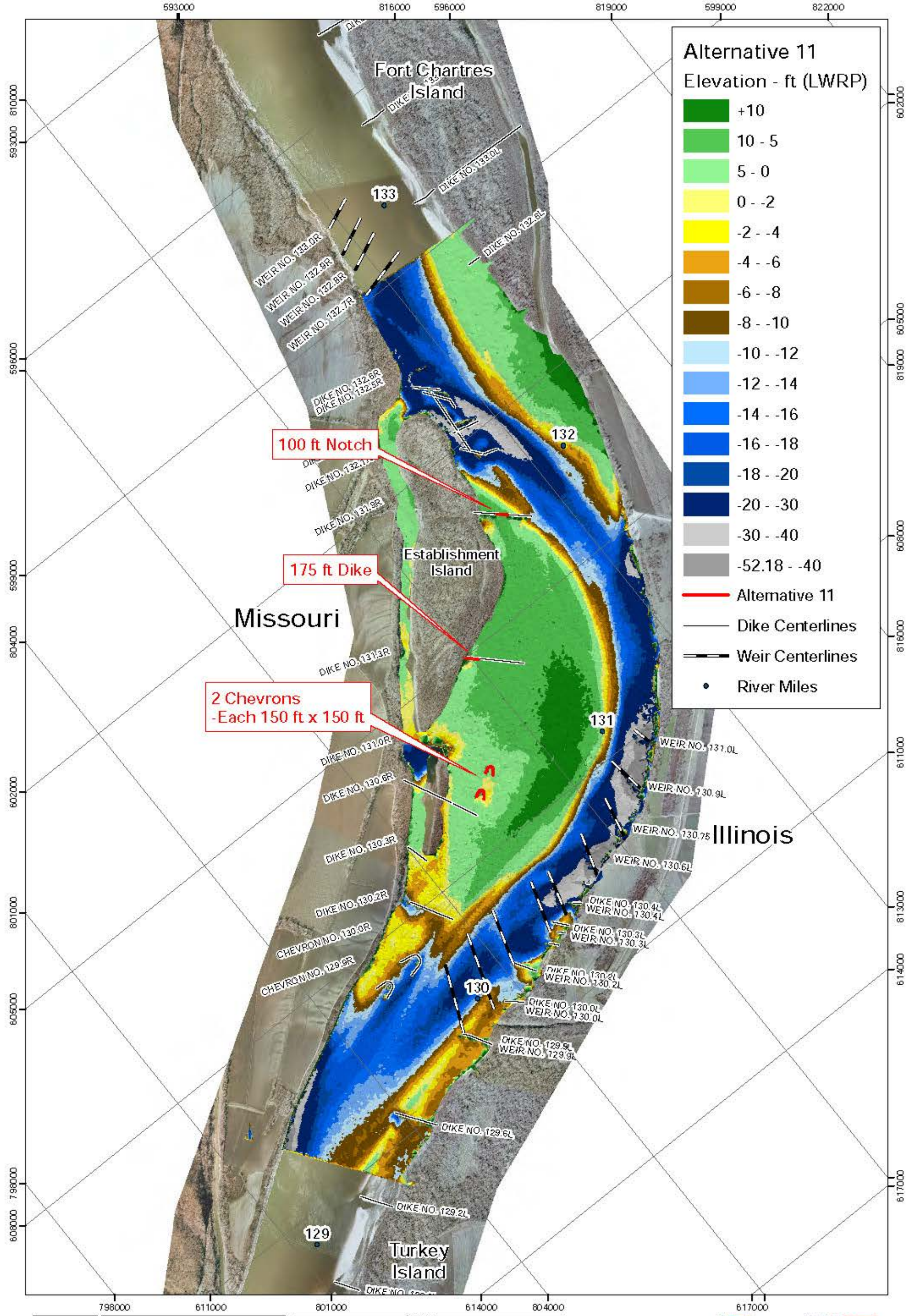


Alternative 9
Elevation - ft (LWRP)

Dark Green	+10
Light Green	10 - 5
Yellow-Green	5 - 0
Yellow	0 - -2
Orange	-2 - -4
Dark Orange	-4 - -6
Brown	-6 - -8
Dark Brown	-8 - -10
Light Blue	-10 - -12
Medium Blue	-12 - -14
Dark Blue	-14 - -16
Very Dark Blue	-16 - -18
Black	-18 - -20
Dark Grey	-20 - -30
Light Grey	-30 - -40
Dark Grey	-51.96 - -40

— Alternative 9
— Dike Centerlines
— Weir Centerlines
• River Miles





Alternative 11
Elevation - ft (LWRP)

Dark Green	+10
Light Green	10 - 5
Yellow-Green	5 - 0
Yellow	0 - -2
Orange	-2 - -4
Dark Orange	-4 - -6
Brown	-6 - -8
Dark Brown	-8 - -10
Light Blue	-10 - -12
Blue	-12 - -14
Dark Blue	-14 - -16
Very Dark Blue	-16 - -18
Dark Blue-Black	-18 - -20
Black	-20 - -30
Grey	-30 - -40
Dark Grey	-52.18 - -40

— Alternative 11
— Dike Centerlines
= Weir Centerlines
• River Miles

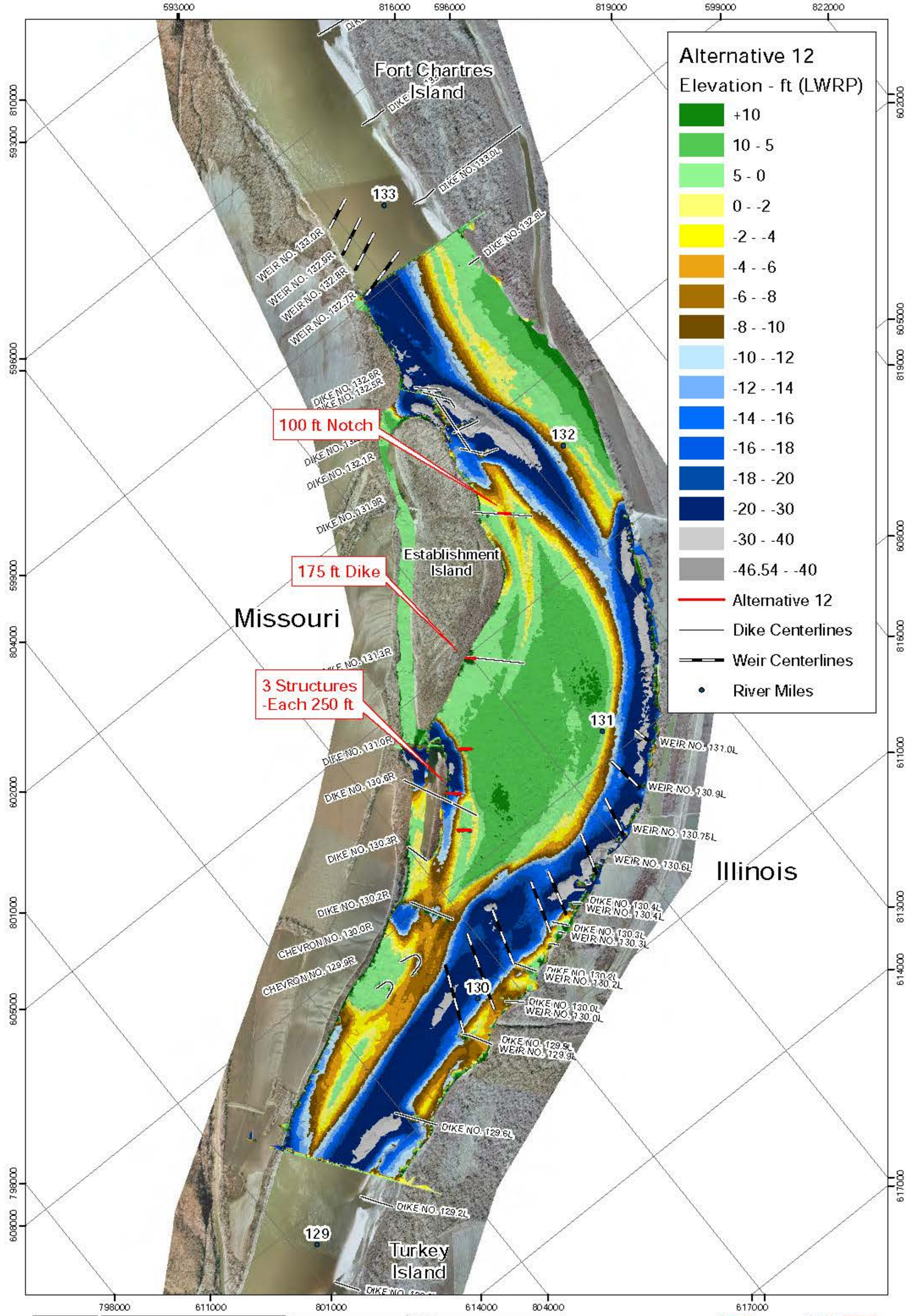
PLATE
NUMBER
30

0 750 1,500 3,000
Foot

Alternative 11
2006 Aerial Photograph

U.S. ARMY ENGINEER DIVISION CORPS OF ENGINEERS ST. LOUIS, MISSOURI			DESIGNED BY B Erischel		
			DESIGNED BY B Erischel	DESIGNED BY A Cox	DESIGNED BY J Brown, PE.
UPPER MISSISSIPPI RIVER BASIN Establishment Creek HSR Model River Miles 134.0-139.0			SUBMITTED BY B Erischel		APPROVED BY R Davison, PE.
			FOR NAME U.S. Project 134.0-139.0 Establishment Creek HSR Model		RUN DATE 11/17/2022

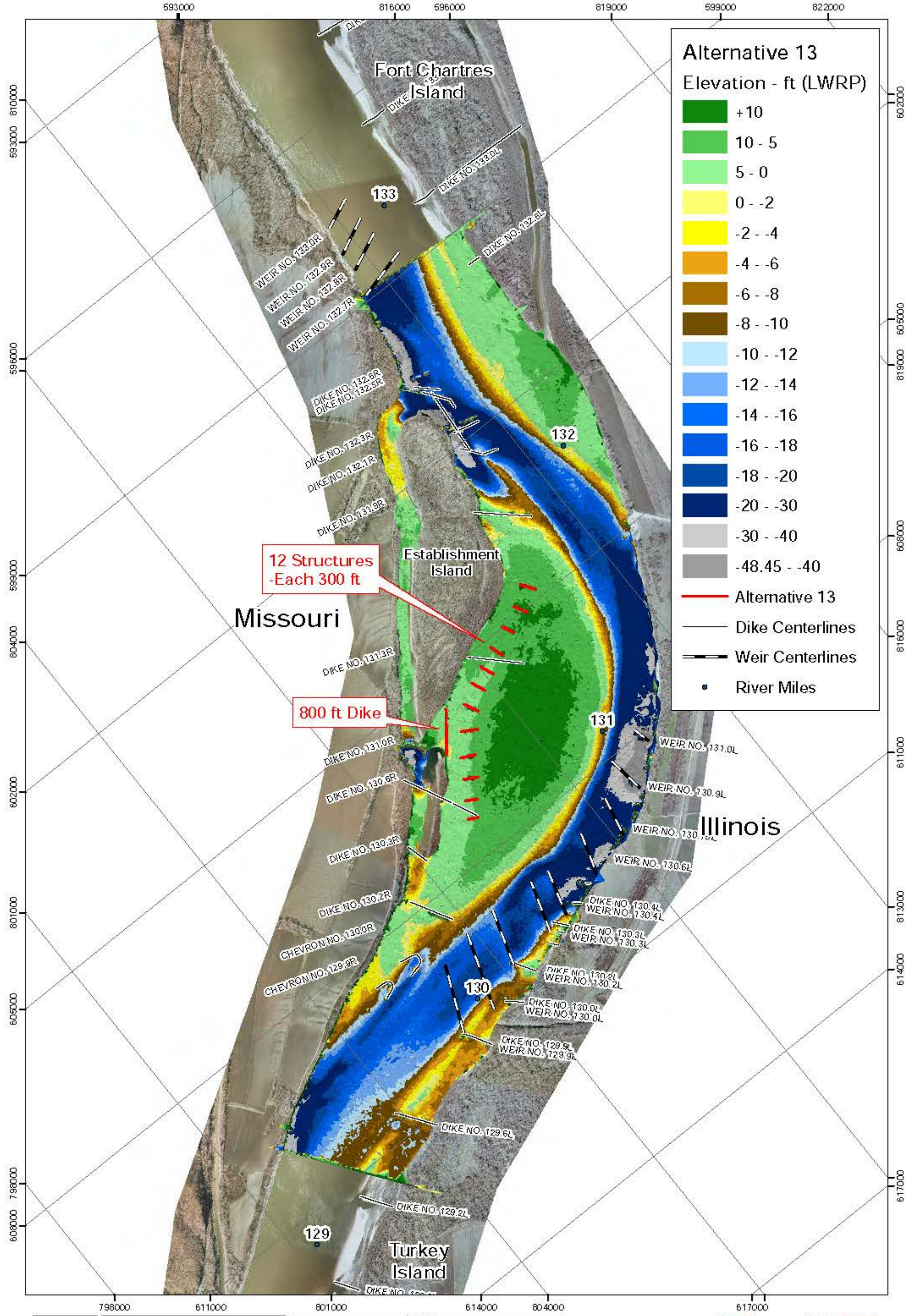




Alternative 12
Elevation - ft (LWRP)

Dark Green	+10
Light Green	10 - 5
Yellow-Green	5 - 0
Yellow	0 - -2
Orange	-2 - -4
Dark Orange	-4 - -6
Brown	-6 - -8
Dark Brown	-8 - -10
Light Blue	-10 - -12
Blue	-12 - -14
Dark Blue	-14 - -16
Very Dark Blue	-16 - -18
Dark Blue	-18 - -20
Dark Blue	-20 - -30
Grey	-30 - -40
Dark Grey	-46.54 - -40

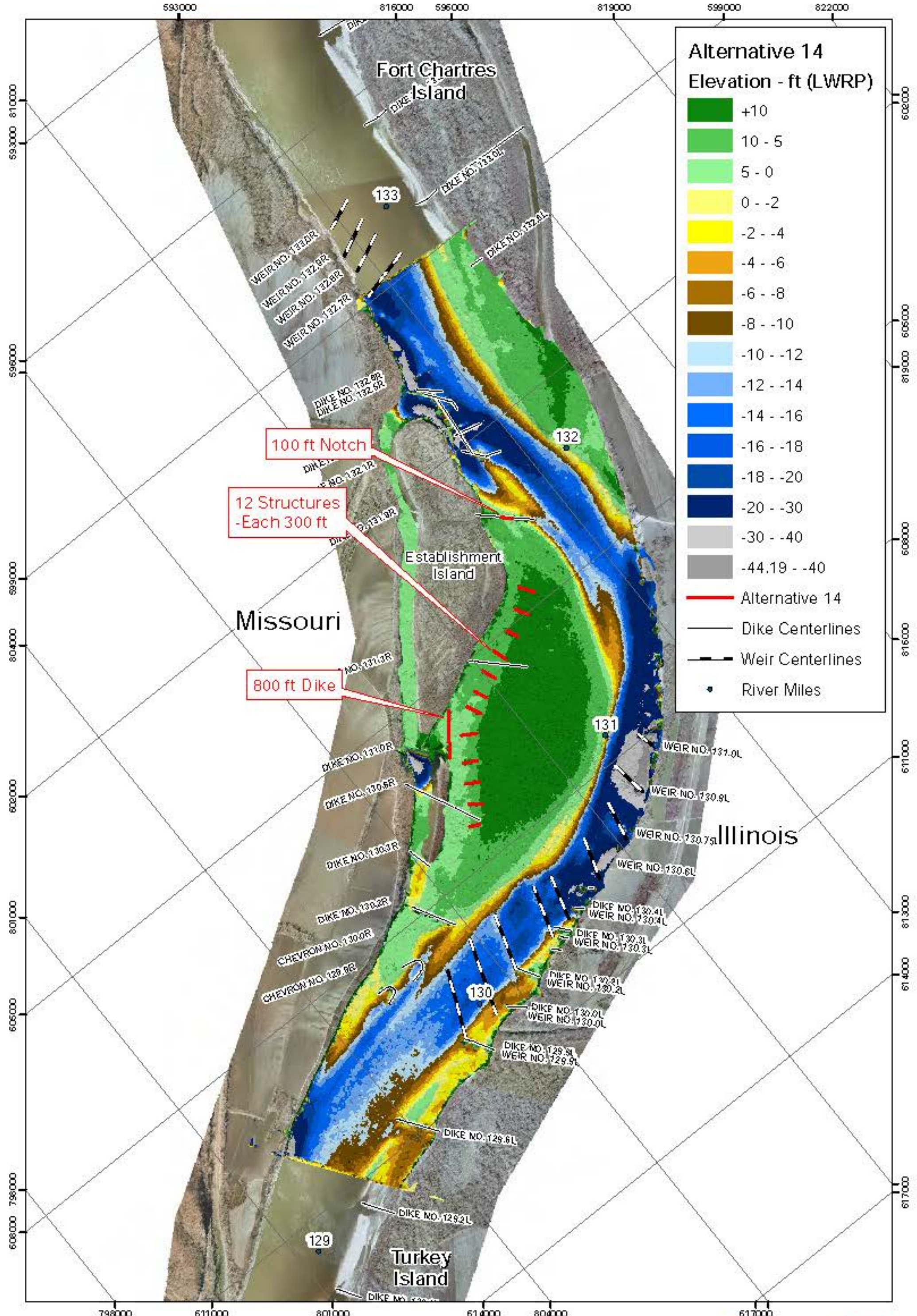
— Alternative 12
— Dike Centerlines
— Weir Centerlines
• River Miles



Alternative 13
Elevation - ft (LWRP)

Dark Green	+10
Light Green	10 - 5
Yellow-Green	5 - 0
Yellow	0 - -2
Orange	-2 - -4
Dark Orange	-4 - -6
Brown	-6 - -8
Dark Brown	-8 - -10
Light Blue	-10 - -12
Blue	-12 - -14
Dark Blue	-14 - -16
Very Dark Blue	-16 - -18
Black	-18 - -20
Dark Grey	-20 - -30
Light Grey	-30 - -40
Dark Grey	-48.45 - -40

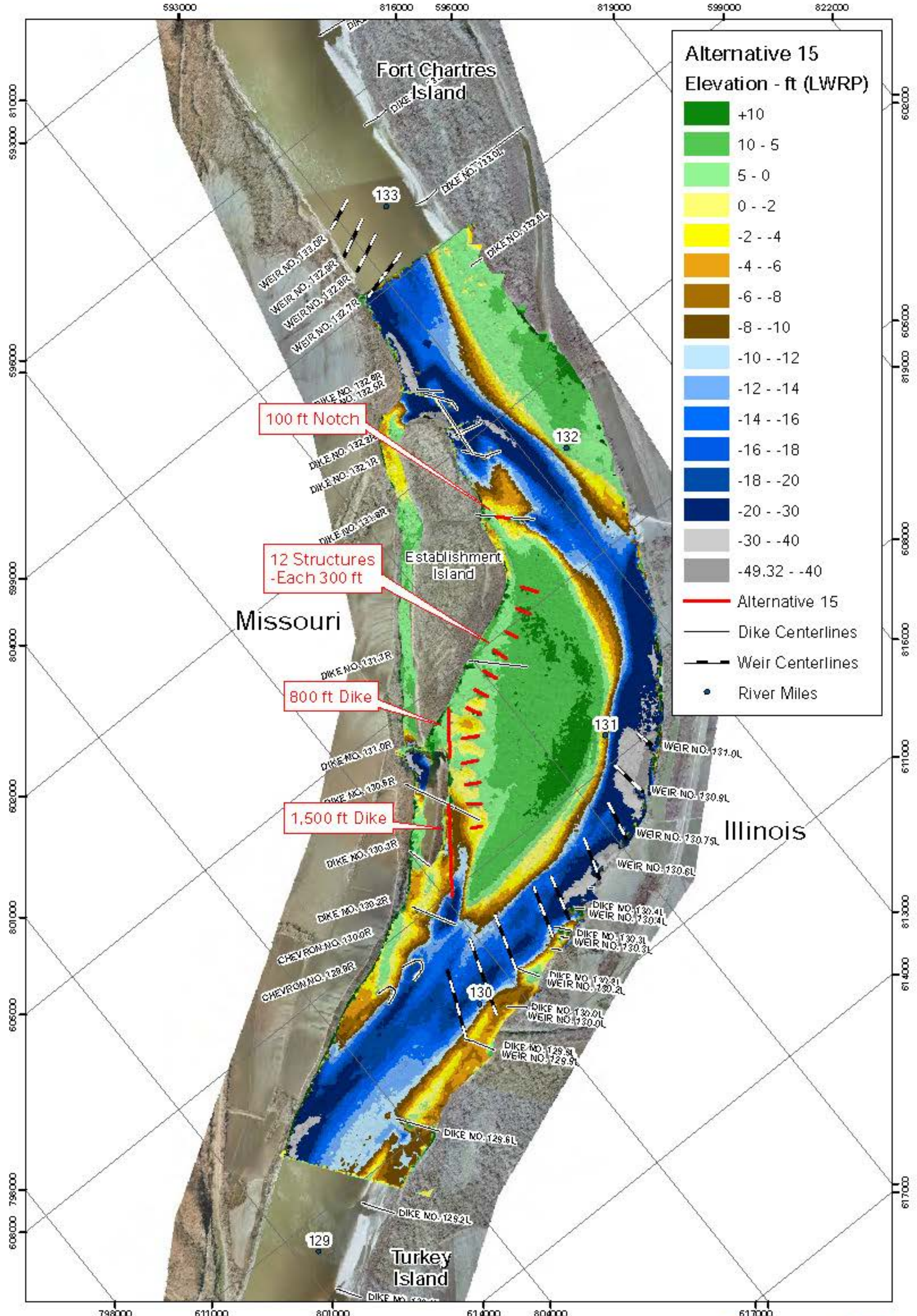
— Alternative 13
— Dike Centerlines
— Weir Centerlines
• River Miles



Alternative 14
Elevation - ft (LWRP)

Dark Green	+10
Light Green	10 - 5
Yellow-Green	5 - 0
Yellow	0 - -2
Orange	-2 - -4
Dark Orange	-4 - -6
Brown	-6 - -8
Dark Brown	-8 - -10
Light Blue	-10 - -12
Blue	-12 - -14
Dark Blue	-14 - -16
Very Dark Blue	-16 - -18
Dark Blue	-18 - -20
Dark Blue	-20 - -30
Grey	-30 - -40
Dark Grey	-44.19 - -40

— Alternative 14
— DiKE Centerlines
- - - Weir Centerlines
• River Miles



Alternative 15
Elevation - ft (LWRP)

Dark Green	+10
Light Green	10 - 5
Yellow-Green	5 - 0
Yellow	0 - -2
Orange	-2 - -4
Dark Orange	-4 - -6
Brown	-6 - -8
Dark Brown	-8 - -10
Light Blue	-10 - -12
Blue	-12 - -14
Dark Blue	-14 - -16
Very Dark Blue	-16 - -18
Dark Blue	-18 - -20
Dark Blue	-20 - -30
Grey	-30 - -40
Dark Grey	-49.32 - -40

— Alternative 15
— Dike Centerlines
— Weir Centerlines
• River Miles

PLATE
NUMBER
34

0 750 1,500 3,000
Feet

Alternative 15
2006 Aerial Photograph

U.S. ARMY ENGINEER DIVISION CORPS OF ENGINEERS ST. LOUIS, MISSOURI		
DESIGNED BY S. Rissdorf	DESIGNED BY S. Rissdorf	DESIGNED BY J. Brown, R.E.
APPROVED BY S. Rissdorf	APPROVED BY S. Rissdorf	APPROVED BY S. Rissdorf
SUPERVISOR S. Rissdorf		
PROJECT NO. 617000		
PROJECT NAME Mississippi River Basin		
PROJECT LOCATION St. Louis, Missouri		
PROJECT DATE 12-0-12		



