APPENDIX E.1:
SEPTEMBER 1993 EVENT INUNDATION MAPS

Downstream Model Results Overview Map

Pensacola Dam

GRAND RIVER DAM AUTHORITY

Date: August 2021

Overview Map Legend

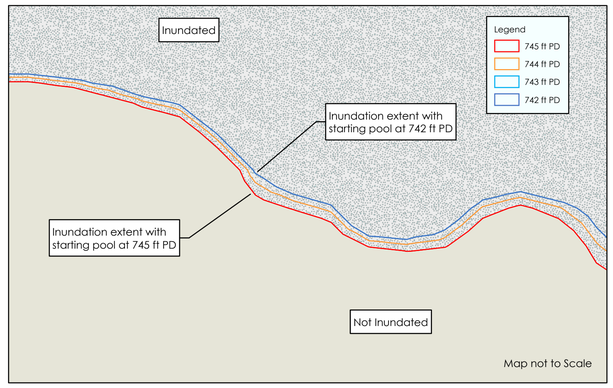
- 1:24,000-scale Map Sheet
- County Boundary
- Municipality
- Unincorporated

Road Class

- Interstate
- US Highway

Inundation Scenario Mapping

Mapping shows the extent of inundation for the selected hydraulic event under different starting pool elevations at Pensacola Dam: 742 ft PD, 743 ft PD, 744 ft PD, and 745 ft PD.



0 0.75 1.5 3 4.5 6 Miles

NORTH

Map Notes

Data Sources for Maps:

1. Base map images from https://gis.apfo.usda.gov/arcgis/services/NAIP/USDA_CONUS_PRIME/ImageServer, 2019.
2. Transportation network (major roads, local roads, and railroads) and county boundaries obtained from the Oklahoma Office of Geographic Information (http://okmaps.org/ogi/search.aspx).

Map Source: Esri, NASA, NGA, USGS, FEMA, Missouri Dept. of Conservation, Missouri DNR, Texas Parks & Wildlife, Esri, HERE, Garmin, SafeGraph, METI/NASA, USGS, EPA, NPS, USDA

Big Cabin Creek

S 4400 Rd

S 4420 Rd

S 4430 Rd

E 330 Rd

E 340 Rd

E 345 Rd

E 360 Rd

Craig Co

Mayes Co

Granny Branch

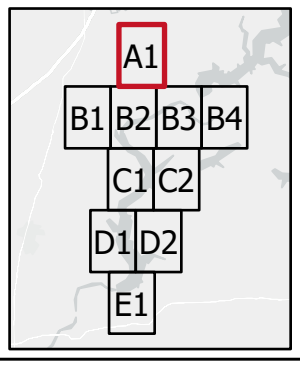
B2 B2 B3

SEPTEMBER 1993 INUNDATION SCENARIO

NORTH

0 500 1,000 2,000 3,000 4,000 Feet

1 inch = 2,000 feet



Legend

SEP 1993 MAX INUNDATION

- 745 ft PD
- 744 ft PD
- 743 ft PD
- 742 ft PD

ROAD CLASS

- Interstate
- State Highway
- US Highway
- Major Collector
- Local Road

- Stream
- Project Boundary
- County Boundary
- Municipal Boundary

LEGEND NOTES

* For areas where only the highest starting elevation inundation boundary is visible, the inundation from the other starting elevations is nearly identical.

PENSACOLA DAM
DOWNSTREAM HYDRAULIC MODEL

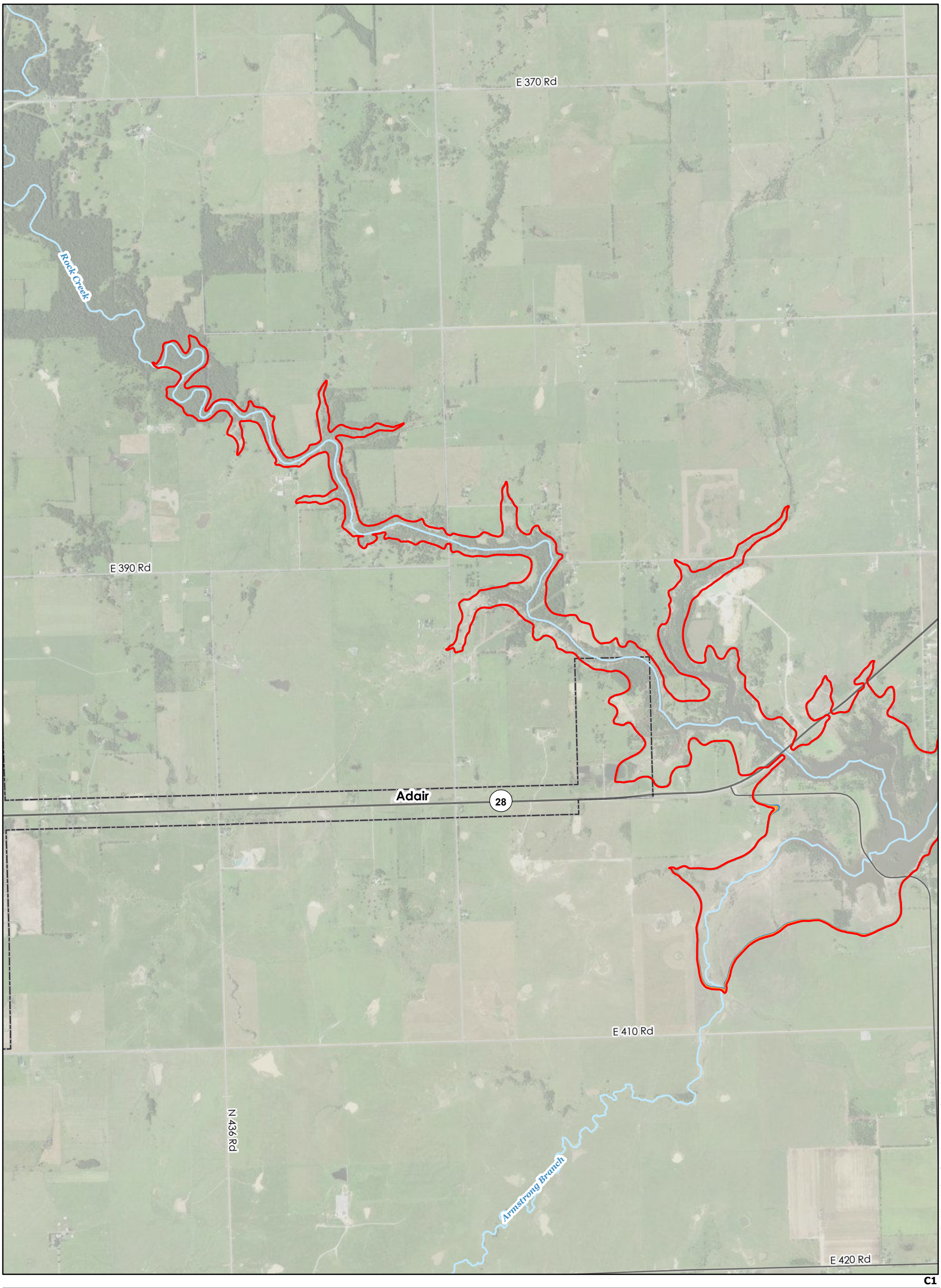
GRAND RIVER DAM AUTHORITY

MAP: A1

CRAIG, DELAWARE, AND MAYES COUNTIES, OKLAHOMA

FERC No. 1494

August 2021

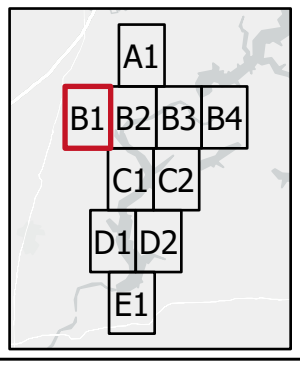


SEPTEMBER 1993 INUNDATION SCENARIO

NORTH

0 500 1,000 2,000 3,000 4,000 Feet

1 inch = 2,000 feet



Legend

SEP 1993 MAX INUNDATION

- 745 ft PD
- 744 ft PD
- 743 ft PD
- 742 ft PD

ROAD CLASS

- Interstate
- State Highway
- US Highway
- Major Collector
- Local Road

- Stream
- Project Boundary
- County Boundary
- Municipal Boundary

LEGEND NOTES

* For areas where only the highest starting elevation inundation boundary is visible, the inundation from the other starting elevations is nearly identical.

PENSACOLA DAM
DOWNSTREAM HYDRAULIC MODEL

GRAND RIVER DAM AUTHORITY

MAP: B1

CRAIG, DELAWARE, AND MAYES COUNTIES, OKLAHOMA

FERC No. 1494

August 2021

A1 A1

B1 B3

C1 C1 C2

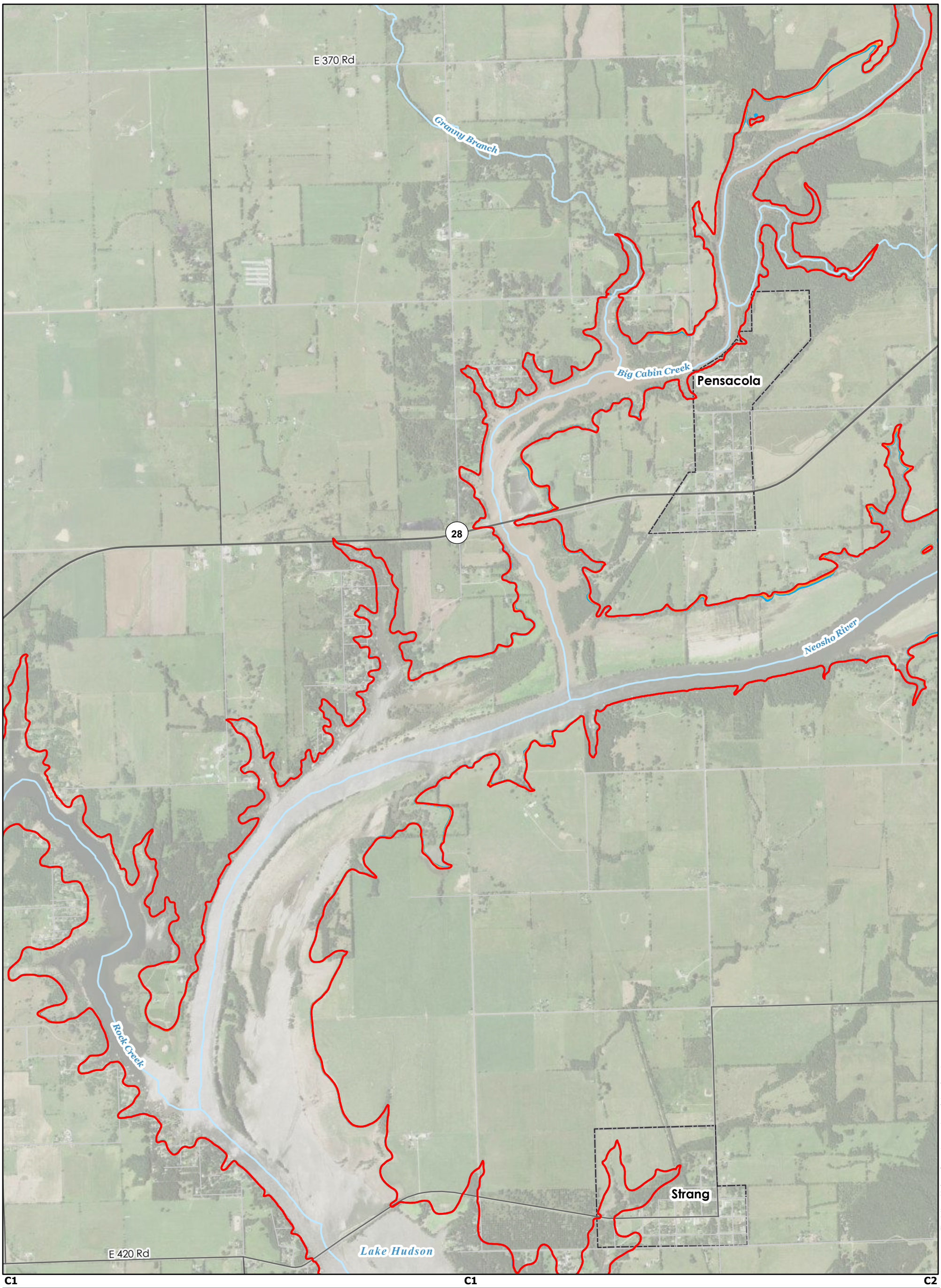


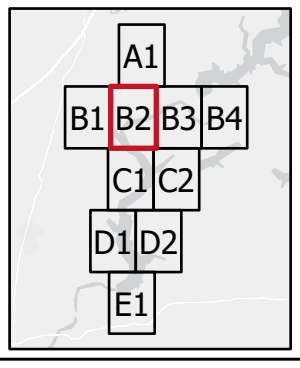
Image credits: https://gis.apfo.usda.gov/arcgis/services/NAIP/USDA_CONUS_PRIME/ImageServer, 2019

SEPTEMBER 1993 INUNDATION SCENARIO

NORTH

0 500 1,000 2,000 3,000 4,000 Feet

1 inch = 2,000 feet



Legend

SEP 1993 MAX INUNDATION
- 745 ft PD
- 744 ft PD
- 743 ft PD
- 742 ft PD

ROAD CLASS
- Interstate
- State Highway
- US Highway
- Major Collector
- Local Road

- Stream
- Project Boundary
- County Boundary
- Municipal Boundary

LEGEND NOTES

* For areas where only the highest starting elevation inundation boundary is visible, the inundation from the other starting elevations is nearly identical.

PENSACOLA DAM
DOWNSTREAM HYDRAULIC MODEL

GRAND RIVER DAM AUTHORITY

MAP: B2

CRAIG, DELAWARE, AND MAYES COUNTIES, OKLAHOMA

FERC No. 1494

August 2021

A1

B2

B4

C2

C2

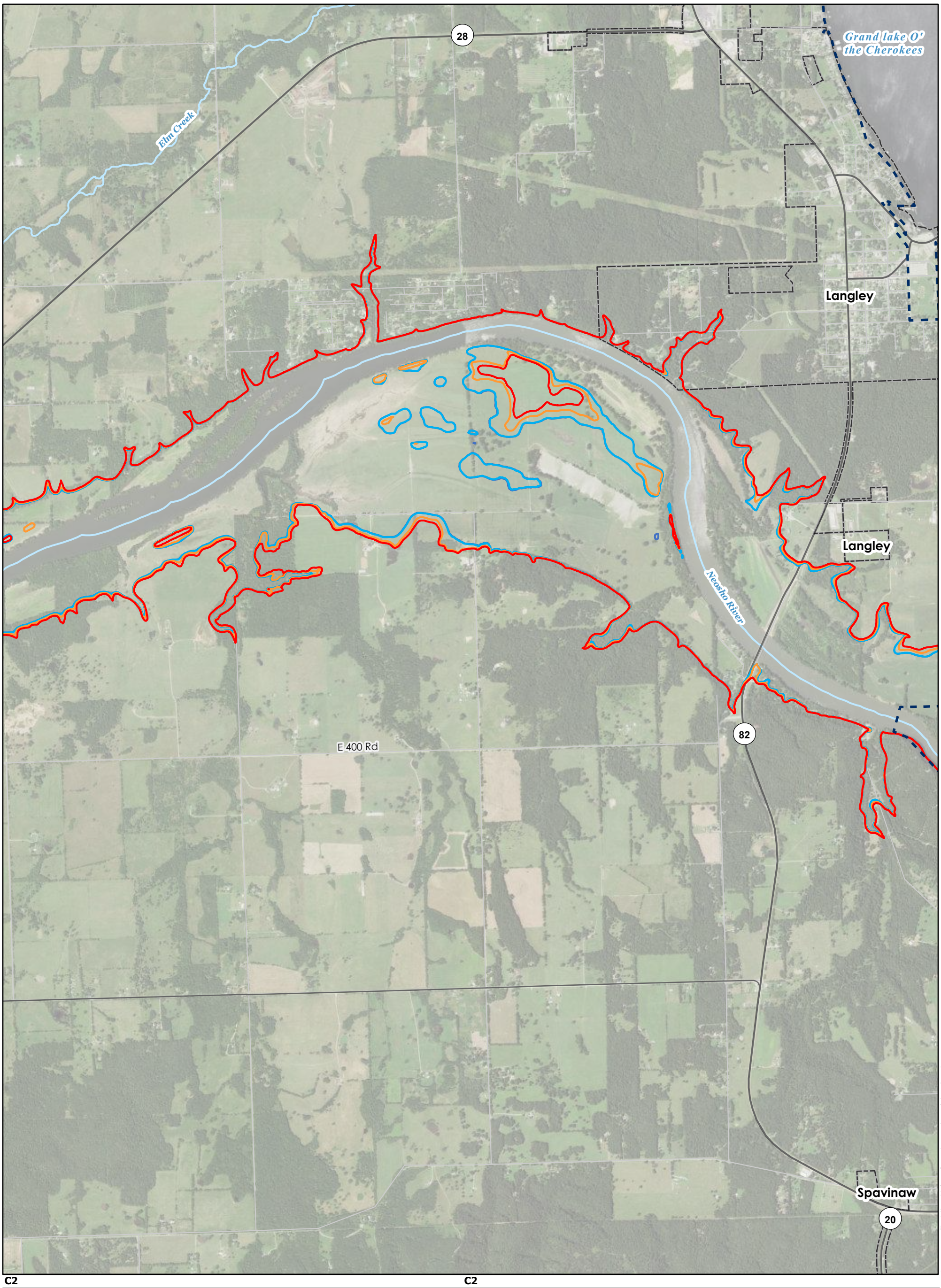


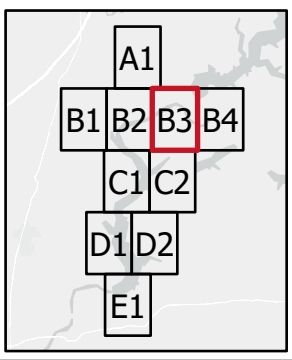
Image credits: https://gis.apfo.usda.gov/arcgis/services/NAIP/USDA_CONUS_PRIME/ImageServer, 2019

SEPTEMBER 1993 INUNDATION SCENARIO

NORTH

0 500 1,000 2,000 3,000 4,000 Feet

1 inch = 2,000 feet



Legend

SEP 1993 MAX INUNDATION

- 745 ft PD
- 744 ft PD
- 743 ft PD
- 742 ft PD

ROAD CLASS

- Interstate
- State Highway
- US Highway
- Major Collector
- Local Road
- Stream
- Project Boundary
- County Boundary
- Municipal Boundary

LEGEND NOTES

* For areas where only the highest starting elevation inundation boundary is visible, the inundation from the other starting elevations is nearly identical.

PENSACOLA DAM
DOWNSTREAM HYDRAULIC MODEL

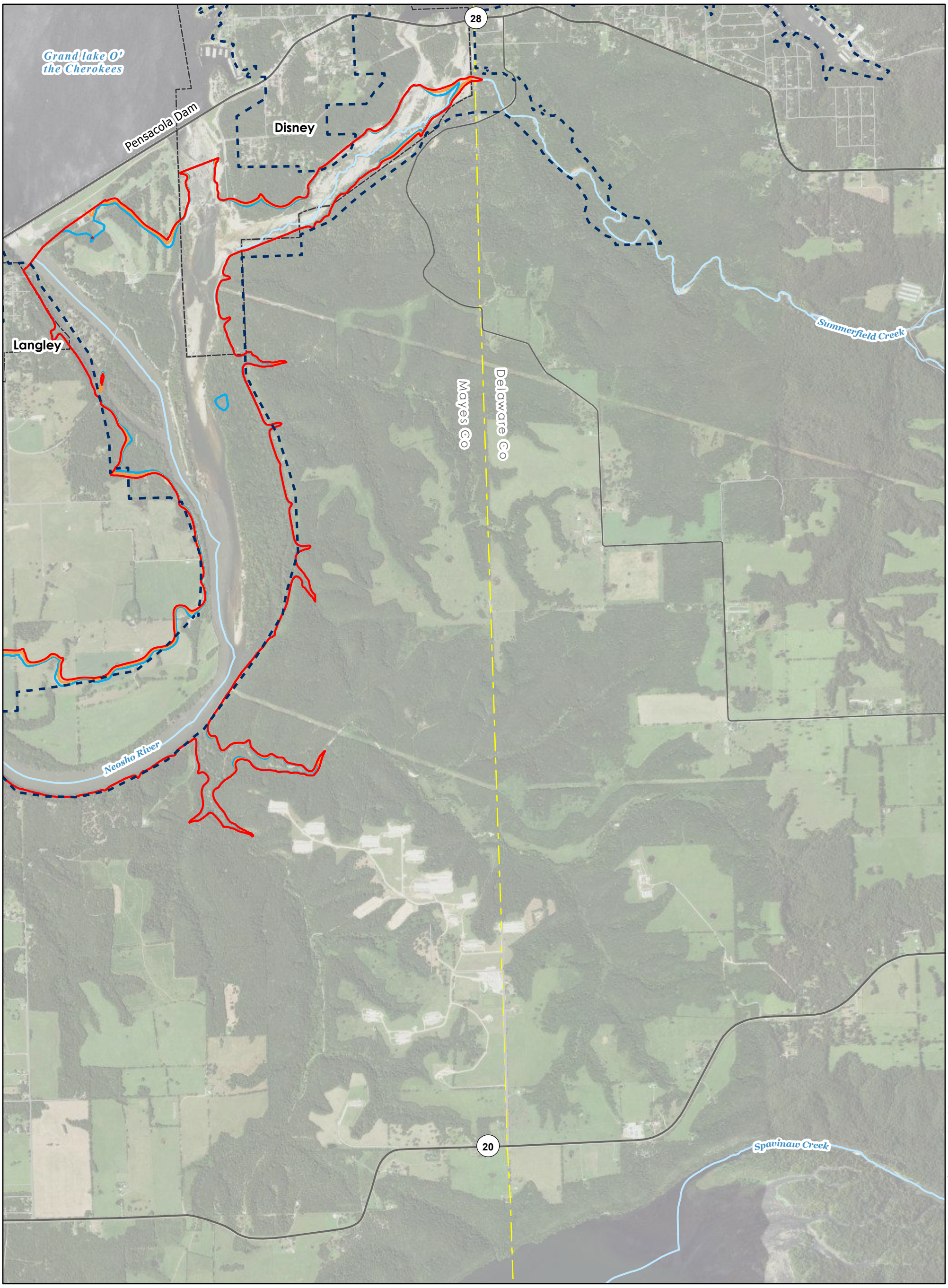
GRAND RIVER DAM AUTHORITY

MAP: B3

CRAIG, DELAWARE, AND MAYES COUNTIES, OKLAHOMA

FERC No. 1494

August 2021

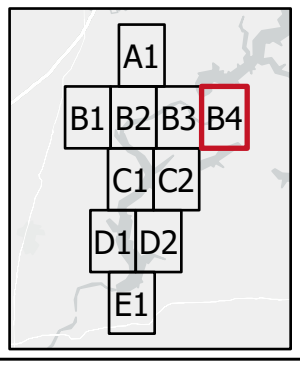


SEPTEMBER 1993 INUNDATION SCENARIO

NORTH

0 500 1,000 2,000 3,000 4,000 Feet

1 inch = 2,000 feet



Legend

SEP 1993 MAX INUNDATION

- 745 ft PD
- 744 ft PD
- 743 ft PD
- 742 ft PD

ROAD CLASS

- Interstate
- State Highway
- US Highway
- Major Collector
- Local Road

- Stream
- Project Boundary
- County Boundary
- Municipal Boundary

LEGEND NOTES

* For areas where only the highest starting elevation inundation boundary is visible, the inundation from the other starting elevations is nearly identical.

PENSACOLA DAM
DOWNSTREAM HYDRAULIC MODEL

GRAND RIVER DAM AUTHORITY

MAP: B4

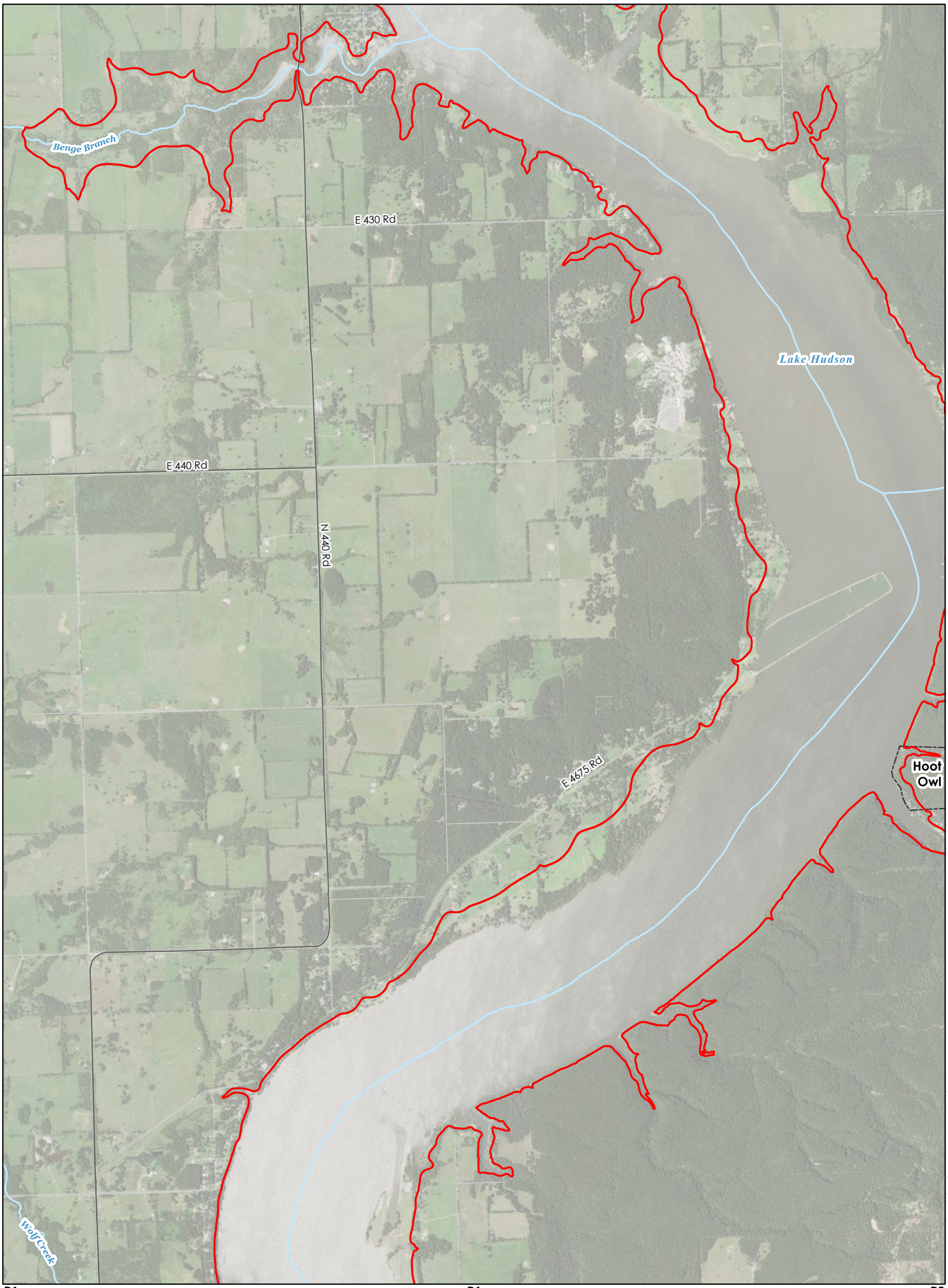
CRAIG, DELAWARE, AND MAYES COUNTIES, OKLAHOMA

FERC No. 1494

August 2021

Image credits: https://gis.apfo.usda.gov/arcgis/services/NAIP/USDA_CONUS_PRIME/ImageServer, 2019

B1 B2 B2



C2

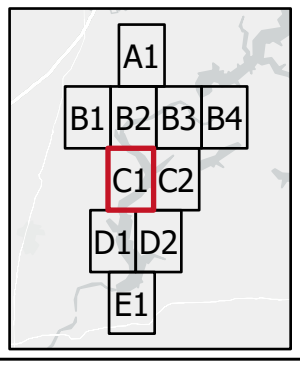
D1 D1 D2

SEPTEMBER 1993 INUNDATION SCENARIO

NORTH

0 500 1,000 2,000 3,000 4,000 Feet

1 inch = 2,000 feet



Legend

SEP 1993 MAX INUNDATION

- 745 ft PD
- 744 ft PD
- 743 ft PD
- 742 ft PD

ROAD CLASS

- Interstate
- State Highway
- US Highway
- Major Collector
- Local Road

- Stream
- Project Boundary
- County Boundary
- Municipal Boundary

LEGEND NOTES

* For areas where only the highest starting elevation inundation boundary is visible, the inundation from the other starting elevations is nearly identical.

PENSACOLA DAM
DOWNSTREAM HYDRAULIC MODEL

GRAND RIVER DAM AUTHORITY

MAP: C1

CRAIG, DELAWARE, AND MAYES COUNTIES, OKLAHOMA

FERC No. 1494

August 2021

Image credits: https://gis.apfo.usda.gov/arcgis/services/NAIP/USDA_CONUS_PRIME/ImageServer, 2019

B2 B3 B3

C1

Spavinaw Creek

Spavinaw

Hoot Owl

20

D2 D2

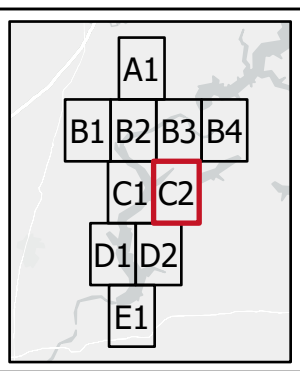
Image credits: https://gis.apfo.usda.gov/arcgis/services/NAIP/USDA_CONUS_PRIME/ImageServer, 2019

SEPTEMBER 1993 INUNDATION SCENARIO

NORTH

0 500 1,000 2,000 3,000 4,000 Feet

1 inch = 2,000 feet



Legend

SEP 1993 MAX INUNDATION

- 745 ft PD
- 744 ft PD
- 743 ft PD
- 742 ft PD

ROAD CLASS

- Interstate
- State Highway
- US Highway
- Major Collector
- Local Road

- Stream
- Project Boundary
- County Boundary
- Municipal Boundary

LEGEND NOTES

* For areas where only the highest starting elevation inundation boundary is visible, the inundation from the other starting elevations is nearly identical.

PENSACOLA DAM
DOWNSTREAM HYDRAULIC MODEL

GRAND RIVER DAM AUTHORITY

MAP: C2

CRAIG, DELAWARE, AND MAYES COUNTIES, OKLAHOMA

FERC No. 1494

August 2021

C1 C1

Wolf Creek

Lake Hudson

N 438 Rd

20

Sulphur Creek

Chapel Branch

S 438 Rd

Salina

D2

Lake Hudson

E 520 Rd

E1 E1

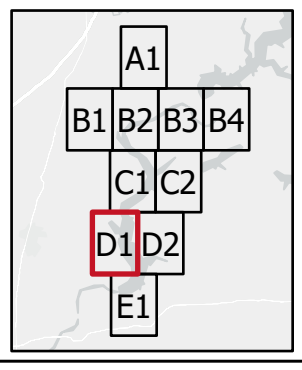
Image credits: https://gis.apfo.usda.gov/arcgis/services/NAIP/USDA_CONUS_PRIME/ImageServer, 2019

SEPTEMBER 1993 INUNDATION SCENARIO

NORTH

0 500 1,000 2,000 3,000 4,000 Feet

1 inch = 2,000 feet



Legend

SEP 1993 MAX INUNDATION

- 745 ft PD
- 744 ft PD
- 743 ft PD
- 742 ft PD

ROAD CLASS

- Interstate
- State Highway
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- Major Collector
- Local Road

- Stream
- Project Boundary
- County Boundary
- Municipal Boundary

LEGEND NOTES

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PENSACOLA DAM
DOWNSTREAM HYDRAULIC MODEL

GRAND RIVER DAM AUTHORITY

MAP: D1

CRAIG, DELAWARE, AND MAYES COUNTIES, OKLAHOMA

FERC No. 1494

August 2021

C1 C2 C2

D1

E1

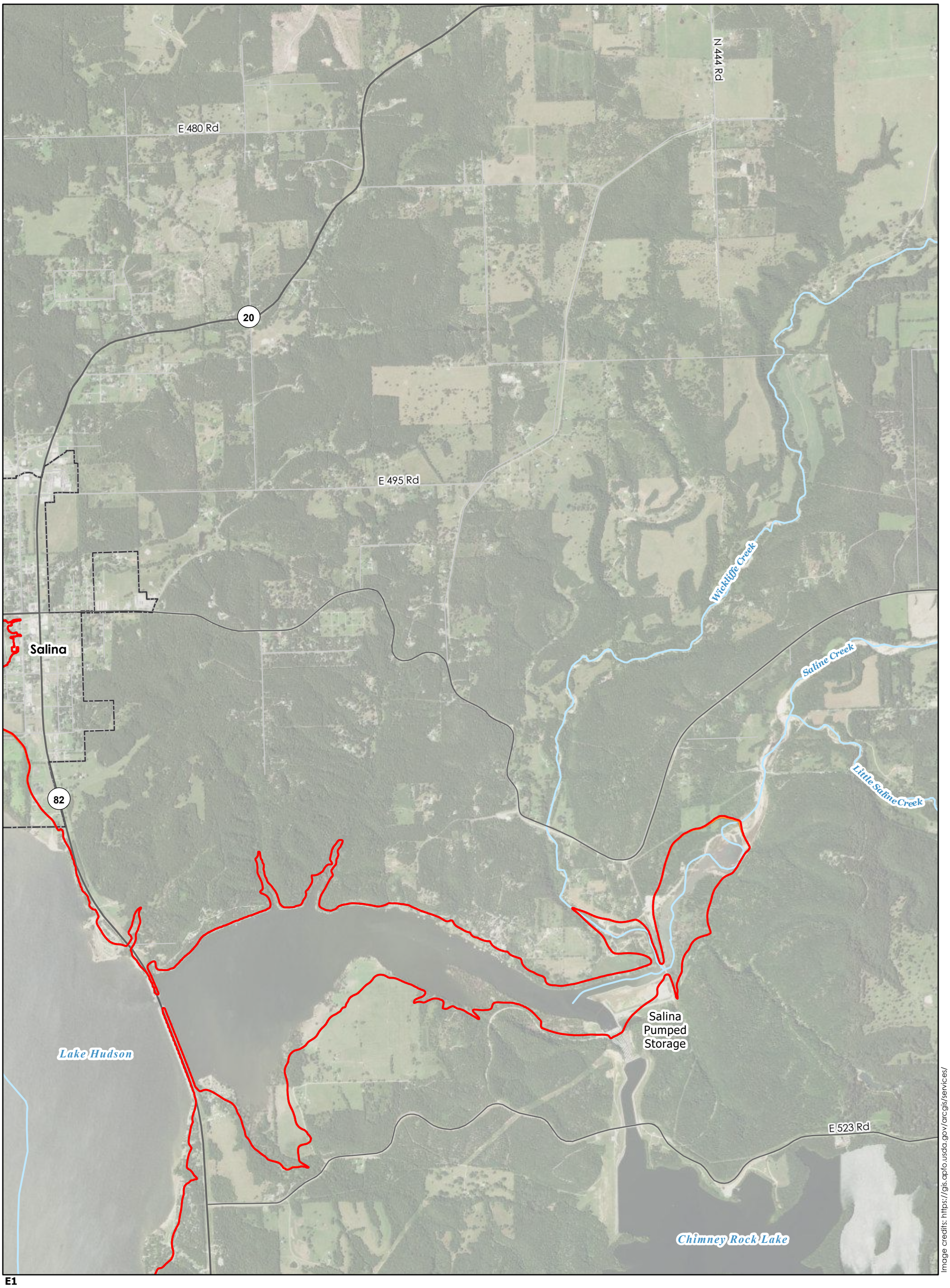


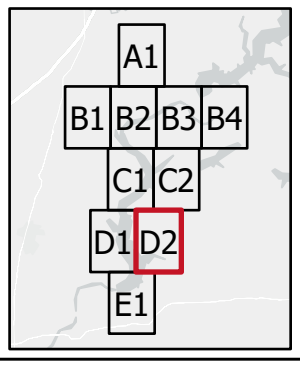
Image credits: https://gis.apfo.usda.gov/arcgis/services/NAIP/USDA_CONUS_PRIME/ImageServer, 2019

SEPTEMBER 1993 INUNDATION SCENARIO

NORTH

0 500 1,000 2,000 3,000 4,000 Feet

1 inch = 2,000 feet



Legend

SEP 1993 MAX INUNDATION

- 745 ft PD
- 744 ft PD
- 743 ft PD
- 742 ft PD

ROAD CLASS

- Interstate
- State Highway
- US Highway
- Major Collector
- Local Road

- Stream
- Project Boundary
- County Boundary
- Municipal Boundary

LEGEND NOTES

* For areas where only the highest starting elevation inundation boundary is visible, the inundation from the other starting elevations is nearly identical.

PENSACOLA DAM
DOWNSTREAM HYDRAULIC MODEL

GRAND RIVER DAM AUTHORITY

MAP: D2

CRAIG, DELAWARE, AND MAYES COUNTIES, OKLAHOMA

FERC No. 1494

August 2021

D1 D1 D2

Lake Hudson

Robert S. Kerr Dam
(Markham Ferry)

S 440 Rd

82

E 560 Rd

412A

Locust Grove

412

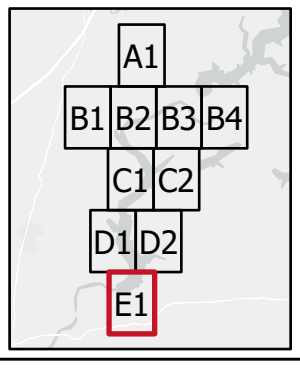
Image credits: https://gis.apfo.usda.gov/arcgis/services/NAIP/USDA_CONUS_PRIME/ImageServer, 2019

SEPTEMBER 1993 INUNDATION SCENARIO

NORTH

0 500 1,000 2,000 3,000 4,000 Feet

1 inch = 2,000 feet



Legend

SEP 1993 MAX INUNDATION

- 745 ft PD
- 744 ft PD
- 743 ft PD
- 742 ft PD

ROAD CLASS

- Interstate
- State Highway
- US Highway
- Major Collector
- Local Road

- Stream
- Project Boundary
- County Boundary
- Municipal Boundary

LEGEND NOTES

* For areas where only the highest starting elevation inundation boundary is visible, the inundation from the other starting elevations is nearly identical.

PENSACOLA DAM
DOWNSTREAM HYDRAULIC MODEL

GRAND RIVER DAM AUTHORITY

MAP: E1

CRAIG, DELAWARE, AND MAYES COUNTIES, OKLAHOMA

FERC No. 1494

August 2021

APPENDIX E.2:
JUNE 2004 EVENT INUNDATION MAPS

Downstream Model Results Overview Map

Pensacola Dam

GRAND RIVER DAM AUTHORITY

Date: August 2021

Overview Map Legend

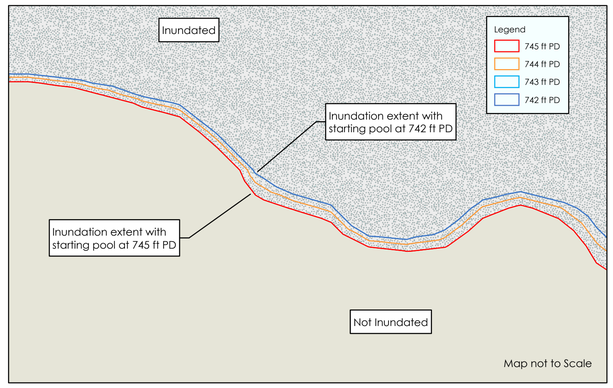
- 1:24,000-scale Map Sheet
- County Boundary
- Municipality
- Unincorporated

Road Class

- Interstate
- US Highway

Inundation Scenario Mapping

Mapping shows the extent of inundation for the selected hydraulic event under different starting pool elevations at Pensacola Dam: 742 ft PD, 743 ft PD, 744 ft PD, and 745 ft PD.



0 0.75 1.5 3 4.5 6 Miles

NORTH

Map Notes

Data Sources for Maps:

1. Base map images from https://gis.apfo.usda.gov/arcgis/services/NAIP/USDA_CONUS_PRIME/ImageServer, 2019.
2. Transportation network (major roads, local roads, and railroads) and county boundaries obtained from the Oklahoma Office of Geographic Information (http://okmaps.org/ogi/search.aspx).

Map Source: Esri, NASA, NGA, USGS, FEMA, Missouri Dept. of Conservation, Missouri DNR, Texas Parks & Wildlife, Esri, HERE, Garmin, SafeGraph, METI/NASA, USGS, EPA, NPS, USDA

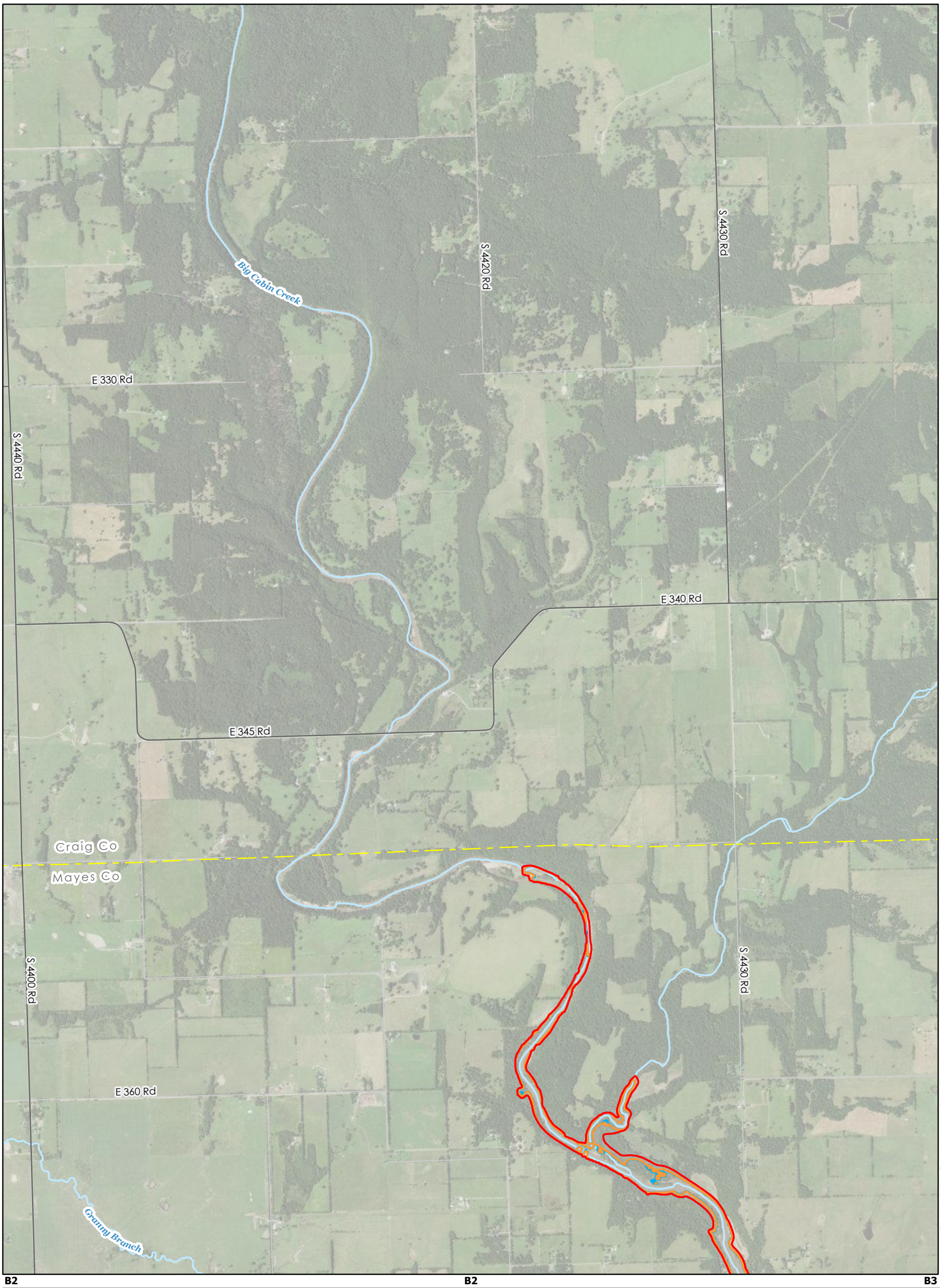


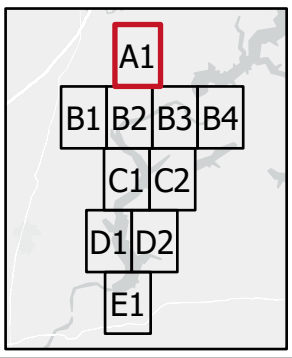
Image credits: https://gis.apfo.usda.gov/arcgis/services/NAIP/USDA_CONUS_PRIME/ImageServer, 2019

JUNE 2004 INUNDATION SCENARIO

NORTH

0 500 1,000 2,000 3,000 4,000 Feet

1 inch = 2,000 feet



Legend

JUN 2004 MAX INUNDATION

- 745 ft PD
- 744 ft PD
- 743 ft PD
- 742 ft PD

ROAD CLASS

- Interstate
- State Highway
- US Highway
- Major Collector
- Local Road
- Stream
- Project Boundary
- County Boundary
- Municipal Boundary

LEGEND NOTES

* For areas where only the highest starting elevation inundation boundary is visible, the inundation from the other starting elevations is nearly identical.

PENSACOLA DAM
DOWNSTREAM HYDRAULIC MODEL

GRAND RIVER DAM AUTHORITY

MAP: A1

CRAIG, DELAWARE, AND MAYES COUNTIES, OKLAHOMA

FERC No. 1494

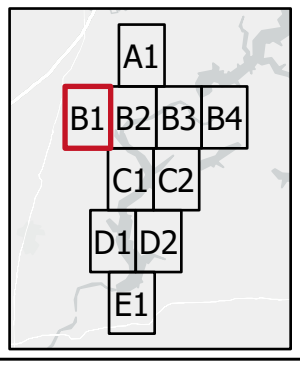
August 2021

JUNE 2004 INUNDATION SCENARIO

NORTH

0 500 1,000 2,000 3,000 4,000 Feet

1 inch = 2,000 feet



Legend

JUN 2004 MAX INUNDATION

- 745 ft PD
- 744 ft PD
- 743 ft PD
- 742 ft PD

ROAD CLASS

- Interstate
- State Highway
- US Highway
- Major Collector
- Local Road

- Stream
- Project Boundary
- County Boundary
- Municipal Boundary

LEGEND NOTES

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PENSACOLA DAM
DOWNSTREAM HYDRAULIC MODEL

GRAND RIVER DAM AUTHORITY

MAP: B1

CRAIG, DELAWARE, AND MAYES COUNTIES, OKLAHOMA

FERC No. 1494

August 2021

A1 A1

B1 B3

C1 C1 C2

E 370 Rd

Granny Branch

Big Cabin Creek

Pensacola

28

Neosho River

Rock Creek

Lake Hudson

Strang

E 420 Rd

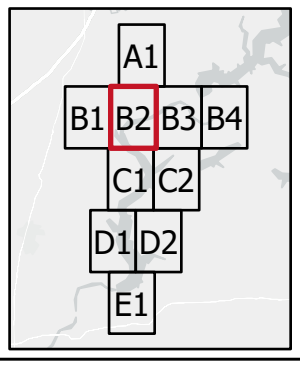
Image credits: https://gis.apfo.usda.gov/arcgis/services/NAIP/USDA_CONUS_PRIME/ImageServer, 2019

JUNE 2004 INUNDATION SCENARIO

NORTH

0 500 1,000 2,000 3,000 4,000 Feet

1 inch = 2,000 feet



Legend

JUN 2004 MAX INUNDATION

- 745 ft PD
- 744 ft PD
- 743 ft PD
- 742 ft PD

ROAD CLASS

- Interstate
- State Highway
- US Highway
- Major Collector
- Local Road

- Stream
- Project Boundary
- County Boundary
- Municipal Boundary

LEGEND NOTES

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PENSACOLA DAM
DOWNSTREAM HYDRAULIC MODEL

GRAND RIVER DAM AUTHORITY

MAP: B2

CRAIG, DELAWARE, AND MAYES COUNTIES, OKLAHOMA

FERC No. 1494

August 2021

A1

B2

B4

C2

C2

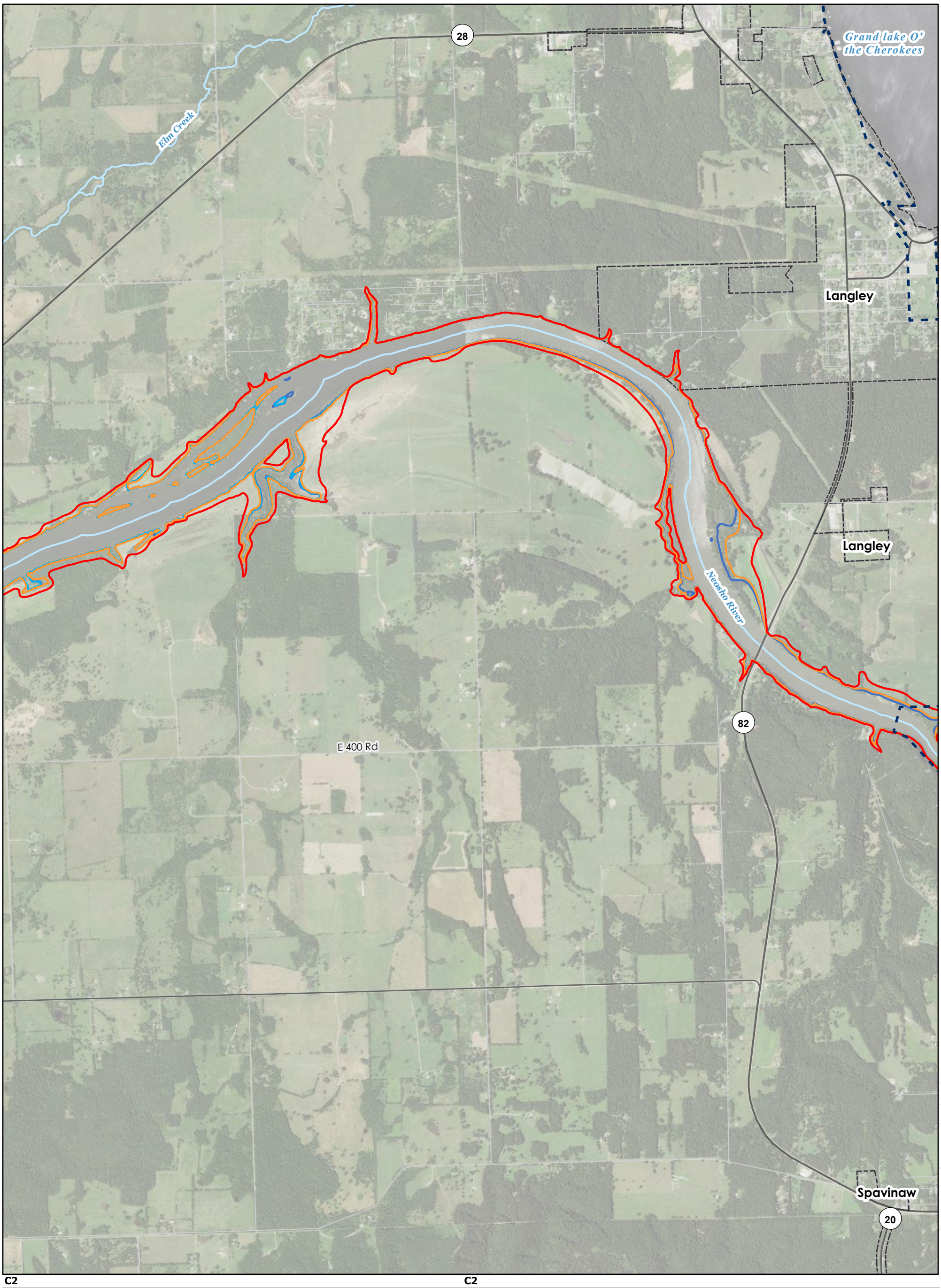


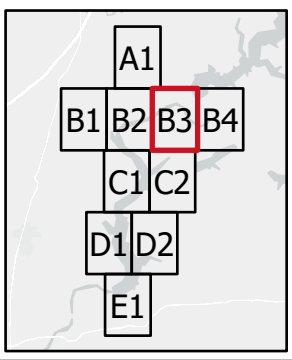
Image credits: https://gis.apfo.usda.gov/arcgis/services/NAIP/USDA_CONUS_PRIME/ImageServer, 2019

JUNE 2004 INUNDATION SCENARIO

NORTH

0 500 1,000 2,000 3,000 4,000 Feet

1 inch = 2,000 feet



Legend

JUN 2004 MAX INUNDATION

- 745 ft PD
- 744 ft PD
- 743 ft PD
- 742 ft PD

ROAD CLASS

- Interstate
- State Highway
- US Highway
- Major Collector
- Local Road
- Stream
- Project Boundary
- County Boundary
- Municipal Boundary

LEGEND NOTES

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PENSACOLA DAM
DOWNSTREAM HYDRAULIC MODEL

GRAND RIVER DAM AUTHORITY

MAP: B3

CRAIG, DELAWARE, AND MAYES COUNTIES, OKLAHOMA

FERC No. 1494

August 2021

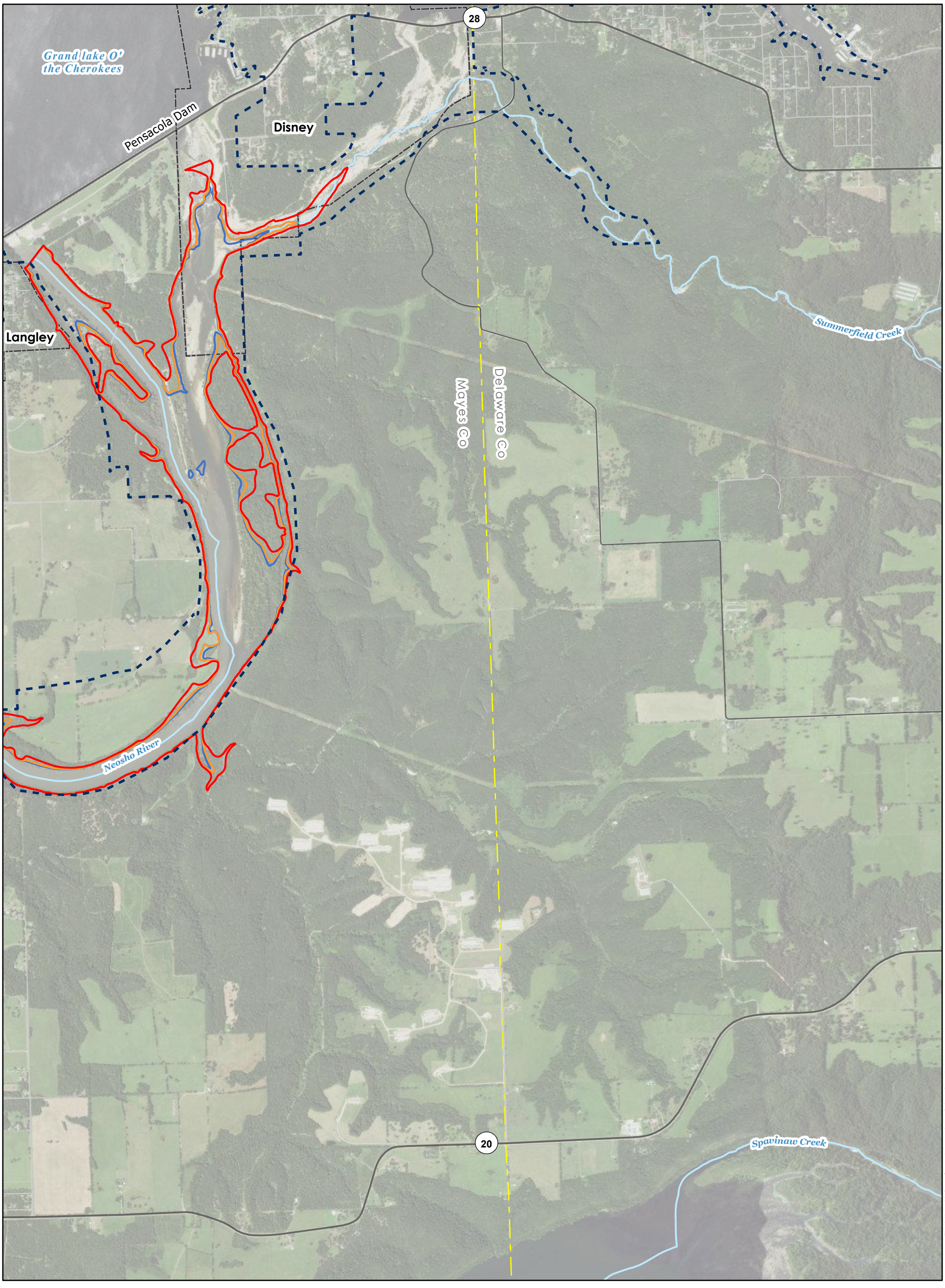


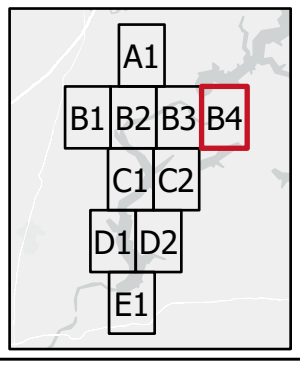
Image credits: https://gis.apfo.usda.gov/arcgis/services/NAIP/USDA_CONUS_PRIME/ImageServer, 2019

JUNE 2004 INUNDATION SCENARIO

NORTH

0 500 1,000 2,000 3,000 4,000 Feet

1 inch = 2,000 feet



Legend

JUN 2004 MAX INUNDATION

- 745 ft PD
- 744 ft PD
- 743 ft PD
- 742 ft PD

ROAD CLASS

- Interstate
- State Highway
- US Highway
- Major Collector
- Local Road

- Stream
- Project Boundary
- County Boundary
- Municipal Boundary

LEGEND NOTES

* For areas where only the highest starting elevation inundation boundary is visible, the inundation from the other starting elevations is nearly identical.

PENSACOLA DAM
DOWNSTREAM HYDRAULIC MODEL

GRAND RIVER DAM AUTHORITY

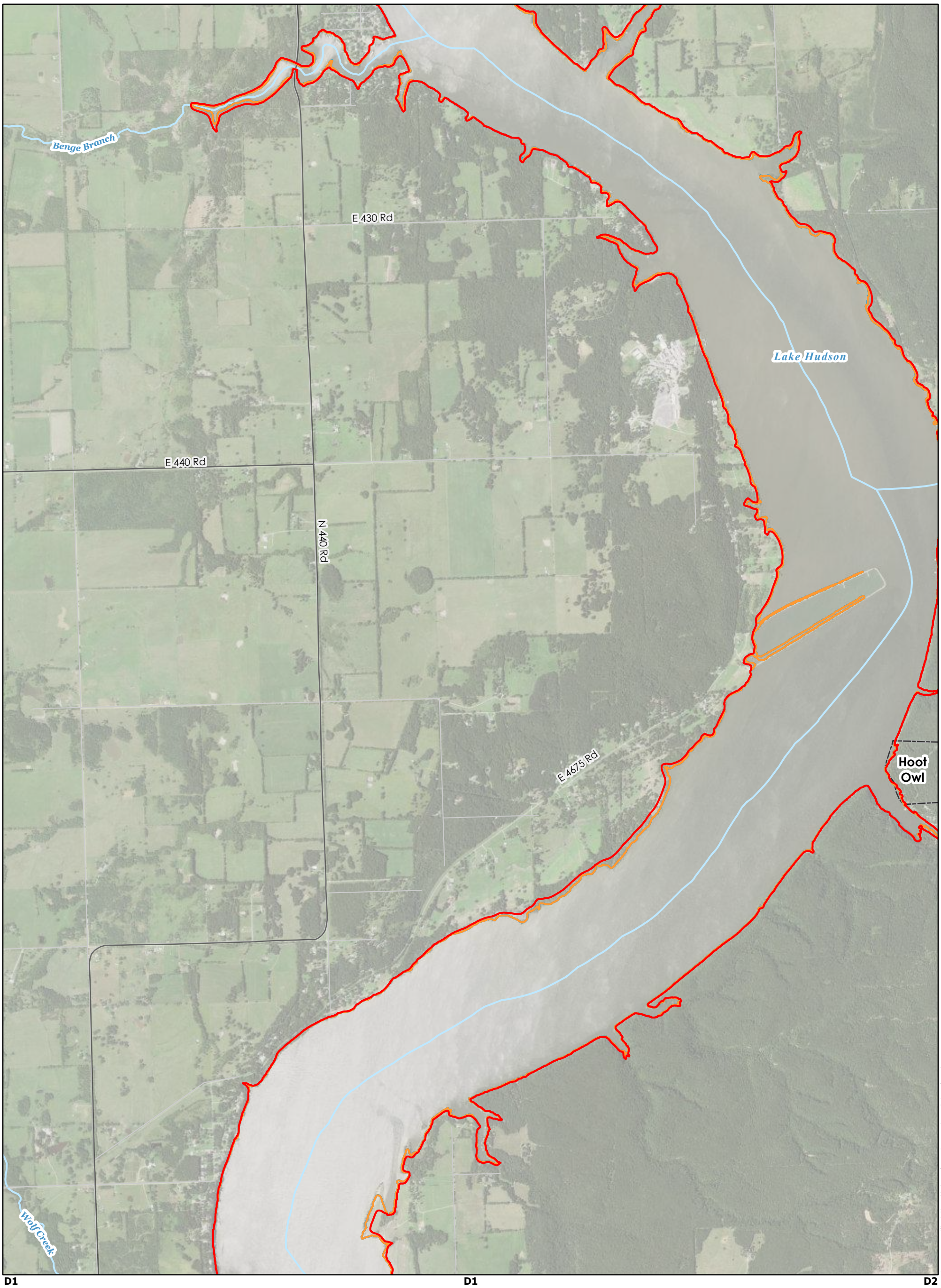
MAP: B4

CRAIG, DELAWARE, AND MAYES COUNTIES, OKLAHOMA

FERC No. 1494

August 2021

B1 B2 B2



C2

D1 D1 D2

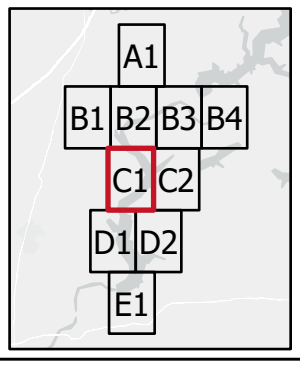
Image credits: https://gis.apfo.usda.gov/arcgis/services/NAIP/USDA_CONUS_PRIME/ImageServer, 2019

JUNE 2004 INUNDATION SCENARIO

NORTH

0 500 1,000 2,000 3,000 4,000 Feet

1 inch = 2,000 feet



Legend

JUN 2004 MAX INUNDATION

- 745 ft PD
- 744 ft PD
- 743 ft PD
- 742 ft PD

ROAD CLASS

- Interstate
- State Highway
- US Highway
- Major Collector
- Local Road
- Stream
- Project Boundary
- County Boundary
- Municipal Boundary

LEGEND NOTES

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PENSACOLA DAM
DOWNSTREAM HYDRAULIC MODEL

GRAND RIVER DAM AUTHORITY

MAP: C1

CRAIG, DELAWARE, AND MAYES COUNTIES, OKLAHOMA

FERC No. 1494

August 2021

B2 B3 B3

C1

Spavinaw Creek

Spavinaw

Hoot Owl

20

D2 D2

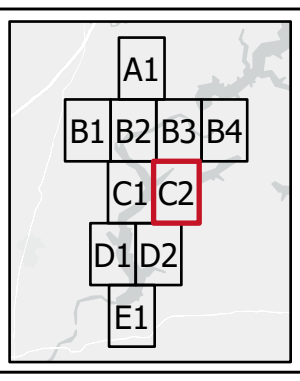
Image credits: https://gis.apfo.usda.gov/arcgis/services/NAIP/USDA_CONUS_PRIME/ImageServer, 2019

JUNE 2004 INUNDATION SCENARIO

NORTH

0 500 1,000 2,000 3,000 4,000 Feet

1 inch = 2,000 feet



Legend

JUN 2004 MAX INUNDATION

- 745 ft PD
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- 743 ft PD
- 742 ft PD

ROAD CLASS

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- State Highway
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- Major Collector
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PENSACOLA DAM
DOWNSTREAM HYDRAULIC MODEL

GRAND RIVER DAM AUTHORITY

MAP: C2

CRAIG, DELAWARE, AND MAYES COUNTIES, OKLAHOMA

FERC No. 1494

August 2021

C1 C1

Wolf Creek

Lake Hudson

N 438 Rd

20

Sulphur Creek

Chapel Branch

S 438 Rd

Salina

D2

Lake Hudson

E 520 Rd

E1 E1

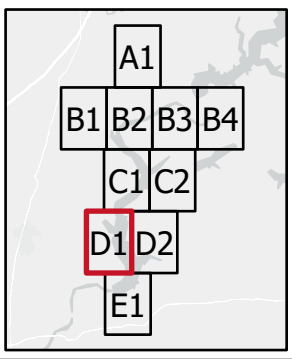
Image credits: https://gis.apfo.usda.gov/arcgis/services/NAIP/USDA_CONUS_PRIME/ImageServer, 2019

JUNE 2004 INUNDATION SCENARIO

NORTH

0 500 1,000 2,000 3,000 4,000 Feet

1 inch = 2,000 feet



Legend

JUN 2004 MAX INUNDATION

- 745 ft PD
- 744 ft PD
- 743 ft PD
- 742 ft PD

ROAD CLASS

- Interstate
- State Highway
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- Major Collector
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LEGEND NOTES

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PENSACOLA DAM
DOWNSTREAM HYDRAULIC MODEL

GRAND RIVER DAM AUTHORITY

MAP: D1

CRAIG, DELAWARE, AND MAYES COUNTIES, OKLAHOMA

FERC No. 1494

August 2021

C1 C2 C2

D1

E1

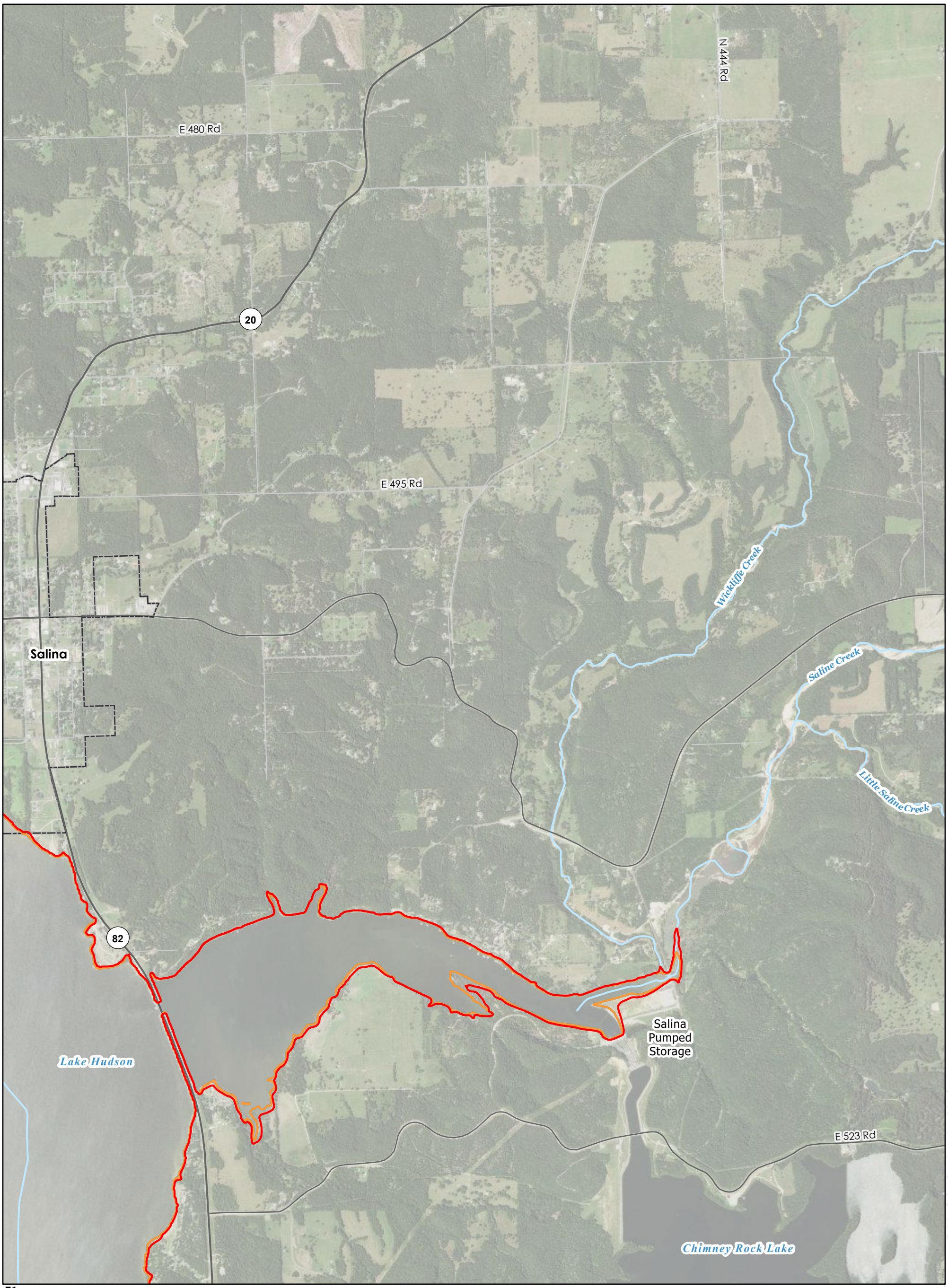


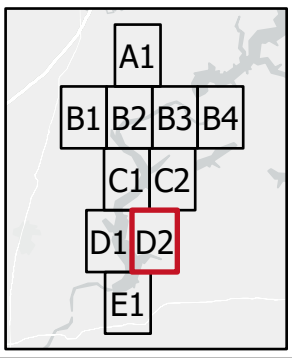
Image credits: https://gis.apfo.usda.gov/arcgis/services/NAIP/USDA_CONUS_PRIME/ImageServer, 2019

JUNE 2004 INUNDATION SCENARIO

NORTH

0 500 1,000 2,000 3,000 4,000 Feet

1 inch = 2,000 feet



Legend

JUN 2004 MAX INUNDATION

- 745 ft PD
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- 742 ft PD

ROAD CLASS

- Interstate
- State Highway
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- Major Collector
- Local Road
- Stream
- Project Boundary
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PENSACOLA DAM
DOWNSTREAM HYDRAULIC MODEL

GRAND RIVER DAM AUTHORITY

MAP: D2

CRAIG, DELAWARE, AND MAYES COUNTIES, OKLAHOMA

FERC No. 1494

August 2021

D1 D1 D2

Lake Hudson

Robert S. Kerr Dam
(Markham Ferry)

S 440 Rd

82

E 560 Rd

412A

Locust Grove

412

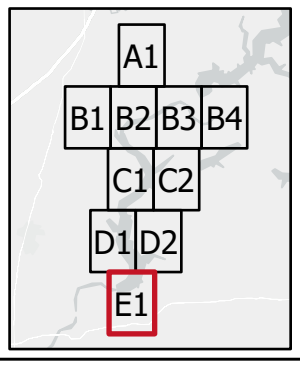
Image credits: https://gis.apfo.usda.gov/arcgis/services/NAIP/USDA_CONUS_PRIME/ImageServer, 2019

JUNE 2004 INUNDATION SCENARIO

NORTH

0 500 1,000 2,000 3,000 4,000 Feet

1 inch = 2,000 feet



Legend

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- 743 ft PD
- 742 ft PD

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- Major Collector
- Local Road

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- Project Boundary
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PENSACOLA DAM
DOWNSTREAM HYDRAULIC MODEL

GRAND RIVER DAM AUTHORITY

MAP: E1

CRAIG, DELAWARE, AND MAYES COUNTIES, OKLAHOMA

FERC No. 1494

August 2021