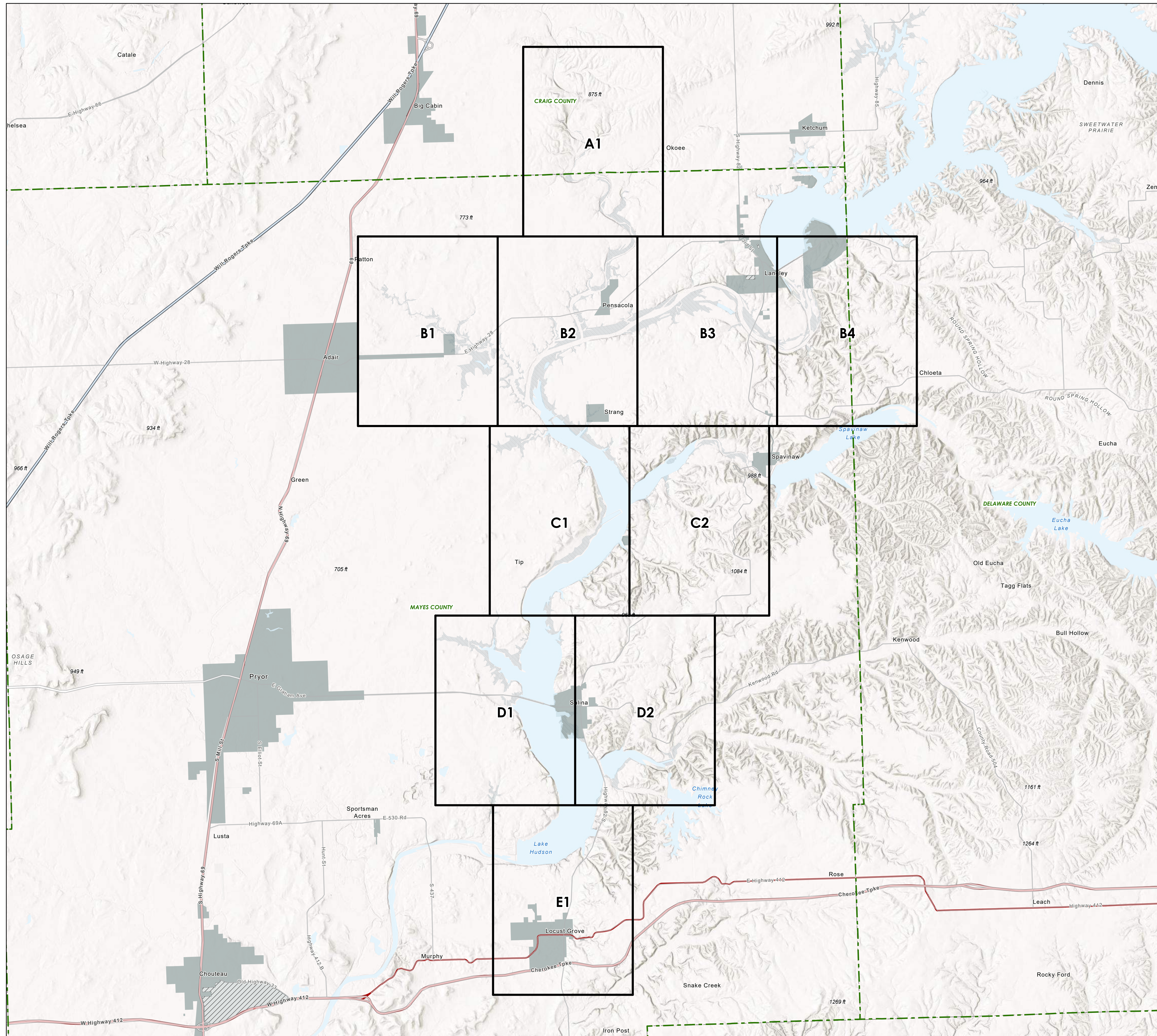

APPENDIX E.3:
JULY 2007 EVENT INUNDATION MAPS

Downstream Model Results Overview Map

Pensacola Dam
GRAND RIVER DAM AUTHORITY
Date: August 2021

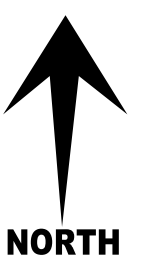
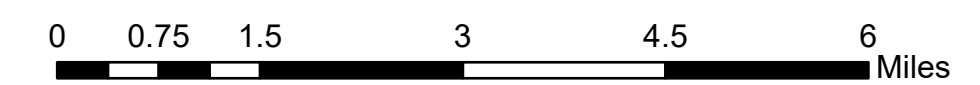
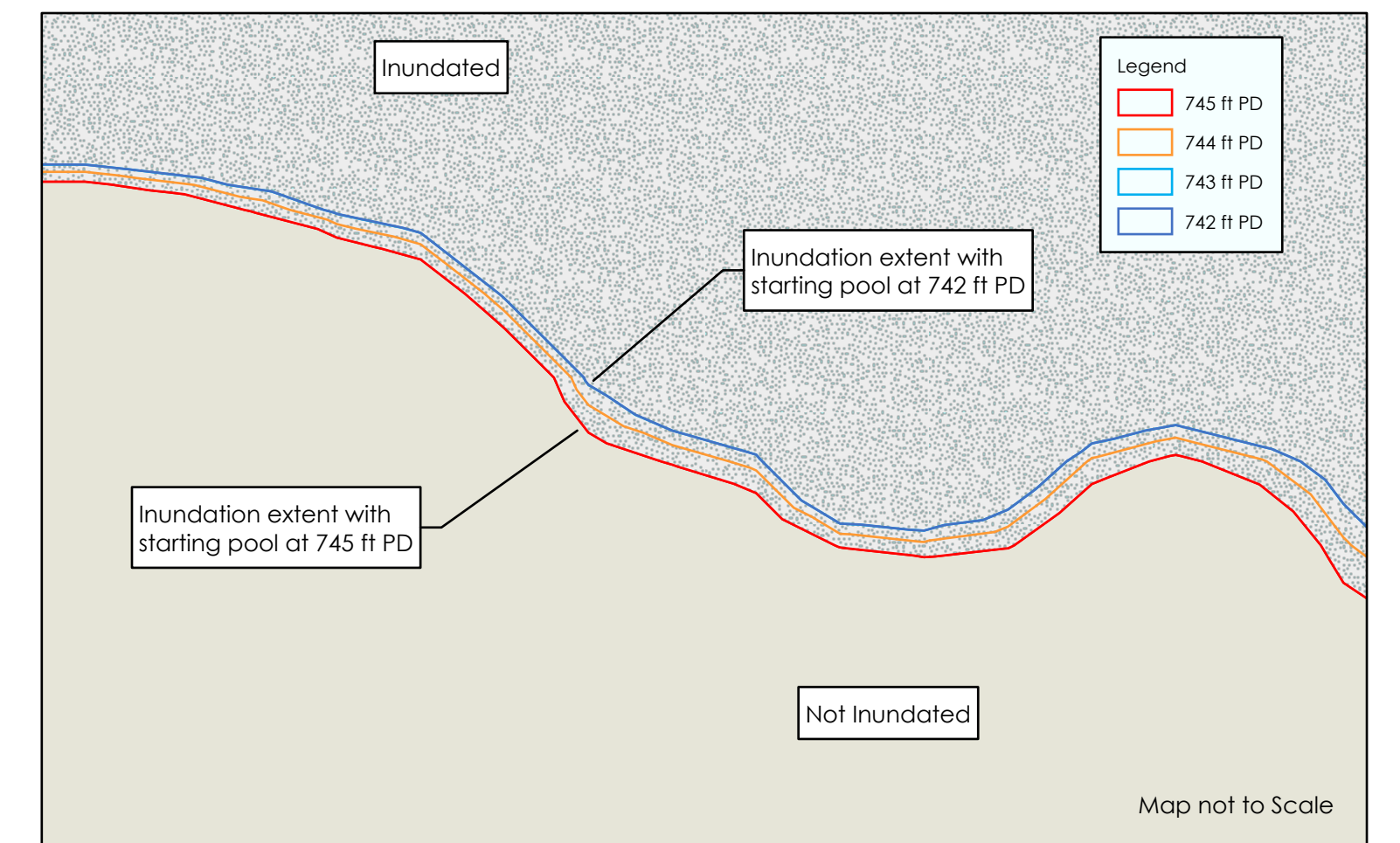


Overview Map Legend

1:24,000-scale Map Sheet	Road Class
County Boundary	Interstate
Municipality	US Highway
Unincorporated	

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.



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/cgi/search.aspx>).

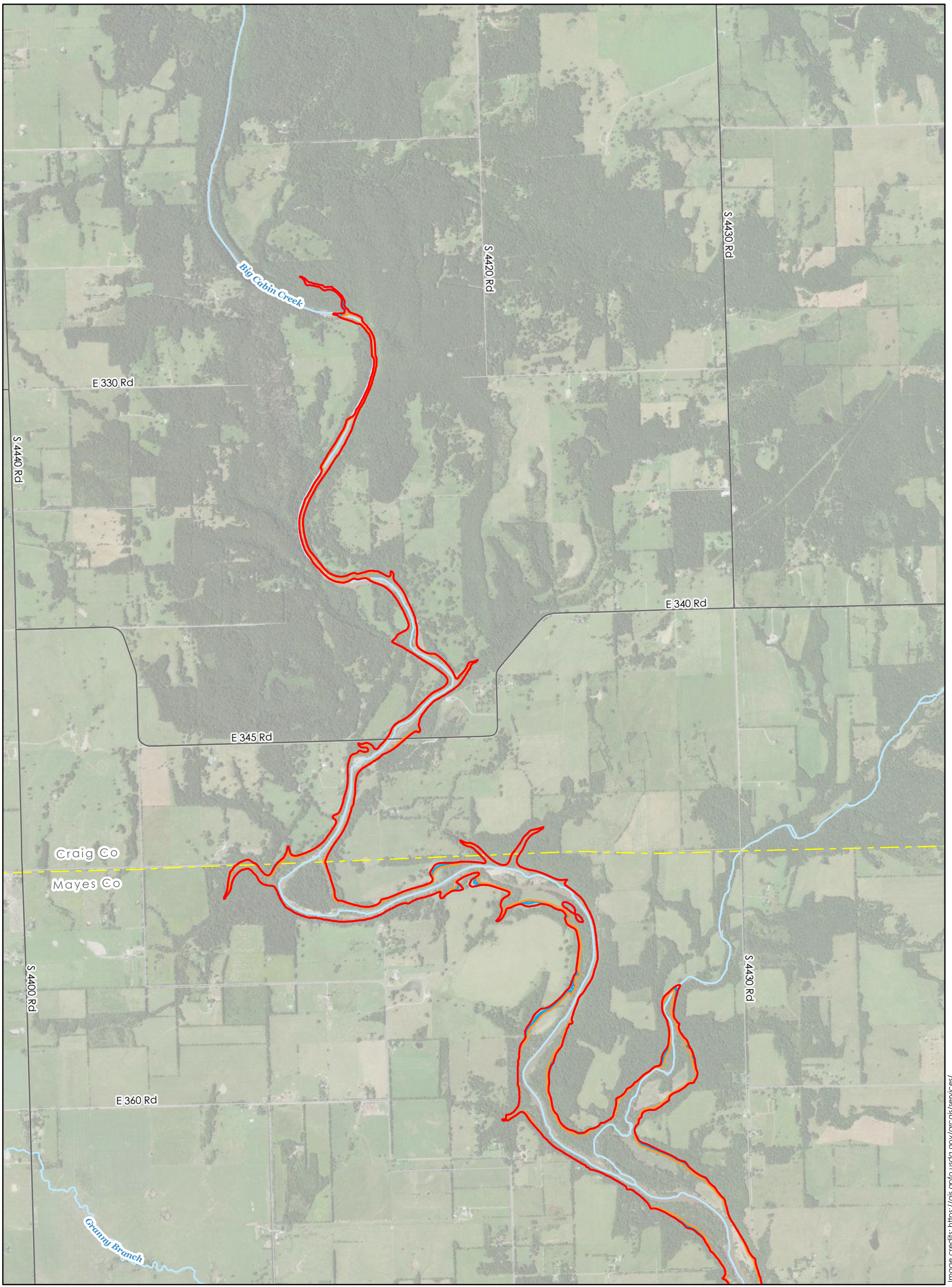


Image credits: https://gis.cplio.usda.gov/carcgis/services/NAIP/USDA_CONUS_PRIME/ImageServer, 2019

JULY 2007 INUNDATION SCENARIO

NORTH

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

1 inch = 2,000 feet

Legend

<p>JUL 2007 MAX INUNDATION</p> <ul style="list-style-type: none"> 745 ft PD 744 ft PD 743 ft PD 742 ft PD 	<p>ROAD CLASS</p> <ul style="list-style-type: none"> Interstate State Highway US Highway Major Collector Local Road 	<ul style="list-style-type: none"> 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

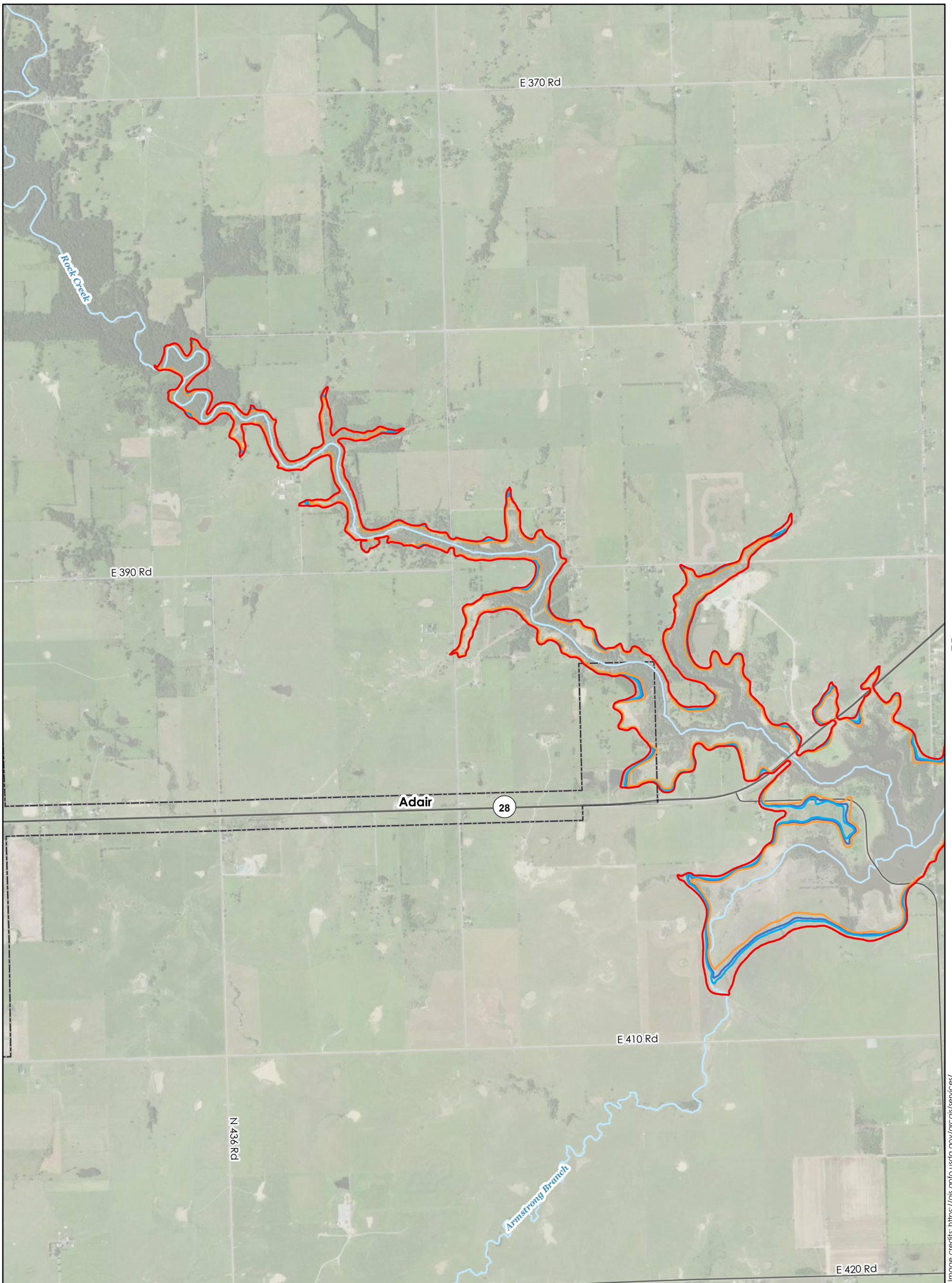
DOWNSTREAM HYDRAULIC MODEL

GRAND RIVER DAM AUTHORITY

MAP: A1

CRAIG, DELAWARE, AND MAYES
COUNTIES, OKLAHOMA

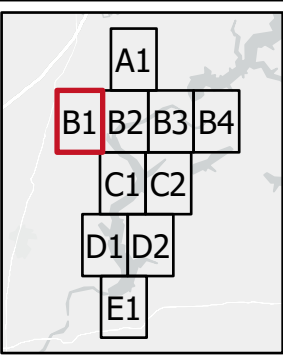
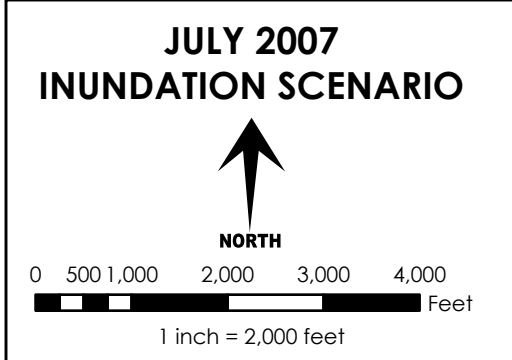
FERC No. 1494
August 2021



B2

Image credits: https://gis.cpl.usda.gov/orcgl/services/NAIP/USDA_CONUS_PRIME/ImageServer, 2019

C1



JUL 2007 MAX INUNDATION

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

Legend

ROAD CLASS

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

- Project Boundary
- County Boundary
- Municipal Boundary

Stream

- Stream

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

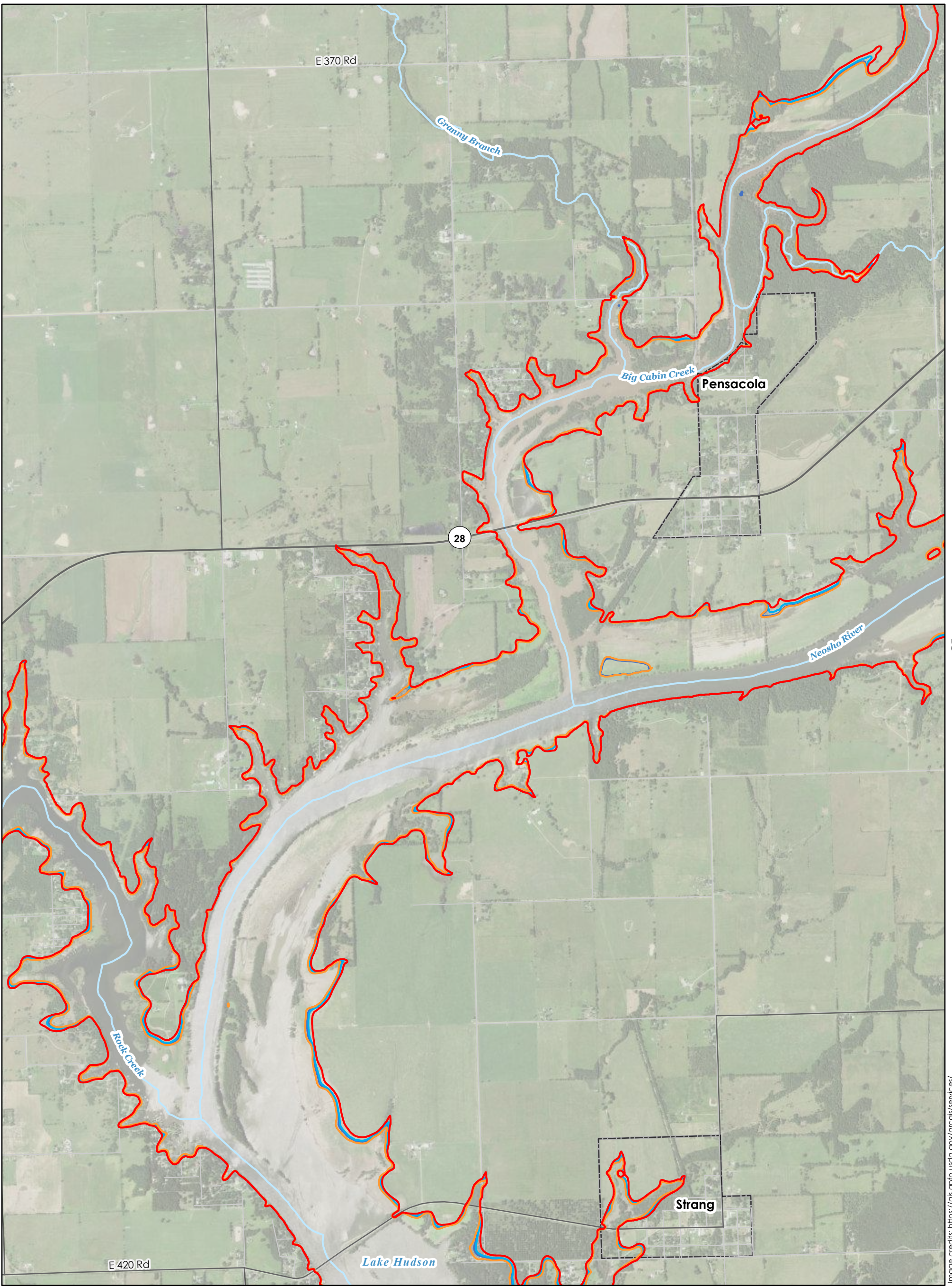
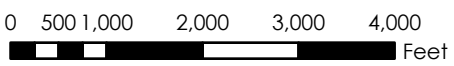


Image credits: https://gis.cplio.usda.gov/arcgis/services/NAIP/USDA_CONUS_PRIME/ImageServer, 2019

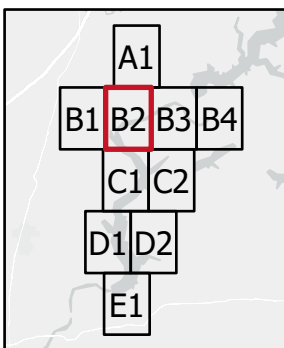
**JULY 2007
INUNDATION SCENARIO**



NORTH



1 inch = 2,000 feet



JUL 2007 MAX INUNDATION

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

Legend

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

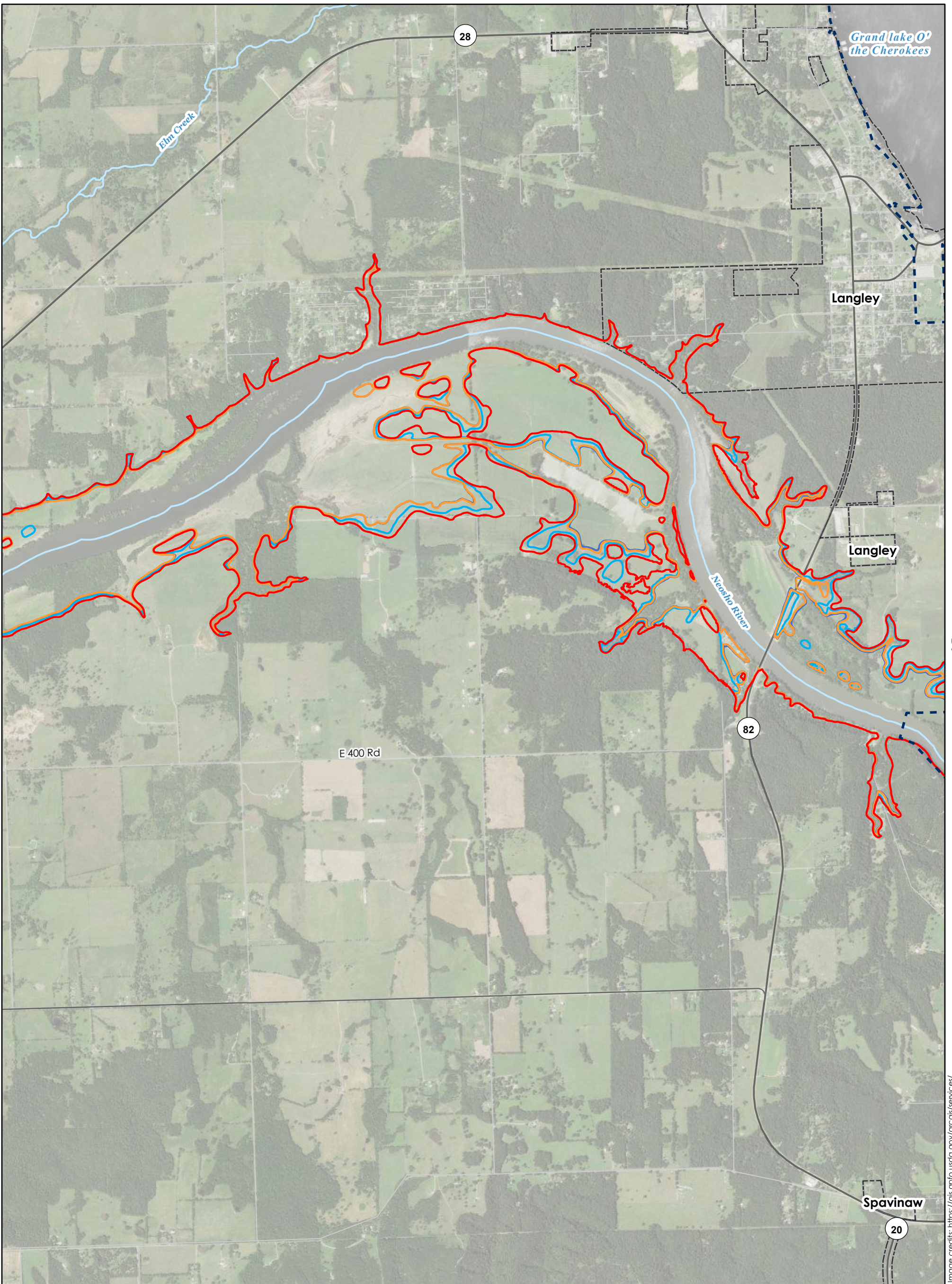


Image credits: https://glt.cplio.usda.gov/arcgis/services/NAIP/USDA_CONUS_PRIME/ImageServer, 2019

C2

C2

JULY 2007 INUNDATION SCENARIO

NORTH

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

1 inch = 2,000 feet

JUL 2007 MAX INUNDATION

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

LEGEND NOTES

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

Legend

ROAD CLASS

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

- Stream
- Project Boundary
- County Boundary
- Municipal Boundary

PENSACOLA DAM DOWNSTREAM HYDRAULIC MODEL

GRAND RIVER DAM AUTHORITY

MAP: B3

CRAIG, DELAWARE, AND MAYES
COUNTIES, OKLAHOMA

FERC No. 1494
August 2021

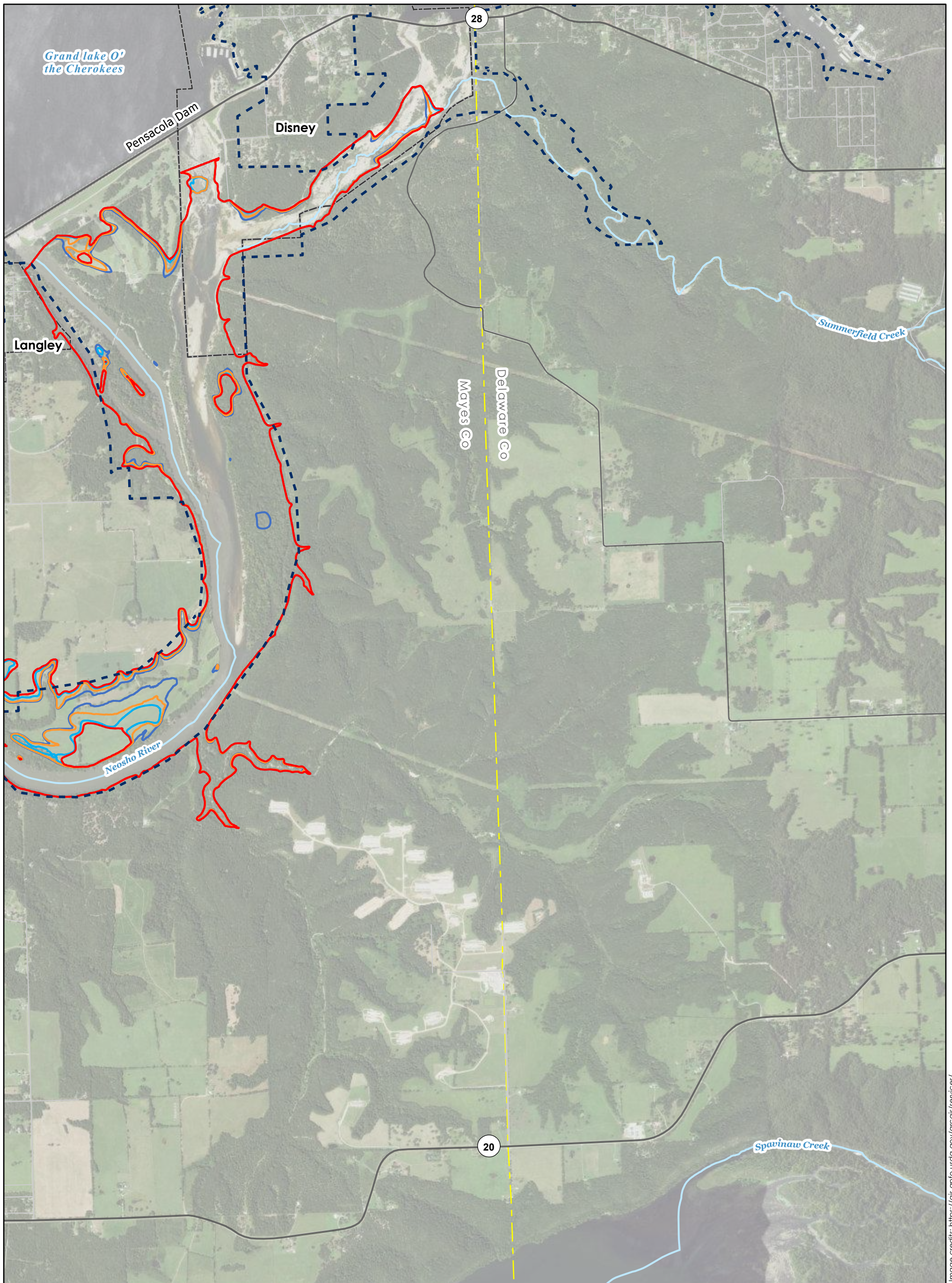


Image credits: https://gis.cplio.usda.gov/arcgis/services/NAIP/USDA_CONUS_PRIME/ImageServer, 2019

JULY 2007 INUNDATION SCENARIO

NORTH

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

1 inch = 2,000 feet

JULY 2007 MAX INUNDATION

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

Legend

<h5>ROAD CLASS</h5> <ul style="list-style-type: none"> Interstate State Highway US Highway Major Collector Local Road 	<ul style="list-style-type: none"> Stream Project Boundary County Boundary Municipal Boundary
---	---

PENSACOLA DAM DOWNSTREAM HYDRAULIC MODEL

GRAND RIVER DAM AUTHORITY

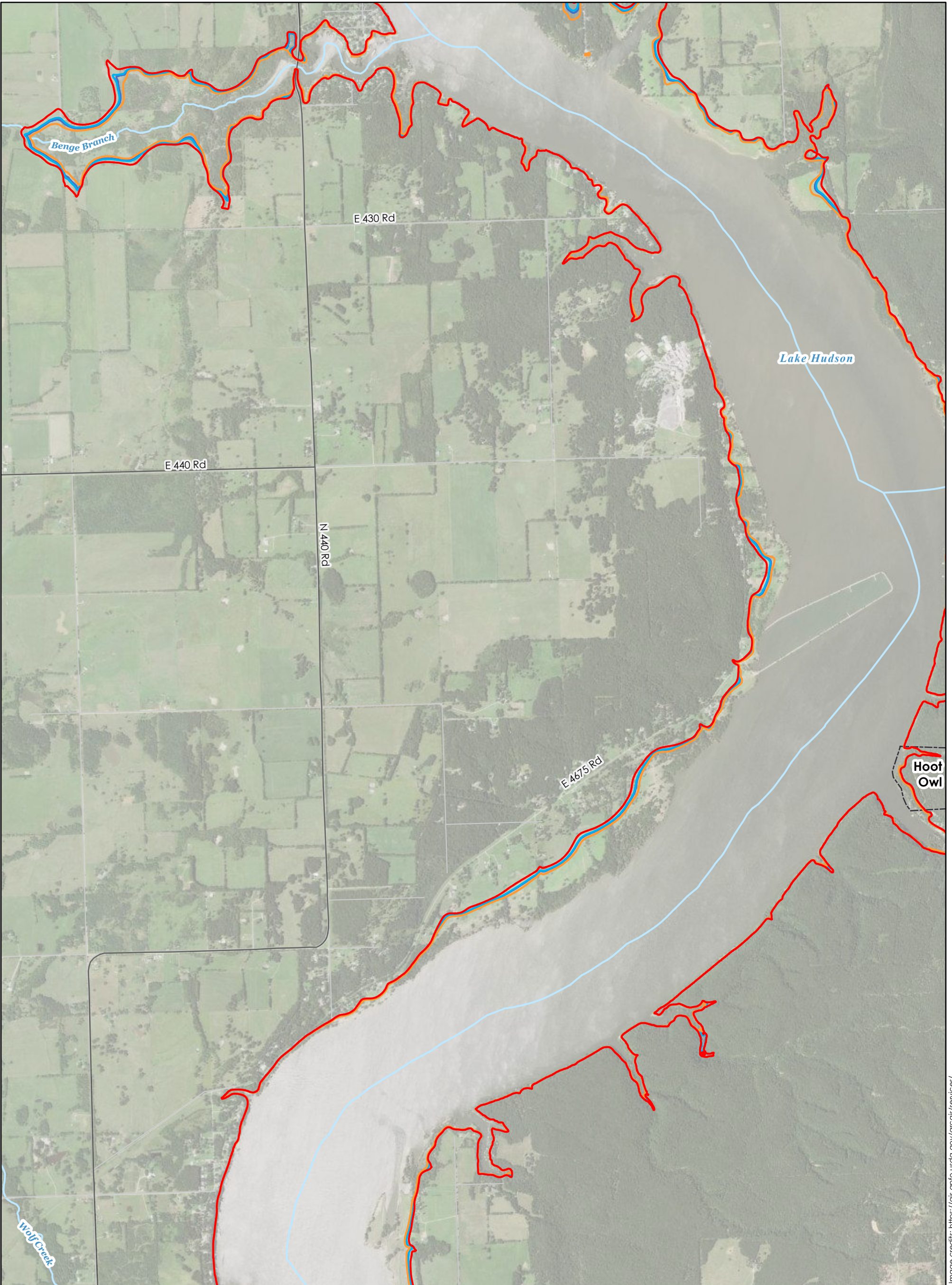
MAP: B4

CRAIG, DELAWARE, AND MAYES
COUNTIES, OKLAHOMA

FERC No. 1494
August 2021

LEGEND NOTES

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

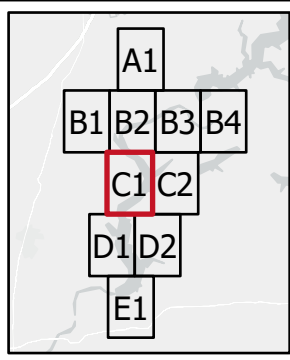


JULY 2007 INUNDATION SCENARIO

NORTH

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

1 inch = 2,000 feet



JULY 2007 MAX INUNDATION

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

LEGEND NOTES

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

Legend

ROAD CLASS

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

- Stream
- Project Boundary
- County Boundary
- Municipal Boundary

PENSACOLA DAM
DOWNSTREAM HYDRAULIC MODEL
 GRAND RIVER DAM AUTHORITY

MAP: C1

CRAIG, DELAWARE, AND MAYES
 COUNTIES, OKLAHOMA

FERC No. 1494
 August 2021

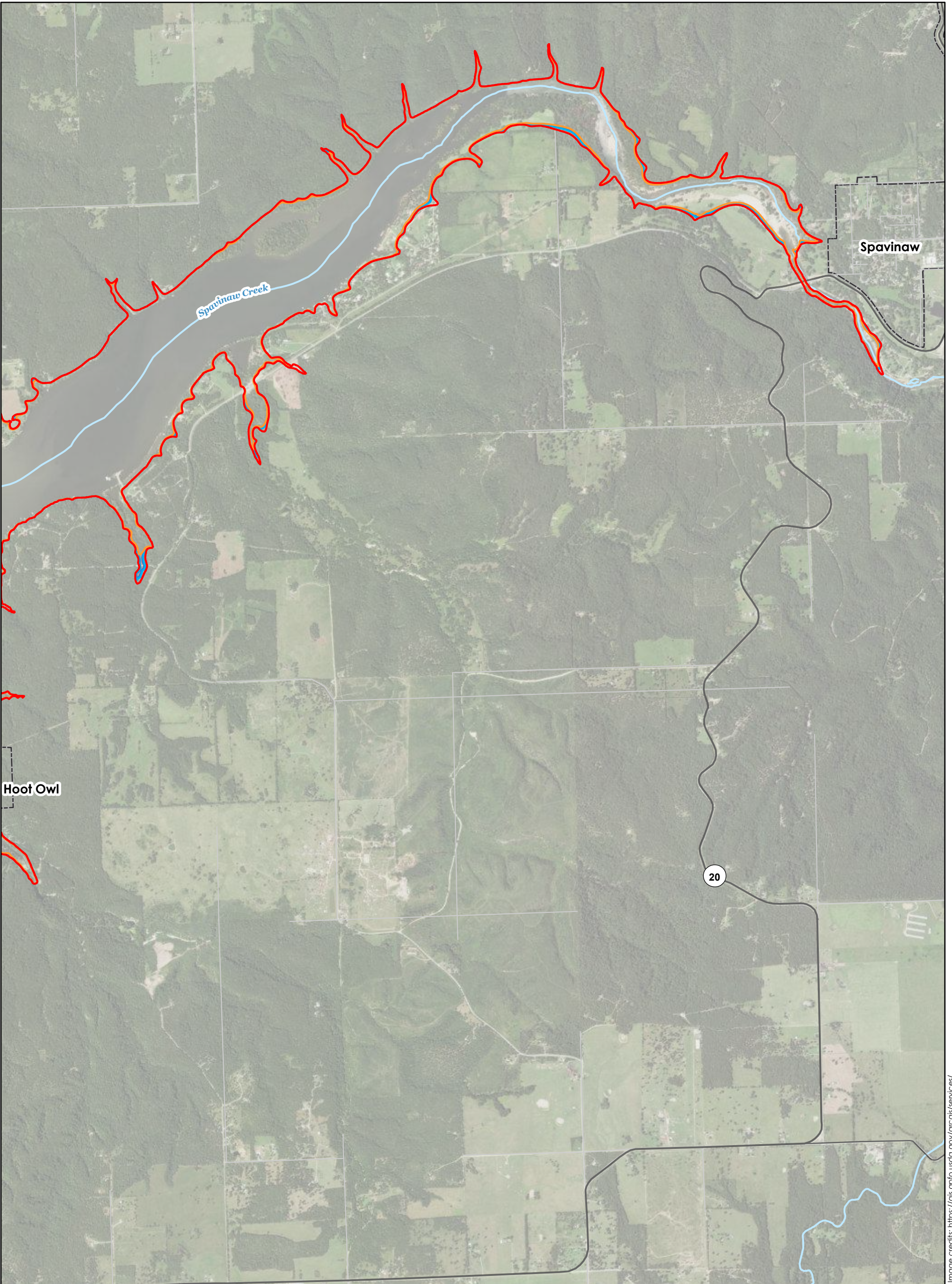


Image credits: https://gis.cplio.usda.gov/arcgis/services/NAIP/USDA_CONUS_PRIME/ImageServer, 2019

JULY 2007 INUNDATION SCENARIO

NORTH

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

1 inch = 2,000 feet

JULY 2007 MAX INUNDATION

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

LEGEND NOTES

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

Legend

ROAD CLASS

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

- Stream
- County Boundary
- Municipal Boundary

PENSACOLA DAM DOWNSTREAM HYDRAULIC MODEL

GRAND RIVER DAM AUTHORITY

MAP: C2

CRAIG, DELAWARE, AND MAYES
COUNTIES, OKLAHOMA

FERC No. 1494
August 2021

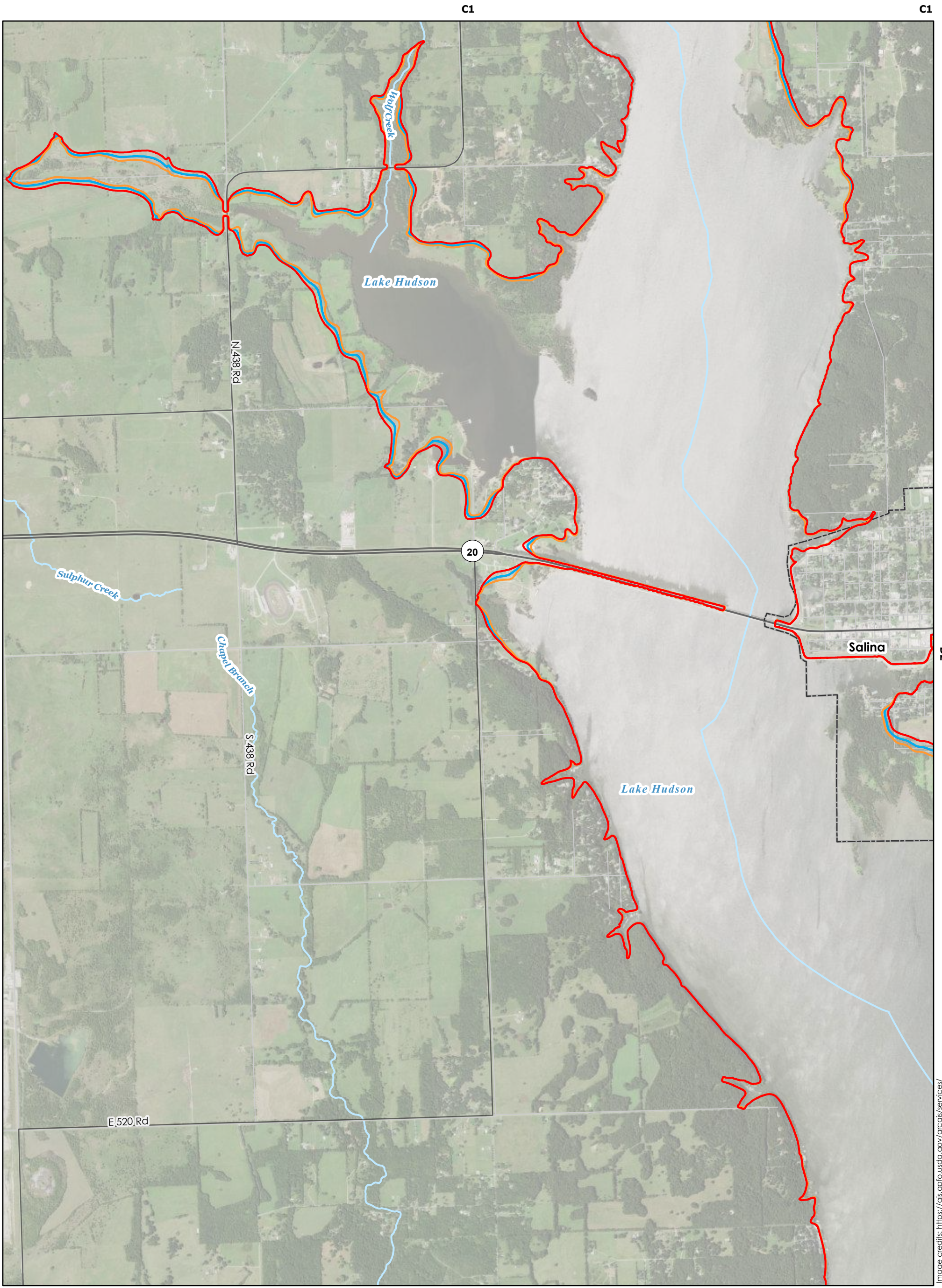
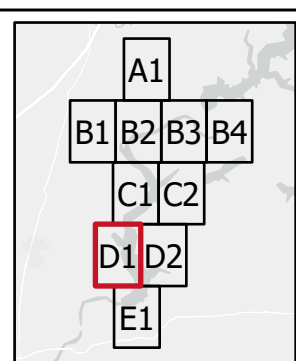
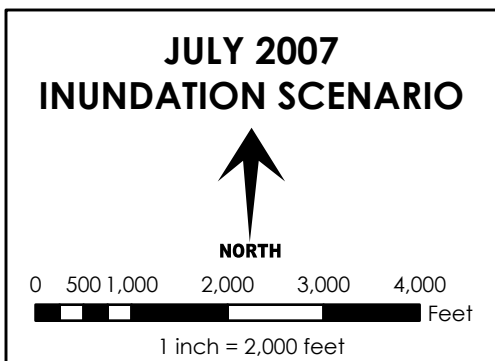


Image credits: https://gis.apfo.usda.gov/arcgis/services/NAIP/USDA_CONUS_PRIME/ImageServer, 2019



JUL 2007 MAX INUNDATION

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

LEGEND NOTES

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

Legend

ROAD CLASS

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

- Project Boundary
- County Boundary
- Municipal Boundary

- Stream

PENSACOLA DAM
DOWNSTREAM HYDRAULIC MODEL
 GRAND RIVER DAM AUTHORITY

MAP: D1

CRAIG, DELAWARE, AND MAYES
 COUNTIES, OKLAHOMA

FERC No. 1494
 August 2021

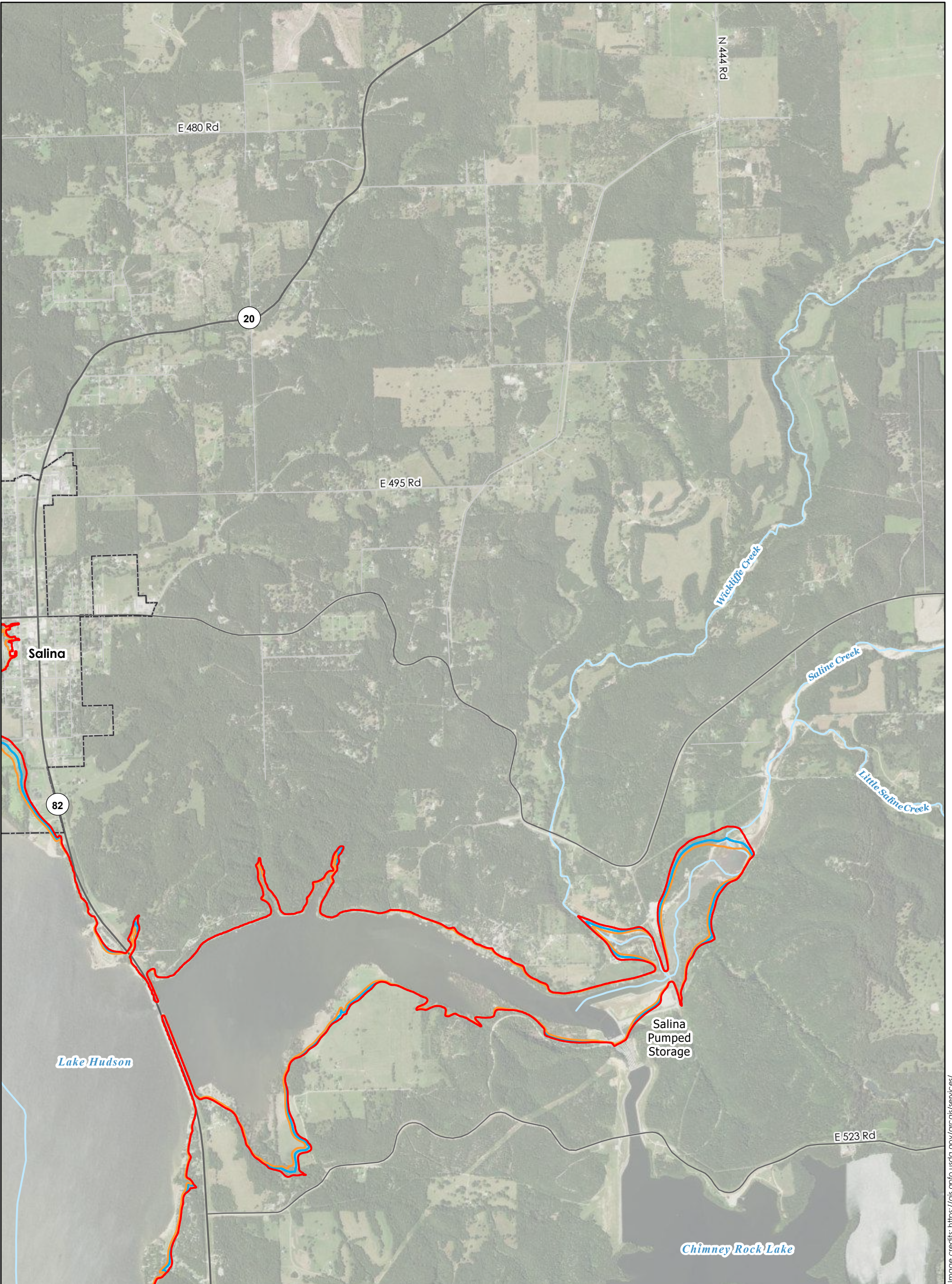


Image credits: https://glt.apfo.usda.gov/arcgis/services/NAIP/USDA_CONUS_PRIME/ImageServer, 2019

JULY 2007 INUNDATION SCENARIO

NORTH

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

1 inch = 2,000 feet

JULY 2007 MAX INUNDATION

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

Legend

<h5>ROAD CLASS</h5> <ul style="list-style-type: none"> Interstate State Highway US Highway Major Collector Local Road 	<ul style="list-style-type: none"> Stream Project Boundary County Boundary Municipal Boundary
--	--

PENSACOLA DAM DOWNSTREAM HYDRAULIC MODEL

GRAND RIVER DAM AUTHORITY

MAP: D2

CRAIG, DELAWARE, AND MAYES
COUNTIES, OKLAHOMA

FERC No. 1494
August 2021

LEGEND NOTES

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

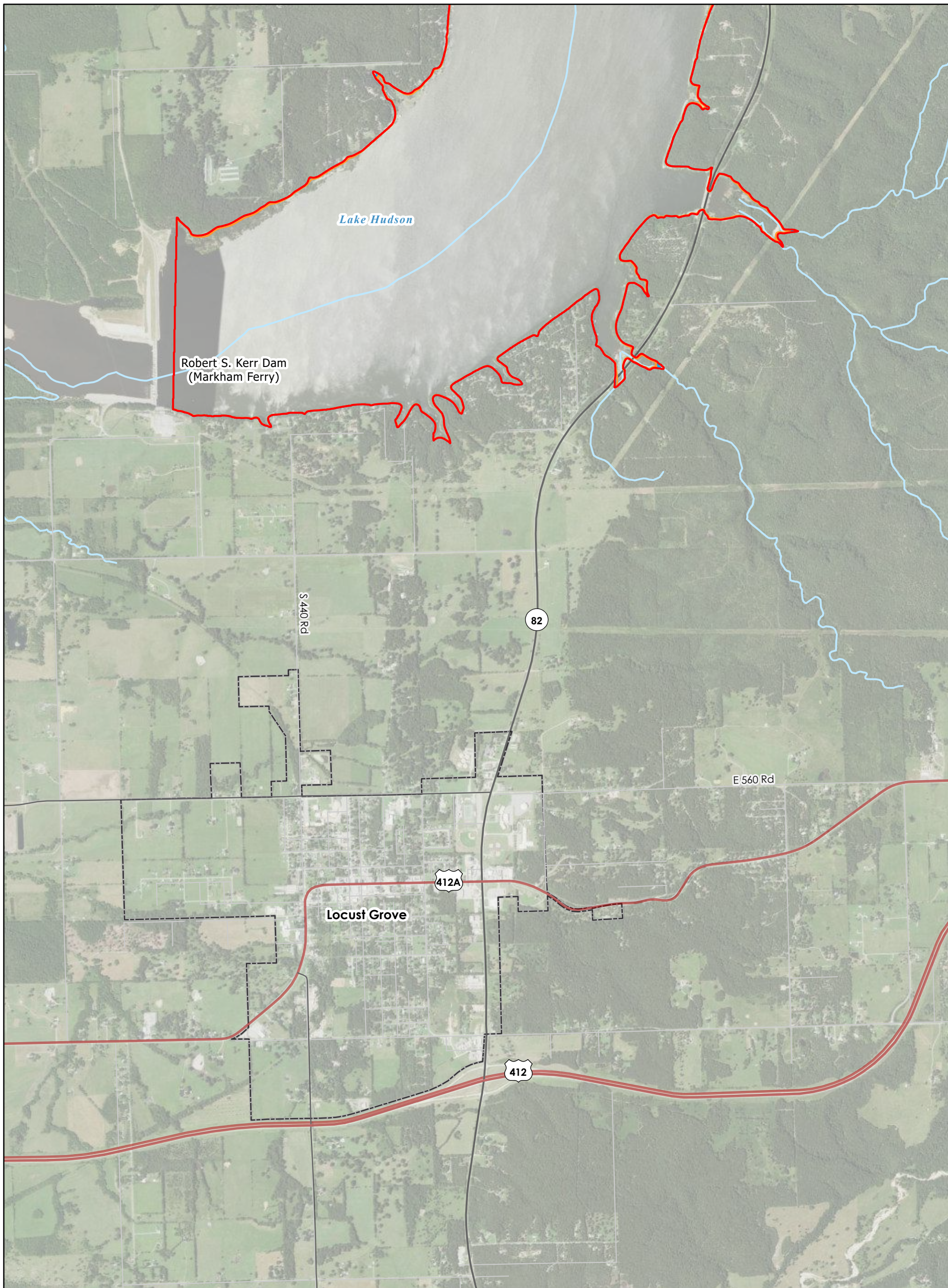


Image credits: https://gis.apfo.usda.gov/arcgis/services/NAIP/USDA_CONUS_PRIME/ImageServer, 2019

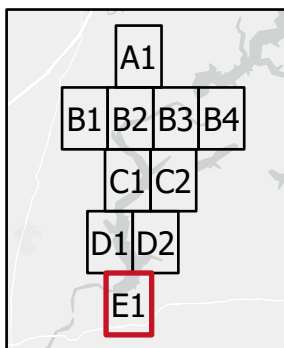
**JULY 2007
INUNDATION SCENARIO**



NORTH

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

1 inch = 2,000 feet



**JUL 2007 MAX
INUNDATION**

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

LEGEND NOTES

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

Legend

ROAD CLASS

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

- Stream
- Project Boundary
- County Boundary
- Municipal Boundary

**PENSACOLA DAM
DOWNSTREAM HYDRAULIC MODEL**

GRAND RIVER DAM AUTHORITY

MAP: E1

CRAIG, DELAWARE, AND MAYES
COUNTIES, OKLAHOMA

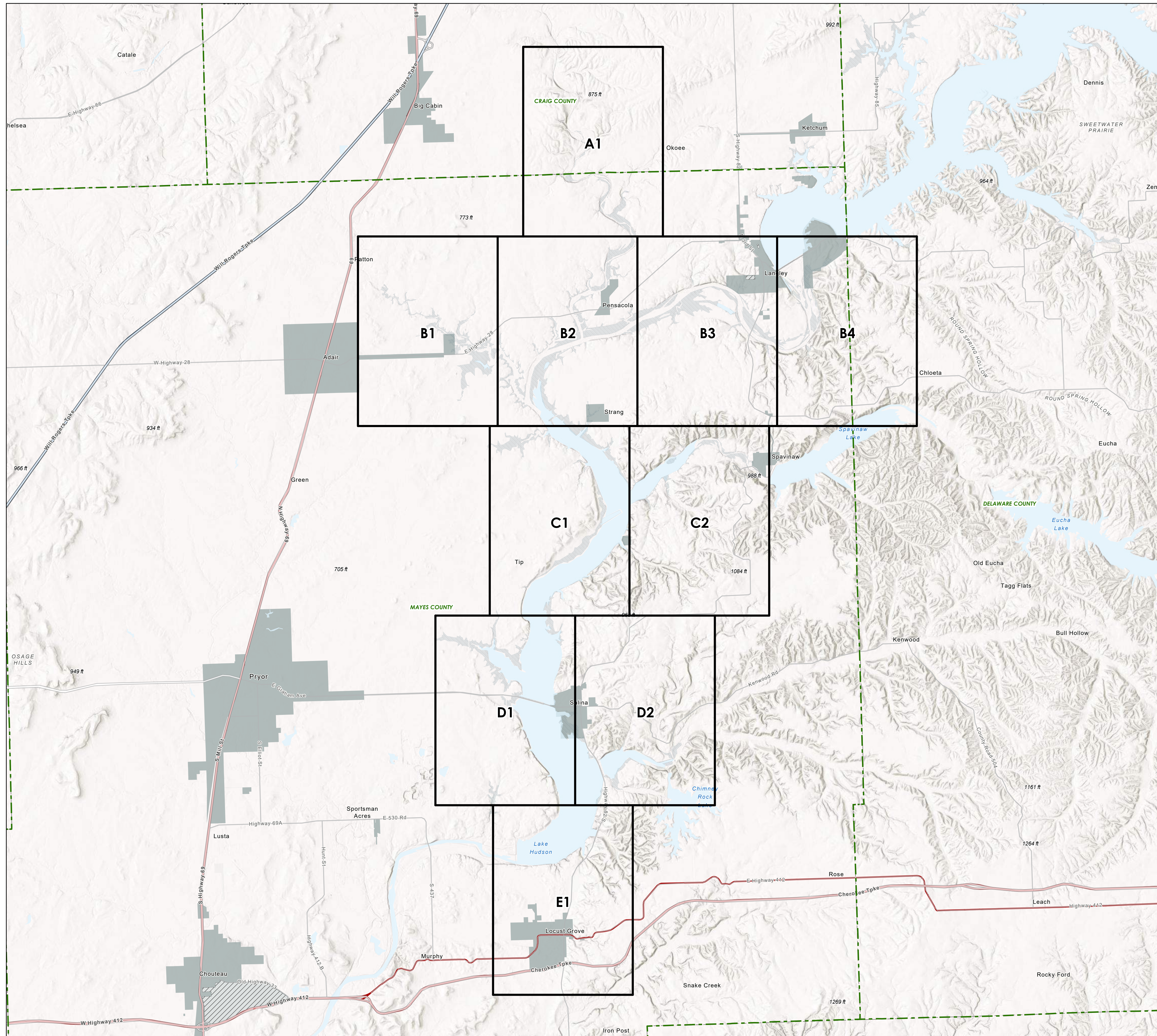
FERC No. 1494

August 2021

APPENDIX E.4:
OCTOBER 2009 EVENT INUNDATION MAPS

Downstream Model Results Overview Map

Pensacola Dam
GRAND RIVER DAM AUTHORITY
Date: August 2021

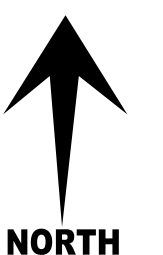
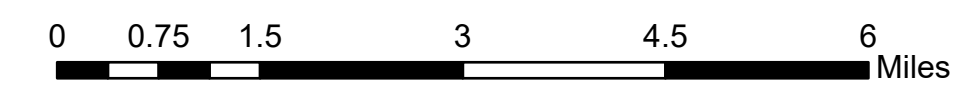
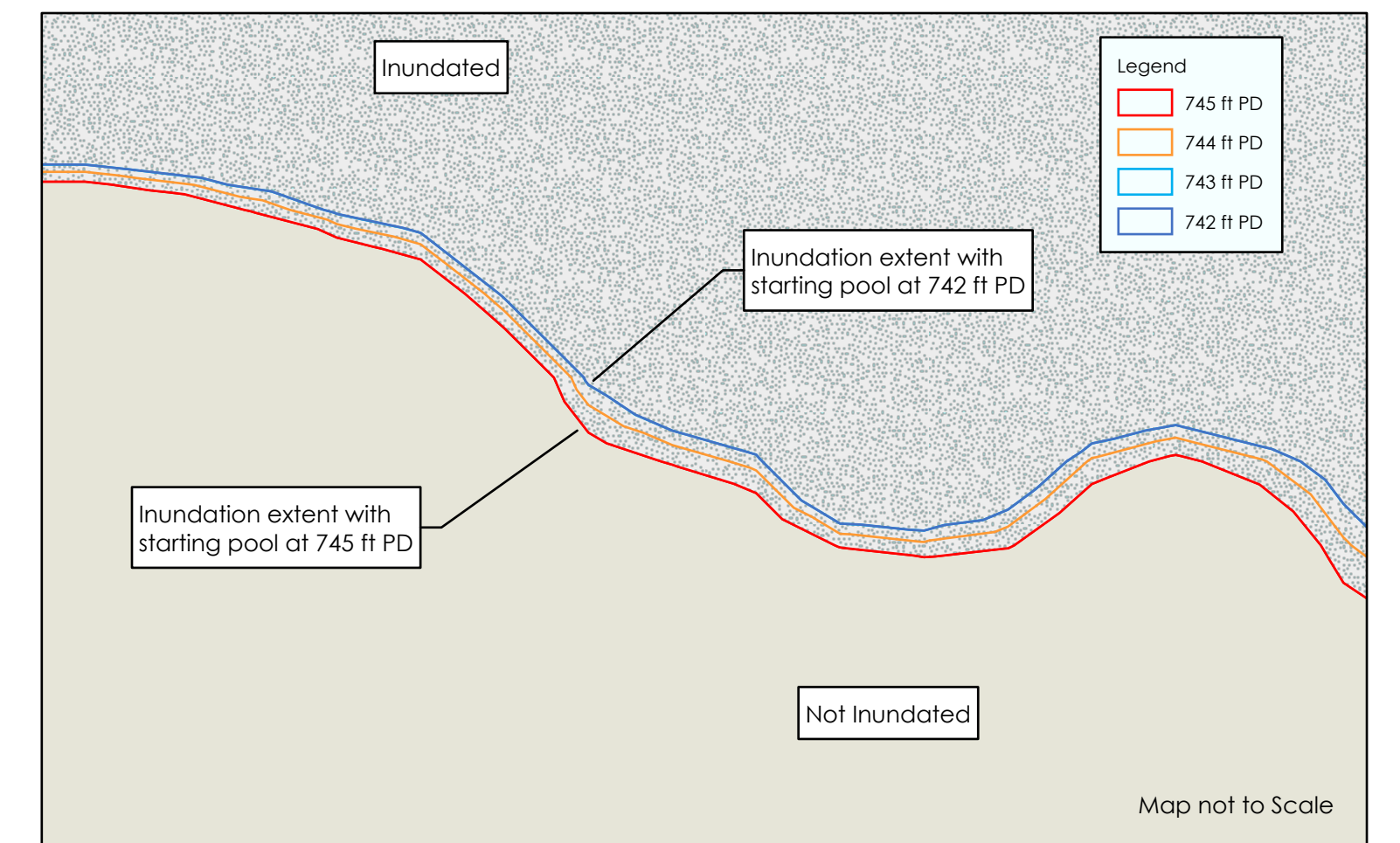


Overview Map Legend

1:24,000-scale Map Sheet	Road Class
County Boundary	Interstate
Municipality	US Highway
Unincorporated	

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.



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/cgi/search.aspx>).

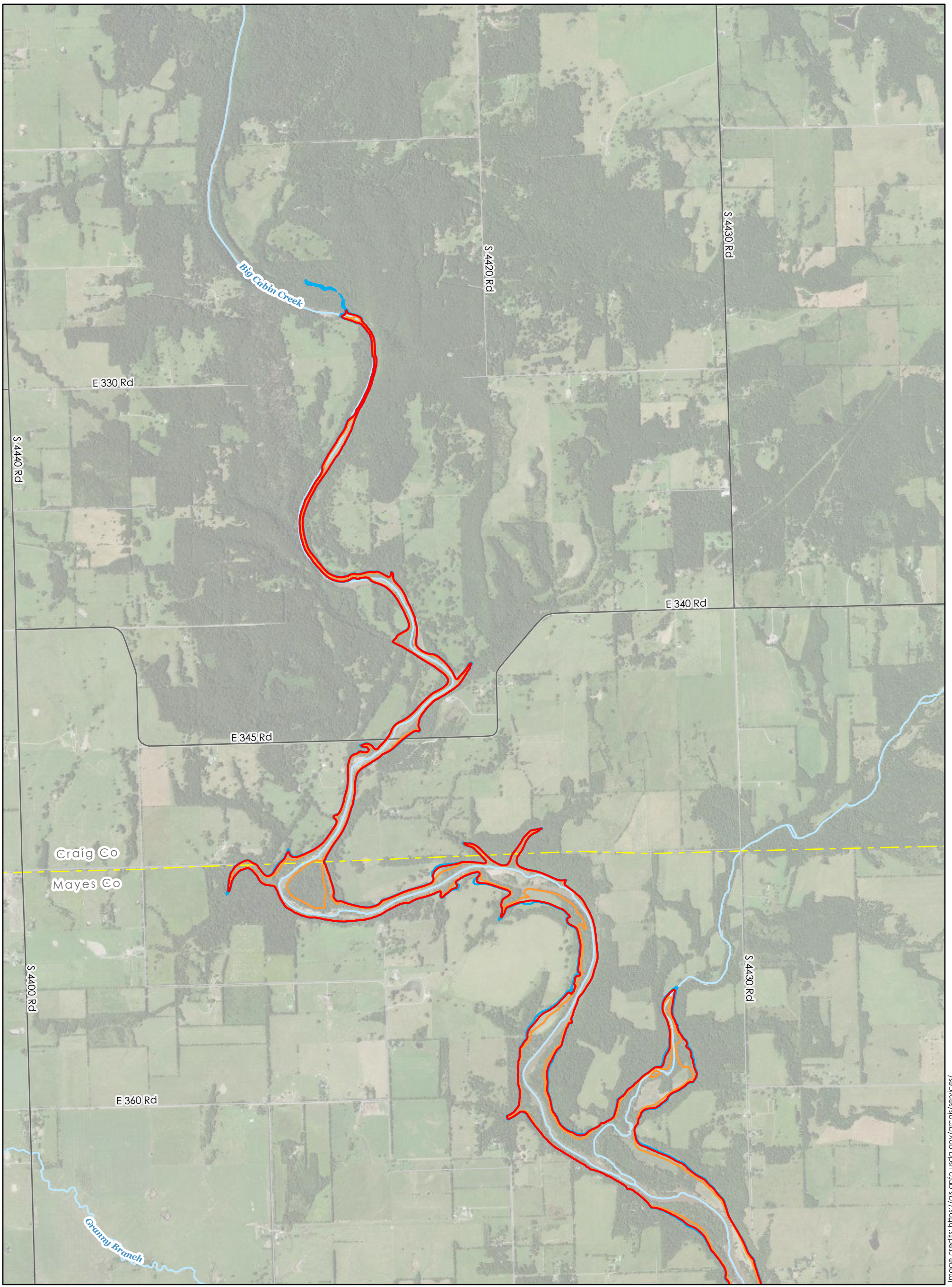


Image credits: https://gis.cplio.usda.gov/carcgis/services/NAIP/USDA_CONUS_PRIME/ImageServer, 2019

**OCTOBER 2009
INUNDATION SCENARIO**

NORTH
↑

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

1 inch = 2,000 feet

Legend

OCT 2009 MAX INUNDATION	ROAD CLASS	Stream
 745 ft PD	 Interstate	 Stream
 744 ft PD	 State Highway	 Project Boundary
 743 ft PD	 US Highway	 County Boundary
 742 ft PD	 Major Collector	 Municipal Boundary
	 Local Road	

LEGEND NOTES

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

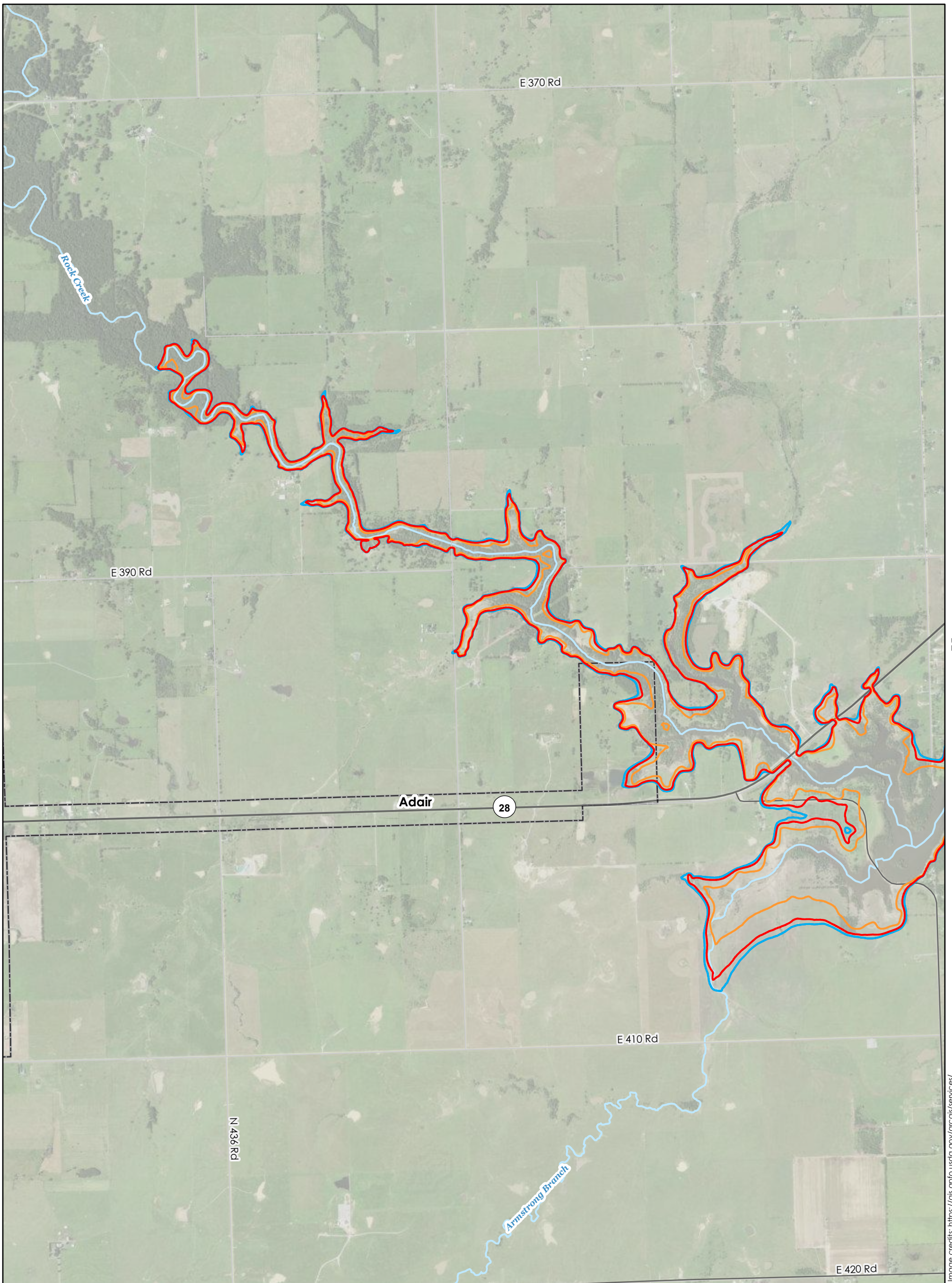
**PENSACOLA DAM
DOWNSTREAM HYDRAULIC MODEL**

GRAND RIVER DAM AUTHORITY

MAP: A1

CRAIG, DELAWARE, AND MAYES
COUNTIES, OKLAHOMA

FERC No. 1494
August 2021



B2

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

C1

OCTOBER 2009 INUNDATION SCENARIO

NORTH

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

1 inch = 2,000 feet

Legend

OCT 2009 MAX INUNDATION	ROAD CLASS	Stream
 745 ft PD	 Interstate	 Stream
 744 ft PD	 State Highway	 Project Boundary
 743 ft PD	 US Highway	 County Boundary
 742 ft PD	 Major Collector	 Municipal Boundary
	 Local Road	

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

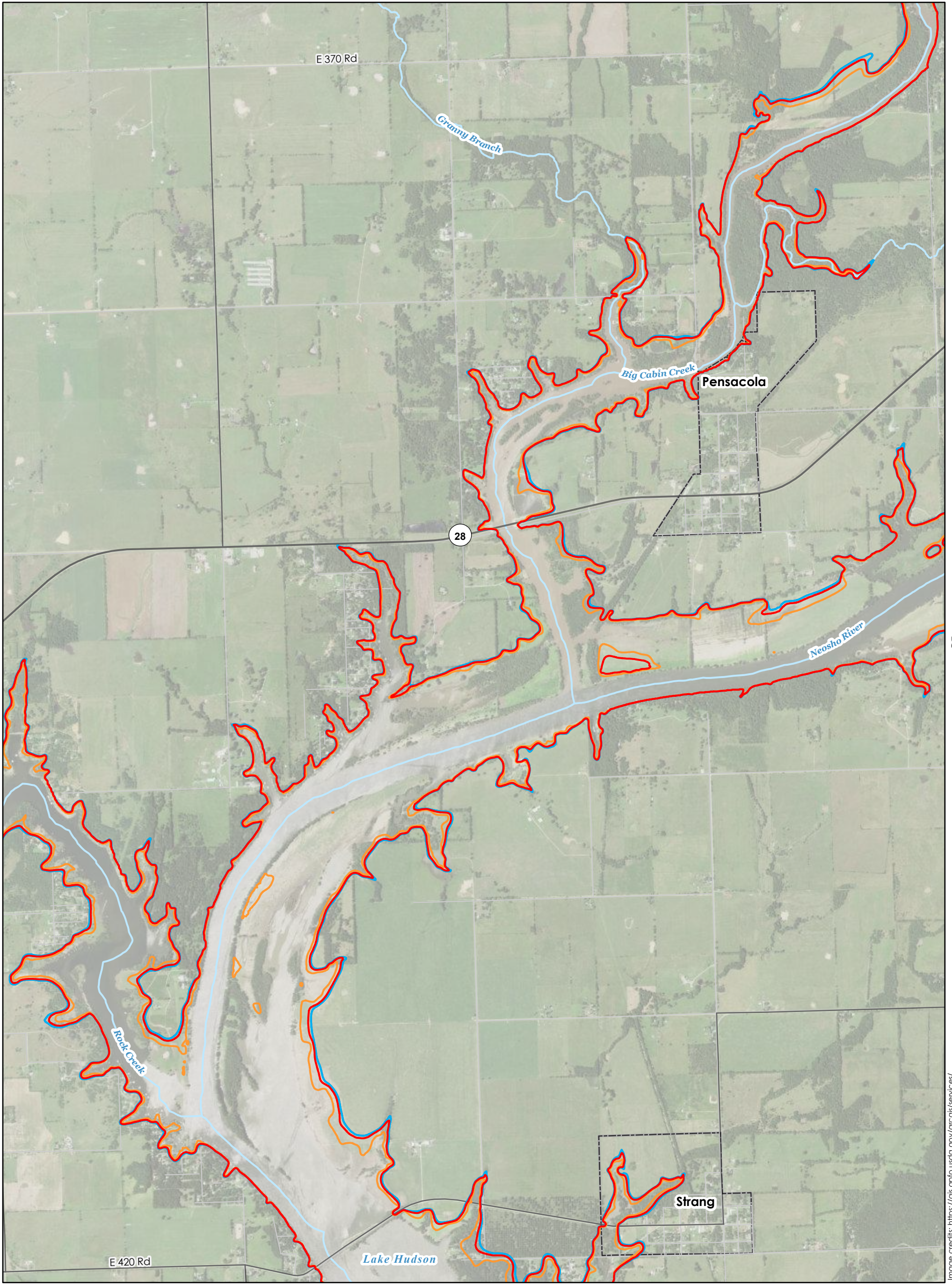
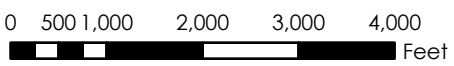


Image credits: https://gis.cplio.usdo.gov/orcgl/services/NAIP/USDA_CONUS_PRIME/ImageServer, 2019

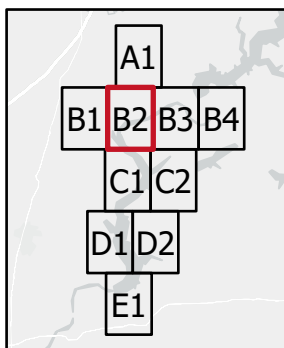
**OCTOBER 2009
INUNDATION SCENARIO**



NORTH



1 inch = 2,000 feet



OCT 2009 MAX INUNDATION

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

Legend

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**

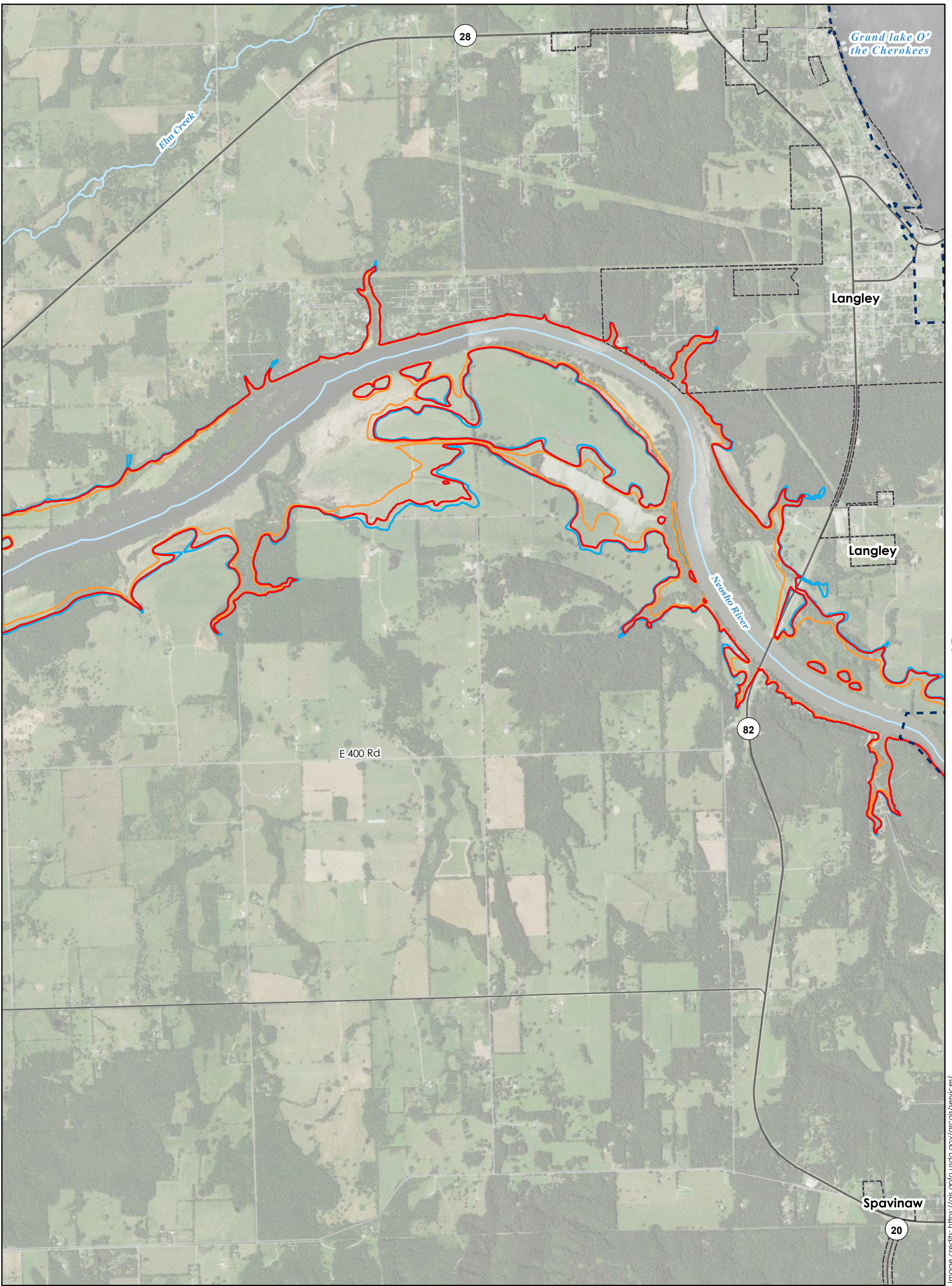
GRAND RIVER DAM AUTHORITY

MAP: B2

CRAIG, DELAWARE, AND MAYES
COUNTIES, OKLAHOMA

FERC No. 1494
August 2021

A1



B2

B4

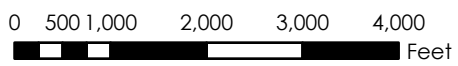
C2

C2

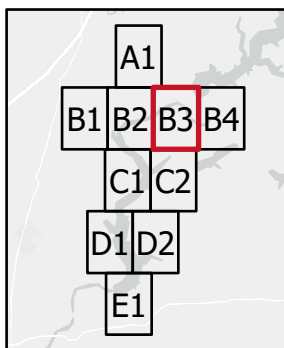
**OCTOBER 2009
INUNDATION SCENARIO**



NORTH



1 inch = 2,000 feet



**OCT 2009 MAX
INUNDATION**

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

LEGEND NOTES

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

Legend

ROAD CLASS

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

- Stream
- Project Boundary
- County Boundary
- Municipal Boundary

**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.cplio.usda.gov/arcgis/services/NAIP/USDA_CONUS_PRIME/ImageServer, 2019

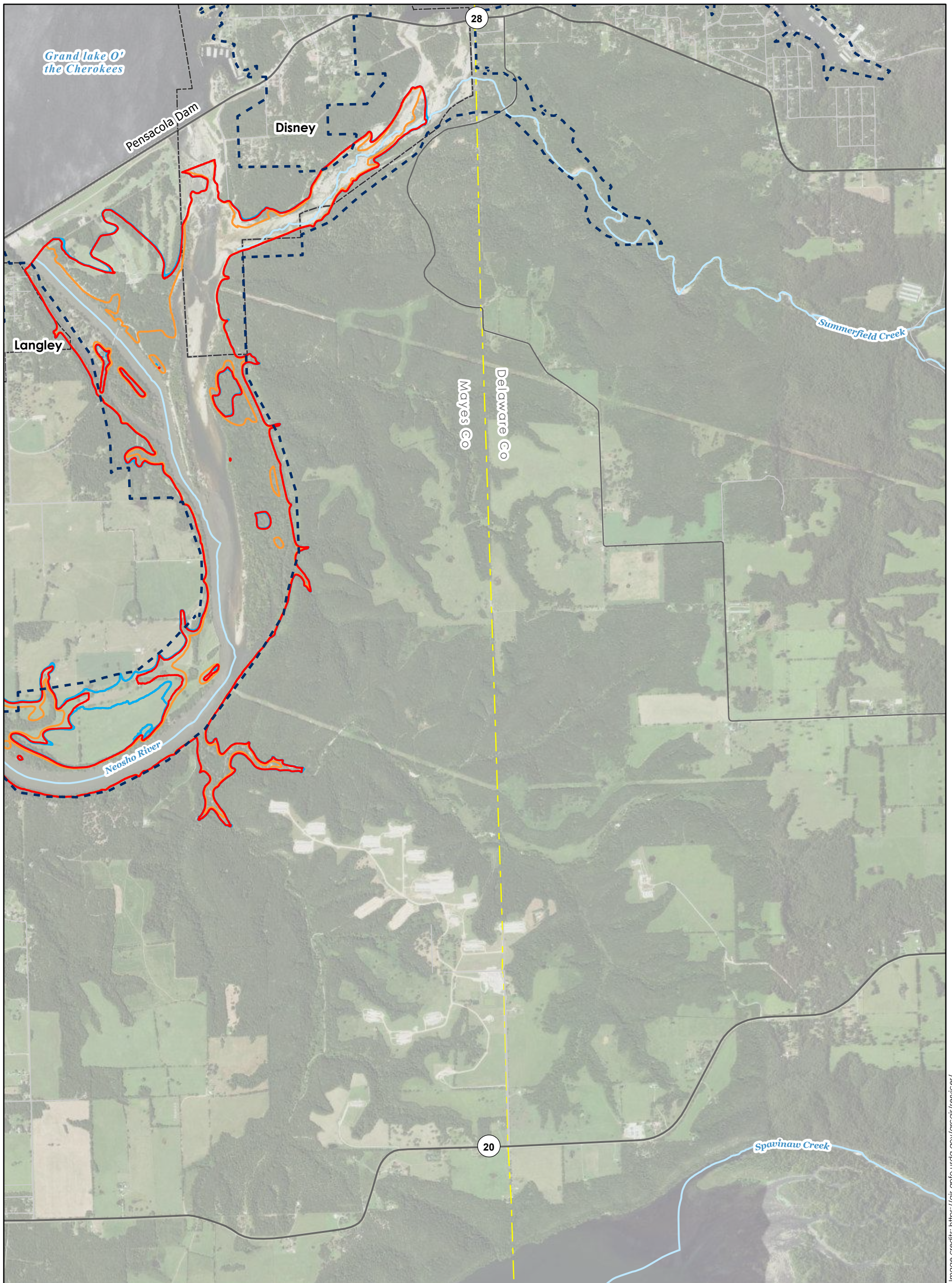


Image credits: https://gis.cpl.usda.gov/arcgis/services/NAIP/USDA_CONUS_PRIME/ImageServer, 2019

OCTOBER 2009 INUNDATION SCENARIO

NORTH

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

1 inch = 2,000 feet

Legend

OCT 2009 MAX INUNDATION	ROAD CLASS	Stream
 745 ft PD	 Interstate	 Project Boundary
 744 ft PD	 State Highway	 County Boundary
 743 ft PD	 US Highway	 Municipal Boundary
 742 ft PD	 Major Collector	
	 Local Road	

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

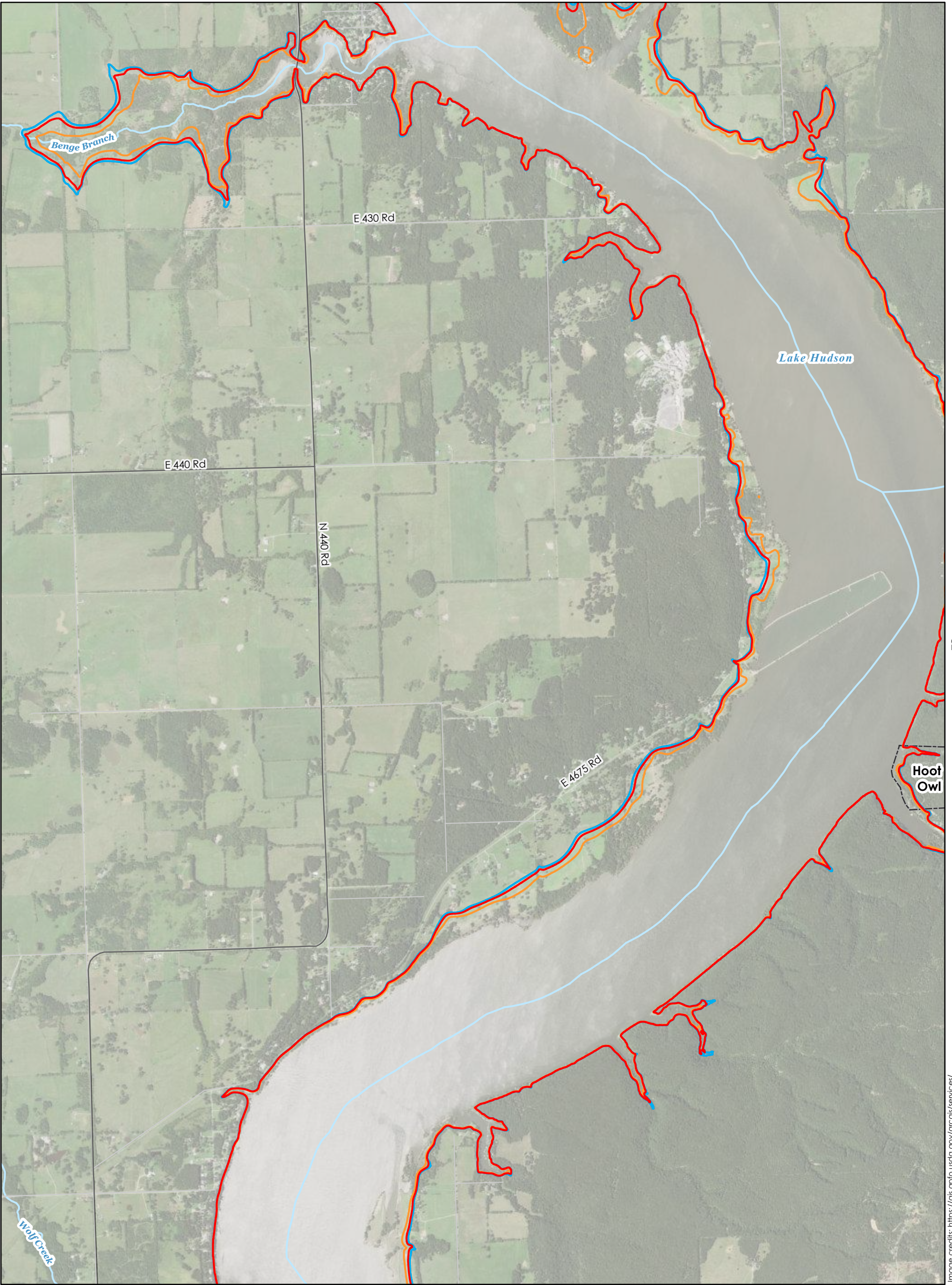
DOWNSTREAM HYDRAULIC MODEL

GRAND RIVER DAM AUTHORITY

MAP: B4

CRAIG, DELAWARE, AND MAYES COUNTIES, OKLAHOMA

FERC No. 1494
August 2021



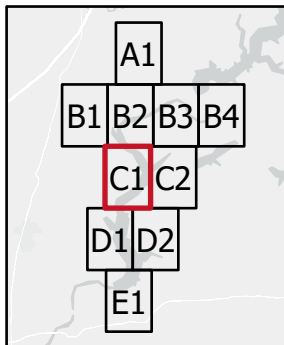
**OCTOBER 2009
INUNDATION SCENARIO**



NORTH

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

1 inch = 2,000 feet



OCT 2009 MAX INUNDATION

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

LEGEND NOTES

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

Legend

ROAD CLASS

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

- Stream
- Project Boundary
- County Boundary
- Municipal Boundary

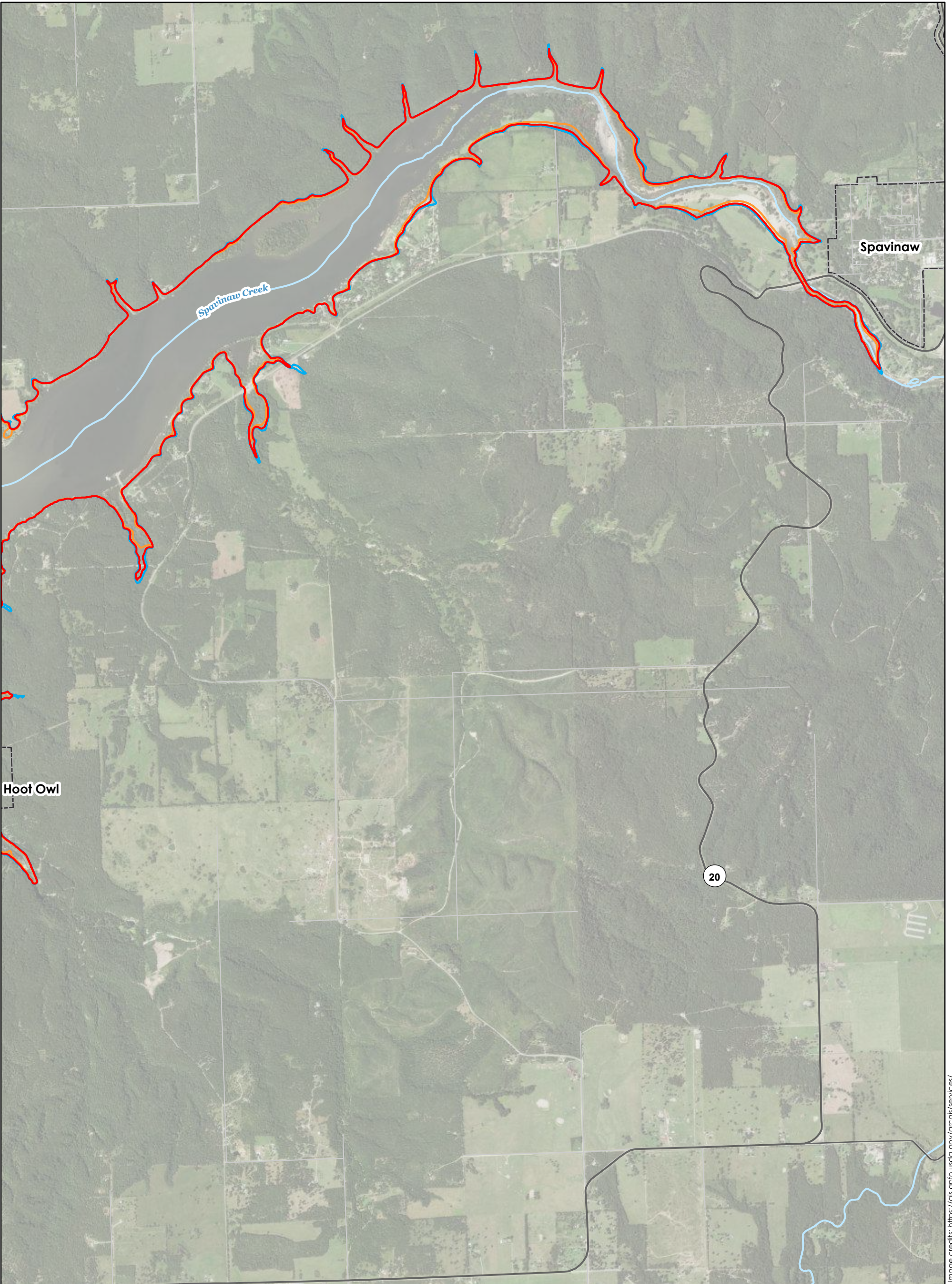
**PENSACOLA DAM
DOWNSTREAM HYDRAULIC MODEL**

GRAND RIVER DAM AUTHORITY

MAP: C1

CRAIG, DELAWARE, AND MAYES
COUNTIES, OKLAHOMA

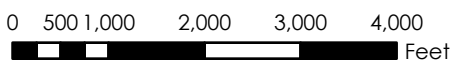
FERC No. 1494
August 2021



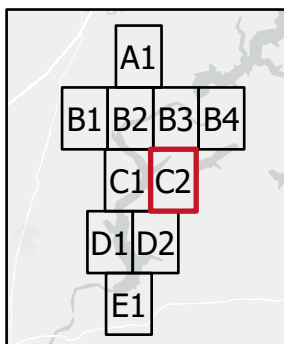
**OCTOBER 2009
INUNDATION SCENARIO**



NORTH



1 inch = 2,000 feet



OCT 2009 MAX INUNDATION

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

Legend

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

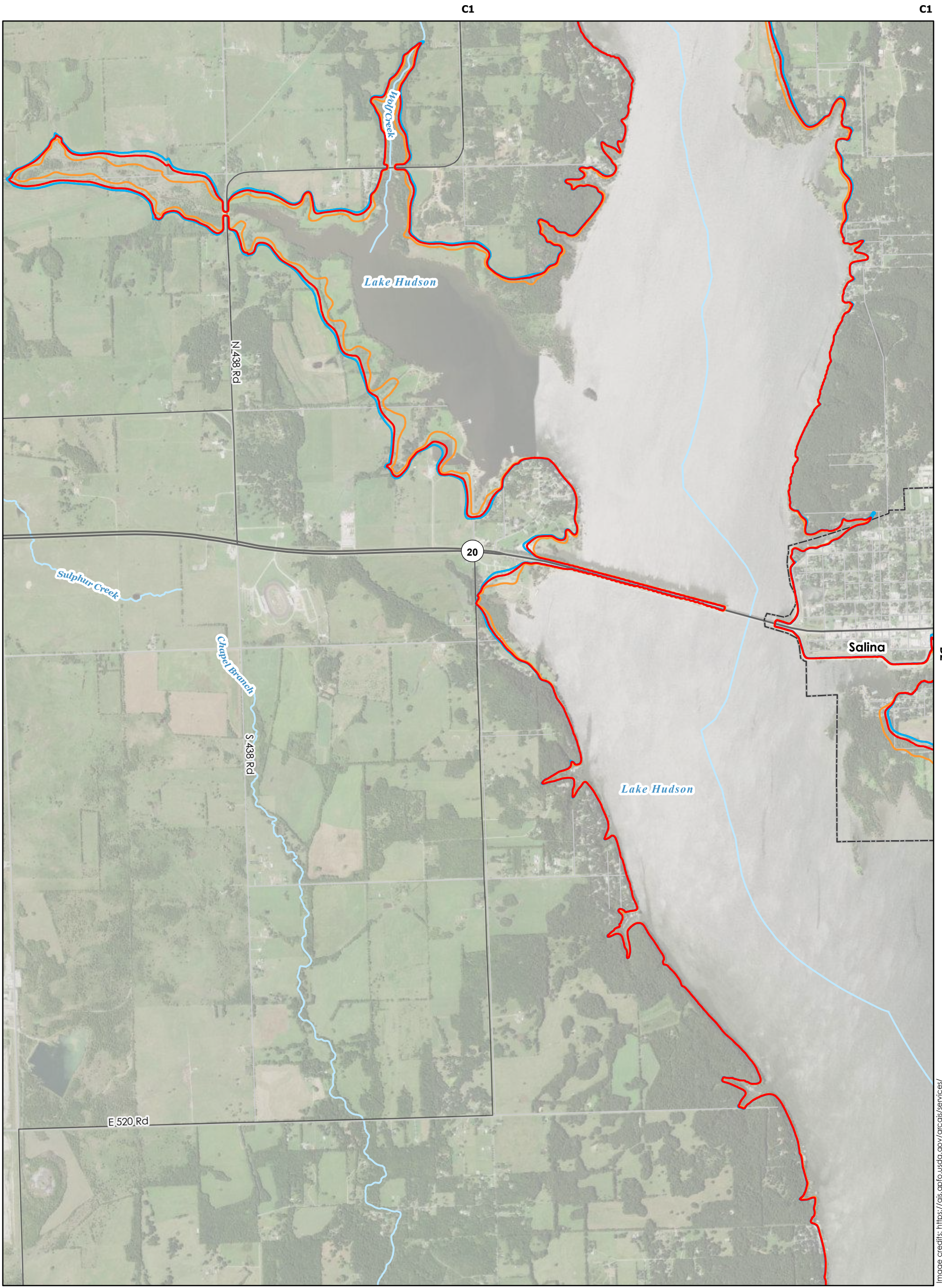


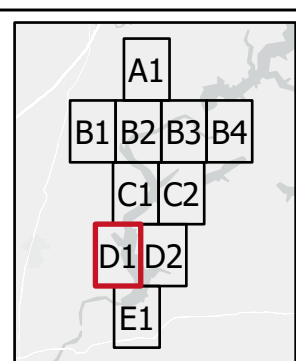
Image credits: https://gis.cplio.usda.gov/arcgis/services/NAIP/USDA_CONUS_PRIME/ImageServer, 2019

OCTOBER 2009 INUNDATION SCENARIO

NORTH

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

1 inch = 2,000 feet



Legend

OCT 2009 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

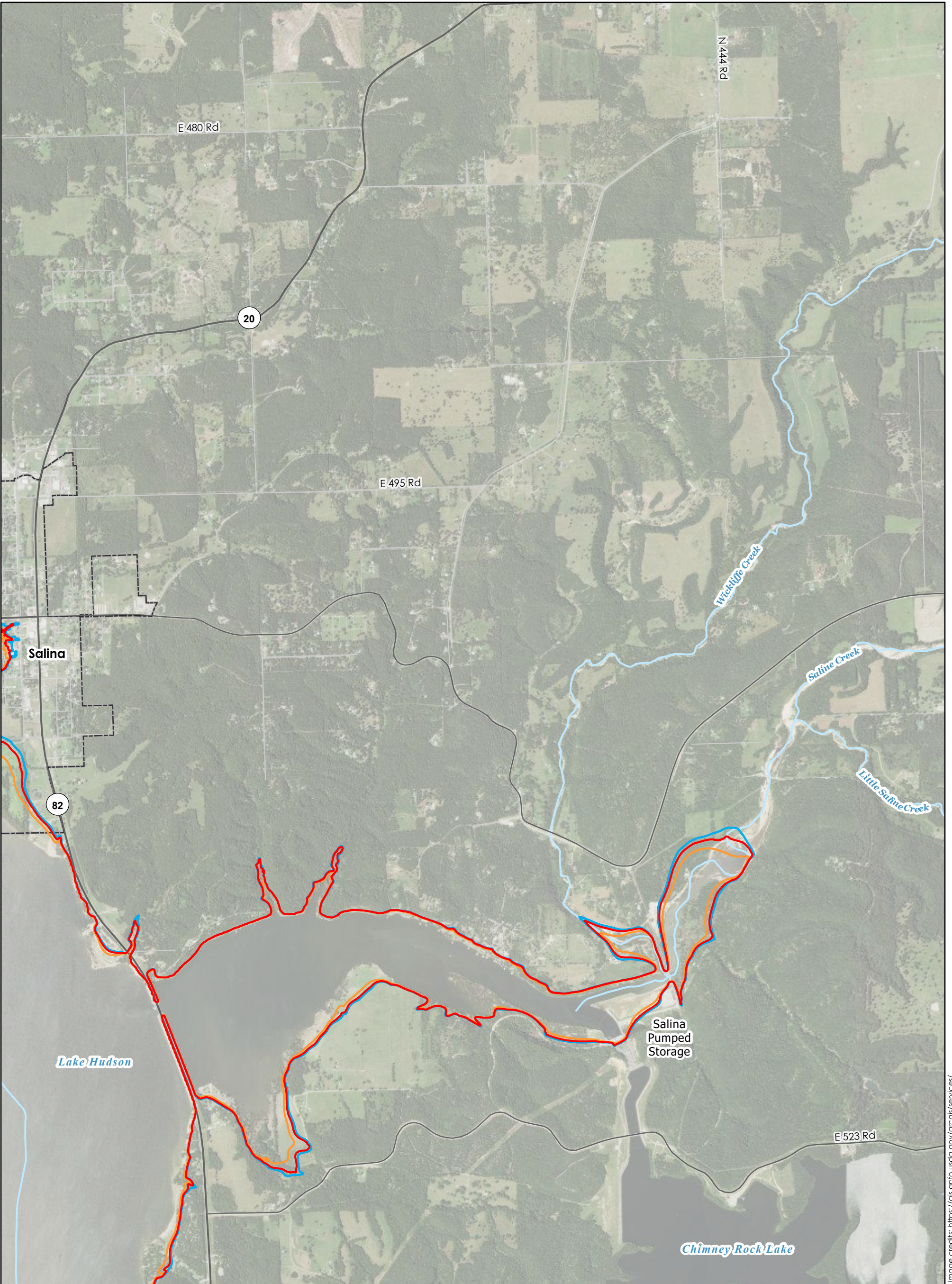
* For areas where only the highest starting elevation inundation boundary is visible, the inundation from the other starting elevations is nearly identical.

PENSACOLA DAM
DOWNSTREAM HYDRAULIC MODEL
GRAND RIVER DAM AUTHORITY

MAP: D1

CRAIG, DELAWARE, AND MAYES
COUNTIES, OKLAHOMA

FERC No. 1494
August 2021



D1

Salina

82

Lake Hudson

Salina Pumped Storage

Chimney Rock Lake

E 523 Rd

E1

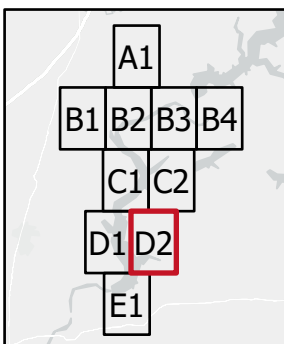
**OCTOBER 2009
INUNDATION SCENARIO**



NORTH

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

1 inch = 2,000 feet



**OCT 2009 MAX
INUNDATION**

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

LEGEND NOTES

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

Legend

ROAD CLASS

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

- Stream
- Project Boundary
- County Boundary
- Municipal Boundary

**PENSACOLA DAM
DOWNSTREAM HYDRAULIC MODEL**

GRAND RIVER DAM AUTHORITY

MAP: D2

CRAIG, DELAWARE, AND MAYES
COUNTIES, OKLAHOMA

FERC No. 1494
August 2021

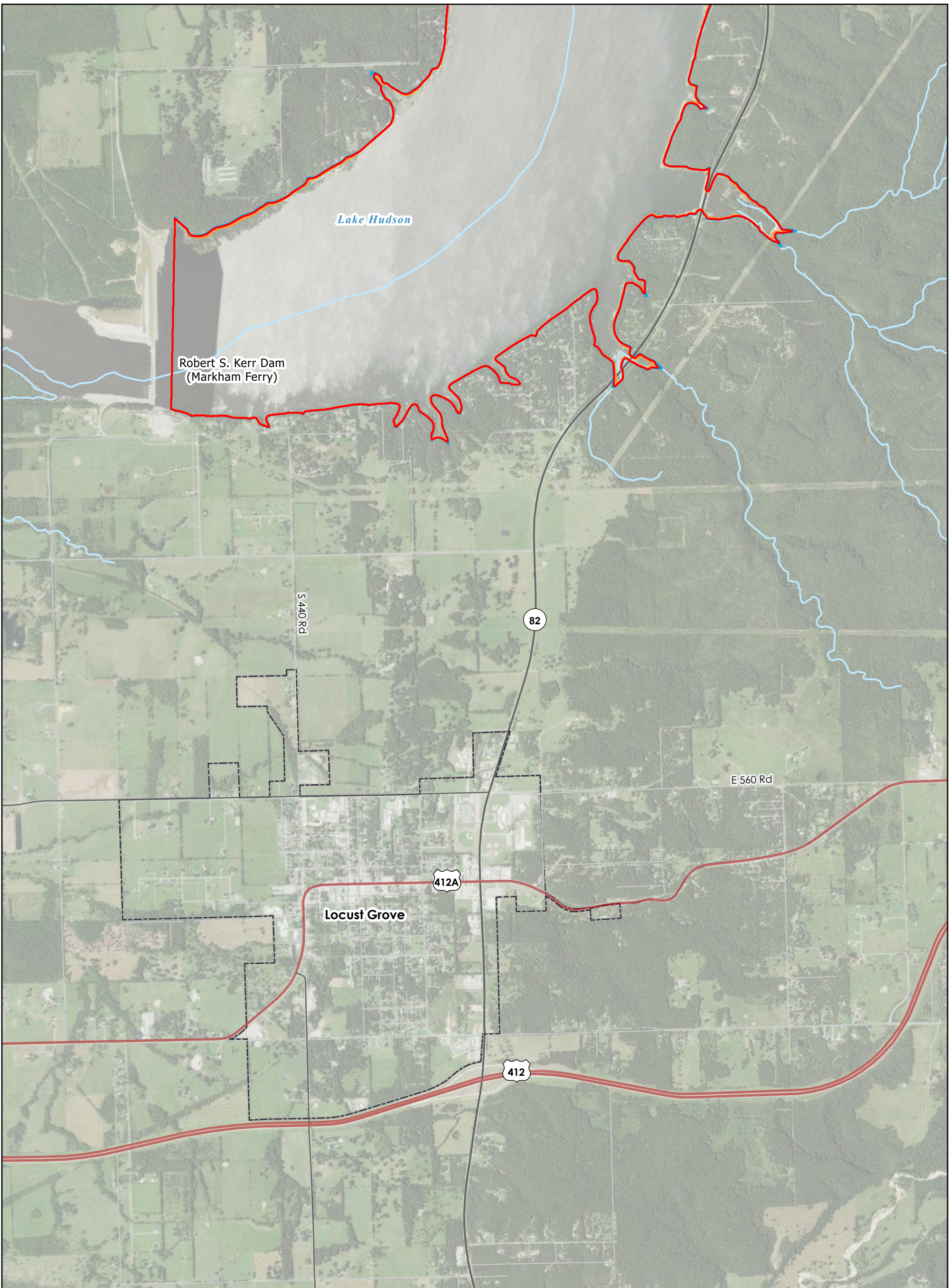


Image credits: https://gis.apfo.usda.gov/arcgis/services/NAIP/USDA_CONUS_PRIME/ImageServer, 2019

OCTOBER 2009 INUNDATION SCENARIO

NORTH

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

1 inch = 2,000 feet

Legend

OCT 2009 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

PENSACOLA DAM

DOWNSTREAM HYDRAULIC MODEL

GRAND RIVER DAM AUTHORITY

MAP: E1

CRAIG, DELAWARE, AND MAYES
COUNTIES, OKLAHOMA

FERC No. 1494
August 2021

LEGEND NOTES

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