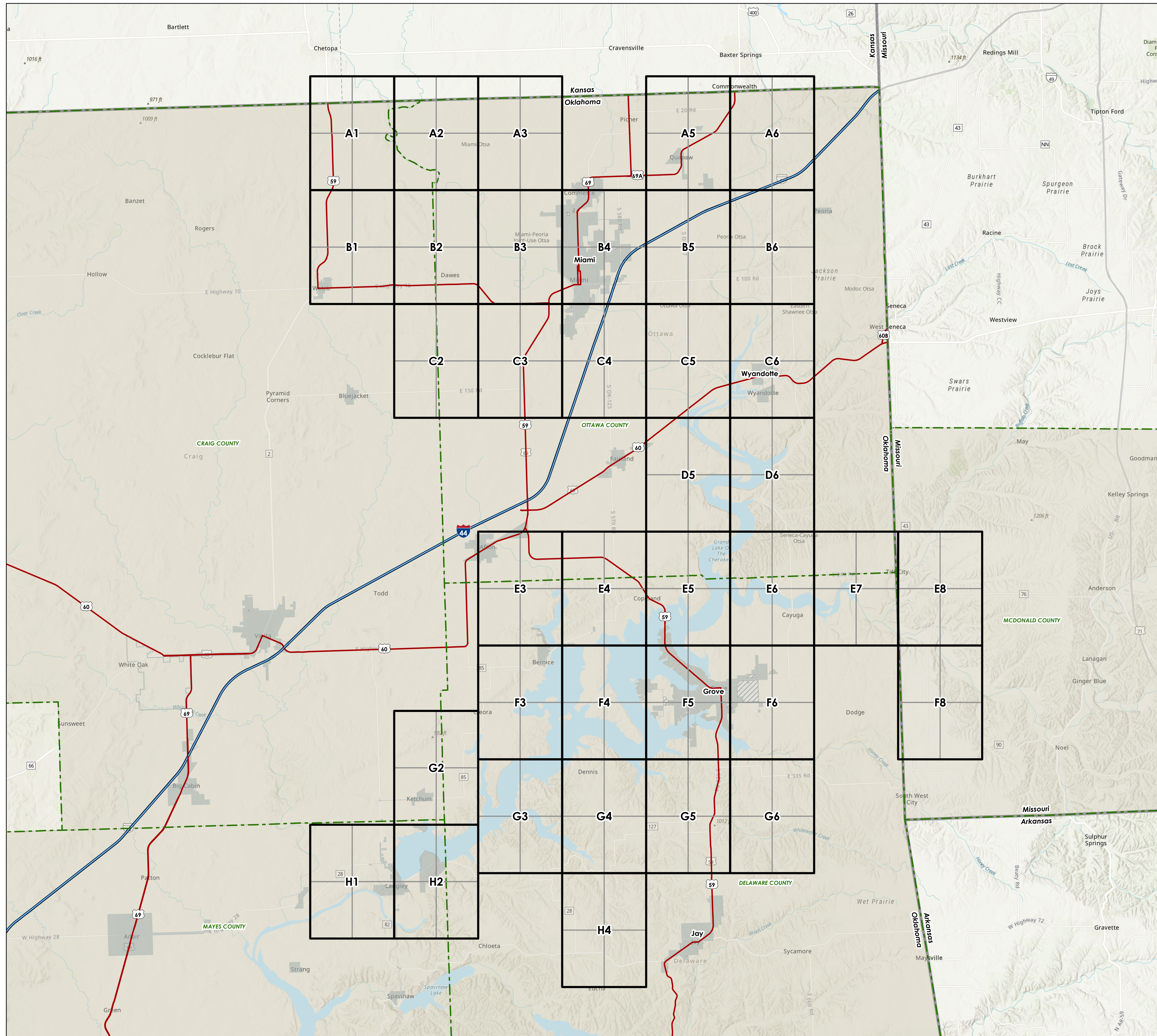

APPENDIX F.5:
DECEMBER 2015 EVENT INUNDATION MAPS

Upstream Model Results Overview Map

Pensacola Dam
GRAND RIVER DAM AUTHORITY
September 2021

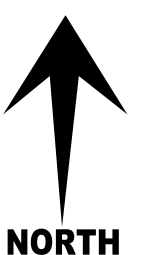
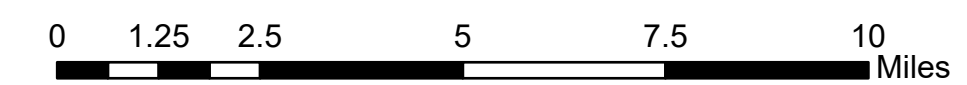
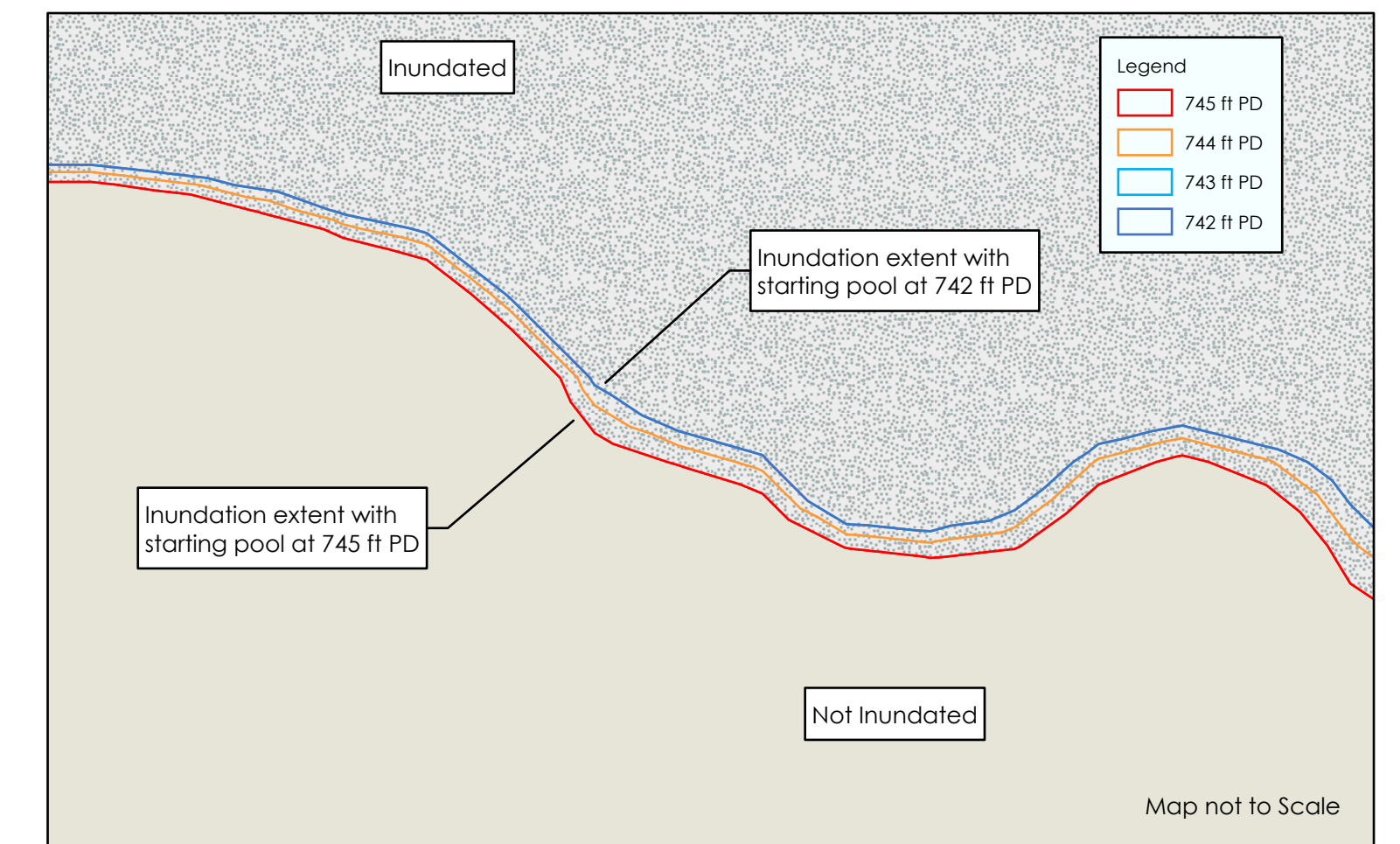


Overview Map Legend

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

Inundation Scenario Mapping

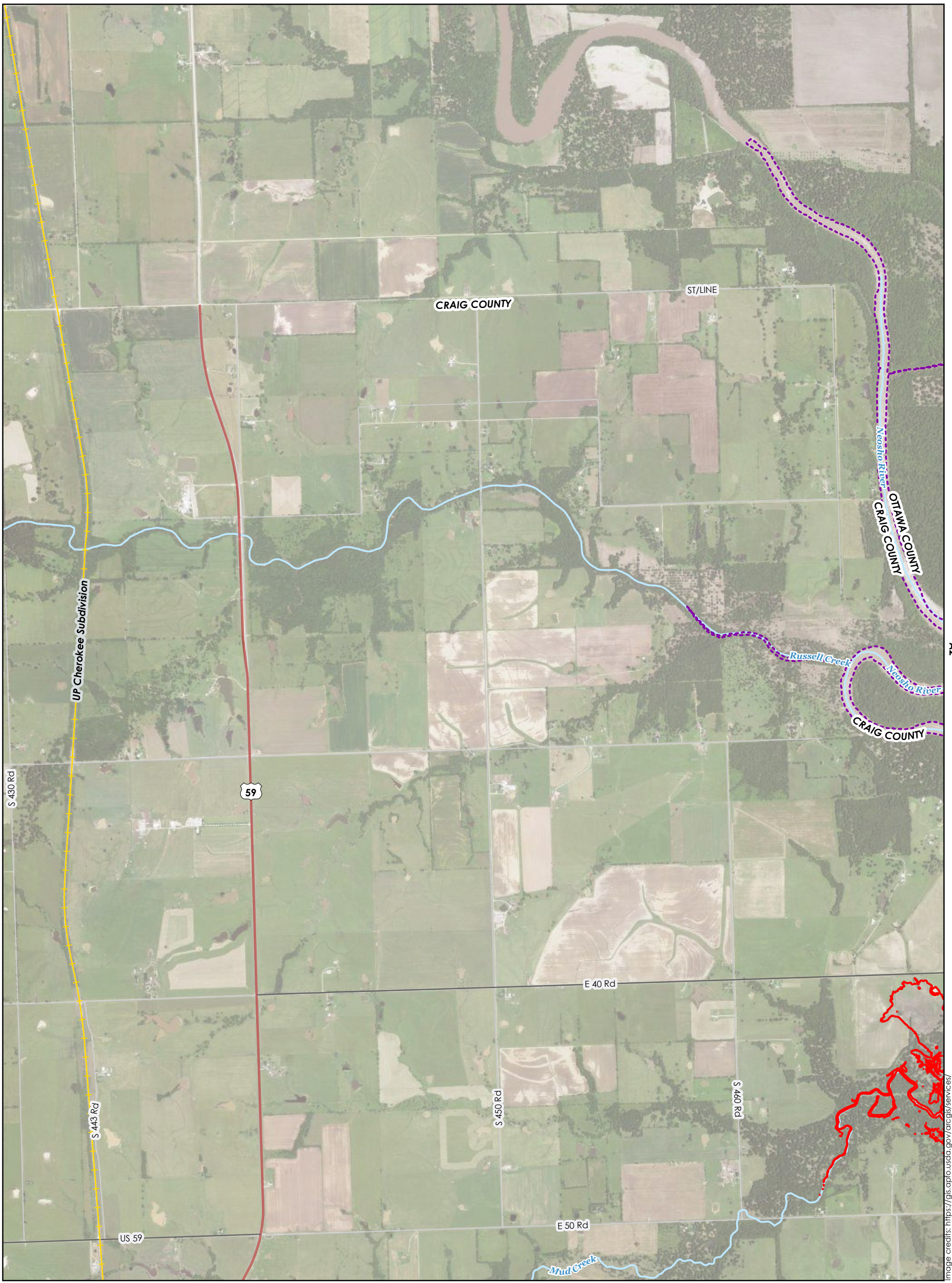
Mapping shows the extent of inundation for the selected hydraulic event under different starting pool elevations: 742 ft PD, 743 ft PD, 744 ft PD, and 745 ft PD.



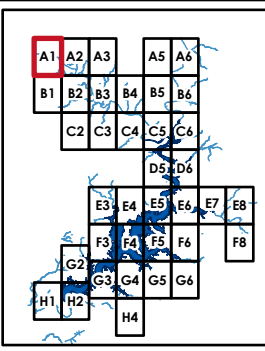
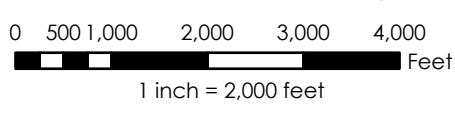
Map Notes

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>).
3. Parcels owned by GRDA are from GIS parcel data provided by County Assessor's Offices (2020).
4. The displayed Flowage Easement is equal to the 760-foot NGVD29 elevation contour, extracted from 2011 Dewberry LIDAR.



DECEMBER 2015 INUNDATION SCENARIO



- DEC 2015 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
- Railroad
 - Stream
 - - - Flowage Easements
 - - - Project Boundary
 - █ GRDA Ownership

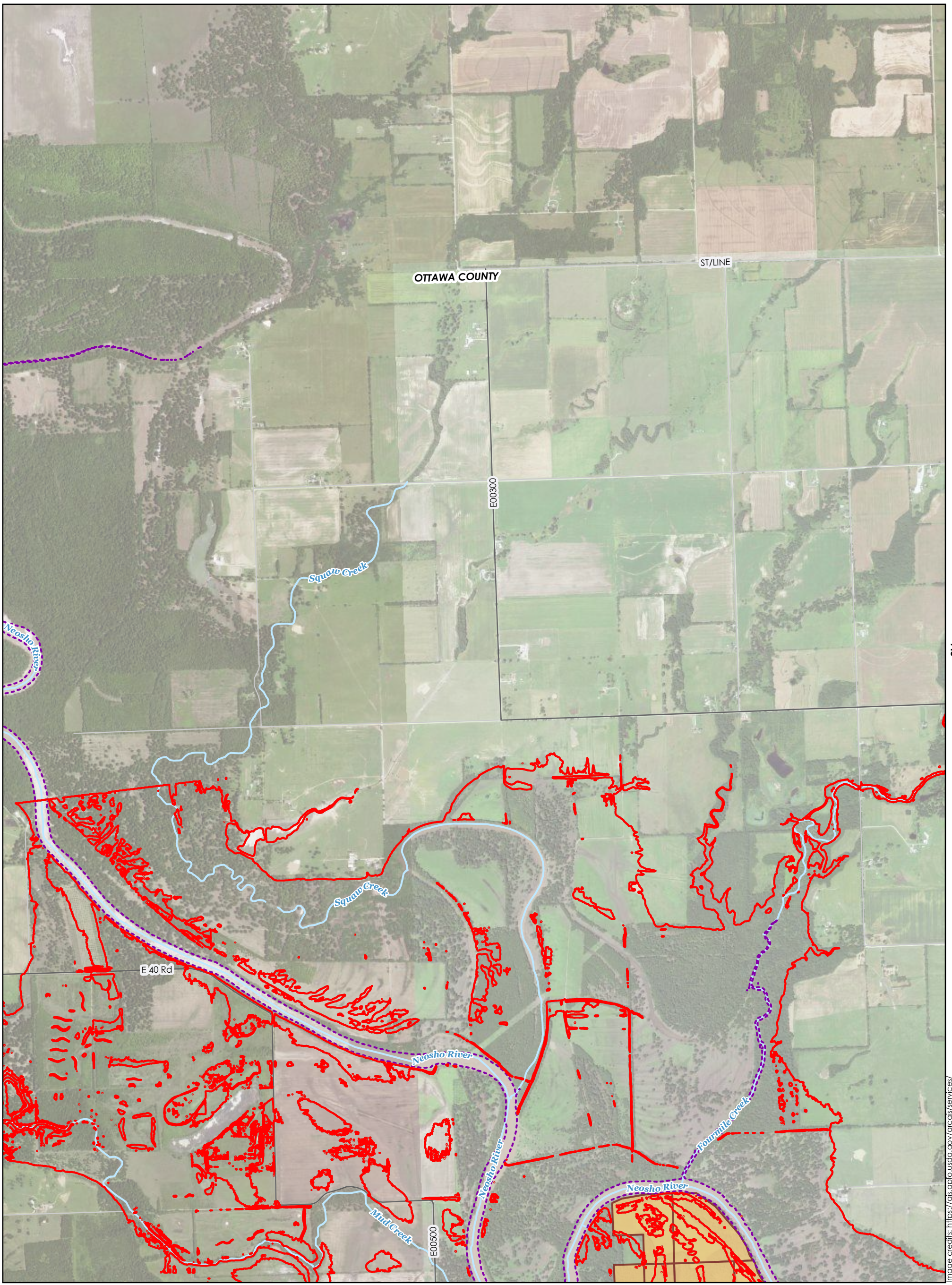
- MAP NOTES**
- For areas where only the highest starting elevation inundation boundary is visible, the inundation from other starting elevations is nearly identical.
 - See Overview Map for notes on data sources.

PENSACOLA DAM GRAND RIVER DAM AUTHORITY

MAP: A1

CRAIG, DELAWARE, MAYES, AND OTTAWA COUNTIES, OKLAHOMA
FERC No. 1494
 September 2021

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



DECEMBER 2015 INUNDATION SCENARIO

NORTH

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

1 inch = 2,000 feet

Legend

DEC 2015 MAX INUNDATION	ROAD CLASS	Railroad
█ 745 ft PD	Interstate	Stream
█ 744 ft PD	State Highway	Flowage Easements
█ 743 ft PD	US Highway	Project Boundary
█ 742 ft PD	Major Collector	GRDA Ownership
	Local Road	

PENSACOLA DAM

GRAND RIVER DAM AUTHORITY

MAP: A2

CRAIG, DELAWARE, MAYES, AND OTTAWA COUNTIES, OKLAHOMA

FERC No. 1494
September 2021

MAP NOTES

- For areas where only the highest starting elevation inundation boundary is visible, the inundation from other starting elevations is nearly identical.
- See Overview Map for notes on data sources.

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

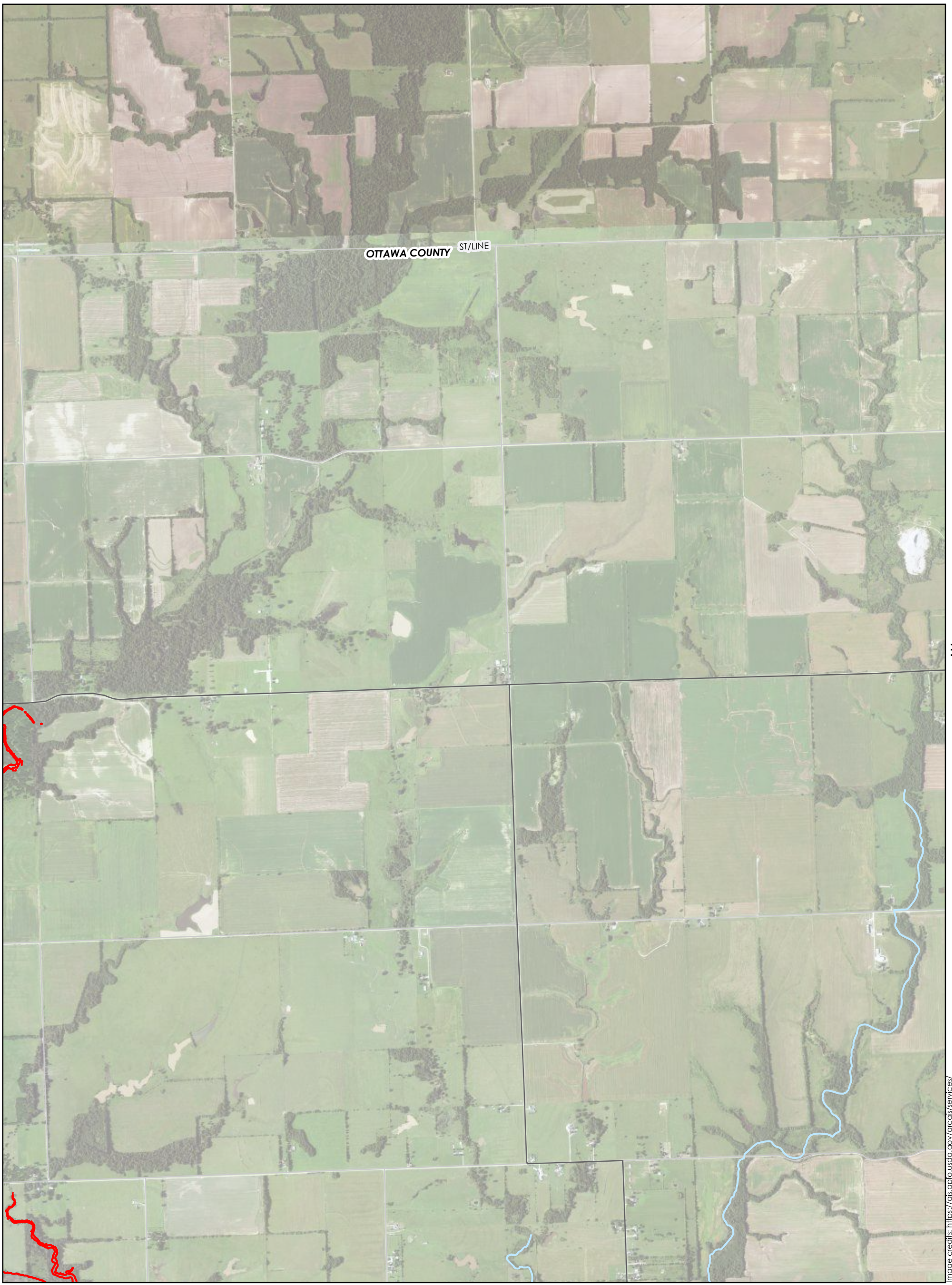
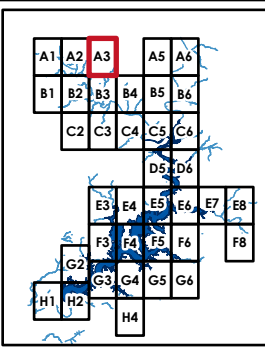
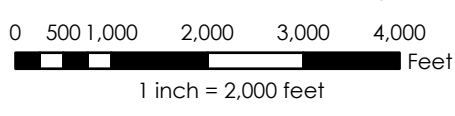


Image credits: https://gis.dplbo.usda.gov/arcgis/services/NAIP/USDA_CONUS_PRIME/ImageServer, 2019

DECEMBER 2015 INUNDATION SCENARIO



- DEC 2015 MAX INUNDATION**
- 745 ft PD
 - 744 ft PD
 - 743 ft PD
 - 742 ft PD

MAP NOTES

1. For areas where only the highest starting elevation inundation boundary is visible, the inundation from other starting elevations is nearly identical.
2. See Overview Map for notes on data sources.

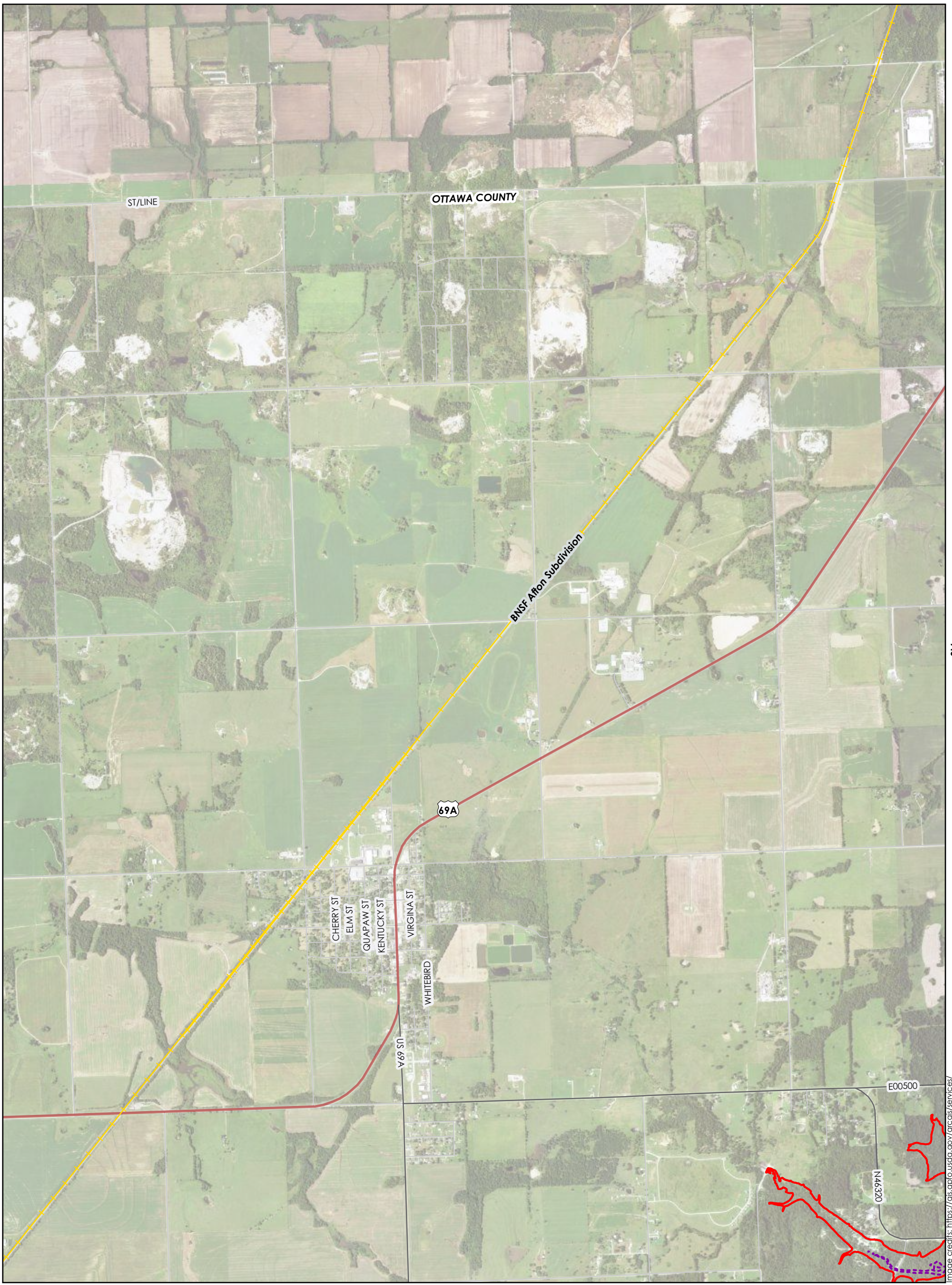
Legend

- ROAD CLASS**
- Interstate
 - State Highway
 - US Highway
 - Major Collector
 - Local Road
- Railroad
 - Stream
 - - - Flowage Easements
 - - - Project Boundary
 - GRDA Ownership

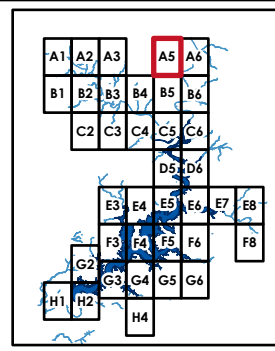
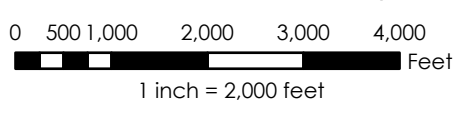
PENSACOLA DAM
GRAND RIVER DAM AUTHORITY

MAP: A3

CRAIG, DELAWARE, MAYES, AND OTTAWA COUNTIES, OKLAHOMA
FERC No. 1494
September 2021



DECEMBER 2015 INUNDATION SCENARIO



- DEC 2015 MAX INUNDATION**
- █ 745 ft PD
 - █ 744 ft PD
 - █ 743 ft PD
 - █ 742 ft PD

MAP NOTES

1. For areas where only the highest starting elevation inundation boundary is visible, the inundation from other starting elevations is nearly identical.
2. See Overview Map for notes on data sources.

Legend

- ROAD CLASS**
- Interstate
 - State Highway
 - US Highway
 - Major Collector
 - Local Road
- Railroad
 - Stream
 - Flowage Easements
 - - - Project Boundary
 - █ GRDA Ownership

PENSACOLA DAM GRAND RIVER DAM AUTHORITY

MAP: A5

CRAIG, DELAWARE, MAYES, AND OTTAWA COUNTIES, OKLAHOMA

FERC No. 1494
September 2021

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

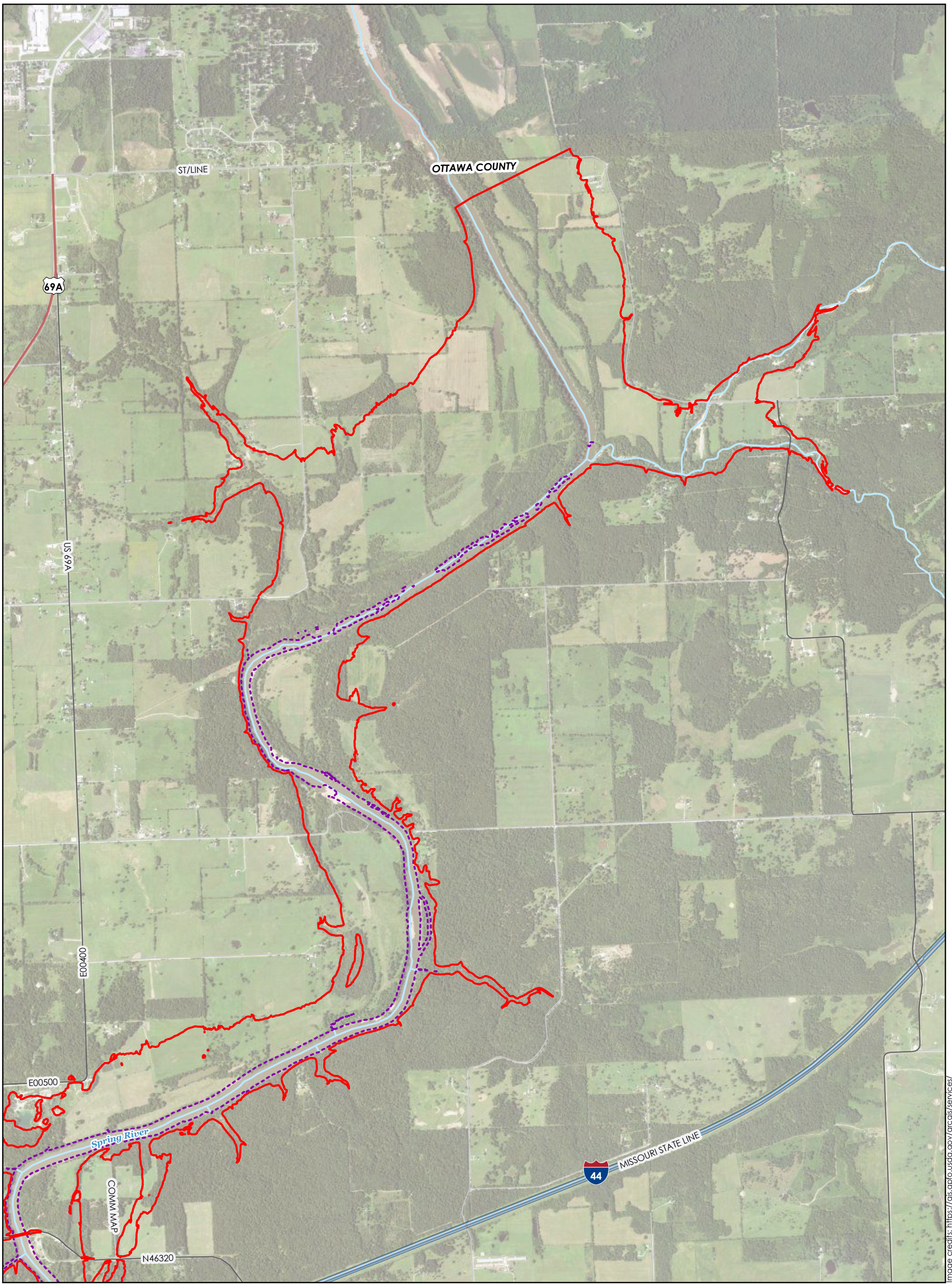
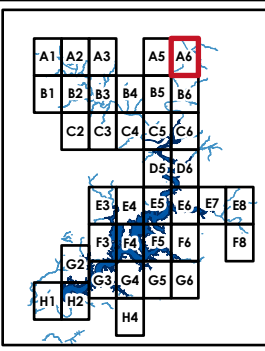
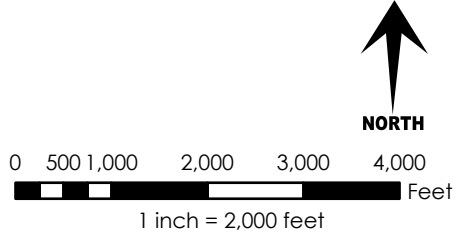


Image credits: https://gis.dplb.usda.gov/arcgis/services/NAIP/USDA_CONUS_PRIME/ImageServer, 2019

DECEMBER 2015 INUNDATION SCENARIO



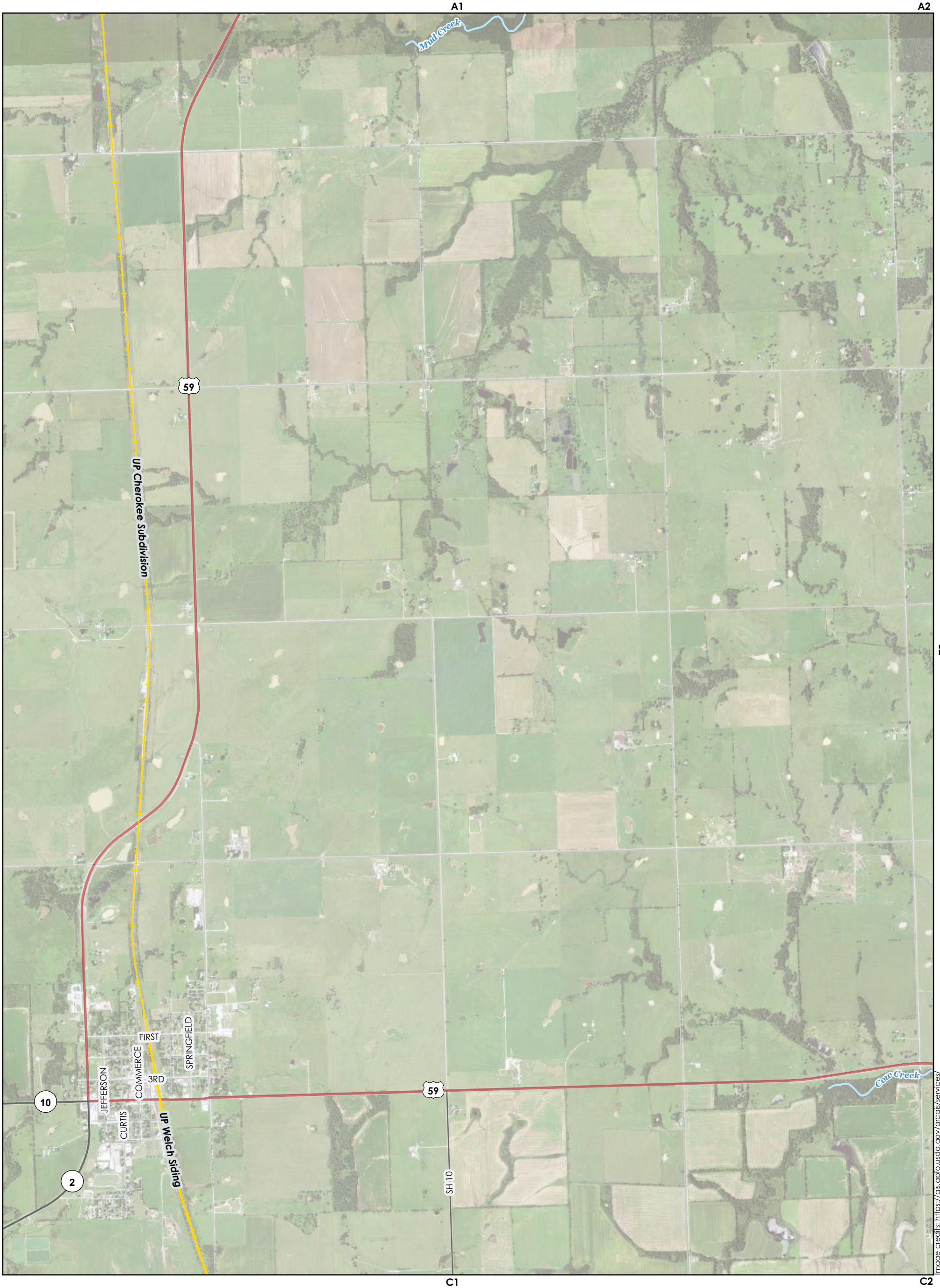
- DEC 2015 MAX INUNDATION**
- █ 745 ft PD
 - █ 744 ft PD
 - █ 743 ft PD
 - █ 742 ft PD
- Legend**
- | | | |
|---|---|--|
| — Interstate | — Railroad | — Stream |
| — State Highway | - - - Flowage Easements | - - - Project Boundary |
| — US Highway | █ GRDA Ownership | |
| — Major Collector | | |
| — Local Road | | |

- MAP NOTES**
- For areas where only the highest starting elevation inundation boundary is visible, the inundation from other starting elevations is nearly identical.
 - See Overview Map for notes on data sources.

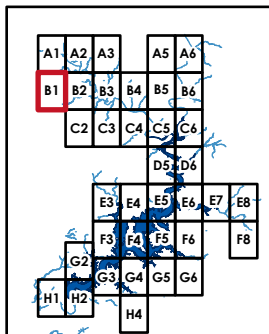
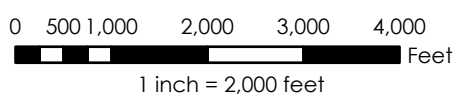
PENSACOLA DAM GRAND RIVER DAM AUTHORITY

MAP: A6

CRAIG, DELAWARE, MAYES, AND OTTAWA COUNTIES, OKLAHOMA
FERC No. 1494
 September 2021



DECEMBER 2015 INUNDATION SCENARIO



- DEC 2015 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
- Railroad
 - Stream
 - Flowage Easements
 - - - Project Boundary
 - █ GRDA Ownership

MAP NOTES

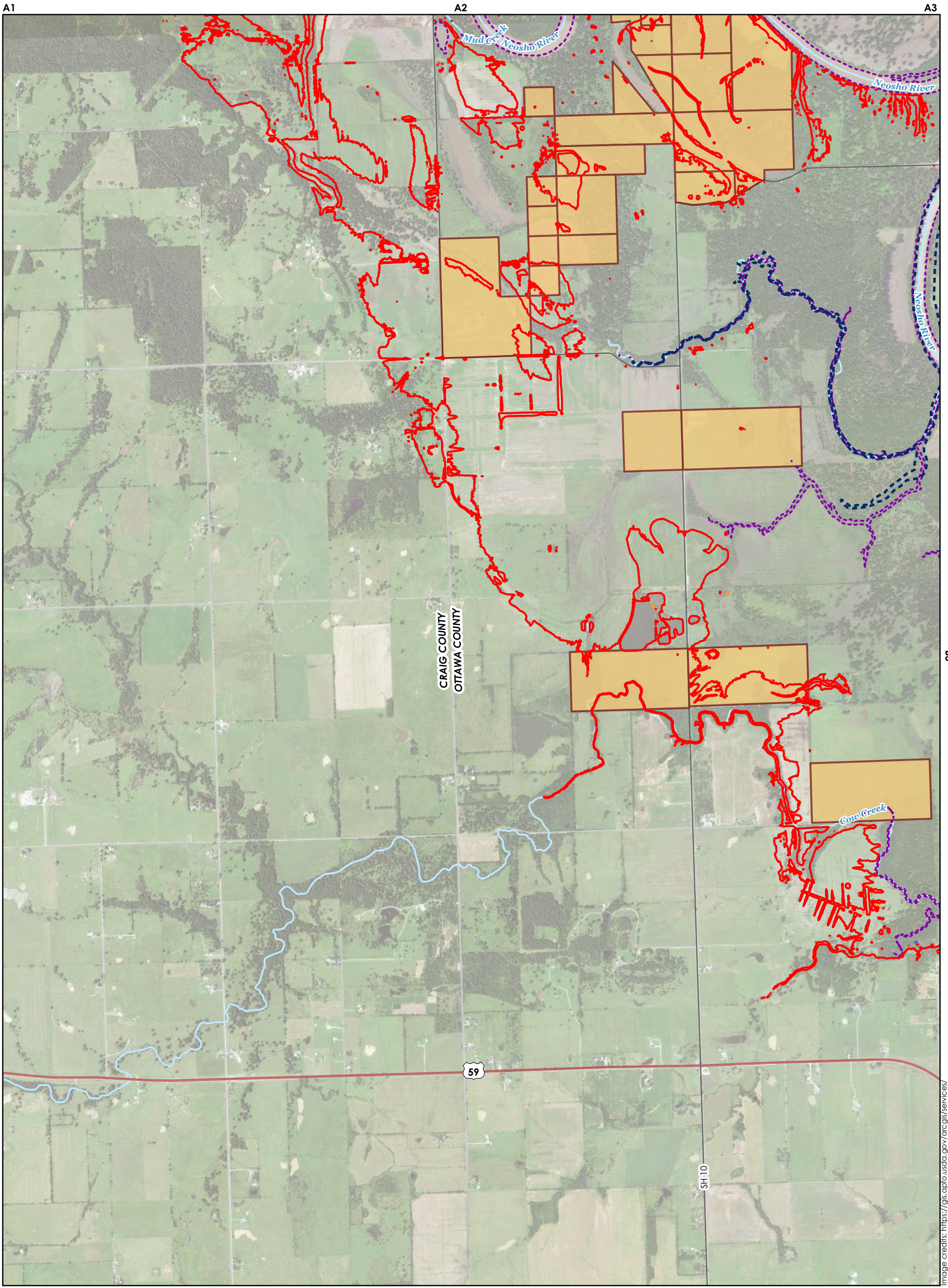
1. For areas where only the highest starting elevation inundation boundary is visible, the inundation from other starting elevations is nearly identical.
2. See Overview Map for notes on data sources.

PENSACOLA DAM
GRAND RIVER DAM AUTHORITY

MAP: B1

CRAIG, DELAWARE, MAYES, AND OTTAWA COUNTIES, OKLAHOMA

FERC No. 1494
September 2021

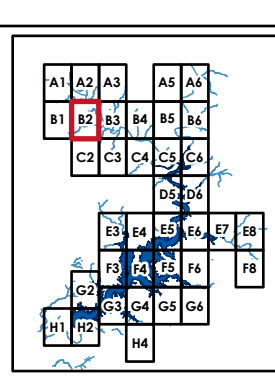


DECEMBER 2015 INUNDATION SCENARIO

NORTH

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

1 inch = 2,000 feet



Legend

DEC 2015 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

- Railroad
- Stream
- Flowage Easements
- Project Boundary
- GRDA Ownership

MAP NOTES

- For areas where only the highest starting elevation inundation boundary is visible, the inundation from other starting elevations is nearly identical.
- See Overview Map for notes on data sources.

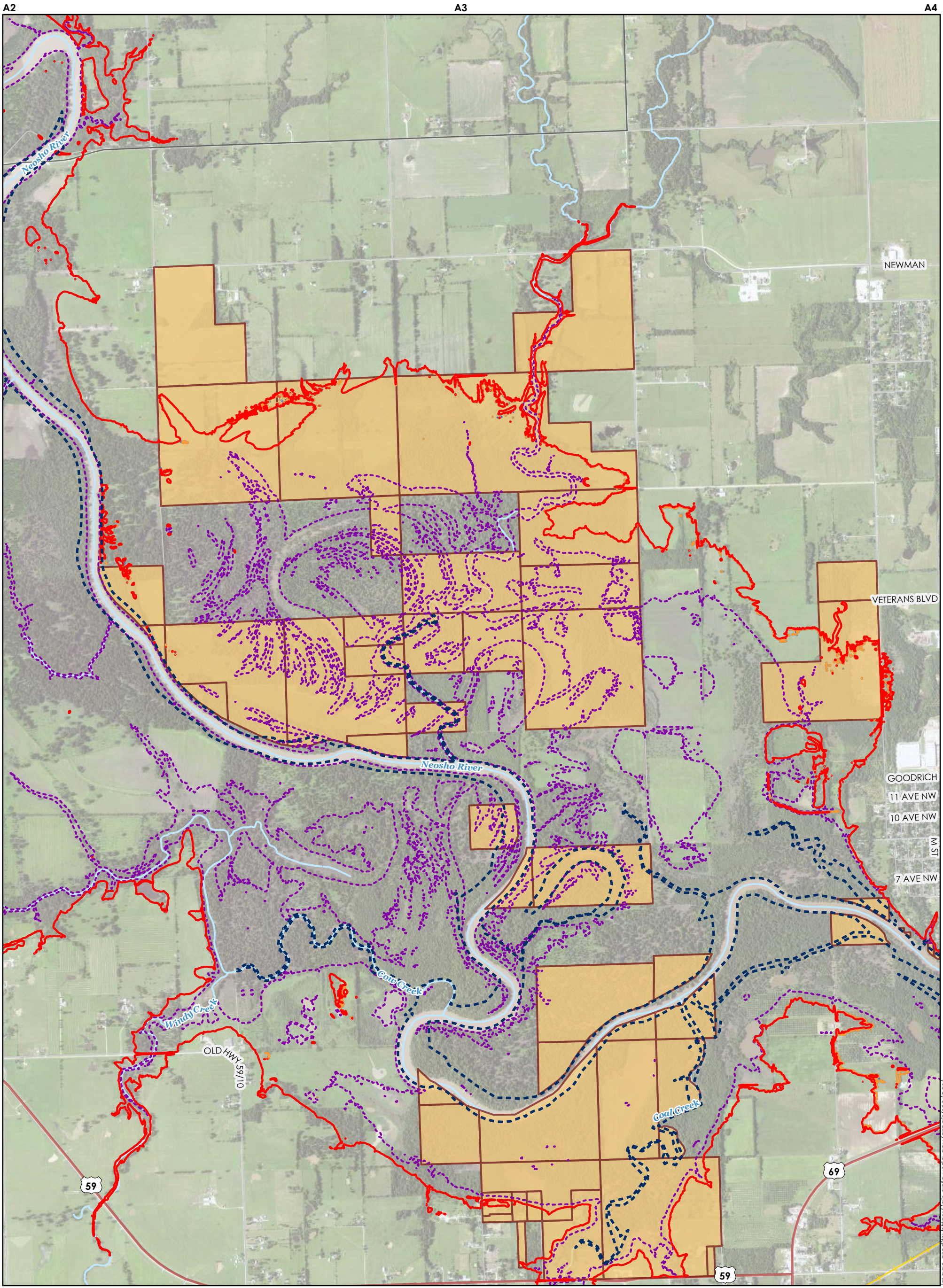
PENSACOLA DAM
GRAND RIVER DAM AUTHORITY

MAP: B2

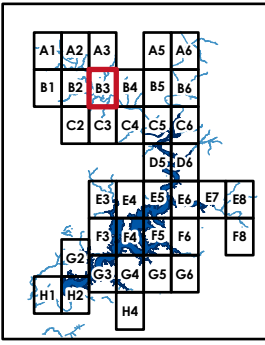
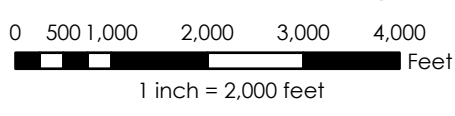
CRAIG, DELAWARE, MAYES, AND OTTAWA COUNTIES, OKLAHOMA

FERC No. 1494
September 2021

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



DECEMBER 2015 INUNDATION SCENARIO



- DEC 2015 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
- Railroad
 - Stream
 - Flowage Easements
 - - - Project Boundary
 - GRDA Ownership

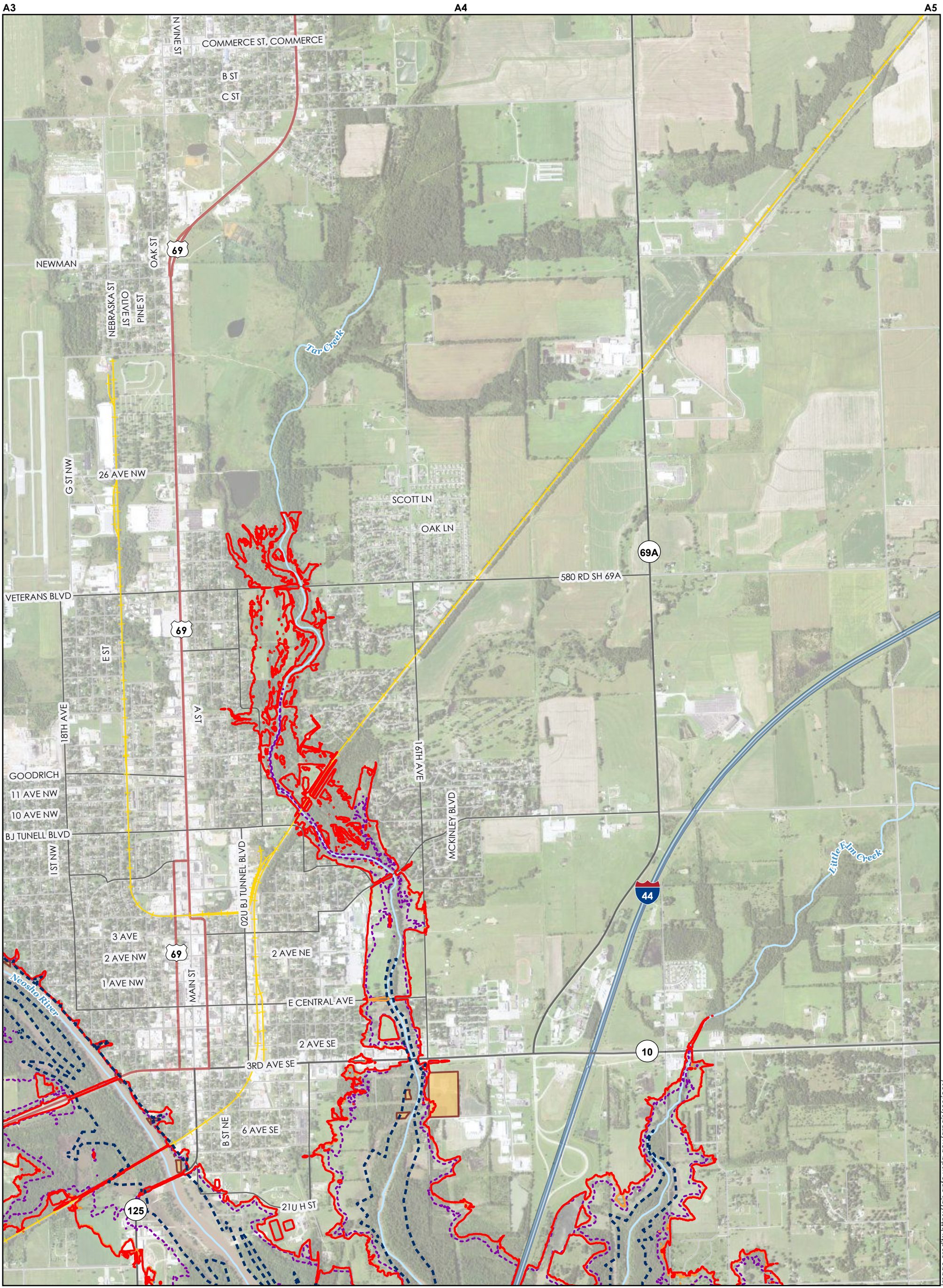
- MAP NOTES**
- For areas where only the highest starting elevation inundation boundary is visible, the inundation from other starting elevations is nearly identical.
 - See Overview Map for notes on data sources.

PENSACOLA DAM GRAND RIVER DAM AUTHORITY

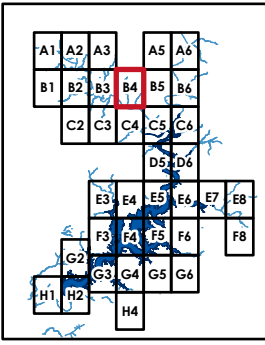
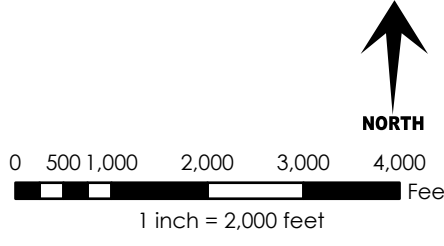
MAP: B3

CRAIG, DELAWARE, MAYES, AND OTTAWA COUNTIES, OKLAHOMA
FERC No. 1494
 September 2021

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



**DECEMBER 2015
INUNDATION SCENARIO**



- DEC 2015 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
- Railroad
 - Stream
 - Flowage Easements
 - - - Project Boundary
 - GRDA Ownership

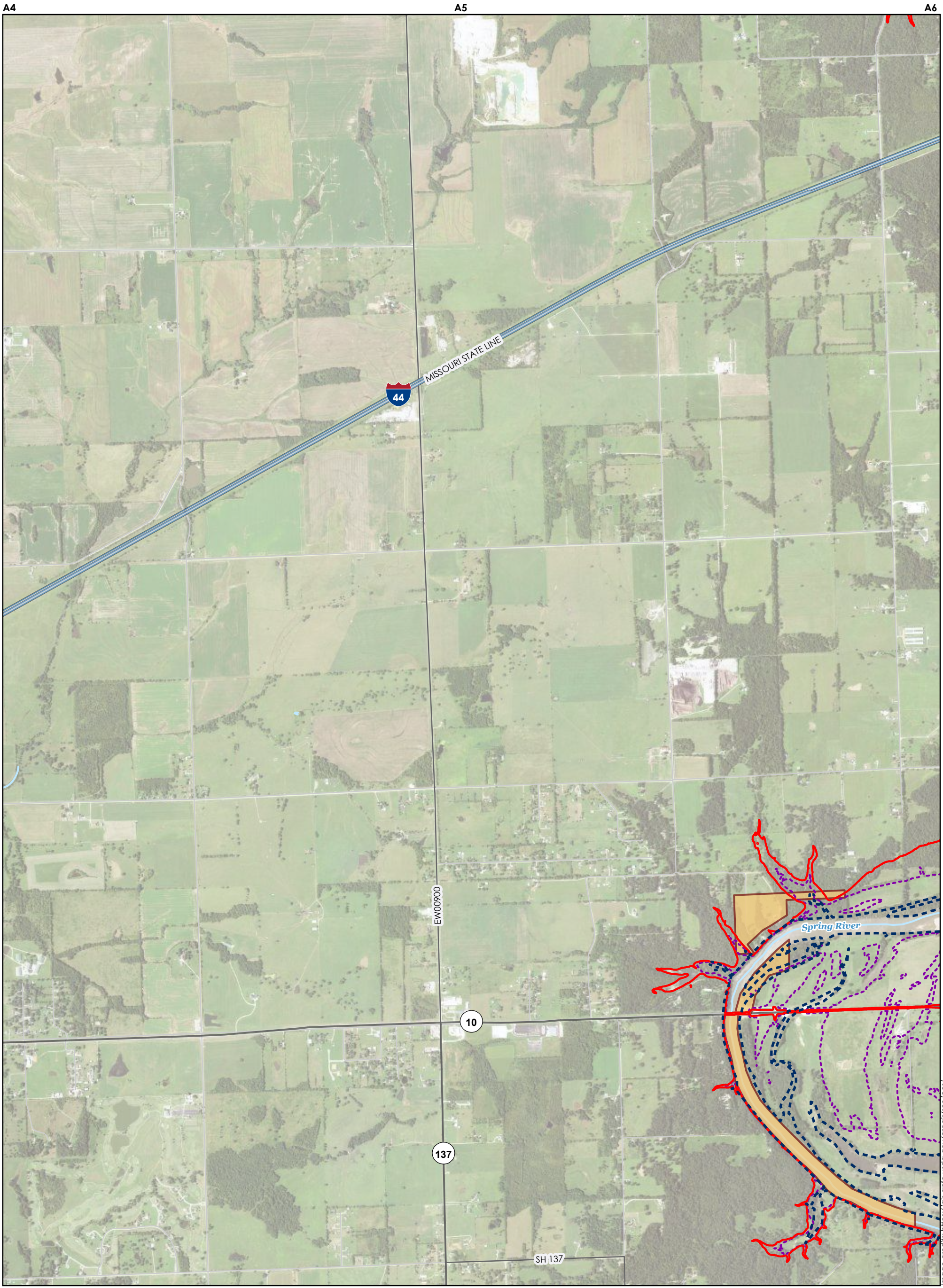
- MAP NOTES**
- For areas where only the highest starting elevation inundation boundary is visible, the inundation from other starting elevations is nearly identical.
 - See Overview Map for notes on data sources.

PENSACOLA DAM
GRAND RIVER DAM AUTHORITY

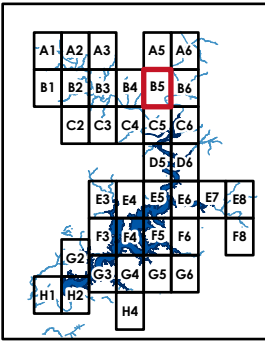
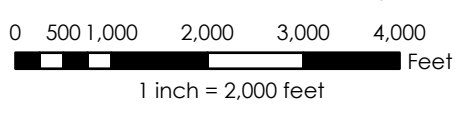
MAP: B4

CRAIG, DELAWARE, MAYES, AND
OTTAWA COUNTIES, OKLAHOMA
FERC No. 1494
September 2021

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



DECEMBER 2015 INUNDATION SCENARIO



- DEC 2015 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
- Railroad
 - Stream
 - - - Flowage Easements
 - - - Project Boundary
 - █ GRDA Ownership

MAP NOTES

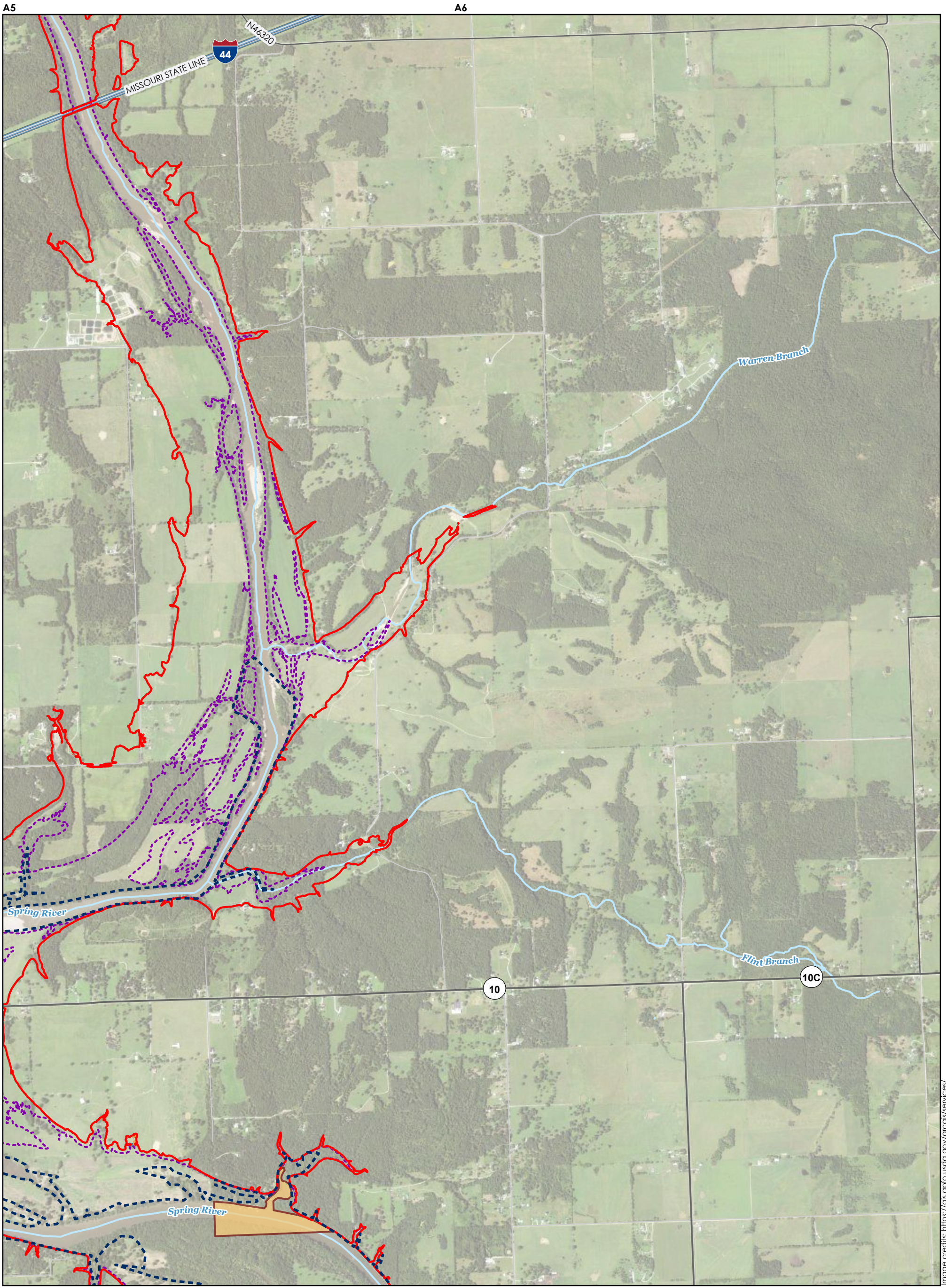
- For areas where only the highest starting elevation inundation boundary is visible, the inundation from other starting elevations is nearly identical.
- See Overview Map for notes on data sources.

PENSACOLA DAM GRAND RIVER DAM AUTHORITY

MAP: B5

CRAIG, DELAWARE, MAYES, AND OTTAWA COUNTIES, OKLAHOMA
FERC No. 1494
September 2021

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

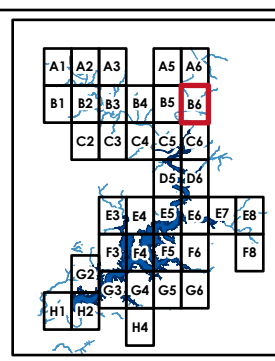


**DECEMBER 2015
INUNDATION SCENARIO**

NORTH

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

1 inch = 2,000 feet



- DEC 2015 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
- Railroad
 - Stream
 - - - Flowage Easements
 - - - Project Boundary
 - █ GRDA Ownership

MAP NOTES

- For areas where only the highest starting elevation inundation boundary is visible, the inundation from other starting elevations is nearly identical.
- See Overview Map for notes on data sources.

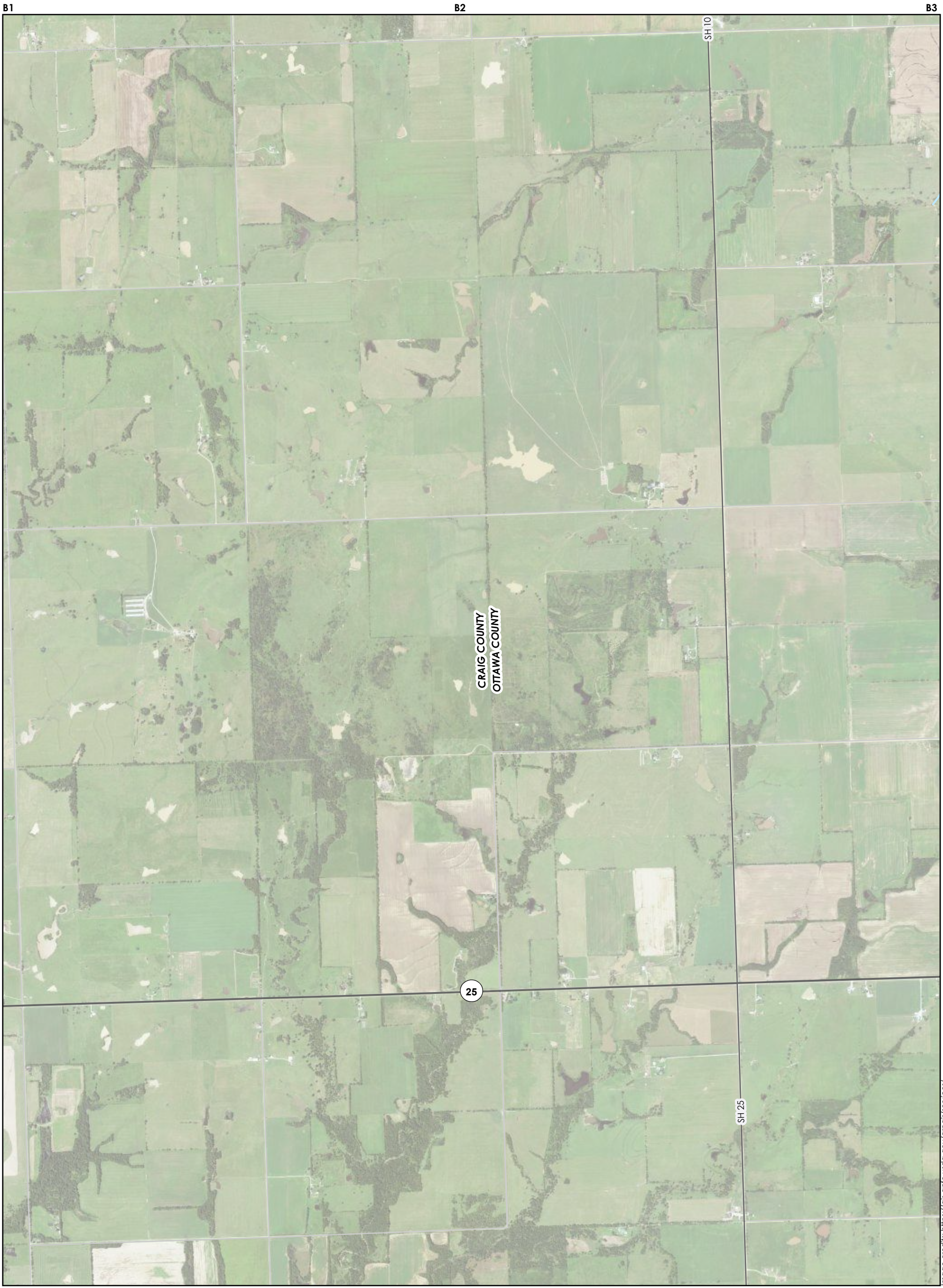
PENSACOLA DAM
GRAND RIVER DAM AUTHORITY

MAP: B6

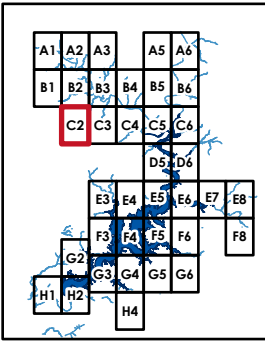
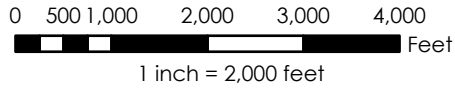
CRAIG, DELAWARE, MAYES, AND
OTTAWA COUNTIES, OKLAHOMA

FERC No. 1494
September 2021

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



**DECEMBER 2015
INUNDATION SCENARIO**



- DEC 2015 MAX INUNDATION**
- █ 745 ft PD
 - █ 744 ft PD
 - █ 743 ft PD
 - █ 742 ft PD

MAP NOTES

1. For areas where only the highest starting elevation inundation boundary is visible, the inundation from other starting elevations is nearly identical.
2. See Overview Map for notes on data sources.

Legend

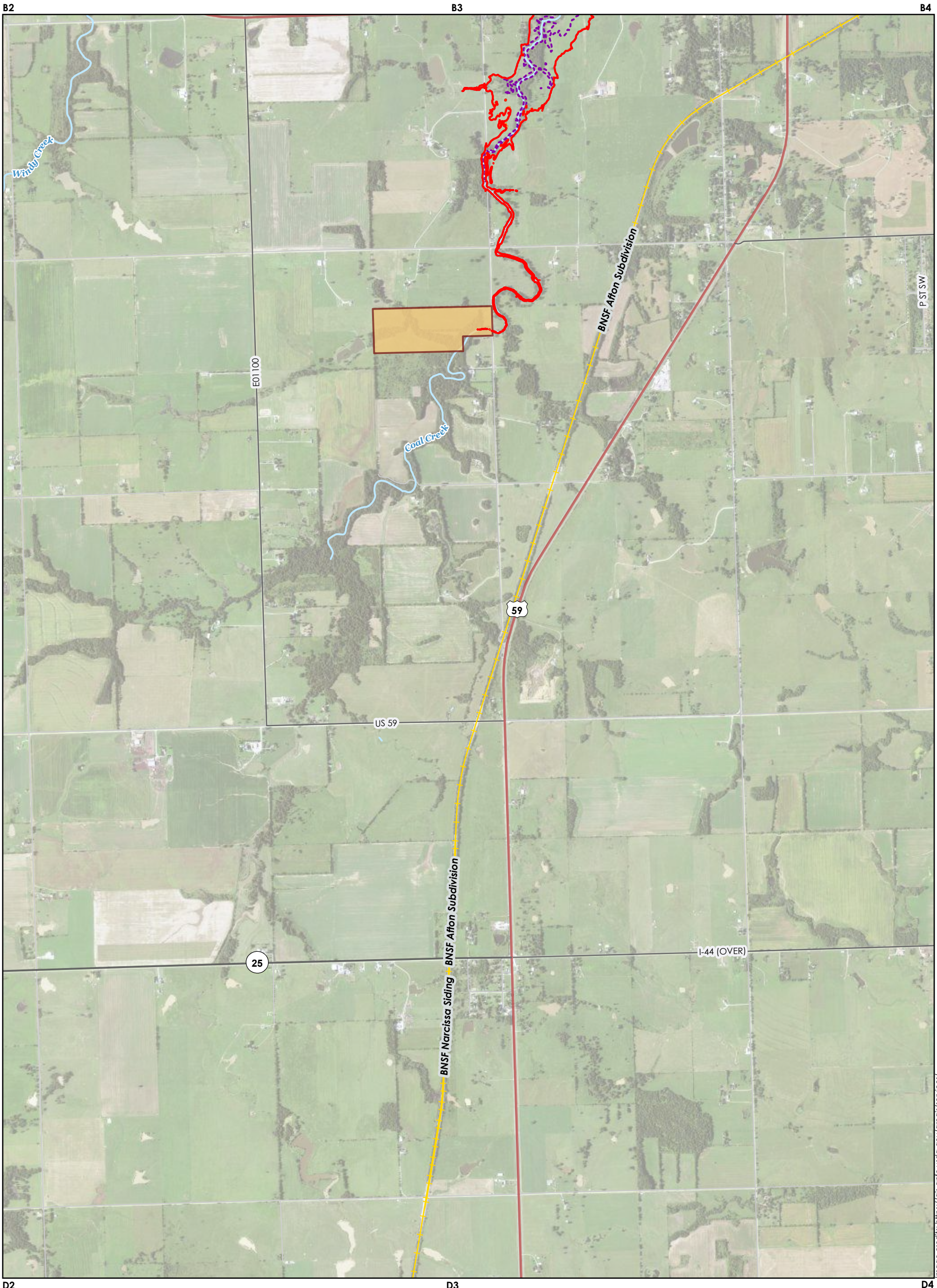
- ROAD CLASS**
- Interstate
 - State Highway
 - US Highway
 - Major Collector
 - Local Road
- Railroad
 - Stream
 - Flowage Easements
 - - - Project Boundary
 - █ GRDA Ownership

PENSACOLA DAM
GRAND RIVER DAM AUTHORITY

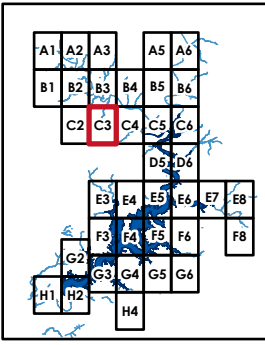
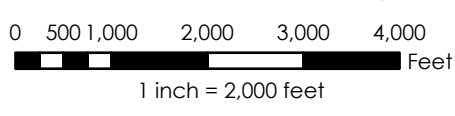
MAP: C2

CRAIG, DELAWARE, MAYES, AND
OTTAWA COUNTIES, OKLAHOMA
FERC No. 1494
September 2021

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



**DECEMBER 2015
INUNDATION SCENARIO**



- DEC 2015 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
- Railroad
 - Stream
 - Flowage Easements
 - - - Project Boundary
 - █ GRDA Ownership

MAP NOTES

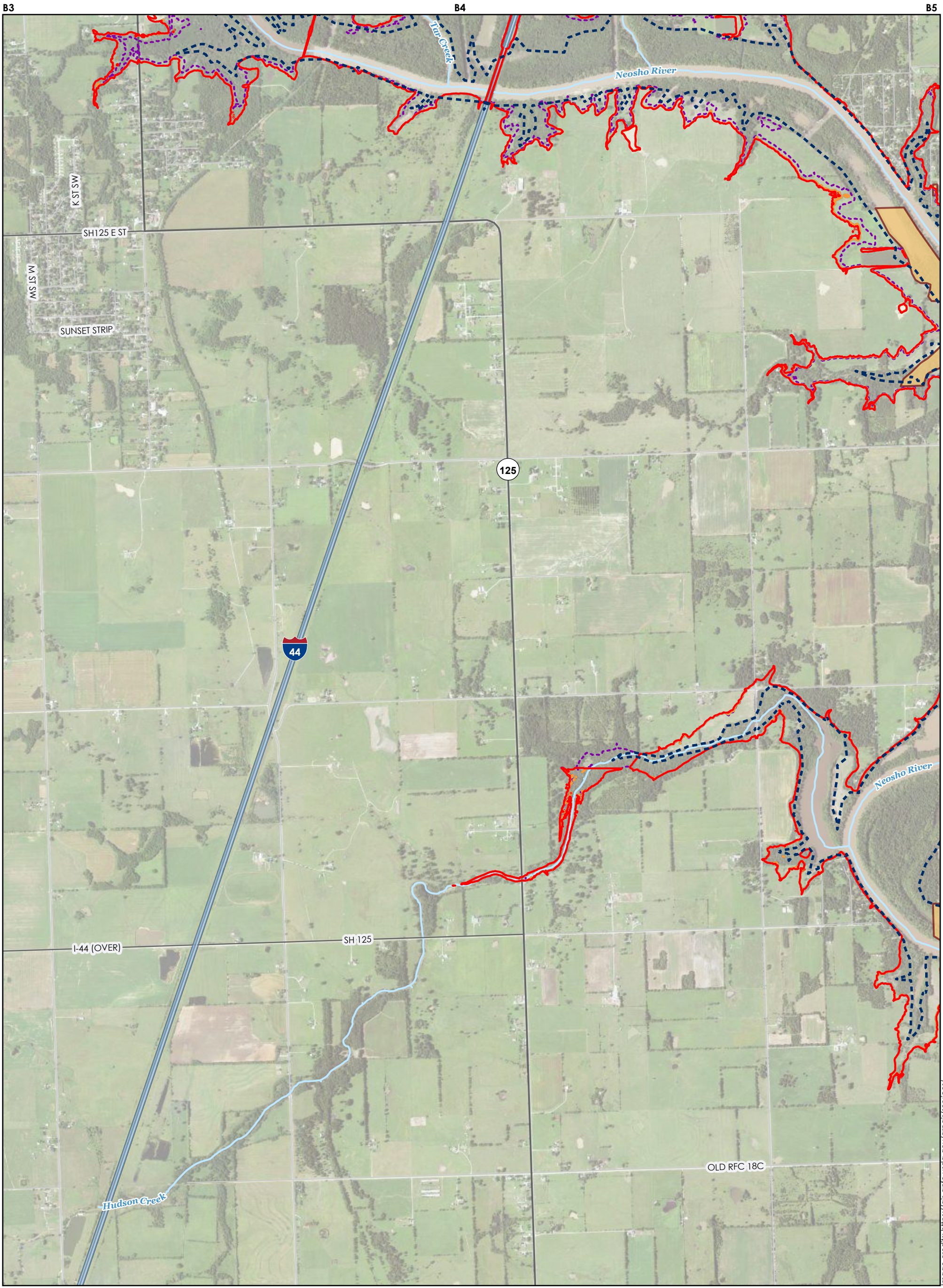
- For areas where only the highest starting elevation inundation boundary is visible, the inundation from other starting elevations is nearly identical.
- See Overview Map for notes on data sources.

PENSACOLA DAM
GRAND RIVER DAM AUTHORITY

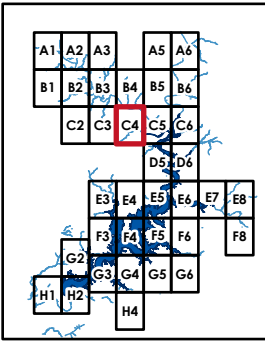
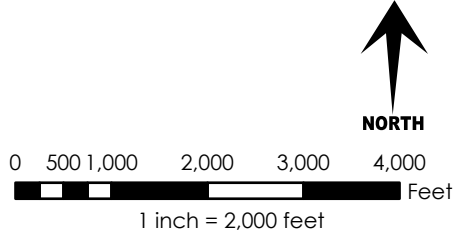
MAP: C3

CRAIG, DELAWARE, MAYES, AND
OTTAWA COUNTIES, OKLAHOMA
FERC No. 1494
September 2021

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



**DECEMBER 2015
INUNDATION SCENARIO**



- DEC 2015 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
- Railroad
 - Stream
 - - - Flowage Easements
 - - - Project Boundary
 - █ GRDA Ownership

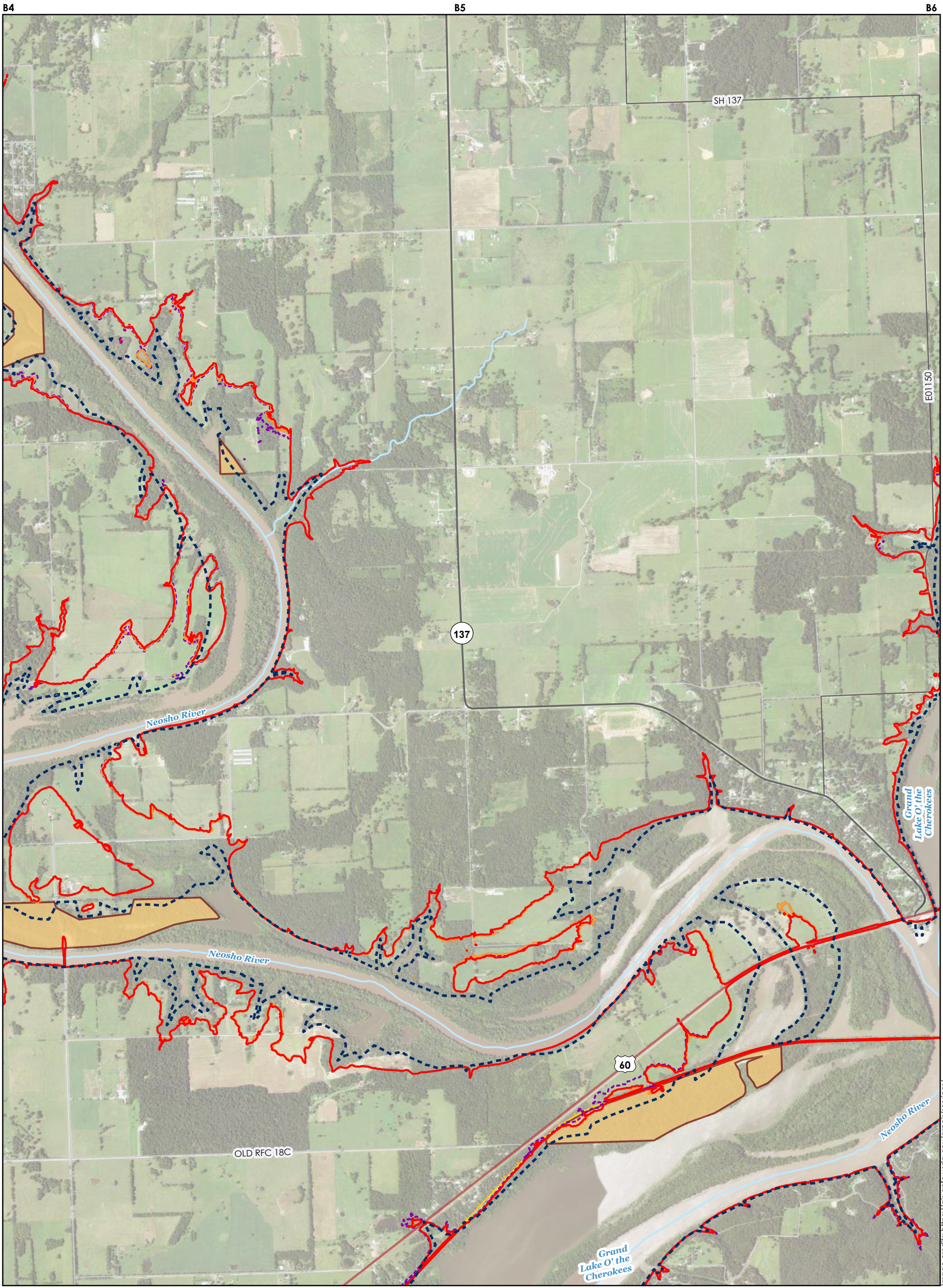
- MAP NOTES**
- For areas where only the highest starting elevation inundation boundary is visible, the inundation from other starting elevations is nearly identical.
 - See Overview Map for notes on data sources.

PENSACOLA DAM
GRAND RIVER DAM AUTHORITY

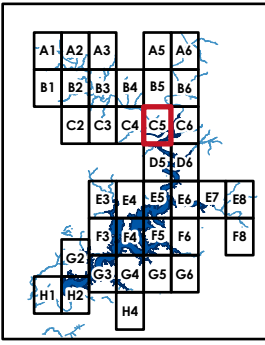
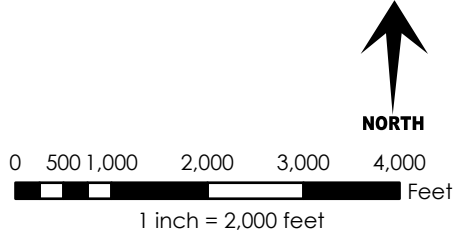
MAP: C4

CRAIG, DELAWARE, MAYES, AND
OTTAWA COUNTIES, OKLAHOMA
FERC No. 1494
September 2021

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



DECEMBER 2015 INUNDATION SCENARIO



- DEC 2015 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
- Railroad
 - Stream
 - Flowage Easements
 - - - Project Boundary
 - GRDA Ownership

MAP NOTES

- For areas where only the highest starting elevation inundation boundary is visible, the inundation from other starting elevations is nearly identical.
- See Overview Map for notes on data sources.

PENSACOLA DAM GRAND RIVER DAM AUTHORITY

MAP: C5

CRAIG, DELAWARE, MAYES, AND OTTAWA COUNTIES, OKLAHOMA
FERC No. 1494
 September 2021

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

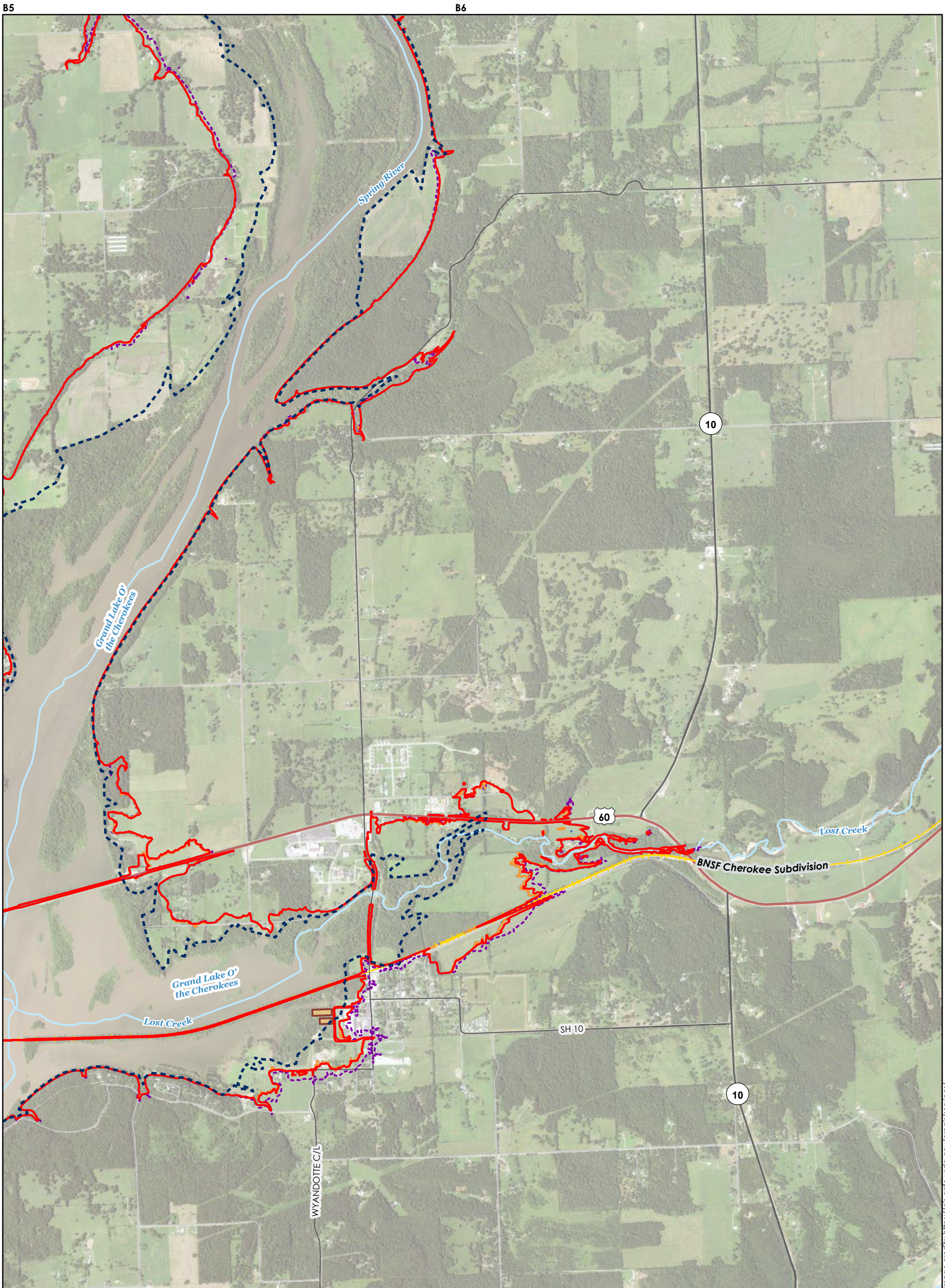
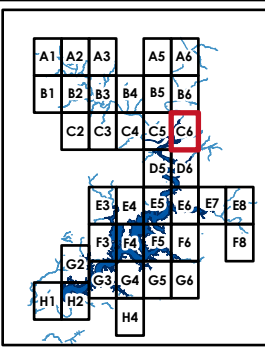
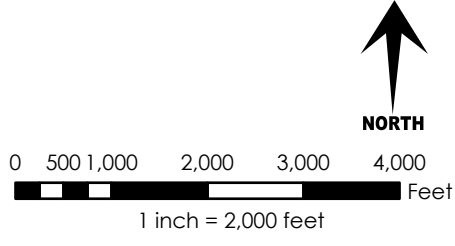


Image credits: https://gis.dplto.usda.gov/arcgis/services/NAIP/USDA_CONUS_PRIME/ImageServer, 2019

DECEMBER 2015 INUNDATION SCENARIO



- DEC 2015 MAX INUNDATION**
- █ 745 ft PD
 - █ 744 ft PD
 - █ 743 ft PD
 - █ 742 ft PD

MAP NOTES

1. For areas where only the highest starting elevation inundation boundary is visible, the inundation from other starting elevations is nearly identical.
2. See Overview Map for notes on data sources.

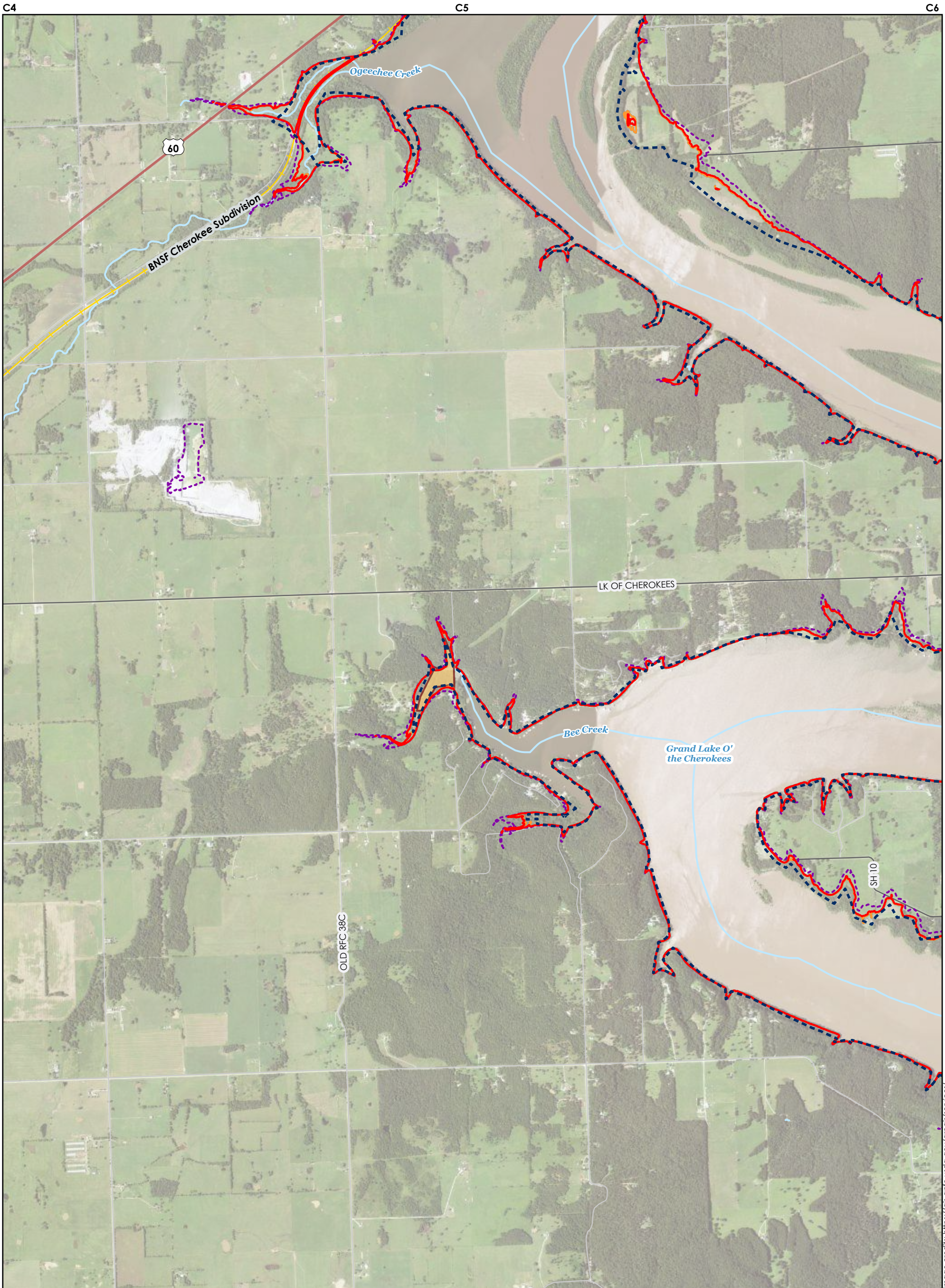
Legend

- ROAD CLASS**
- Interstate
 - State Highway
 - US Highway
 - Major Collector
 - Local Road
- Railroad
 - Stream
 - Flowage Easements
 - - - Project Boundary
 - █ GRDA Ownership

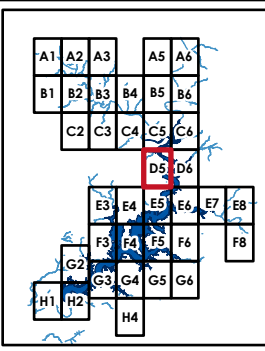
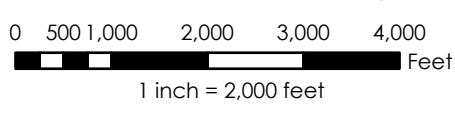
PENSACOLA DAM GRAND RIVER DAM AUTHORITY

MAP: C6

CRAIG, DELAWARE, MAYES, AND OTTAWA COUNTIES, OKLAHOMA
FERC No. 1494
September 2021



DECEMBER 2015 INUNDATION SCENARIO



- DEC 2015 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
- Railroad
 - Stream
 - - - Flowage Easements
 - - - Project Boundary
 - █ GRDA Ownership

MAP NOTES

- For areas where only the highest starting elevation inundation boundary is visible, the inundation from other starting elevations is nearly identical.
- See Overview Map for notes on data sources.

PENSACOLA DAM GRAND RIVER DAM AUTHORITY

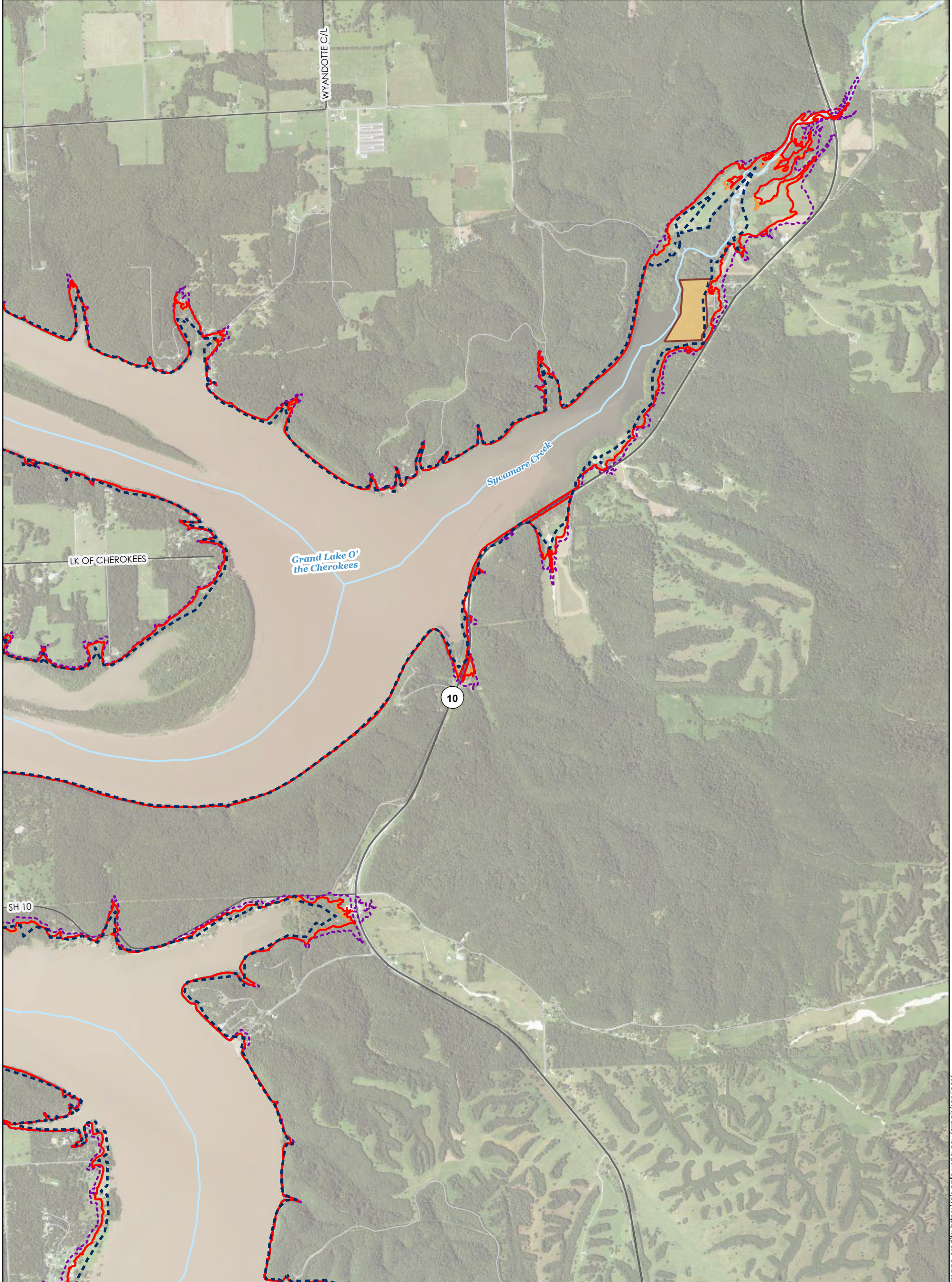
MAP: D5

CRAIG, DELAWARE, MAYES, AND OTTAWA COUNTIES, OKLAHOMA
FERC No. 1494
September 2021

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

C5

C6

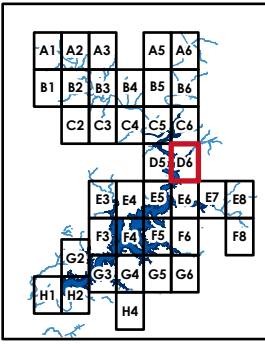
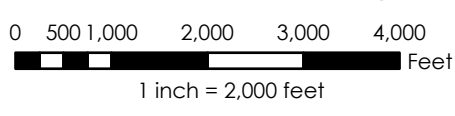


E5

E6

E7

**DECEMBER 2015
INUNDATION SCENARIO**



- DEC 2015 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
- Railroad
 - Stream
 - Flowage Easements
 - - - Project Boundary
 - GRDA Ownership

MAP NOTES

1. For areas where only the highest starting elevation inundation boundary is visible, the inundation from other starting elevations is nearly identical.
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PENSACOLA DAM
GRAND RIVER DAM AUTHORITY

MAP: D6

CRAIG, DELAWARE, MAYES, AND
OTTAWA COUNTIES, OKLAHOMA

FERC No. 1494
September 2021

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