Lake Spawning Species Habitat Changes Overview Map

Pensacola Dam

GRAND RIVER DAM AUTHORITY

September 2022

Overview Map Legend

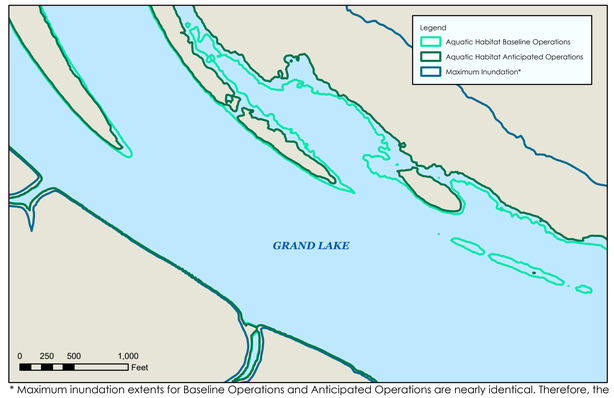
- 1:24,000-scale Map Sheet
- State Boundary
- County Boundary
- Municipality
- Unincorporated

Road Class

- Interstate
- US Highway

Lake Spawning Habitat Mapping Explanation

Mapping shows the extent of inundation calculated using the H&H Study Operations Model and Upstream Hydraulic Model. Estimated inundation extent for normal (median) inflows and operations during the spawning season.



* Maximum inundation extents for Baseline Operations and Anticipated Operations are nearly identical. Therefore, the Maximum inundation extent shown represents both conditions. Maximum inundation extent occurs when USACE is in flood control.

Disclaimer: These maps represent the work of the H&H Study and are not to be used as shown for resource analysis purposes.

0 1.25 2.5 5 7.5 10 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: Missouri Dept. of Conservation, Missouri DNR, Esri, HERE, Garmin, SafeGraph, METI/NASA, USGS, EPA, NPS, USDA, Esri, NASA, NGA, USGS

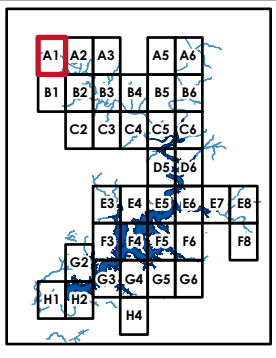
Image credits: https://gis.apfo.usda.gov/arcgis/services/NAIP/USDA_CONUS_PRIME/ImageServer, 2019

LAKE SPAWNING SPECIES HABITAT CHANGES

NORTH

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

1 inch = 2,000 feet



Legend

INUMDATION

- Aquatic Habitat Baseline Operations
- Aquatic Habitat Anticipated Operations
- Maximum Inundation

ROAD CLASS

- Interstate
- State Highway
- US Highway
- Major Collector
- Local Road
- Railroad
- Stream
- Project Boundary (2014)

MAP AND LEGEND NOTES

1. Mapping shows the extent of inundation calculated using the H&H Study Operations Model and Upstream Hydraulic Model. **These maps represent the work of the H&H Study and are not to be used as shown for resource analysis purposes.**
2. Estimated inundation extent for normal (median) inflows and operations during the spawning season.
3. See Overview Map for an explanation of the maximum inundation extent and notes on data sources.

PENSACOLA DAM

GRAND RIVER DAM AUTHORITY

MAP: A1

CRAIG, DELAWARE, MAYES, AND OTTAWA COUNTIES, OKLAHOMA

FERC No. 1494

September 2022

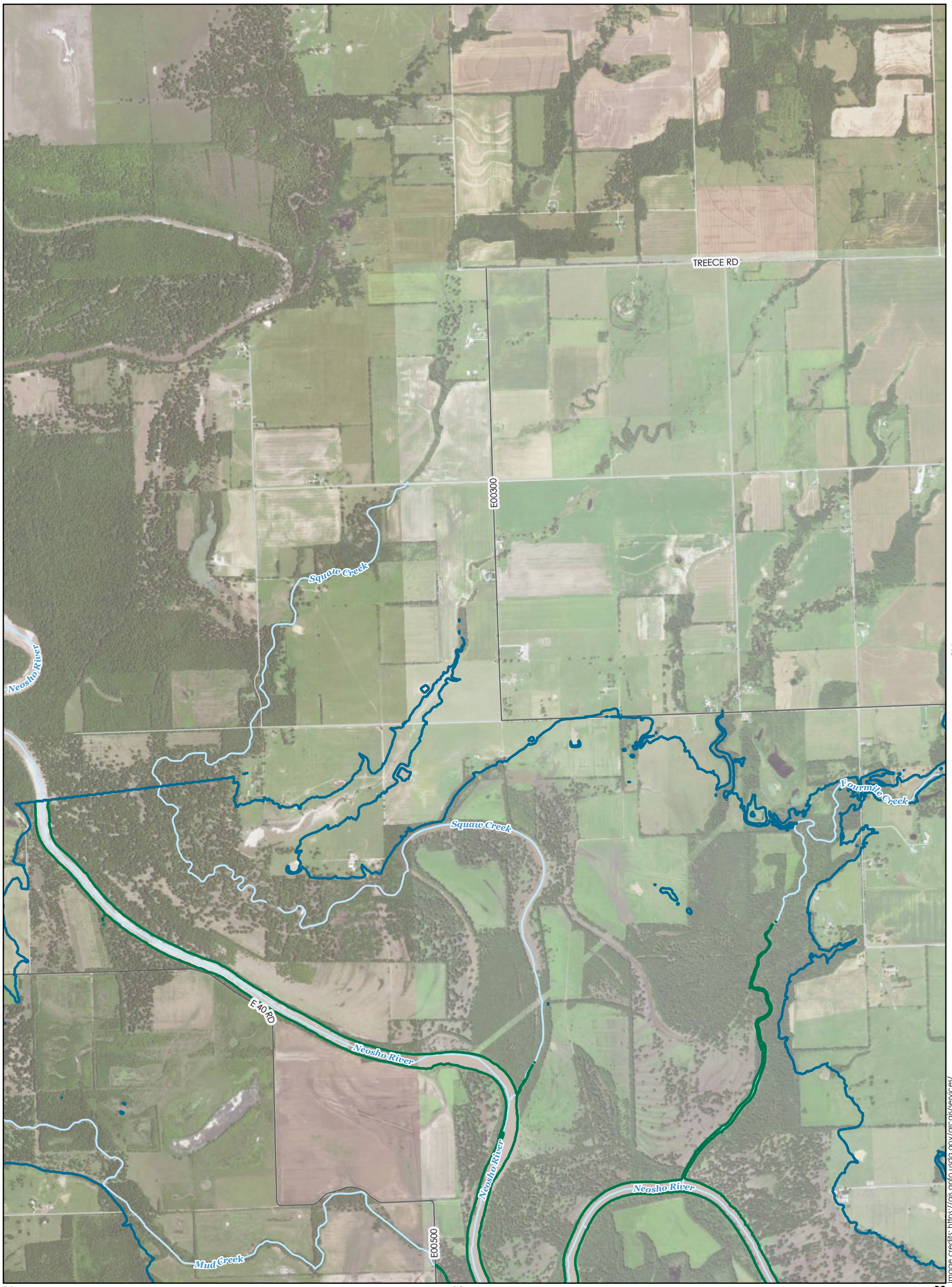


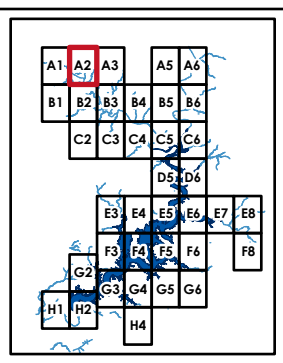
Image credits: https://gis.apfo.usda.gov/arcgis/services/NAIP/USDA_CONUS_PRIME/ImageServer, 2019

LAKE SPAWNING SPECIES HABITAT CHANGES

NORTH

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

1 inch = 2,000 feet



Legend

INUNDATION

- Aquatic Habitat Baseline Operations
- Aquatic Habitat Anticipated Operations
- Maximum Inundation

ROAD CLASS

- Interstate
- State Highway
- US Highway
- Major Collector
- Local Road
- Railroad
- Stream
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MAP AND LEGEND NOTES

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PENSACOLA DAM

GRAND RIVER DAM AUTHORITY

MAP: A2

CRAIG, DELAWARE, MAYES, AND OTTAWA COUNTIES, OKLAHOMA

FERC No. 1494

September 2022

TREECE RD

A2

A4

B2 B3 B4

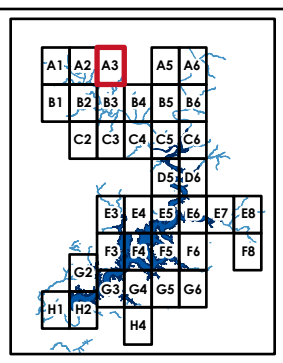
Image credits: https://gis.apfo.usda.gov/arcgis/services/NAIP/USDA_CONUS_PRIME/ImageServer, 2019

LAKE SPAWNING SPECIES HABITAT CHANGES

NORTH

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

1 inch = 2,000 feet



Legend

INUNDATION

- Aquatic Habitat Baseline Operations
- Aquatic Habitat Anticipated Operations
- Maximum Inundation

ROAD CLASS

- Interstate
- State Highway
- US Highway
- Major Collector
- Local Road
- Railroad
- Stream
- Project Boundary (2014)

MAP AND LEGEND NOTES

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PENSACOLA DAM

GRAND RIVER DAM AUTHORITY

MAP: A3

CRAIG, DELAWARE, MAYES, AND OTTAWA COUNTIES, OKLAHOMA

FERC No. 1494

September 2022

A4

A6

E 10 RD

BNSF RR

BNSF RR

69A

CHERRY ST

ELM ST

QUAPAW ST

KENTUCKY ST

VIRGINIA ST

WHITEBIRD

E 50 RD

E 57 RD

137

B4

B5

B6

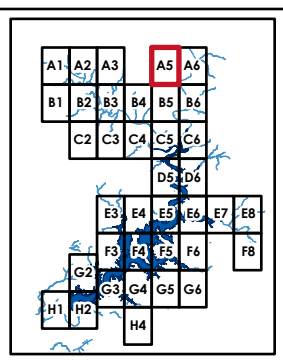
Image credits: https://gis.apfo.usda.gov/arcgis/services/NAIP/USDA_CONUS_PRIME/ImageServer, 2019

LAKE SPAWNING SPECIES HABITAT CHANGES

NORTH

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

1 inch = 2,000 feet



Legend

INUNDATION

- Aquatic Habitat Baseline Operations
- Aquatic Habitat Anticipated Operations
- Maximum Inundation

ROAD CLASS

- Interstate
- State Highway
- US Highway
- Major Collector
- Local Road
- Railroad
- Stream
- Project Boundary (2014)

MAP AND LEGEND NOTES

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PENSACOLA DAM

GRAND RIVER DAM AUTHORITY

MAP: A5

CRAIG, DELAWARE, MAYES, AND OTTAWA COUNTIES, OKLAHOMA

FERC No. 1494

September 2022

A5

B5

B6

E 10 RD

69A

S 630 RD

E 50 RD

Spring River

COMM MAP

E 57 RD

44

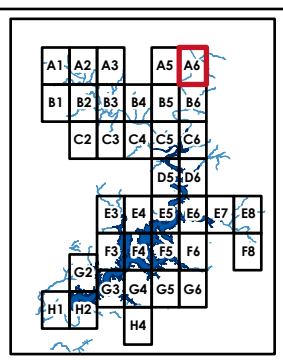
Image credits: https://gis.apfo.usda.gov/arcgis/services/NAIP/USDA_CONUS_PRIME/ImageServer, 2019

LAKE SPAWNING SPECIES HABITAT CHANGES

NORTH

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

1 inch = 2,000 feet



Legend

INUNDATION

- Aquatic Habitat Baseline Operations
- Aquatic Habitat Anticipated Operations
- Maximum Inundation

ROAD CLASS

- Interstate
- State Highway
- US Highway
- Major Collector
- Local Road
- Railroad
- Stream
- Project Boundary (2014)

MAP AND LEGEND NOTES

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PENSACOLA DAM

GRAND RIVER DAM AUTHORITY

MAP: A6

CRAIG, DELAWARE, MAYES, AND OTTAWA COUNTIES, OKLAHOMA

FERC No. 1494

September 2022

A1 A2

B2

C1 C2

Mud Creek

Cow Creek

59

10

2

UP RR

FIRST

3RD

COMMERCE

SPRINGFIELD

JEFFERSON

CURTIS

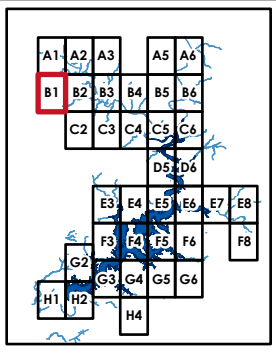
Image credits: https://gis.apfo.usda.gov/arcgis/services/NAIP/USDA_CONUS_PRIME/ImageServer, 2019

LAKE SPAWNING SPECIES HABITAT CHANGES

NORTH

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

1 inch = 2,000 feet



Legend

INUNDATION

- Aquatic Habitat Baseline Operations
- Aquatic Habitat Anticipated Operations
- Maximum Inundation

ROAD CLASS

- Interstate
- State Highway
- US Highway
- Major Collector
- Local Road
- Railroad
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PENSACOLA DAM

GRAND RIVER DAM AUTHORITY

MAP: B1

CRAIG, DELAWARE, MAYES, AND OTTAWA COUNTIES, OKLAHOMA

FERC No. 1494

September 2022

A1 A2 A3

B1 B3

C1 C2 C3

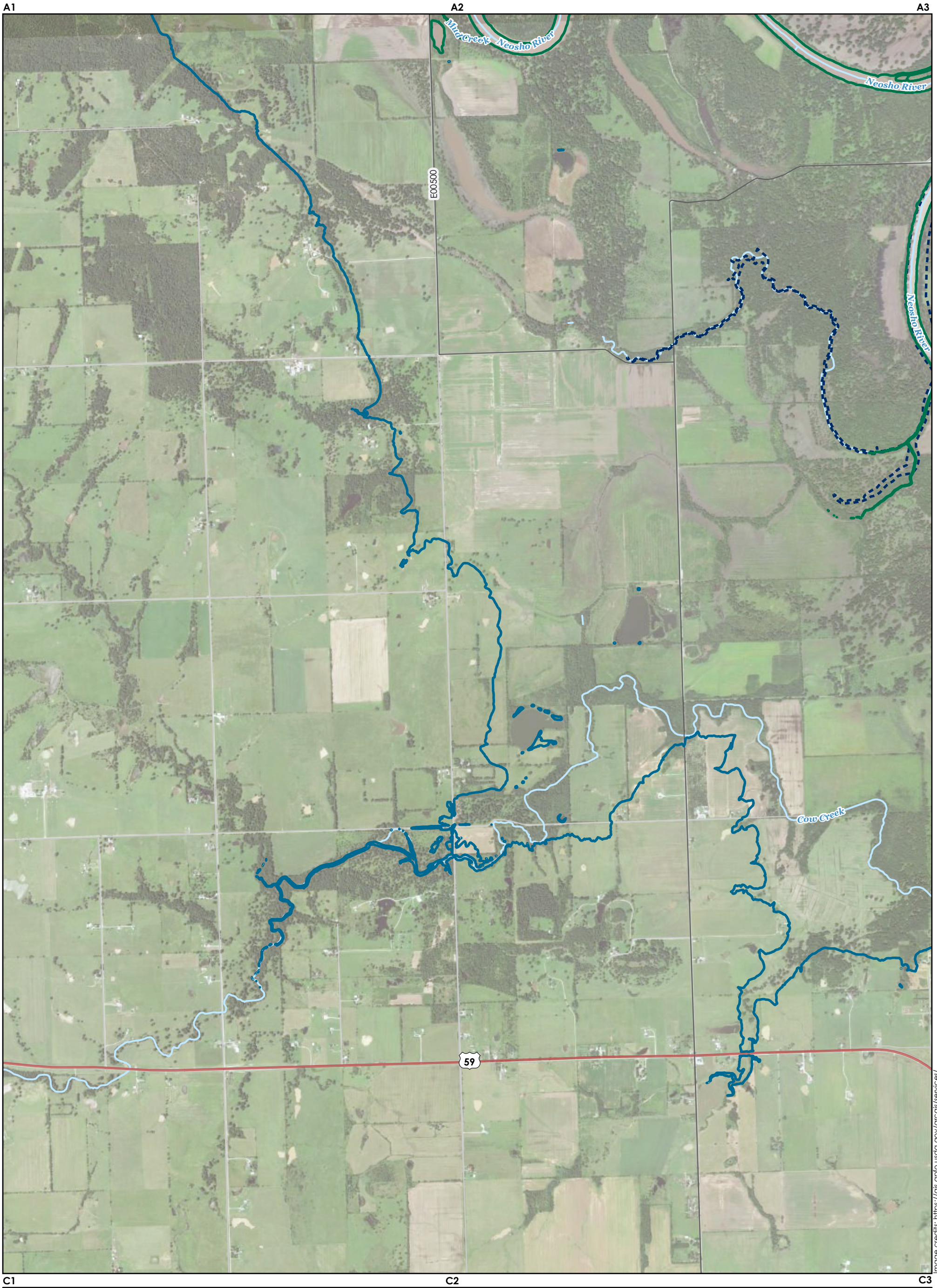


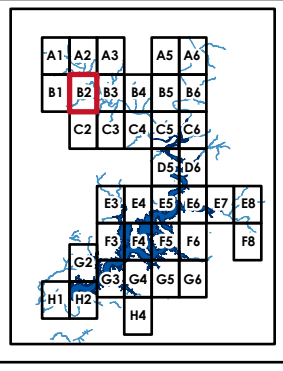
Image credits: https://gis.apfo.usda.gov/arcgis/services/NAIP/USDA_CONUS_PRIME/ImageServer, 2019

LAKE SPAWNING SPECIES HABITAT CHANGES

NORTH

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

1 inch = 2,000 feet



Legend

INUNDATION
- Aquatic Habitat Baseline Operations
- Aquatic Habitat Anticipated Operations
- Maximum Inundation

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

GRAND RIVER DAM AUTHORITY

MAP: B2

CRAIG, DELAWARE, MAYES, AND OTTAWA COUNTIES, OKLAHOMA

FERC No. 1494

September 2022

A2 A3 A4

B2 B4

C2 C3 C4

Neosho River
NEWMAN
VETERANS BLVD
GOODRICH
11 AVE NW
10 AVE NW
BJ TUNELL BLVD
7 AVE NW
Neosho River
Cow Creek
Windy Creek
OLD HWY 59/10
Coal Creek
59
69
59
BNSF RR

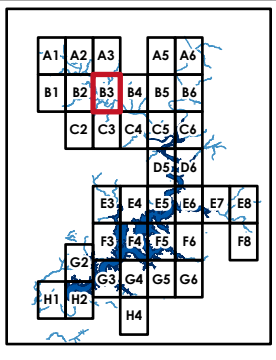
Image credits: https://gis.apfo.usda.gov/arcgis/services/NAIP/USDA_CONUS_PRIME/ImageServer, 2019

LAKE SPAWNING SPECIES HABITAT CHANGES

NORTH

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

1 inch = 2,000 feet



Legend

INUNDATION
- Aquatic Habitat Baseline Operations
- Aquatic Habitat Anticipated Operations
- Maximum Inundation

ROAD CLASS
- Interstate
- State Highway
- US Highway
- Major Collector
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PENSACOLA DAM

GRAND RIVER DAM AUTHORITY

MAP: B3

CRAIG, DELAWARE, MAYES, AND OTTAWA COUNTIES, OKLAHOMA

FERC No. 1494

September 2022

A3 A4 A5

B3 B5

C3 C4 C5

N VINE ST
N RIVER ST
COMMERCE ST
B ST
C ST
NEWMAN
OAK ST
69
NEBRASKA ST
OLIVE ST
PINE ST
BNSF RR
G ST NW
26 AVE NW
SCOTT LN
OAK LN
69A
580 RD
BIRNAMWOOD DR
VETERANS BLVD
E ST
18TH AVE
A ST
16TH AVE
MCKINLEY BLVD
GOODRICH
11 AVE NW
10 AVE NW
BJ TUNELL BLVD
1ST NW
02U BJ TUNNEL BLVD
Tar Creek
BNSF RR
44
3 AVE
2 AVE NW
1 AVE NW
MAIN ST
2 AVE NE
PARK CIR
E CENTRAL AVE
Neosho River
Little Elm Creek
2 AVE SE
3RD AVE SE
10
B ST NE
6 AVE SE
125
21U H ST

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

LAKE SPAWNING SPECIES HABITAT CHANGES

NORTH

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

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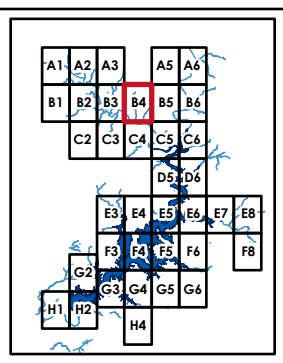

Legend

INUNDATION

- Aquatic Habitat Baseline Operations
- Aquatic Habitat Anticipated Operations
- Maximum Inundation

ROAD CLASS

- Interstate
- State Highway
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PENSACOLA DAM

GRAND RIVER DAM AUTHORITY

MAP: B4

CRAIG, DELAWARE, MAYES, AND OTTAWA COUNTIES, OKLAHOMA

FERC No. 1494

September 2022

A4 A5 A6

B4 B6

C4 C5 C6

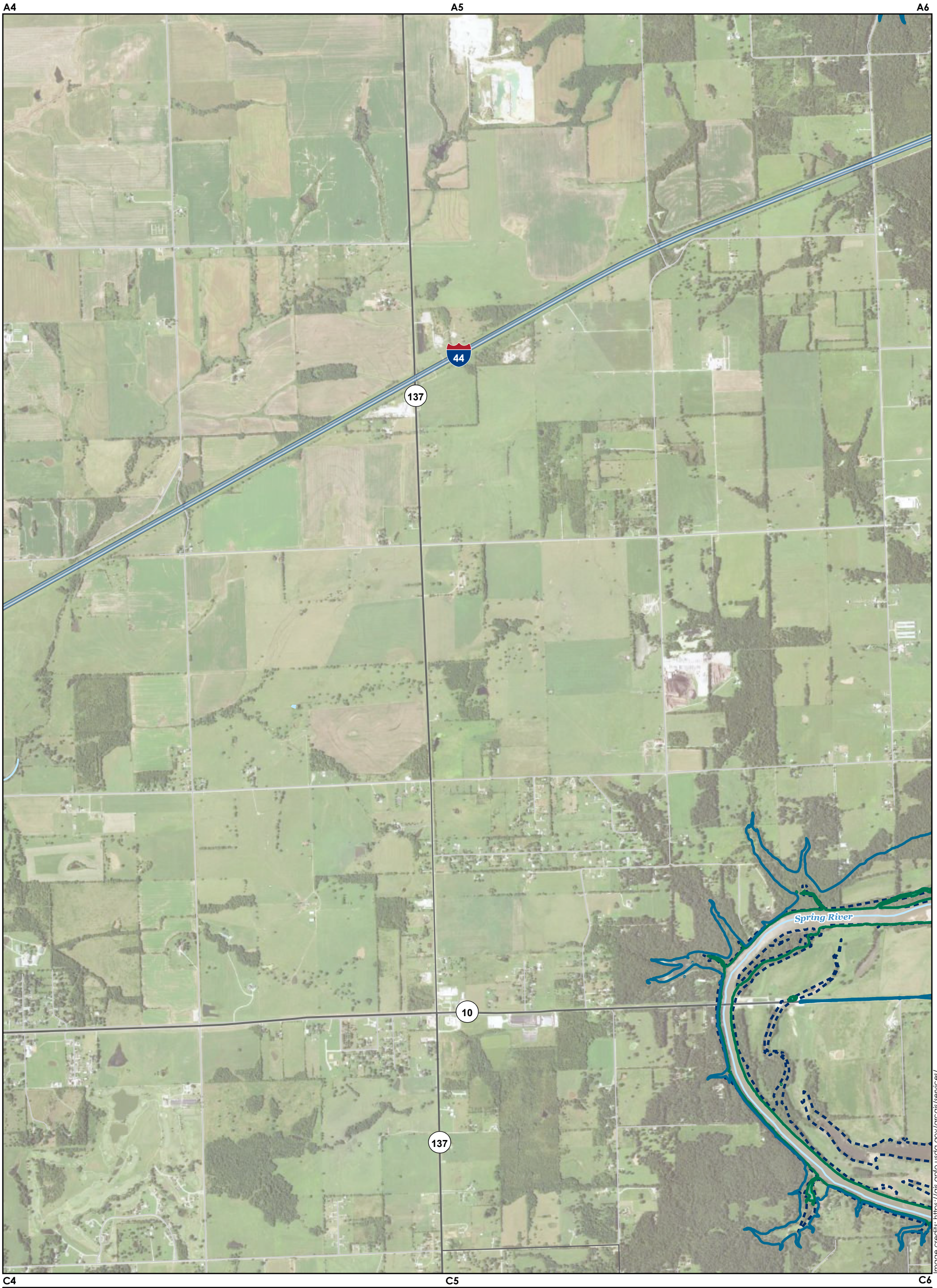


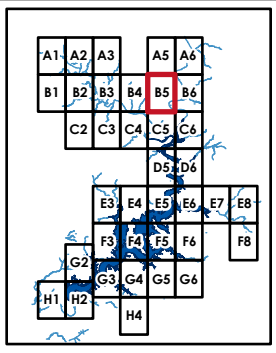
Image credits: https://gis.apfo.usda.gov/arcgis/services/NAIP/USDA_CONUS_PRIME/ImageServer, 2019

LAKE SPAWNING SPECIES HABITAT CHANGES

NORTH

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

1 inch = 2,000 feet



Legend

INUNDATION

- Aquatic Habitat Baseline Operations
- Aquatic Habitat Anticipated Operations
- Maximum Inundation

ROAD CLASS

- Interstate
- State Highway
- US Highway
- Major Collector
- Local Road
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- Project Boundary (2014)

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PENSACOLA DAM

GRAND RIVER DAM AUTHORITY

MAP: B5

CRAIG, DELAWARE, MAYES, AND OTTAWA COUNTIES, OKLAHOMA

FERC No. 1494

September 2022

A5 A6

B5

C5 C6

E 57 RD

44

Warren Branch

Spring River

Flint Branch

10

10C

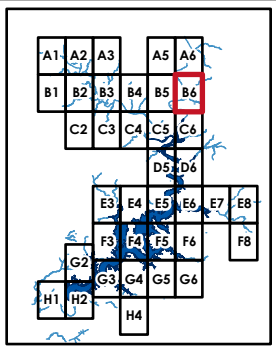
Image credits: https://gis.apfo.usda.gov/arcgis/services/NAIP/USDA_CONUS_PRIME/ImageServer, 2019

LAKE SPAWNING SPECIES HABITAT CHANGES

NORTH

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

1 inch = 2,000 feet



Legend

INUNDATION
- Aquatic Habitat Baseline Operations
- Aquatic Habitat Anticipated Operations
- Maximum Inundation

ROAD CLASS
- Interstate
- State Highway
- US Highway
- Major Collector
- Local Road
- Railroad
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PENSACOLA DAM

GRAND RIVER DAM AUTHORITY

MAP: B6

CRAIG, DELAWARE, MAYES, AND OTTAWA COUNTIES, OKLAHOMA

FERC No. 1494

September 2022