FRAMEWORK

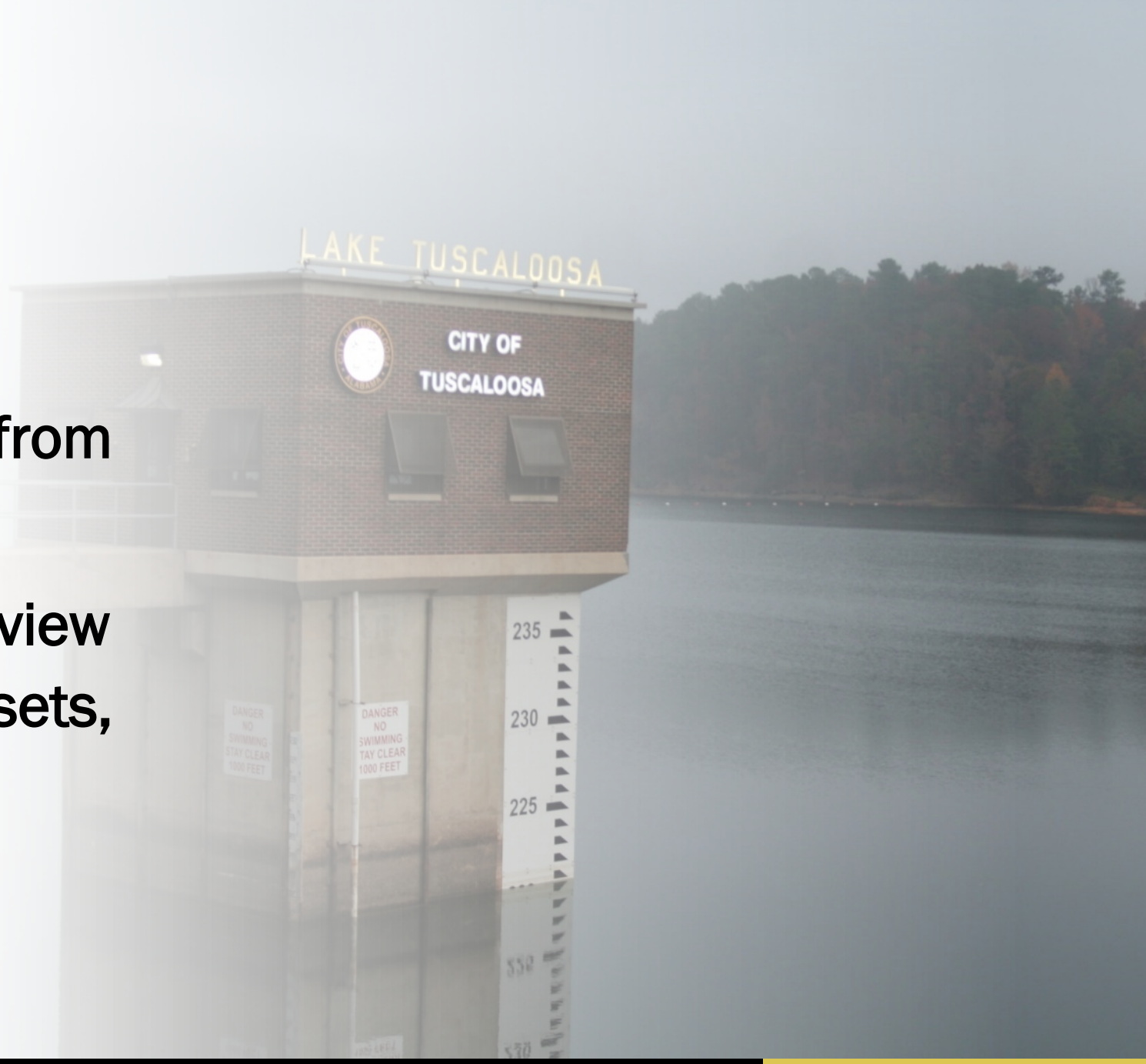
Creating a dynamic guide for Tuscaloosa

2019 Tuscaloosa Lakes
Steering Subcommittee Meeting

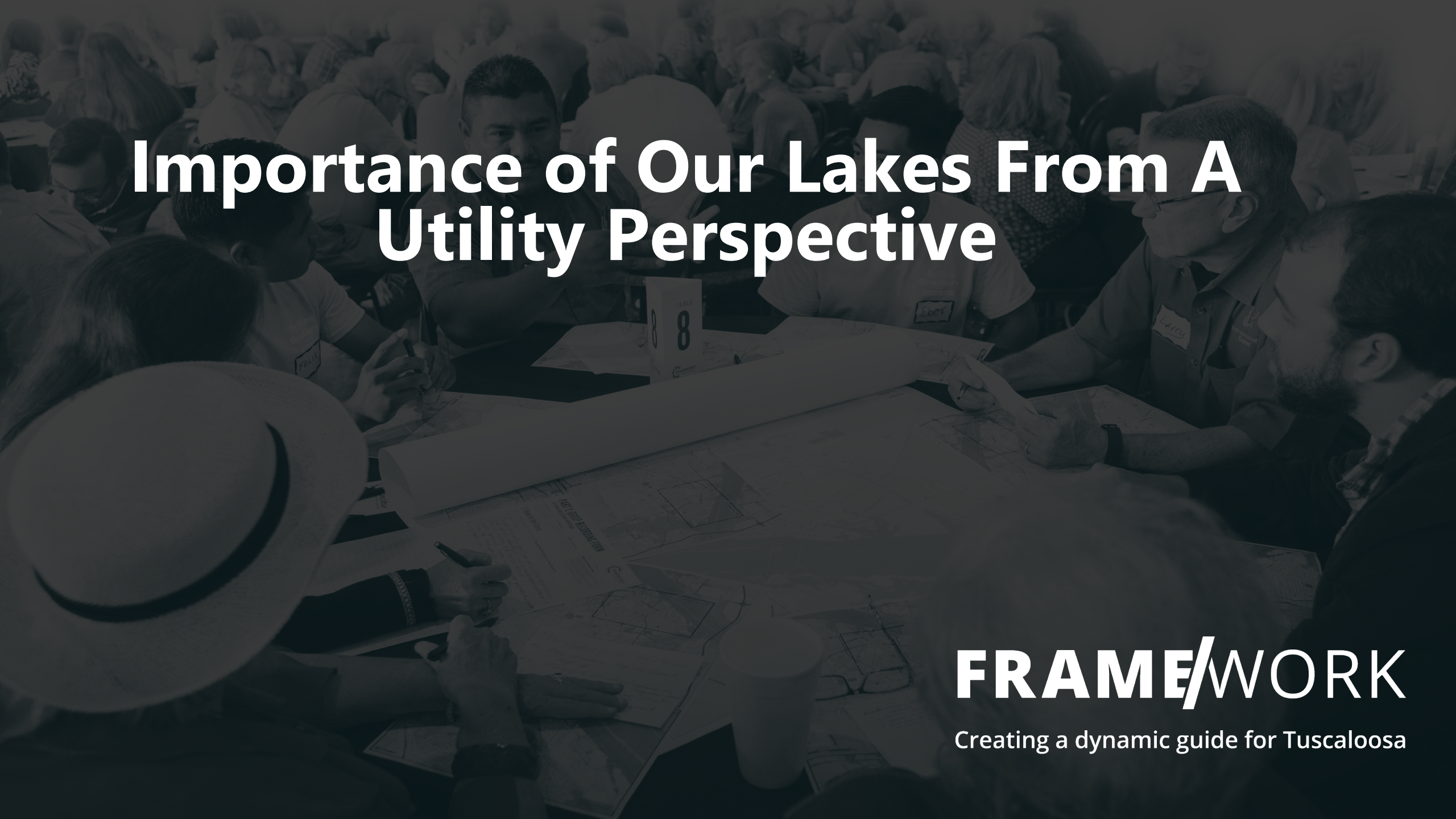
February 6, 2019

Agenda

1. Welcome & Introduction
2. Importance of Our Lakes from a Utility Perspective
3. Lakes Infrastructure Overview (Water Territories, City Assets, Private Assets)
4. Q & A



Importance of Our Lakes From A Utility Perspective



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Some Questions to Ponder

- Why did the City build dams to make lakes for water supply?
- Why not use the Warrior River?
- What is the core function of our lakes?
- What happens if any of our lakes fail to meet their core function?
- How might a lake fail to meet its core function?
- What is the life expectancy of a dam? Of raw water pipes?
- What infrastructure is associated with a water supply reservoir?

Lakes and Water Treatment Overview

- 3 dams
  - *Harris Lake*
  - *Lake Nicol*
  - *Lake Tuscaloosa*
- 20 miles of raw water transmission mains
- Numerous raw water main valves
- Supply raw water to Ed Love and Jerry Plott water treatment plants

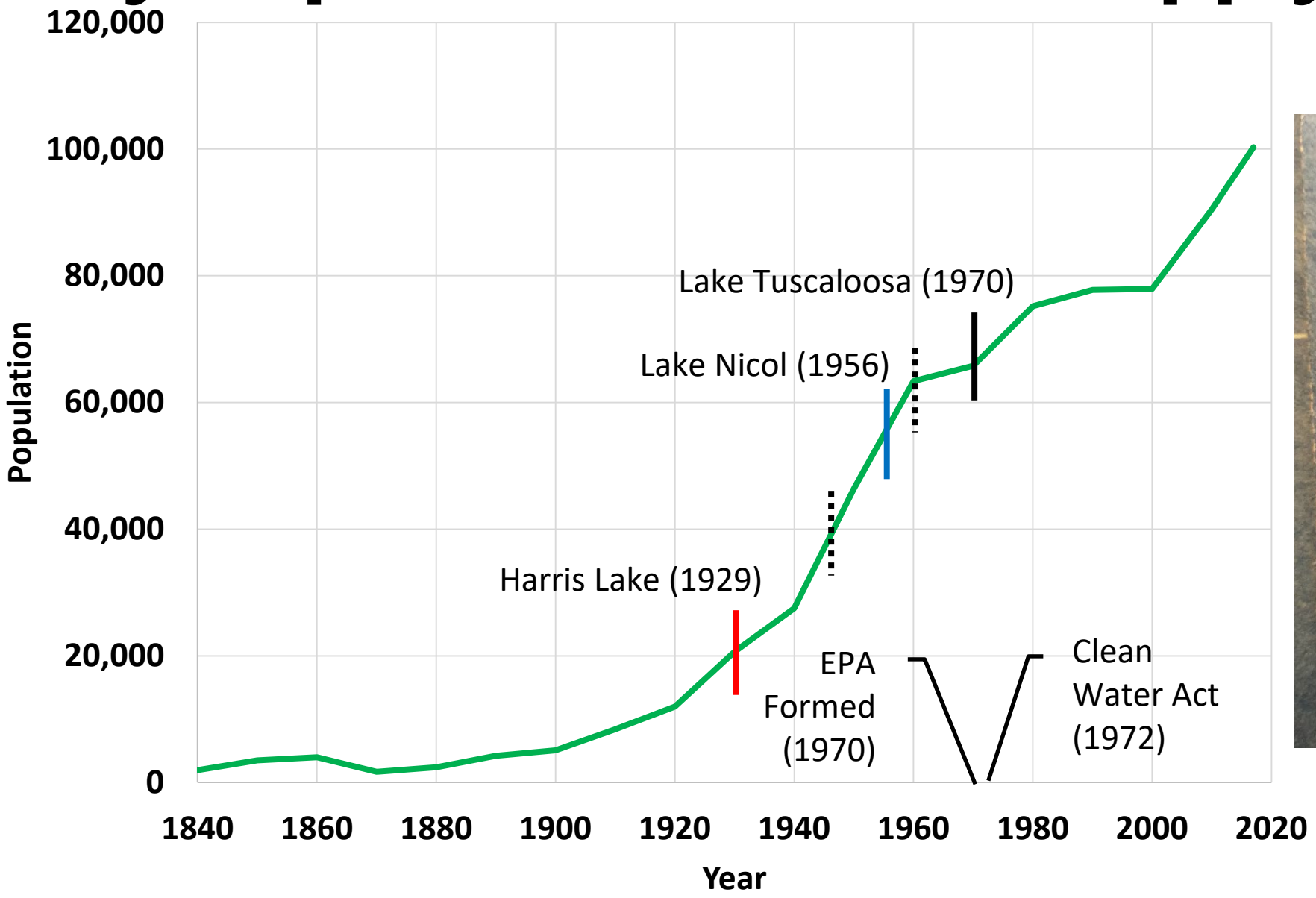
Lakes and Water Treatment Overview (continued)

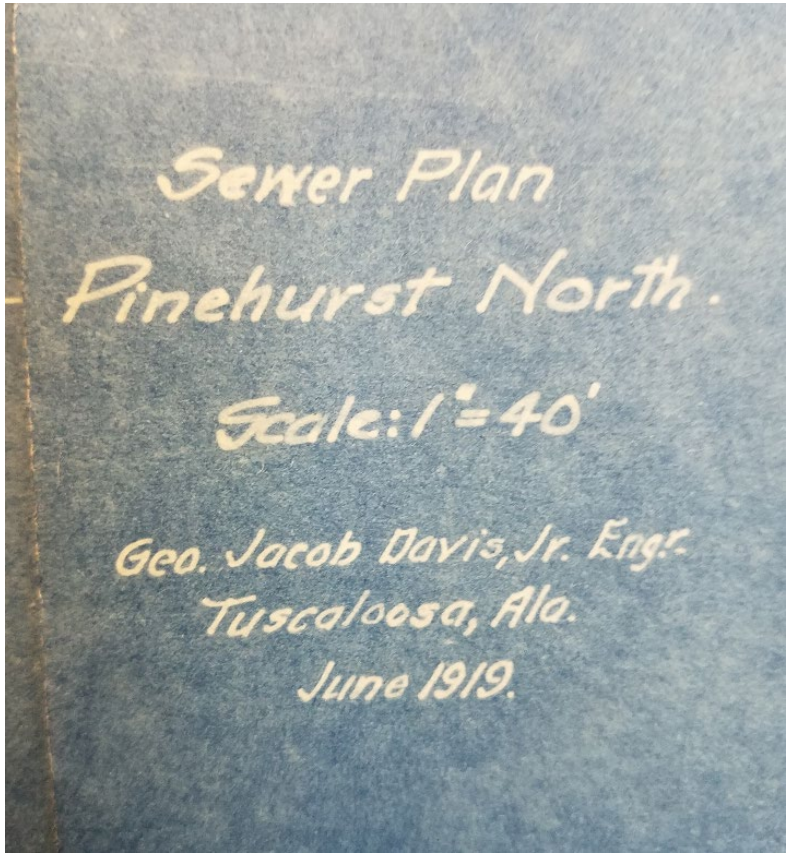
- Current total water treatment capacity is 57 million gallons per day
- Currently average about 24 million gallons per day of treated water
- Lake Tuscaloosa is normal source of supply for both water treatment plants
- Lake Nicol is used infrequently
- Harris Lake serves one commercial customer

Lake Nicol and Harris Lake Structures

Raw Water Mains

City Population vs Water Supply Assets



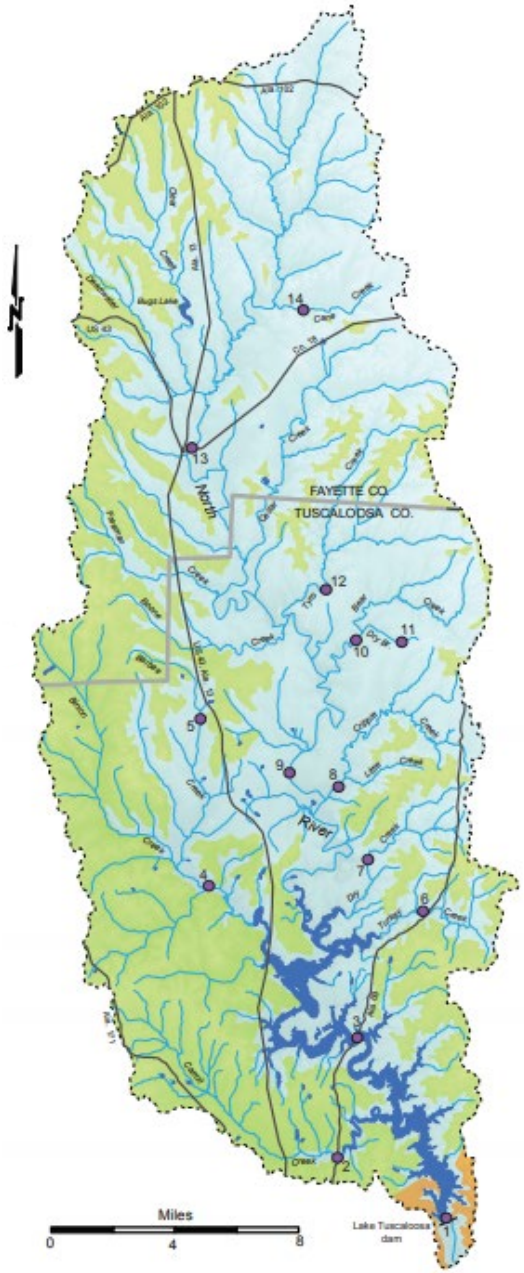


Lake Tuscaloosa Overview

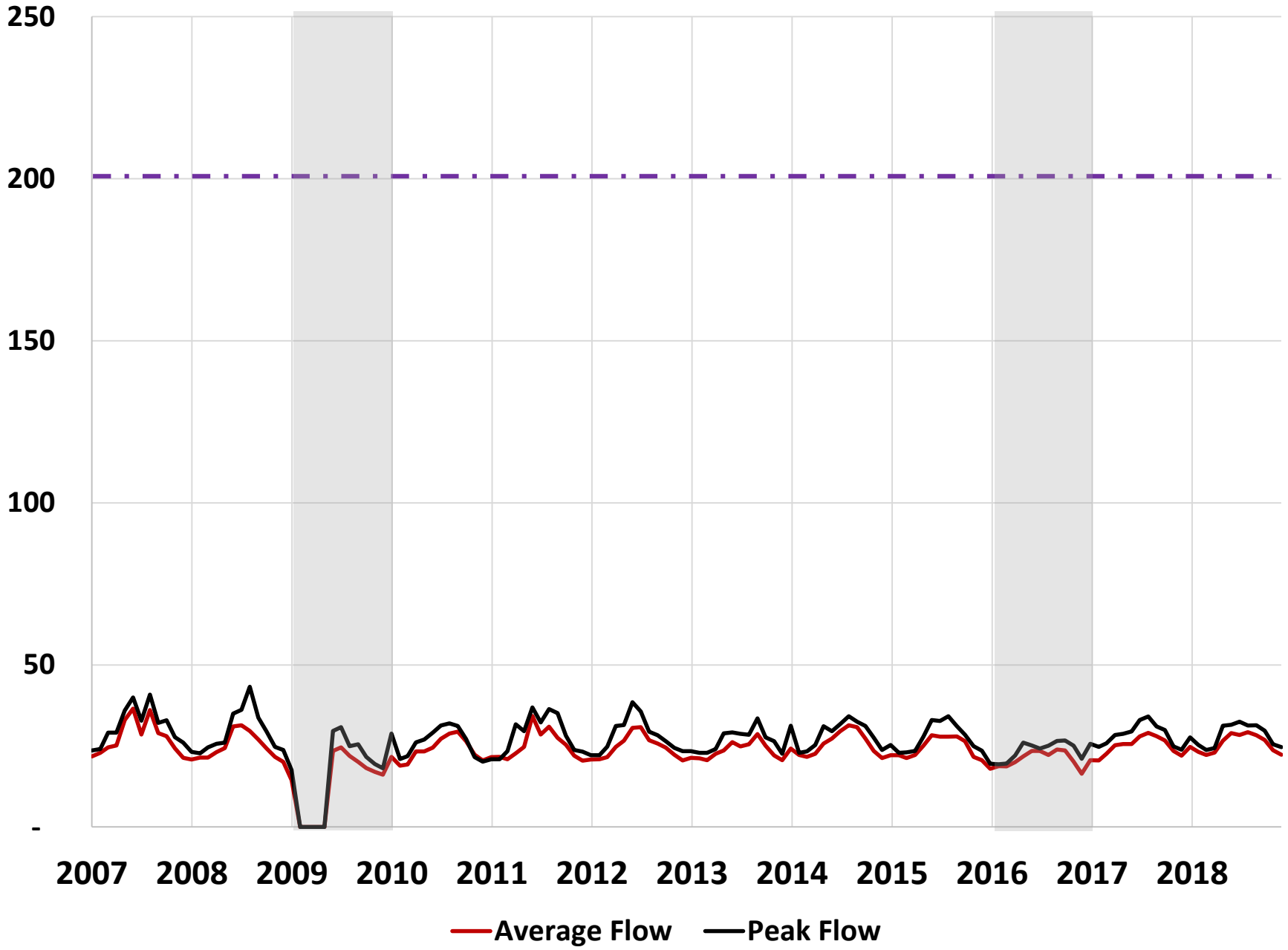
- Watershed is 287,561 acres (449 square miles)
- Safe yield of Lake Tuscaloosa = 200 million gallons per day
- The annual average residence time for water in the lake is 87.5 days.

Watersheds

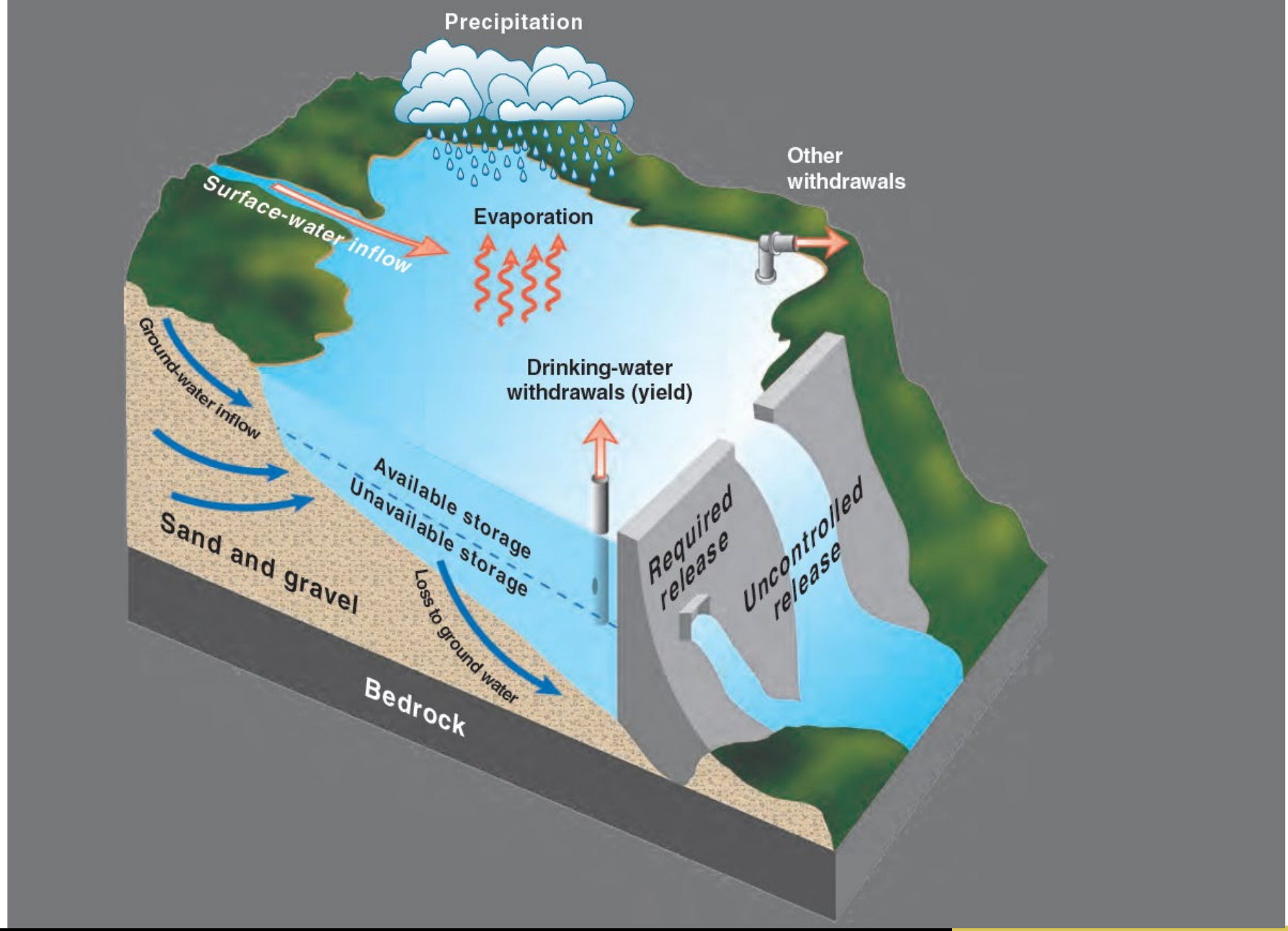
- Lake Tuscaloosa is the drinking water source for 200k people
- Water quality has consistently met standards but there are concerns with growth due to:
  - *Erosion (particularly slopes)*
  - *Runoff*
  - *Septic systems*



Treated Water in Millions of Gallons Per Day



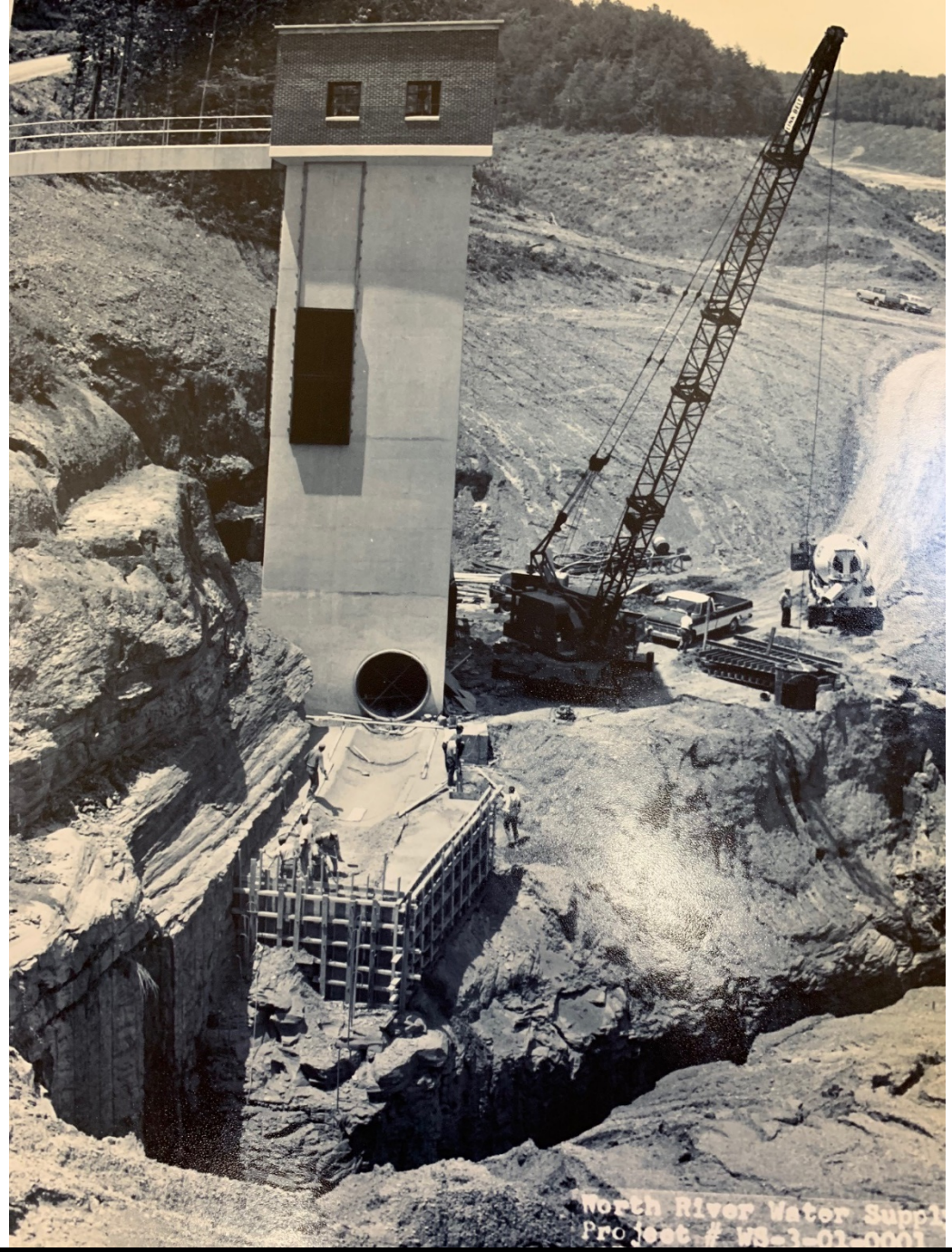
Overview of a Drinking Water Supply Reservoir



Lake Tuscaloosa Dam

Lake Tuscaloosa Dam and Intake Structure

Lake Tuscaloosa Intake Structure



Lake Tuscaloosa Intake Structure

Lake Tuscaloosa Tunnel and Raw Water Lines

Challenges

- Aging infrastructure
  - *Harris Lake dam is 90 years old.*
  - *Lake Nicol dam is 63 years old.*
  - *Lake Tuscaloosa dam is 49 years old.*
- Municipal code could use some attention
- The potential for water quality degradation
- Sedimentation
- Source water protection
- Funding

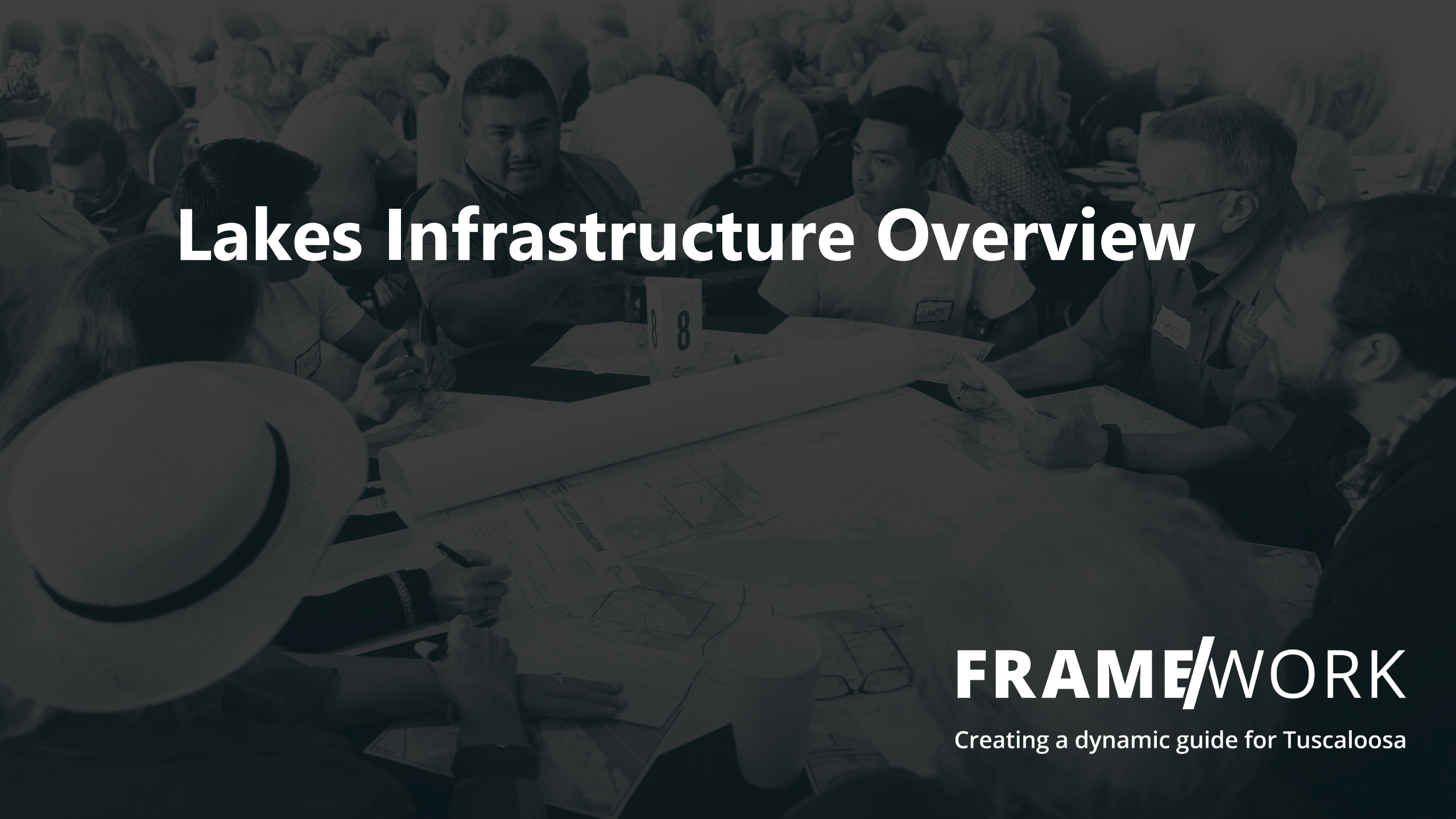
•Municipal code could use some attention

- **Example: irrigation pumps**
  - *Pumps up to 100 gallons per minute are allowed*
  - *If every dock with electrical service turned on a 100 GPM pump, that would take 25% (51 MGD) of Lake Tuscaloosa's safe yield (200 MGD)*
  - *If every dock owner had a 100 GPM pump, this could use more than 75% of the safe yield*
  - *At build-out condition, irrigation pumps could consume more than 3 times the safe yield (672 MGD)*

Water System Conditions

- Lake Tuscaloosa provides a plentiful supply of water
- Backup water sources are Lake Nicol and Harris Lake, but these cannot meet the City's water demand
- Existing water supply facilities are adequate for water capacity and water quality *at present*
- Water supply facilities are aging, which is a concern
- Water treatment capacity is about 25% of the safe yield of Lake Tuscaloosa and will need expanding at some point

Lakes Infrastructure Overview



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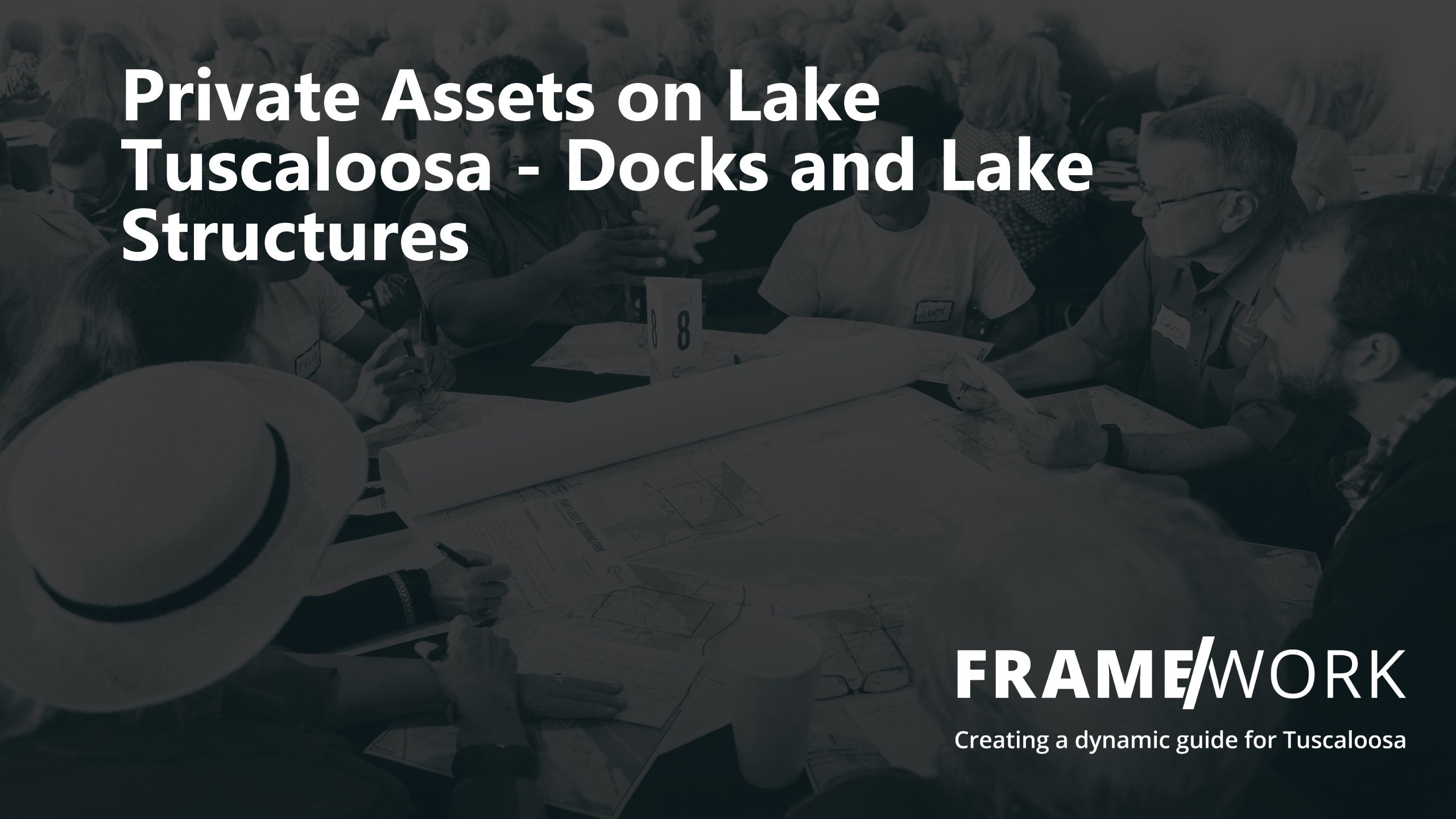
2018 Lake Operation Costs

Lakes Division - $700,000.00
9 Employees
Lake Police - $150,000.00
2 Employees + 1 Security
Total Annual Lake Costs - $850,000.00

Revenues Generated from Lake Division - $100,000

Private Assets on Lake Tuscaloosa - Docks and Lake Structures



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Dock Statistics for Lake Tuscaloosa

Structures: 1156

No Power: 491

Power and Verified Correct: 351

Non Compliant: 194

Approx. 1,000,000 Sq Ft of Docks

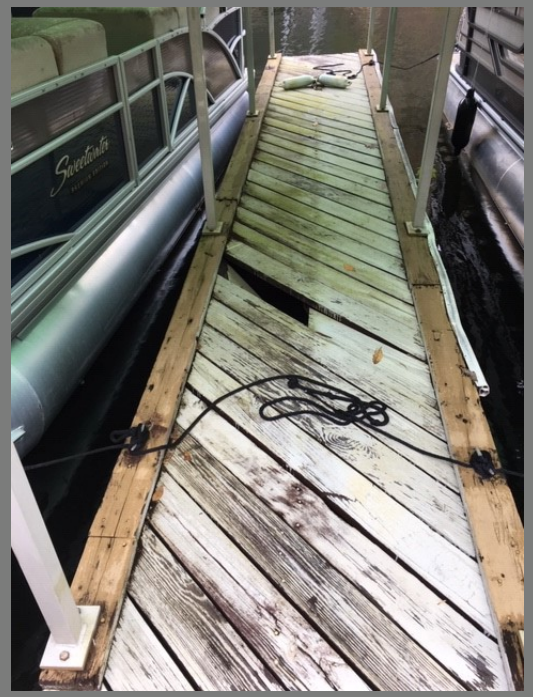
Permitted for Work: 120

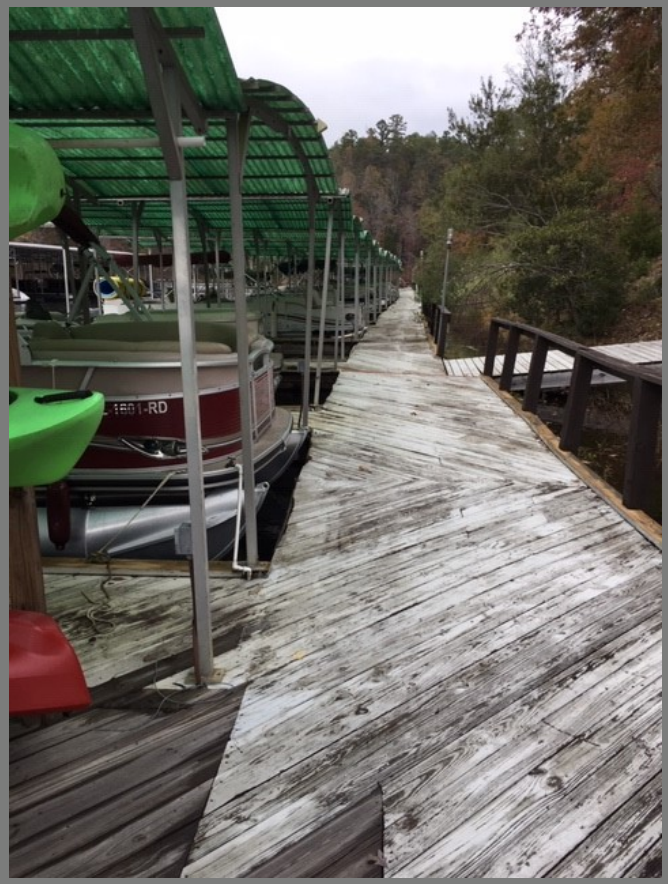
Commercial: 8

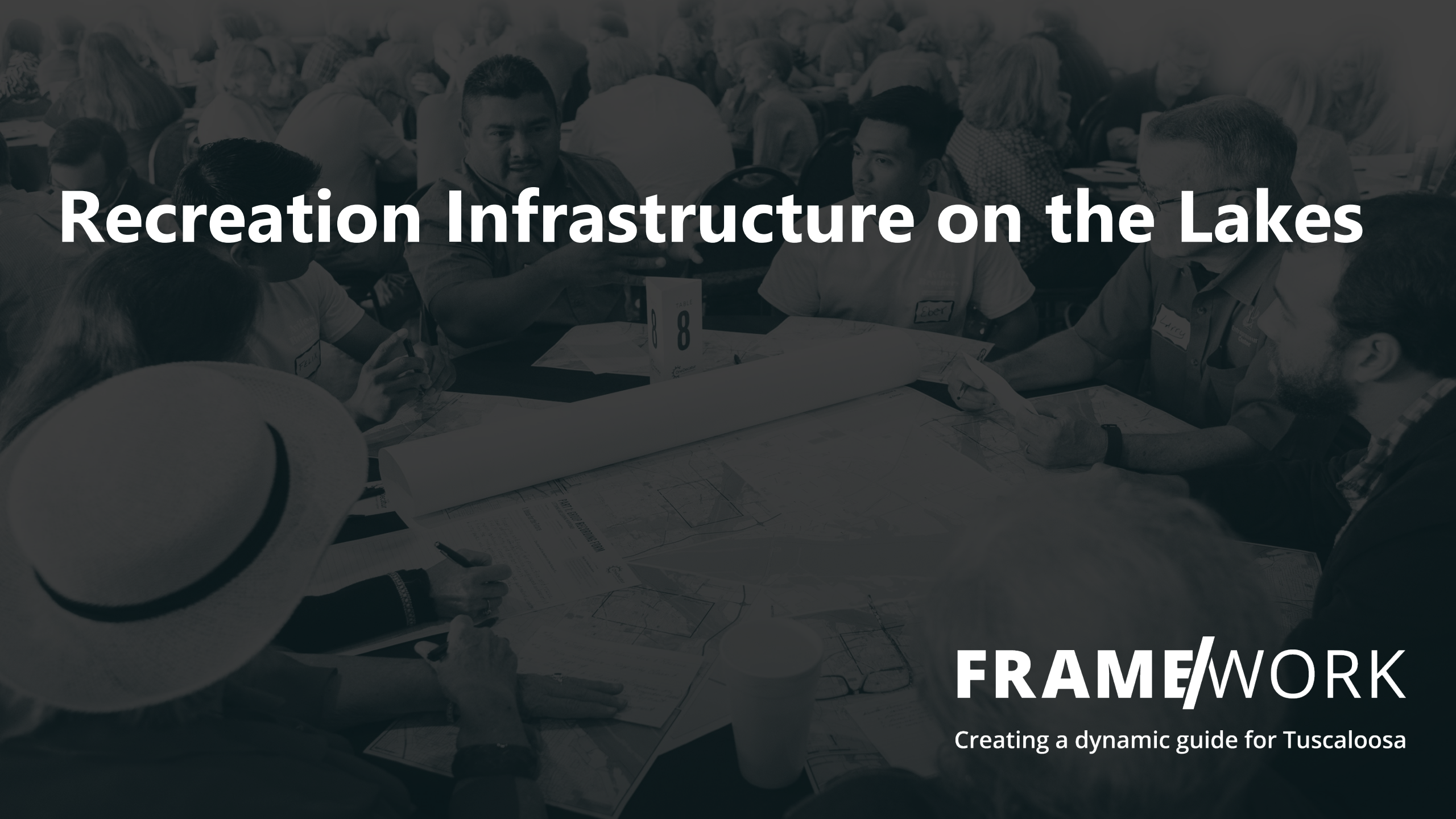
Seawalls: 254 (approx.)

Private Ramps: 79 (approx.)

Docks and Other Structures







Recreation Infrastructure on the Lakes

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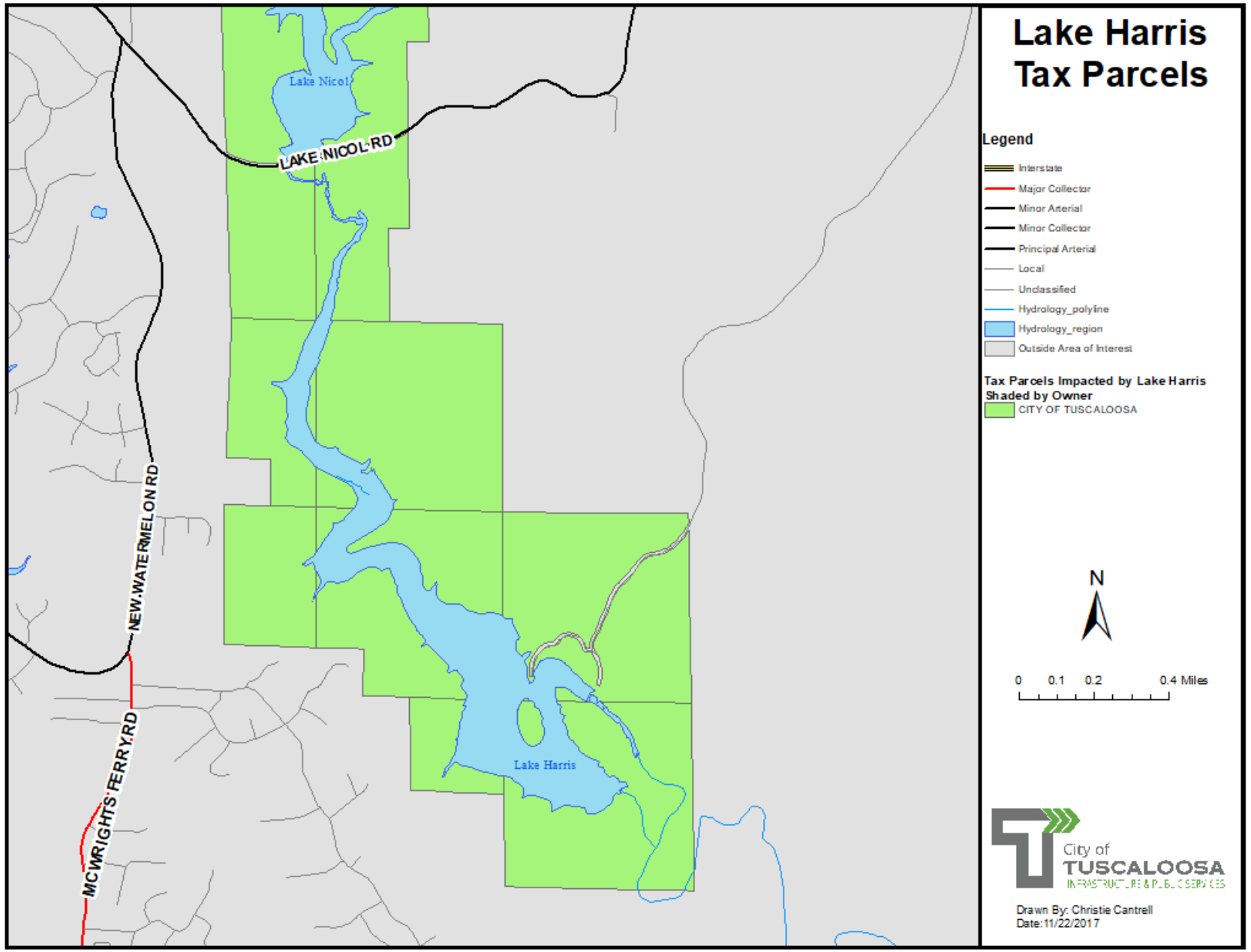
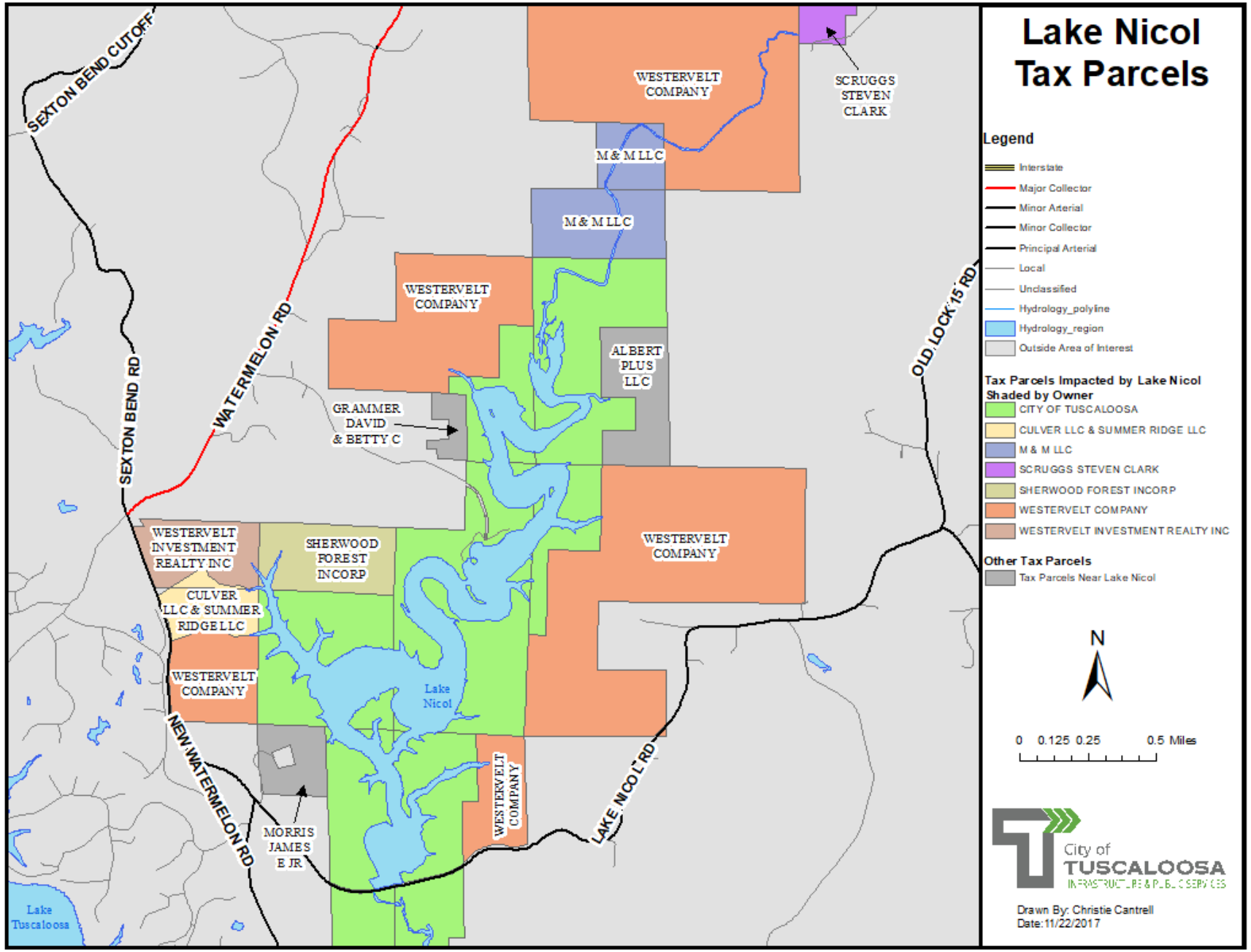
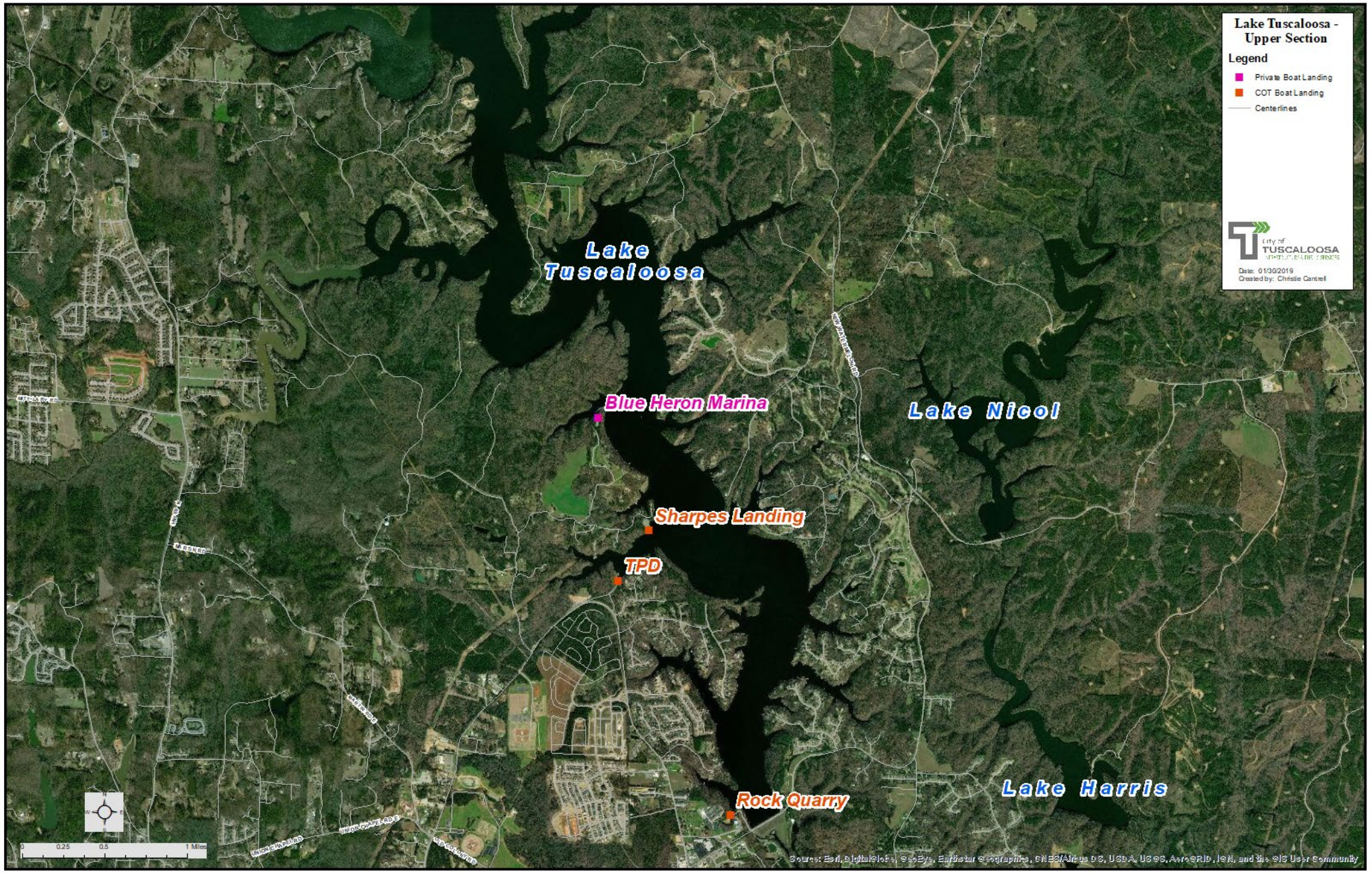
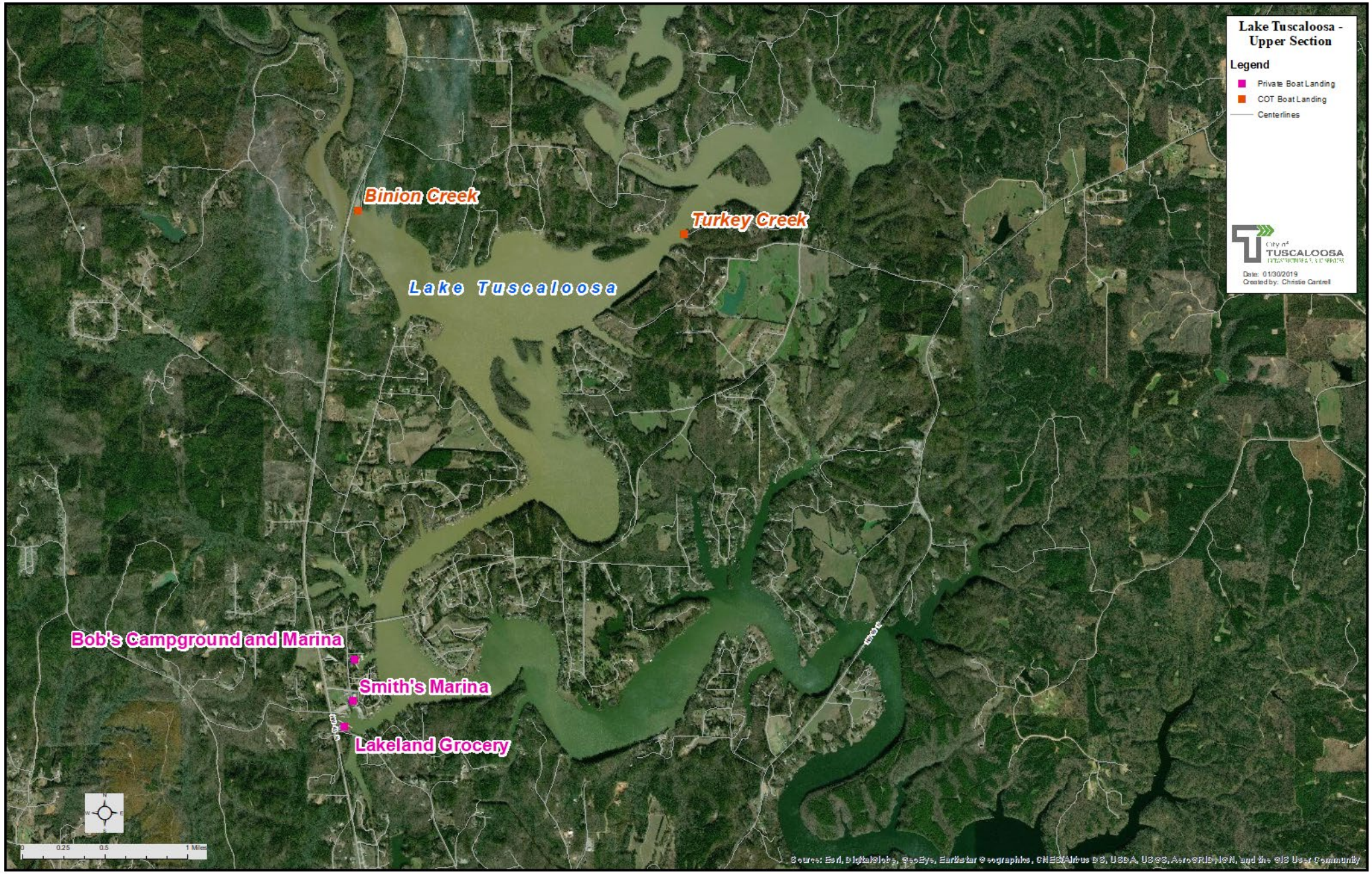
1. Lake Harris Dam constructed in 1929.
2. City of Tuscaloosa population was approximately 20,659
3. Total land owned by city around lake – 234 acres.



1. **Lake Nicol Dam constructed in 1956**
2. **City of Tuscaloosa population was approximately 54,883**
3. **Total land owned by city around lake – 1,095 Acres**

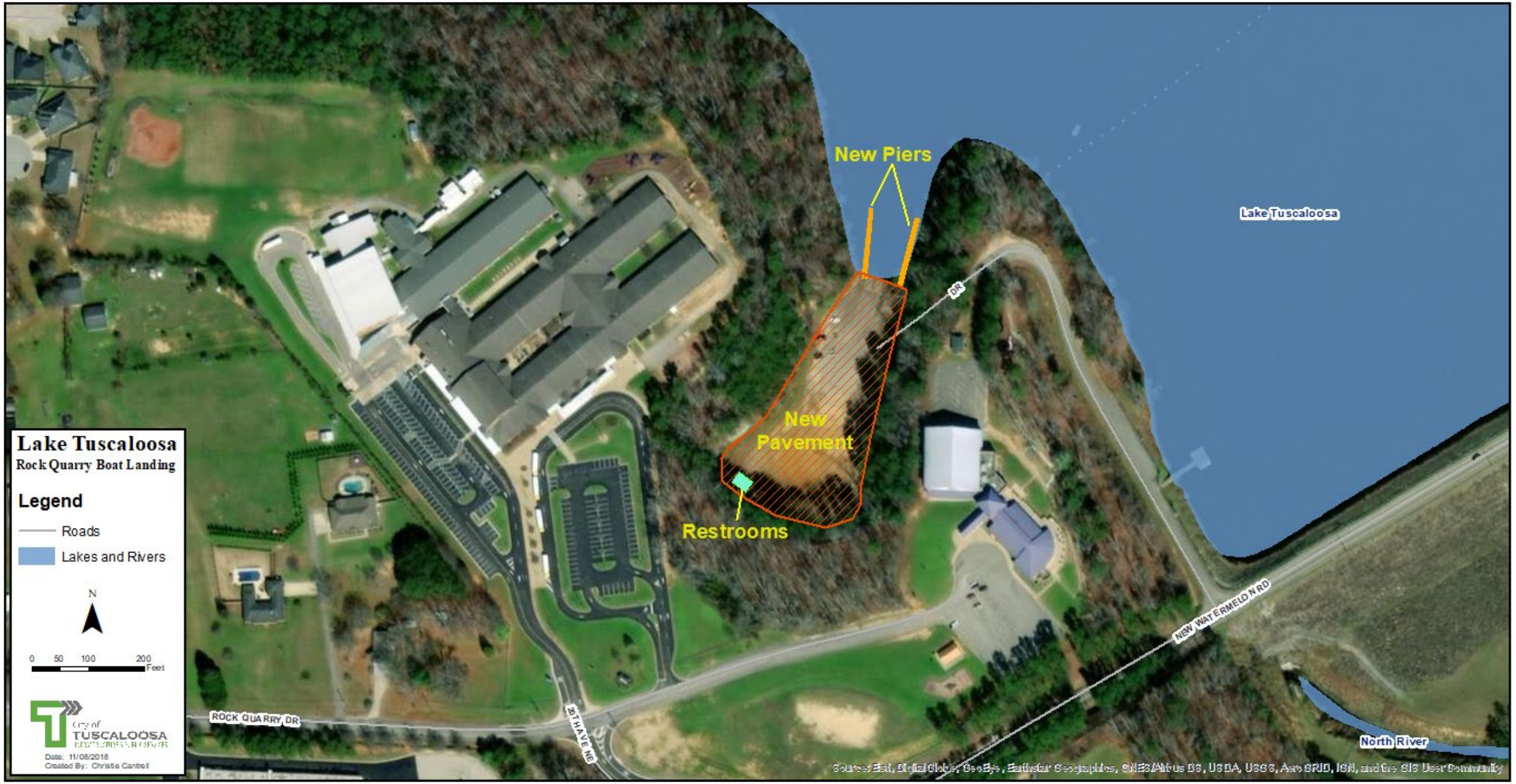



Lake Tuscaloosa - Upper Section
Legend
Private Boat Landing
COT Boat Landing
Centerlines
City of TUSCALOOSA
Date: 01/30/2019
Created by: Christie Cantrell
Lake Tuscaloosa
Blue Heron Marina
Lake Nicol
Sharpes Landing
TPD
Rock Quarry
Lake Harris
MARINER
0 0.25 0.5 1 Miles
Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community


Lake Tuscaloosa - Upper Section
Legend
Private Boat Landing
COT Boat Landing
Centerlines
Date: 01/30/2019
Created by: Christie Cantrell
Binion Creek
Turkey Creek
Lake Tuscaloosa
Bob's Campground and Marina
Smith's Marina
Lakeland Grocery
0 0.25 0.5 1 Miles
Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

Rock Quarry Landing

11 Marked parking spaces, 25-30 can park on gravel


New Piers
Lake Tuscaloosa
New Pavement
Restrooms
DR
NEW WATERMELON RD
ROCK QUARRY DR
20TH AVE NE
North River
Lake Tuscaloosa
Rock Quarry Boat Landing
Legend
Roads
Lakes and Rivers
N
0 50 100 200
Feet
City of TUSCALOOSA
Date: 11/08/2018
Created By: Christie Cantrell

Sharp's Landing

36 Marked parking spaces

Binion Creek Landing




60 Marked parking spaces, 10-25 unmarked parking spaces

Water & Sewer Service Areas

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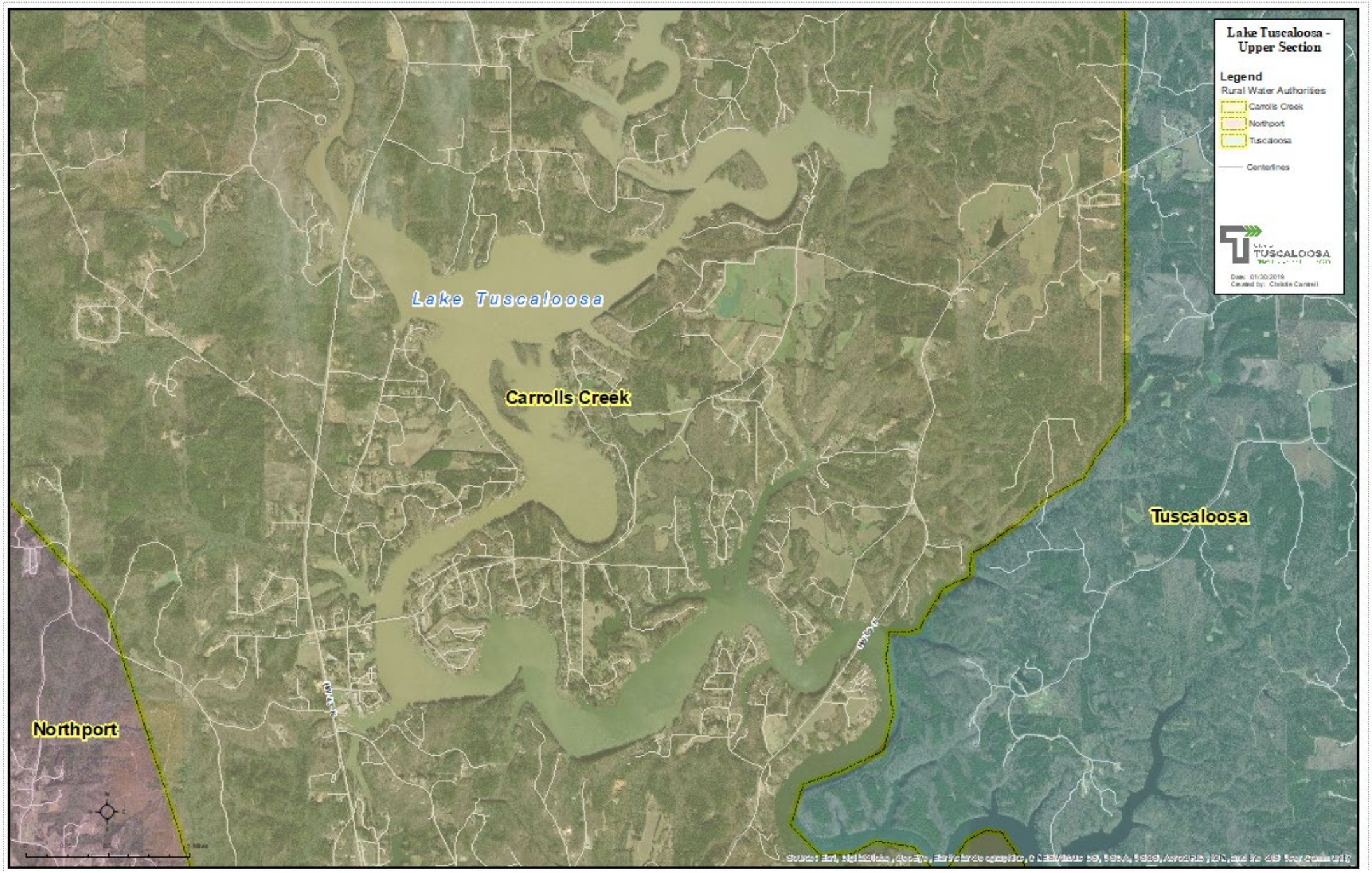
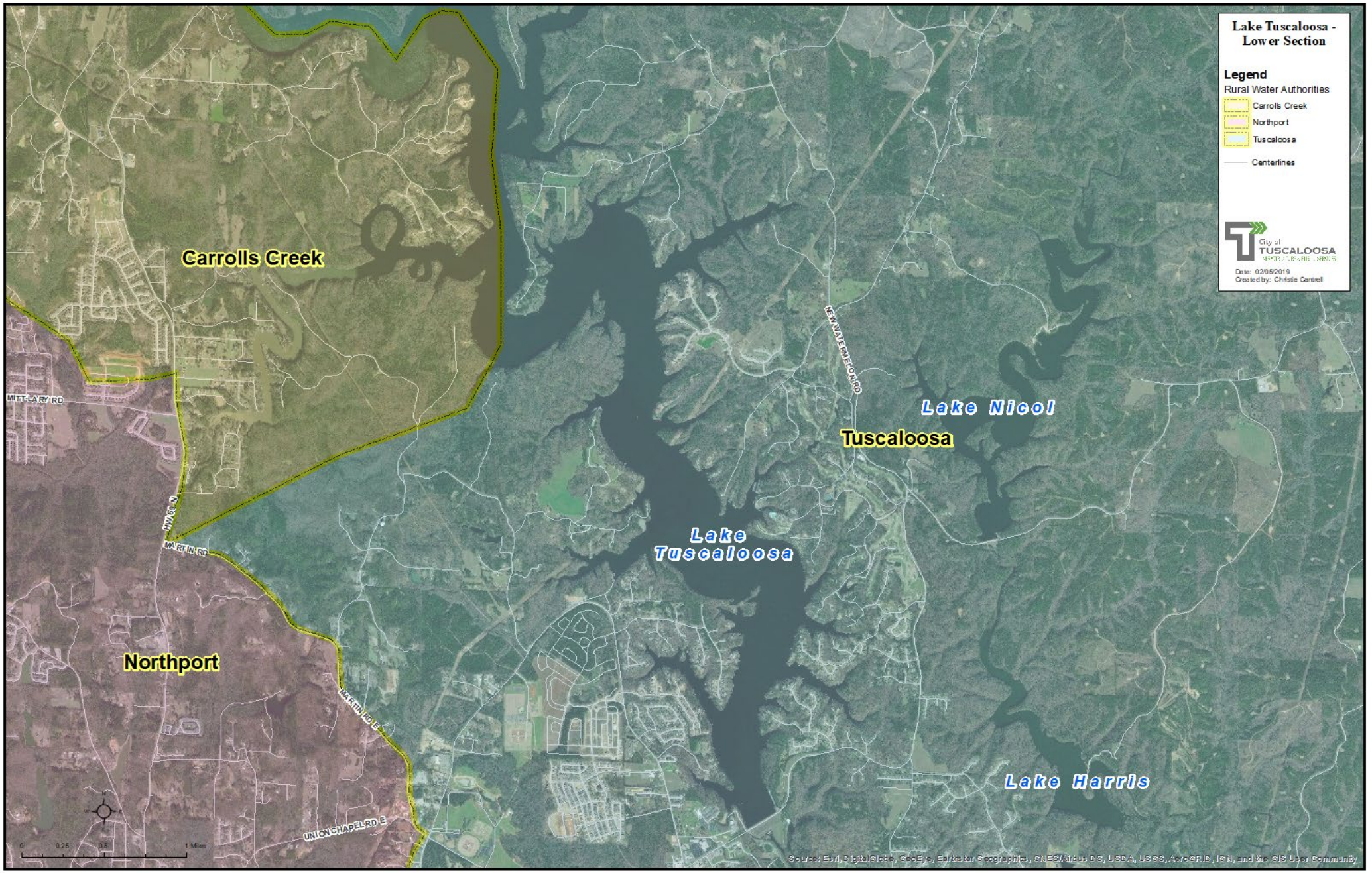
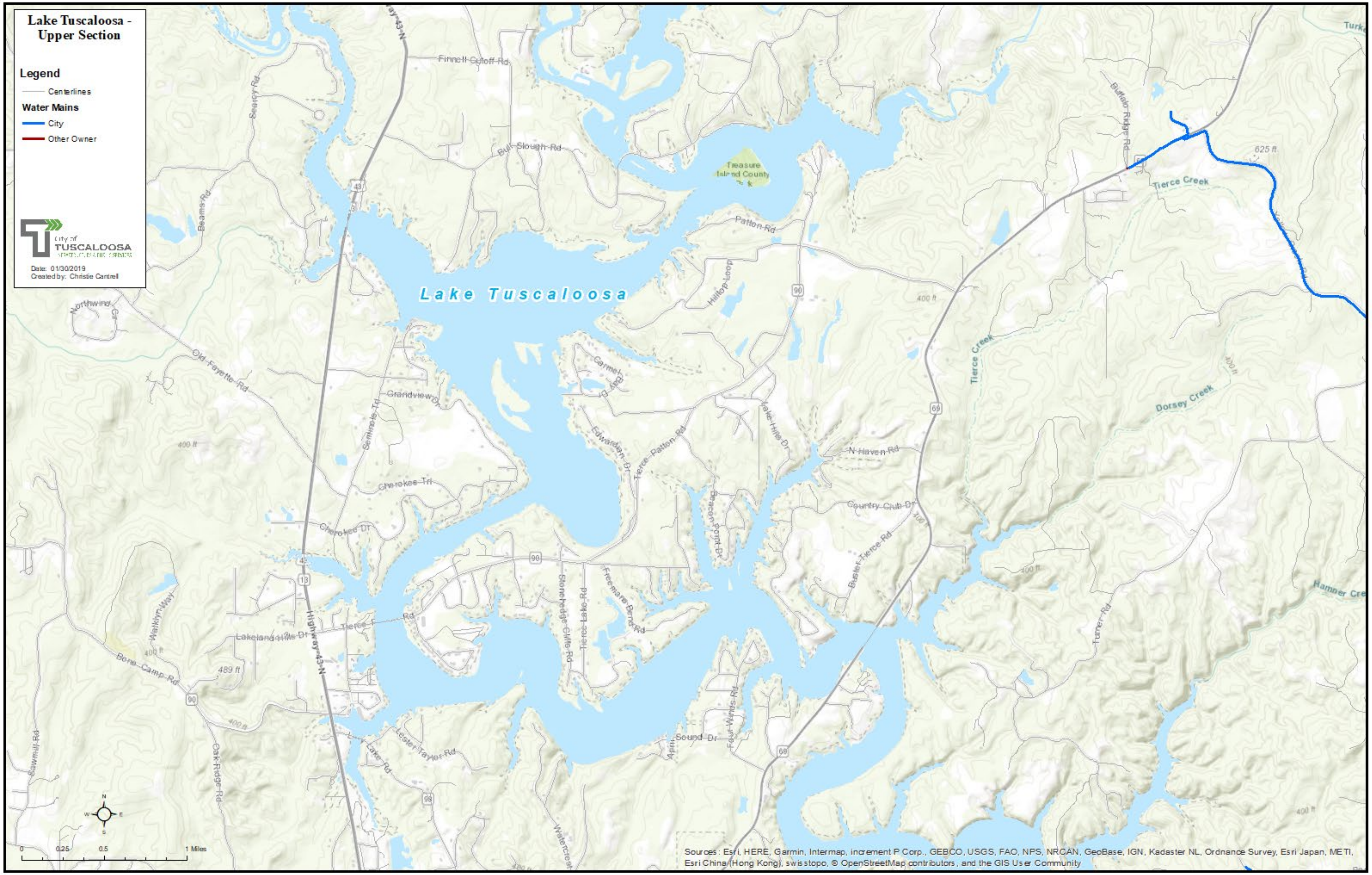
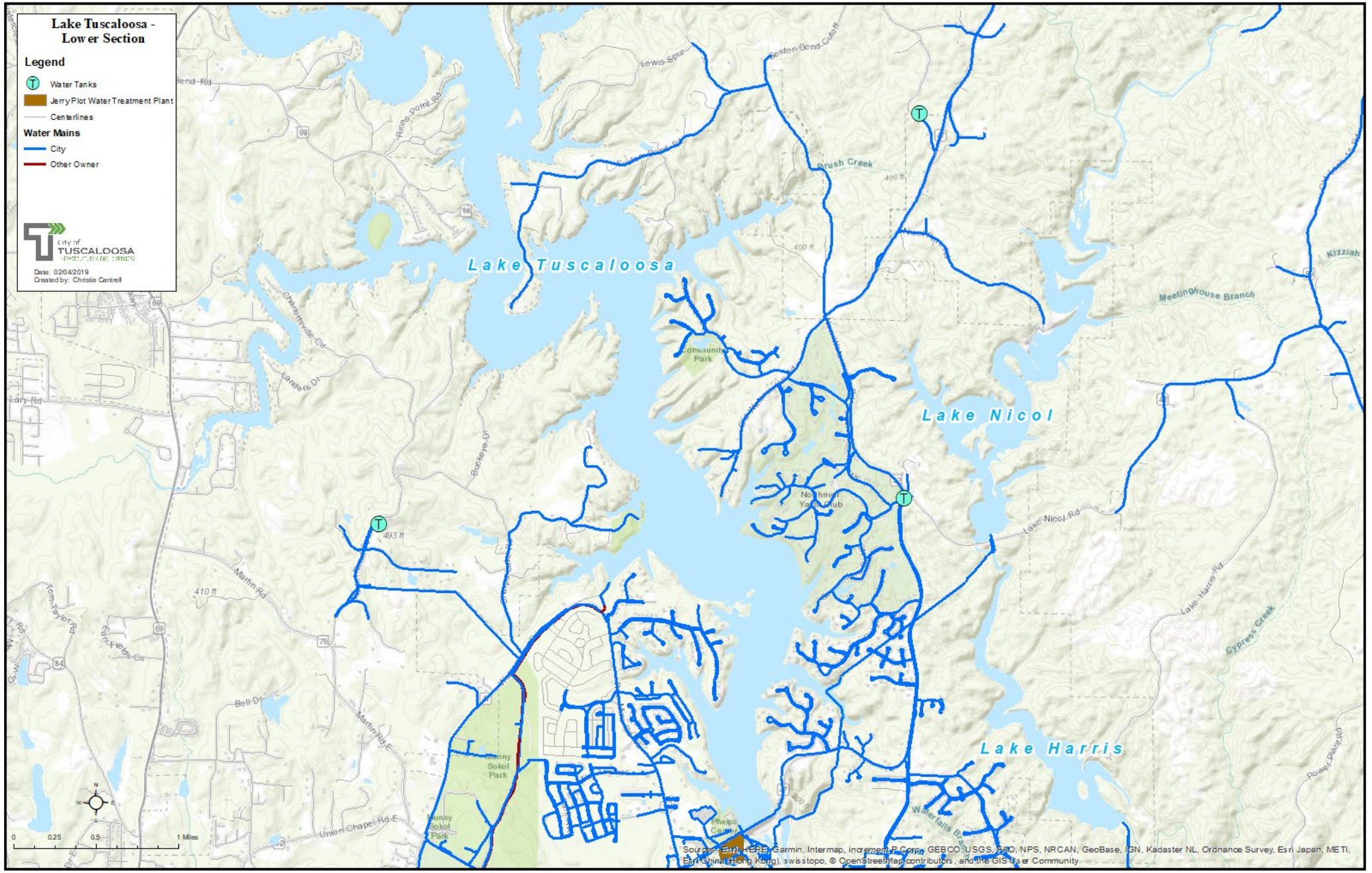
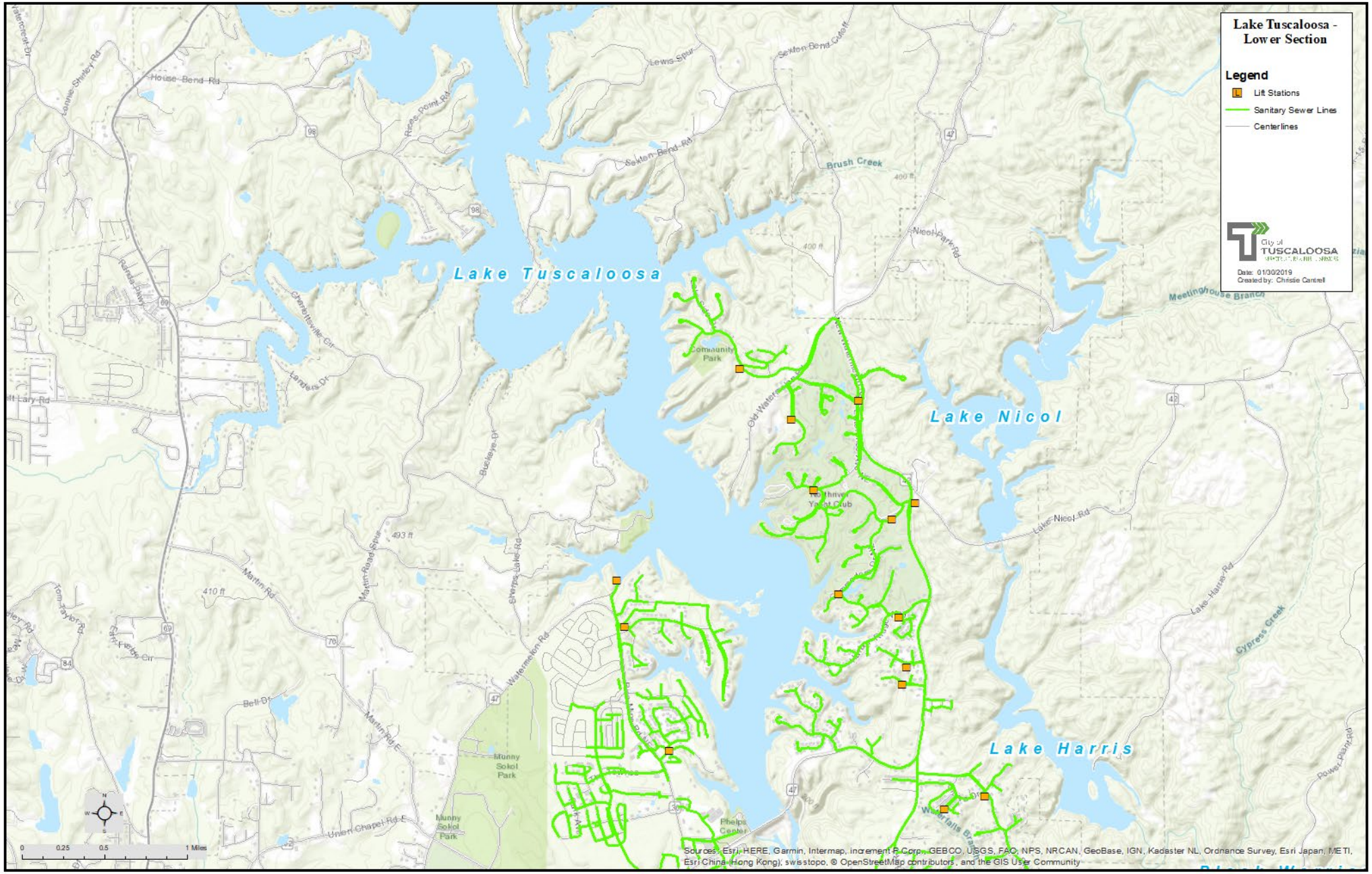

Lake Tuscaloosa - Upper Section
Legend
Rural Water Authorities
Carrolls Creek
Northport
Tuscaloosa
Centerlines
TUSCALOOSA
Date: 01/30/2019
Created by: Christie Cantrell
Lake Tuscaloosa
Carrolls Creek
Tuscaloosa
Northport


Lake Tuscaloosa - Lower Section
Legend
Rural Water Authorities
Carrolls Creek
Northport
Tuscaloosa
Centerlines
City of TUSCALOOSA
Date: 02/05/2019
Created by: Chrissie Cantrell
Carrolls Creek
Northport
Tuscaloosa
Lake Nicol
Lake Tuscaloosa
Lake Harris
MITTLARY RD
MARTIN RD
MARTIN RD E
UNION CHAPEL RD E
NEW WATERWHEEL CAN RD
0
0.25
0.5
1 Miles
Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community


Lake Tuscaloosa - Upper Section
Legend
Centerlines
Water Mains
City
Other Owner
City of TUSCALOOSA
Date: 01/30/2019
Created by: Christie Cantrell
Lake Tuscaloosa
Treasure Island County Park
Finnell Cutoff Rd
Bull Slough Rd
Patton Rd
Buffalo Ridge Rd
Tierce Creek
Dorsey Creek
625 ft
400 ft
489 ft
Hilltop Loop
Old Fayette Rd
Northwind Cir
Grandview Dr
Seminole Trl
Cherokee Trl
Cherokee Dr
Edwardian Dr
Tierce Patton Rd
Lake Hills Dr
N Haven Rd
Country Club Dr
Beacon Point Dr
Bristol Tierce Rd
Stonehedge Cliffs Rd
Tierce Lake Rd
Freemans Bend Rd
Lakeland Hills Dr
Highway 43 N
Watkins Way
Bone Camp Rd
Lester Taylor Rd
Lake Rd
Oak Ridge Rd
Sawmill Rd
Sound Dr
Four Winds Rd
Turner Rd
Hamner Cre
Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, © OpenStreetMap contributors, and the GIS User Community
0 0.25 0.5 1 Miles


Lake Tuscaloosa - Lower Section
Legend
Water Tanks
Jerry Plot Water Treatment Plant
Centerlines
Water Mains
City
Other Owner
City of TUSCALOOSA
Date: 02/04/2019
Created by: Christie Cantrell
Lake Tuscaloosa
Lake Nicol
Lake Harris
Brush Creek
Meetinghouse Branch
Kizziah
Cypress Creek
Lake Nicol Rd
Lake Harris Rd
Martin Rd
Union Chapel Rd E
Community Park
Benny Sokol Park
Murray Sokol Park
Phelps Center
493 ft
410 ft
400 ft
0 0.25 0.5 1 Miles
Sources: Esri, HERE, Garmin, Intermap, increment P Corp, GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, © OpenStreetMap contributors, and the GIS User Community


Lake Tuscaloosa - Lower Section
Legend
Lift Stations
Sanitary Sewer Lines
Centerlines
City of TUSCALOOSA
Date: 01/30/2019
Created by: Chrissie Cantrell
Lake Tuscaloosa
Lake Nicol
Lake Harris
Brush Creek
Meetinghouse Branch
Cypress Creek
Lake Nicol Rd
Lake Harris Rd
Nicol Park Rd
Sexton Bend Rd
Sexton Bend Cutoff
Lewis Spur
House Bend Rd
Rose Point Rd
Buckeye Dr
Martin Rd
Martin Road Spur
Watermelon Rd
Union Chapel Rd E
Bell Dr
Martin Rd E
Sherrie Lake Rd
Old Watermelon Rd
Power Plant Rd
Community Park
Munny Sokol Park
Phelps Center
493 ft
410 ft
400 ft
0 0.25 0.5 1 Miles
Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, © OpenStreetMap contributors, and the GIS User Community

Q & A

Next Steps

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Creating a dynamic guide for Tuscaloosa

Next Meeting

Steering Committee 6: Mar 20

Thank you

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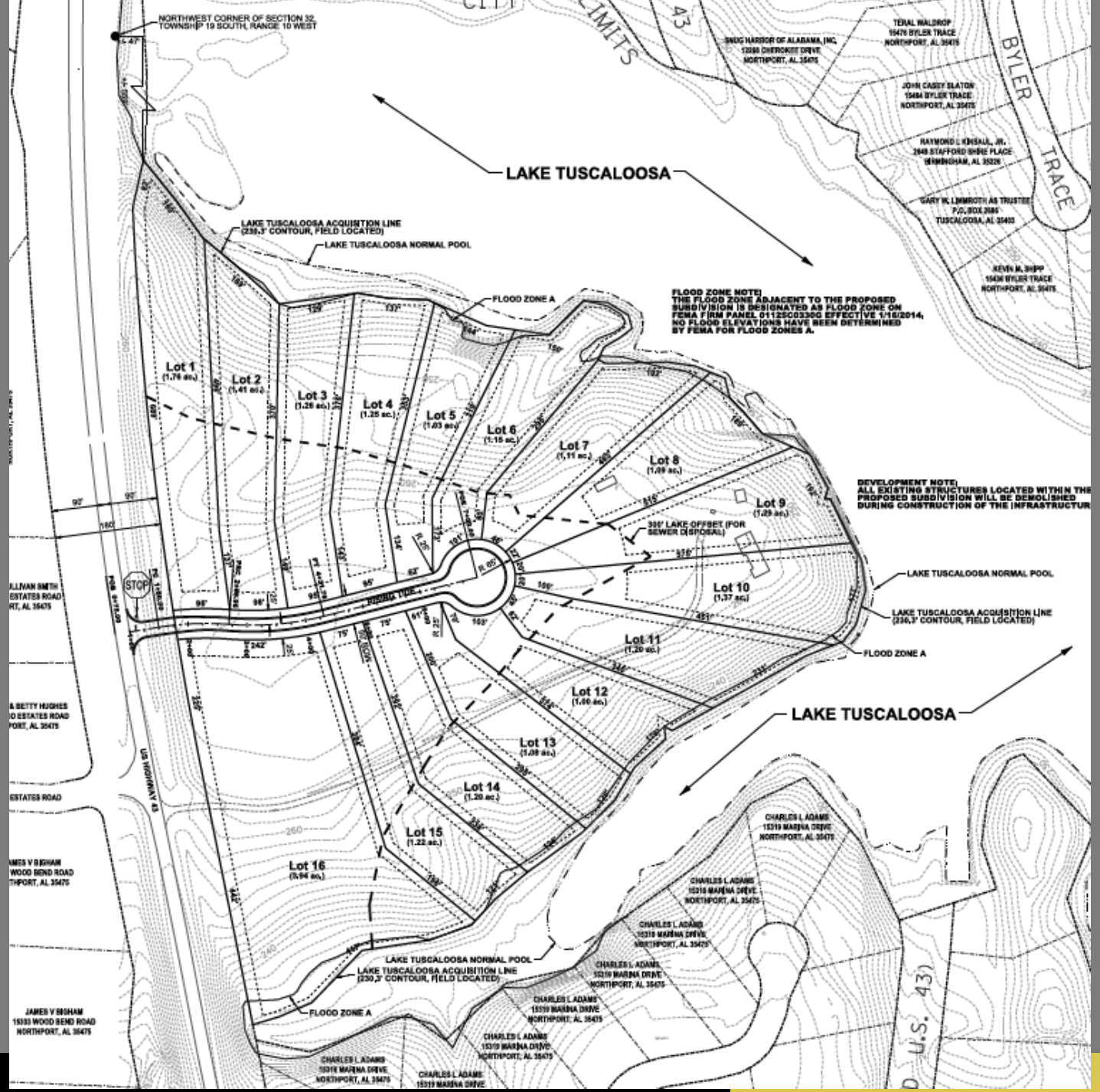
Rising Tide subdivision




TUSCALOOSA CITY LIMITS
OLD U.S. 43
BYLER TRACE
LAKE TUSCALOOSA ACQUISITION LINE (236.3' CONTOUR, FIELD LOCATED)
LAKE TUSCALOOSA NORMAL POOL
FLOOD ZONE NOTE:
THE FLOOD ZONE ADJACENT TO THE PROPOSED SUBDIVISION IS DESIGNATED AS FLOOD ZONE ON FEMA FIRM PANEL 01125C0330G EFFECTIVE 1/16/2014. NO FLOOD ELEVATIONS HAVE BEEN DETERMINED BY FEMA FOR FLOOD ZONES A.
DEVELOPMENT NOTE:
ALL EXISTING STRUCTURES LOCATED WITHIN THE PROPOSED SUBDIVISION WILL BE DEMOLISHED DURING CONSTRUCTION OF THE INFRASTRUCTURE.
Lot 1 (1.78 ac.)
Lot 2 (1.41 ac.)
Lot 3 (1.26 ac.)
Lot 4 (1.25 ac.)
Lot 5 (1.03 ac.)
Lot 6 (1.15 ac.)
Lot 7 (1.11 ac.)
Lot 8 (1.09 ac.)
Lot 9 (1.29 ac.)
Lot 10 (1.37 ac.)
Lot 11 (1.20 ac.)
Lot 12 (1.00 ac.)
Lot 13 (1.09 ac.)
Lot 14 (1.20 ac.)
Lot 15 (1.22 ac.)
Lot 16 (5.94 ac.)
300' LAKE OFFSET (FOR SEWER DISPOSAL)
STOP
RIDGE TIDE
US HIGHWAY 43
WOOD ESTATES ROAD

Edgewater subdivision