Falls Lake: Then and Now
(The Best Dam Tour Ever!)
Falls Lake

- 37,990 acres
  - 12,410 acres of water
  - 25,580 acres of land
- Wake, Durham, and Granville Counties
Authorization of the Falls Lake Project

• May 1932 - Original study by Chief of Engineers
• 1963 - USACE recommends construction
• 1965 - Project authorized by the Flood Control Act of 1965
• 1978 - Lake Construction began
• 1981 – Dam Construction began
Major River Basins Within the Wilmington District
U.S. Army Corps of Engineers
Falls Lake Project Purposes

- Water Quality
- Flood Damage Reduction
- Recreation
- Fish and Wildlife Enhancement
- Water Supply
Multi-Agency Management and Cooperation

Falls Lake and the federally-owned land surrounding it are managed by several federal, state, and local agencies.
So, You Want to Build a Lake…Now What?

Raised Roadbeds
Tree Clearing
Boundary Line Marking

1969 Land Purchasing Began
200-300 Residents Relocated
Conduit and Tower Construction

1978 - 1981
Wait! The lake level is 251.5 ft msl. What’s the deal?
Flood and Drought Operations

When Things Get Interesting....
Hold Floodwaters as Long as We Can.
After The Neuse Recedes….

Falls Lake Avoided Flood Damages: $587,627,439
Major Floods:

Hurricane Fran, September 1996 – 262.5 ft. msl
   Highest Release – 7,500 cfs
El Nino Rains, March 1998 – 263.54 ft. msl
Hurricane Floyd, Sept 1999 – 264.34 ft. msl
   Highest Lake Level, Second Highest Release - 6,000 cfs

Sept 1945 Flood – 22,000 cfs, 263
Who Makes the Tough Decisions and How are they Made?

- Stakeholder Meetings
- Water Control Manual
- Downstream Targets
- Inflows
Flooding in Local Residential Areas
Drought Conditions: Whose Water Is It?

Low Water Record:
December 25th, 2007 – 241.5 ft. msl
Falls Lake Project
Volume Shortage And Discussion

Assumptions:

Practical Amount Needed = 5000 acre-feet, ie, One-ninth of Raleigh’s current water supply

Cost of removing a cubic yard of material = $3

\[(5000 \text{ ac-ft}) \times (43,560 \text{ sq. ft./acre}) \times (1 \text{ cubic yard/27 cubic feet}) = 8,066,667 \text{ cubic yards of material}\]

\[(8,066,667 \text{ cubic yards of material}) \times ($3/\text{cubic yard}) = $24.2 \text{ million}\]
The City of Raleigh uses Falls Lake as its primary water source.

The City of Raleigh has rights to the entire Water Supply portion of Falls Lake.
  - The Water Supply Portion of Falls Lake makes up just under half of the entire lake, the rest is what can be sent downstream for water quality purposes.

Raleigh has the rights to pull 100 million gallons/day from Falls Lake for their water supply.
Controlled Flood Storage

Elevation 251.5 to 264.8 ft, msl
221,182 Acre-Feet or 5.4 inches of run-off storage

Normal Lake Level - 251.5 ft, msl

Conservation Storage

Water Supply Storage
42.3% of Conservation Pool
45,000 Acre-Feet

Water Quality Storage
57.7% of Conservation Pool
61,322 Acre-Feet

Bottom of Conservation Storage - 236.5 ft, msl

Sedimentation Storage

Elevation 200 to 236.5 ft, msl or 25,073 Acre-Feet

Top of Dam - 291.5 ft, msl

Base of Dam - 200 ft, msl
How Much Water is in the Lake?

Lake “Debits”
• Water Withdraw
• Releases
• Evaporation
• Seepage

Lake “Deposits”
• Rivers
• Run-off
• Precipitation

Fact: On a hot, dry and breezy summer day on Falls Lake, water loss from evaporation can range from 100 to 150 cubic feet per second even producing negative net inflows.
Any Questions?