



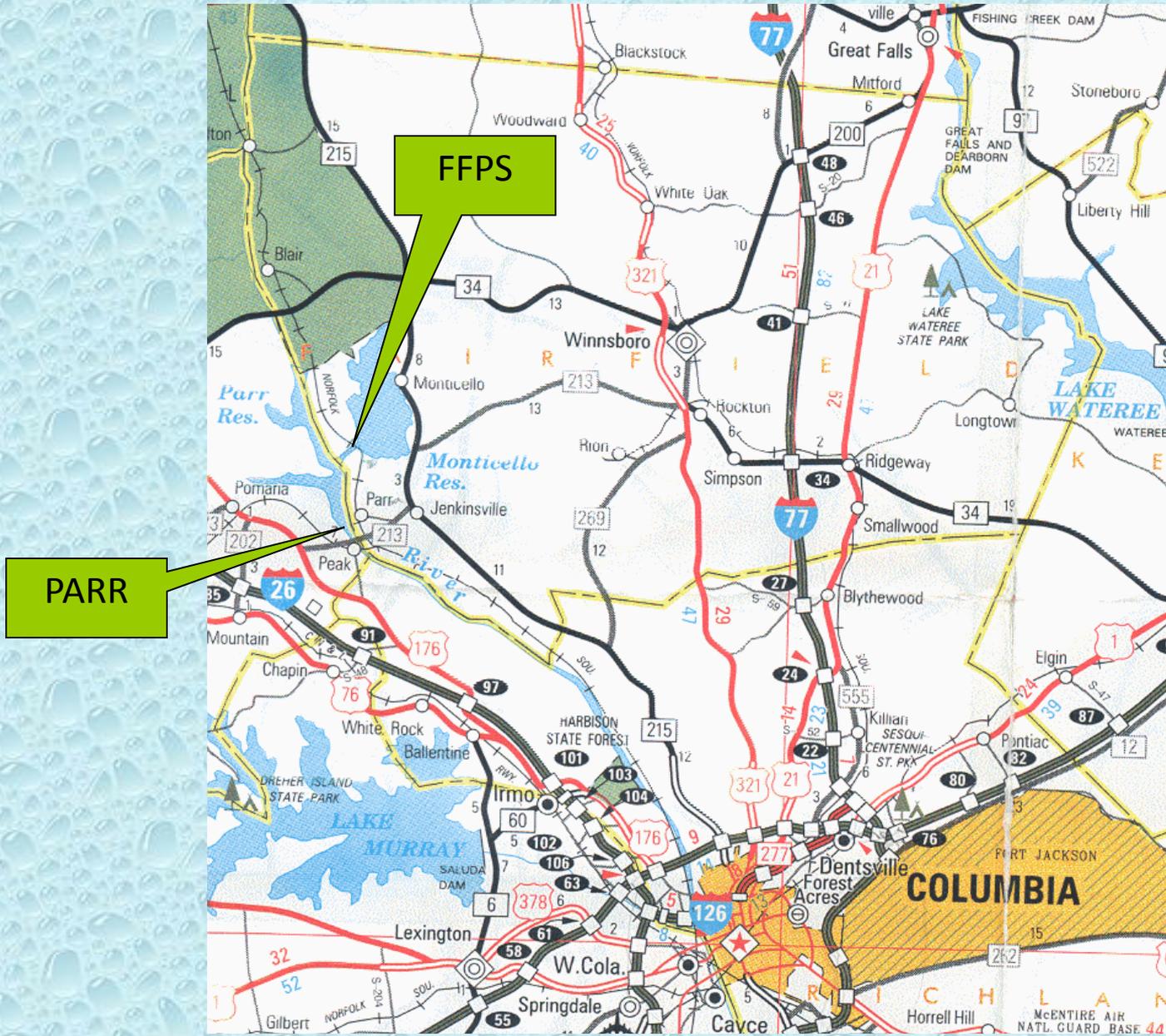
**PARR HYDROELECTRIC PROJECT
PARR HYDRO DEVELOPMENT &
FAIRFIELD PUMPED STORAGE FACILITY
DEVELOPMENT
FERC PROJECT No. 1894 - SC**



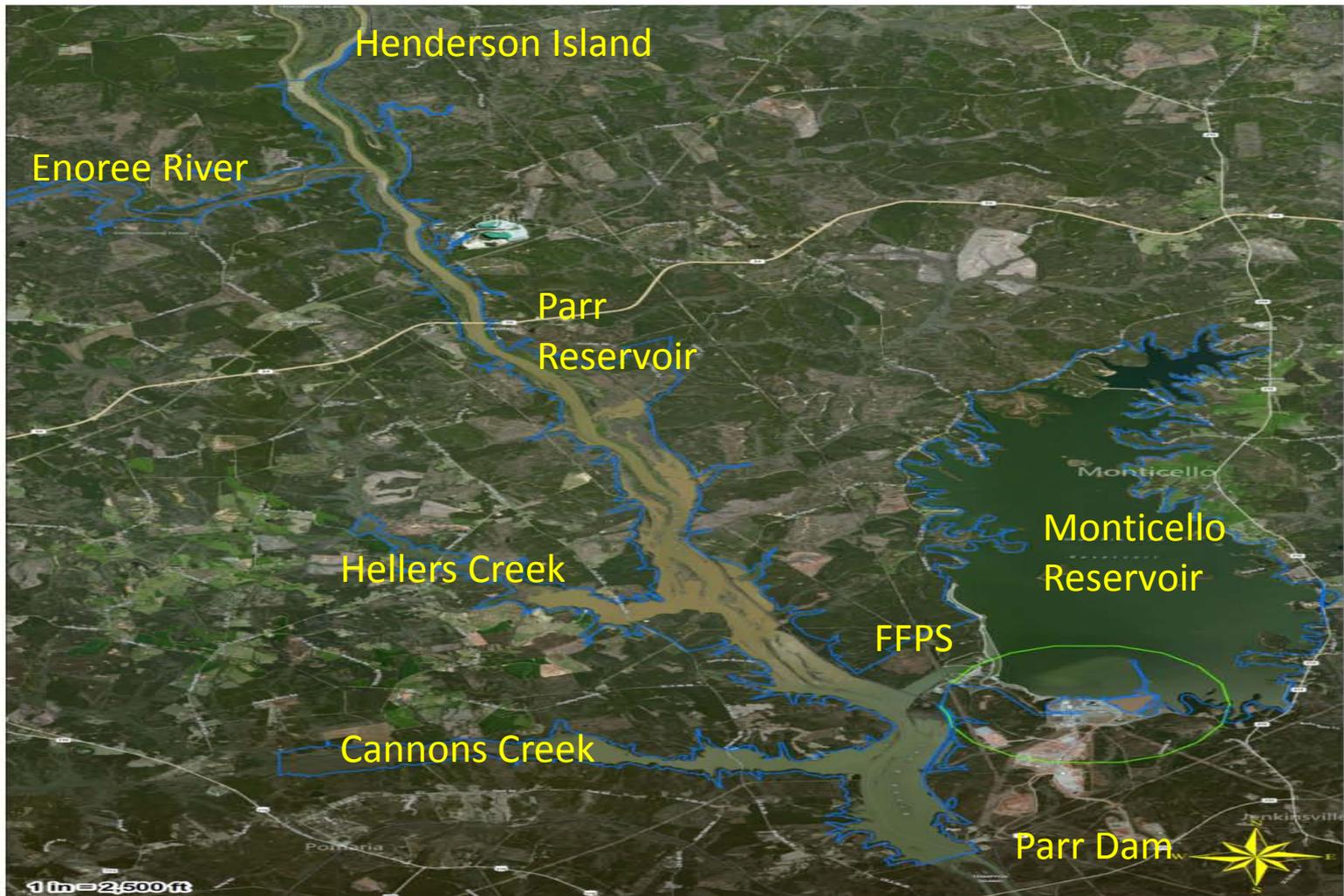
JANUARY 2013

PARR
Relicensing Project

PARR AND FAIRFIELD LOCATIONS



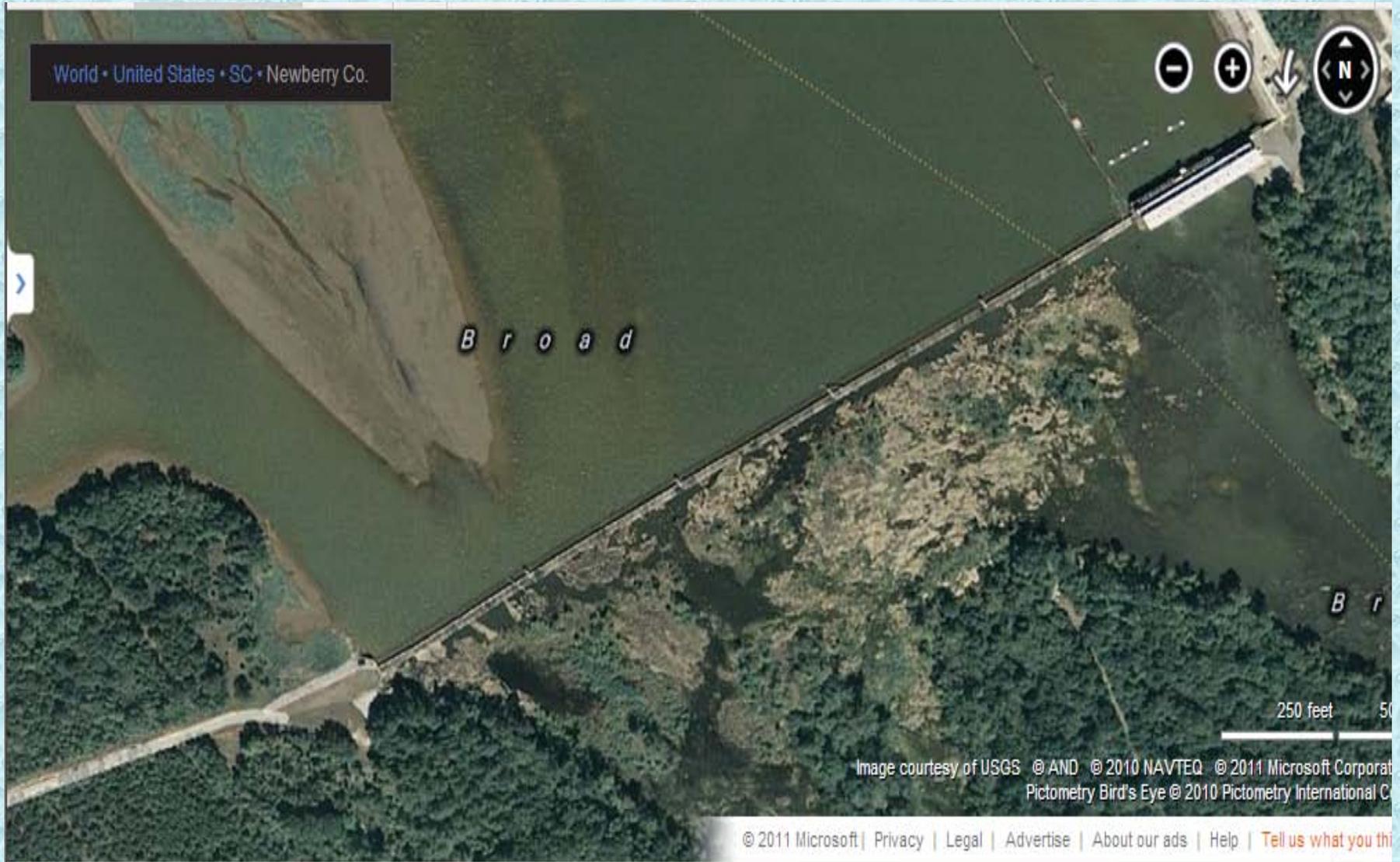
PARR HYDRO PROJECT BOUNDARY



PARR HYDROELECTRIC PLANT

- Parr Dam concrete gravity spillway, 37 ft. high, 2000 ft. long.
- (10) Bottom hinged crest gates, each 200 ft. long and 9 ft. high – added 1976 to increase reservoir capacity for pumped storage operation at Fairfield Pumped Storage.
- Hydraulic crest gates can spill excess inflow. Normally operated in pairs.

PARR HYDRO PLANT



PARR HYDROELECTRIC PLANT



PARR HYDROELECTRIC PLANT



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FAIRFIELD PUMPED STORAGE FACILITY

- Four earthen dams (A, B, C, and D)
- Dam B: main dam across Frees Creek
- Four steel penstocks lead from the intake structure on Monticello Reservoir to the powerhouse

FAIRFIELD PS DEVELOPMENT



FAIRFIELD PUMPED STORAGE FACILITY

Powerhouse, Penstocks and Intake Structure



FAIRFIELD PUMPED STORAGE FACILITY

Dam B



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PARR HYDROELECTRIC PROJECT HYDROLOGIC DATA

Parr Reservoir (full)

- 4,400 acres
- 13 miles long
- Storage capacity directly affected by FFPS Ops
- Total storage at full pool – 32,000 ac-ft
- Active storage - 29,000 ac-ft in 10 ft. operating range
- Reservoir Range: 256.0' – 266.0' (top of Crest Gates)
- 31 river miles downstream of Neal Shoals
- 24 river miles upstream of Columbia diversion dam

PARR HYDROELECTRIC PROJECT HYDROLOGIC DATA

Monticello Reservoir (full)

- 6,800 acres
- Total volume of water available approx. ~9.5 billion gallons of water (29,000 acre-ft)
- Affects Fairfield Pumped Storage Facility only
- Active storage - 29,000 ac-ft in 4.5 ft. operating range
- Reservoir Range: 420.5' – 425.0'

PARR HYDROELECTRIC PROJECT OPERATIONS

Parr Development

- primarily used for base load
- licensed capacity 14.9 MW; hydraulic capacity ~6,000 CFS (6 units).
- Parr Hydro operates in modified run-of-river mode.
- Parr normally operates continuously to pass Broad River flow.

PARR HYDROELECTRIC PROJECT OPERATIONS

Current Minimum Flow Requirements

- March – May: **1,000 CFS minimum flow**, or average daily natural inflow to Parr Reservoir (less evaporative loss from Parr and Monticello Reservoirs).
- Remainder of year: **800 CFS daily average flow and 150 CFS minimum flow**, or average daily natural inflow (less evaporative loss from Parr and Monticello Reservoirs)

PARR HYDROELECTRIC PROJECT OPERATIONS

Fairfield Development

- Primarily used for peaking, reserve generation when Saluda Hydro (Lake Murray) is not available, and off-peak power usage (pumping to store water for generation) –
- Generating during high demand periods, and pumping from Parr Reservoir into Lake Monticello during off peak periods. (exchanging 29,000 ac-ft).

PARR HYDROELECTRIC PROJECT OPERATIONS

Fairfield Development

- Fairfield Pumped Storage licensed capacity 511.2 MW; hydraulic capacity 50,400 CFS generating & 41,800 CFS pumping (8 units).
- One foot out of Monticello Reservoir = two feet into Parr Reservoir
- Fairfield Pumped Storage generation is limited to amount of water available in Monticello Reservoir

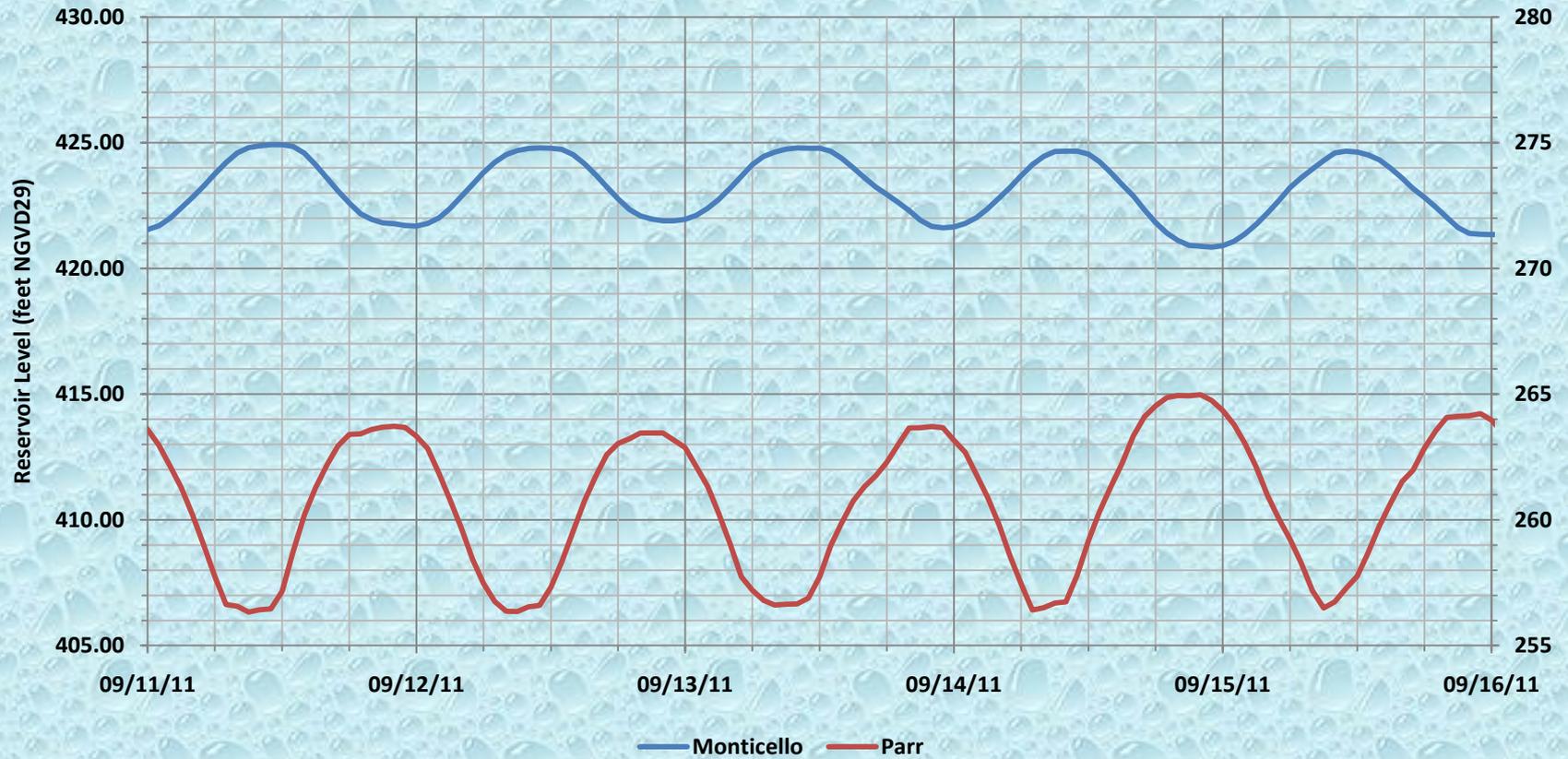
PARR HYDROELECTRIC PROJECT OPERATIONS

Parr and FFPS Developments

- Fairfield Pumped Storage operation (generation and pumping) usually affects only Parr Reservoir level.

Monticello Reservoir Operations

Typical Monticello & Parr Reservoir Level Fluctuation



BENEFITS OF FFPS

- Flexibility – Pump or Generator
- Quick to Respond in both modes
- Generating Plant trip
 - FFPS called to make up lost generation
 - Maintain reliability of the transmission grid
- Rapid Loss of Load
 - FFPS called to shutdown
 - FFPS called to start pumping until slower units can respond

Safety

- Sirens at plant activate when Parr Crest Gates lower to release water into the Broad River
- Both Developments have Emergency Action Plans to notify the public if a dam failure is imminent or has occurred
- Both Developments have Public Safety Plans to identify where warning signs are located

Shoreline Management and Recreation Overview

Monticello Reservoir:

6,500 Surface Acres

54 Shoreline Miles

PBL 50' to 200' wide

Parr Reservoir:

4,400 Surface Acres

94 Shoreline Miles

Recreation Lake:

300 Surface Acres

10 Shoreline Miles

Monticello & Parr Reservoir Shoreline Management

- Shoreline Management Plan (SMP)
- Current FERC License (Permit certain private use)
- Docks (200' minimum on PBL)
- Access path (10' wide path to dock)
- Water Removal
- Shoreline Stabilization
- No docks On Parr
- No docks On Rec. Lake
- Various other permitting requirements and prohibited activities

Monticello Reservoir Shoreline Classifications

- Project Works
- Nuclear Excl. Zone
- Recreation Property
- Recreation Islands
- Dock Excl. Property
- Dock Approval Property

Recreation Lake Shoreline Classifications

- Recreation Property
- Dock Excl. Property

Recreation Overview

- There are 11 existing or future recreation sites at the Project, in addition to eight islands in Monticello Reservoir (4 existing and 1 future on Monticello Reservoir and 5 existing and 1 future on Parr Reservoir)



Questions?