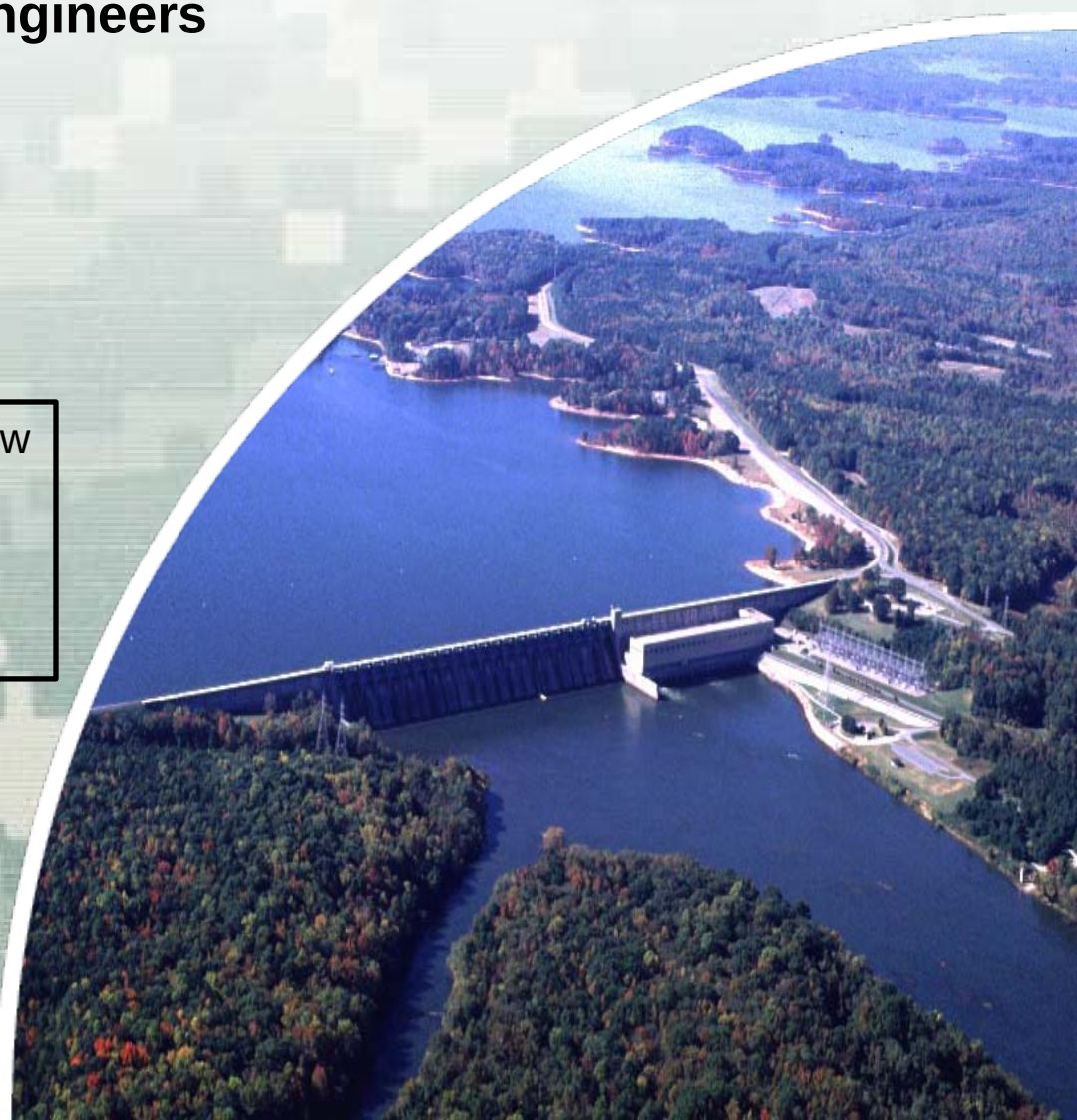
John H. Kerr Dam and Reservoir
Virginia and North Carolina (Section 216)

Wilmington District, Corps of Engineers

August 27, 2012

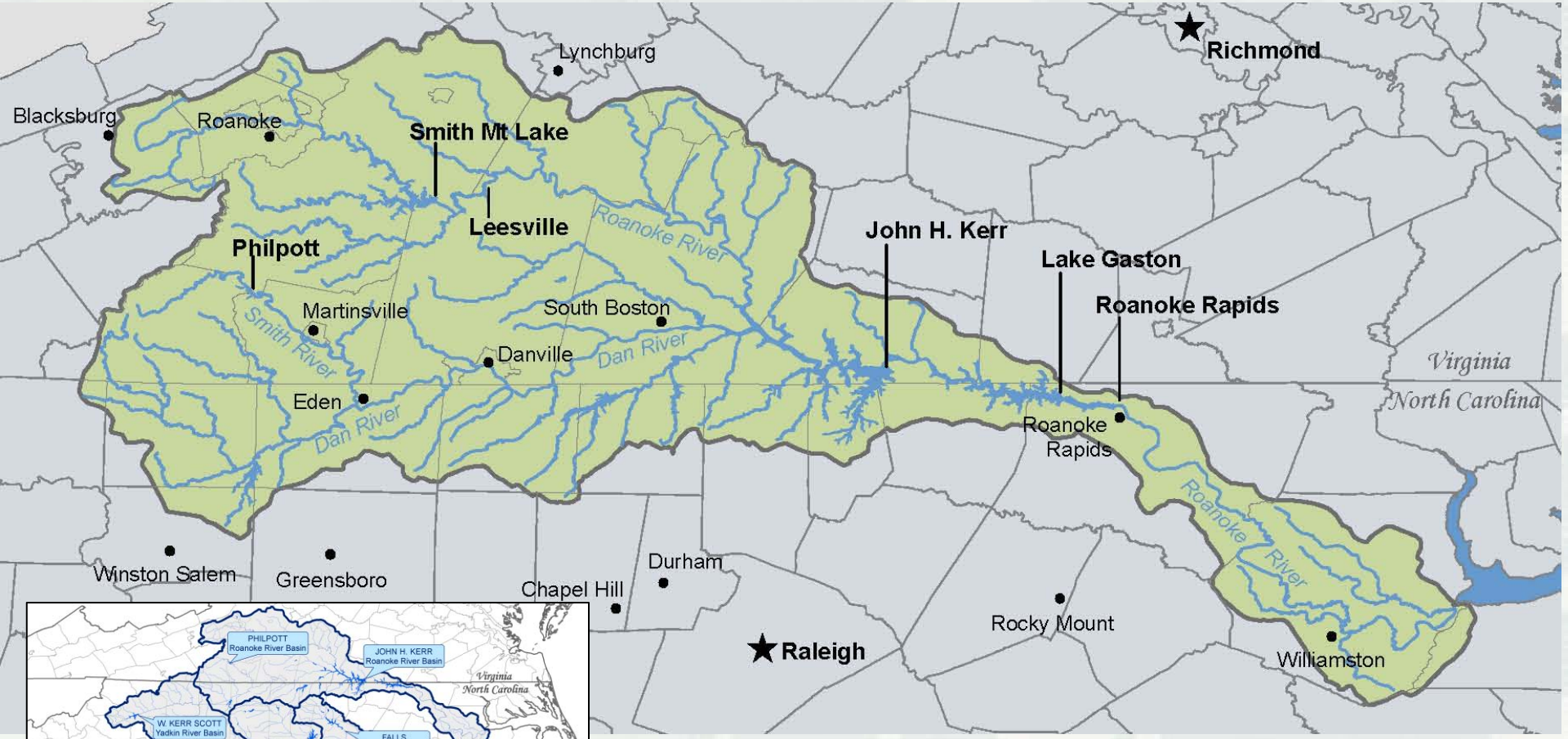
- Authorized under Section 216 of Public Law 91-611, the River and Harbor and Flood Control Act of 1970, as amended.
- Non-federal sponsors are the State of NC and Commonwealth of VA

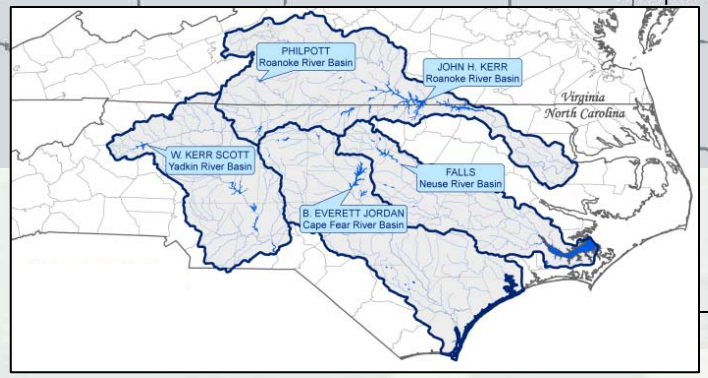


US Army Corps of Engineers
BUILDING STRONG®

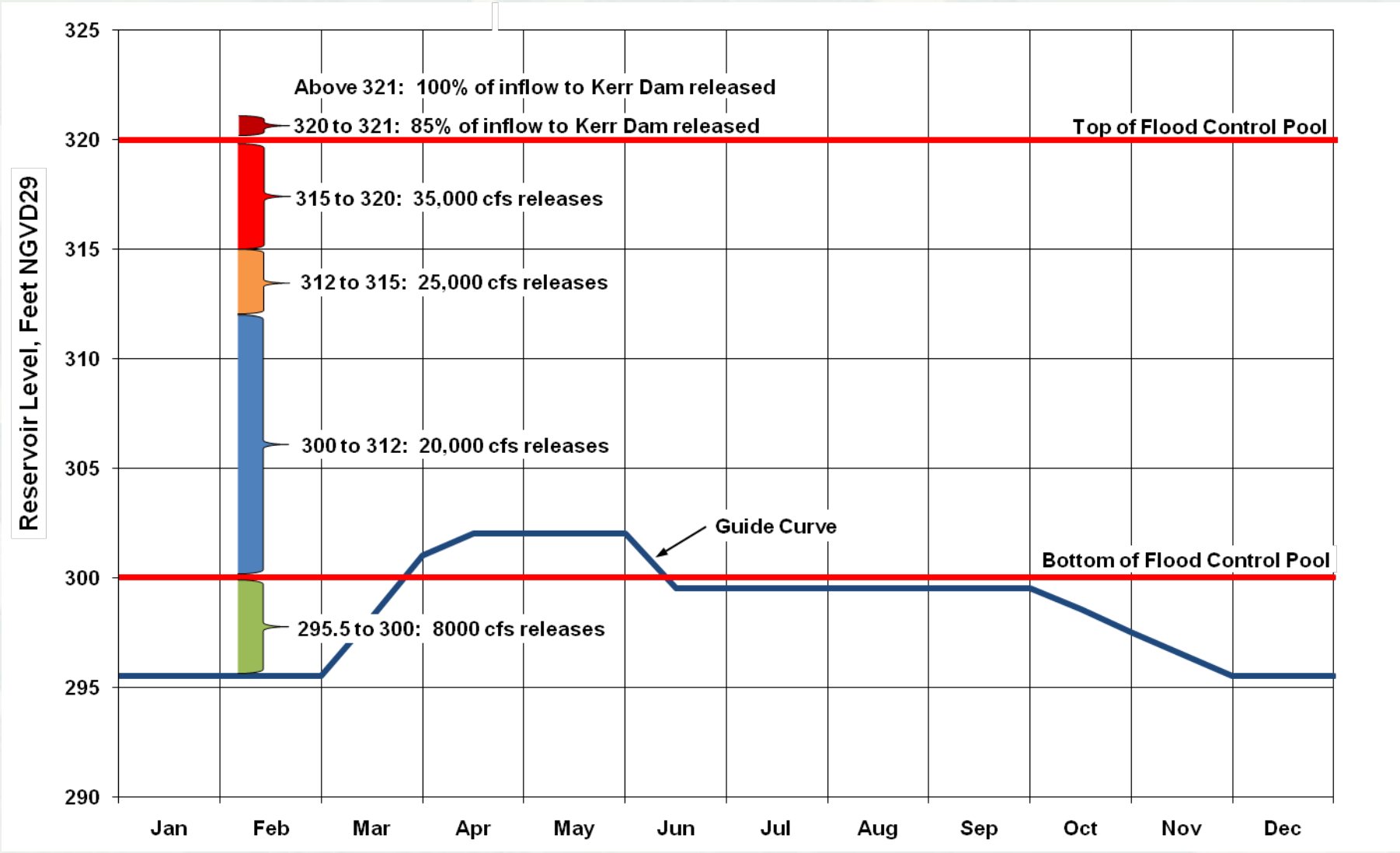
Roanoke River Basin

JH Kerr Watershed -- 7800 Sq Mi





John H Kerr – Existing Operations



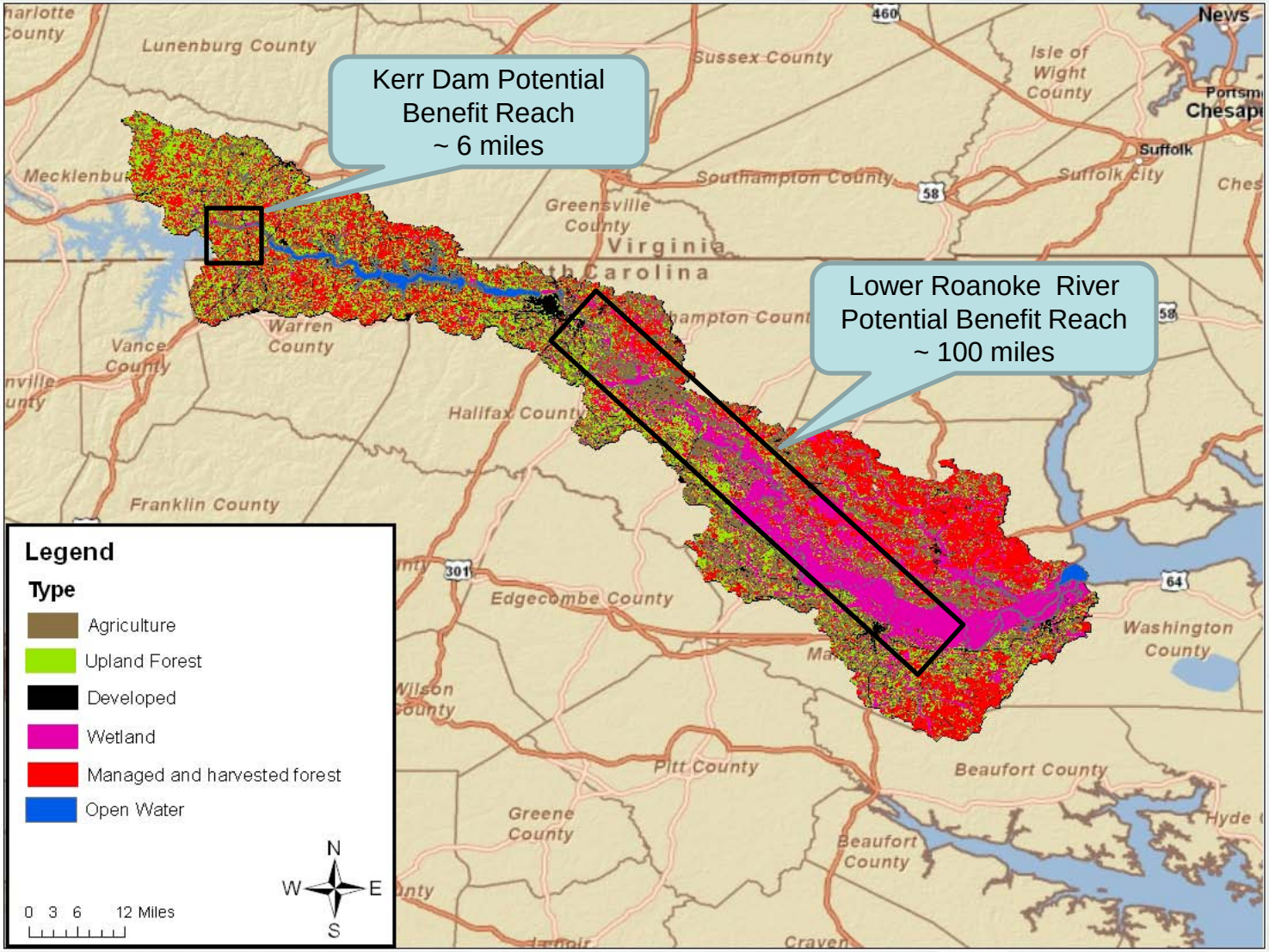
John H Kerr 216 – Primary Objectives

1. Improve the riparian ecosystem of the lower Roanoke River by restoring a more natural hydrology

2. Improve dissolved oxygen (DO) levels in water that drains back into the channel from the floodplain of the Roanoke River to improve fish habitat

3. Increase DO levels in the waters released from Kerr Dam during the summer to improve fish habitat for at least 6 miles downstream

Lower Roanoke River Basin
Land Use and Benefit Reaches



John H Kerr – Potential Alternatives Stand Alone Measures

Improve Lower Roanoke River Ecosystem

Potential measures to address objectives 1&2

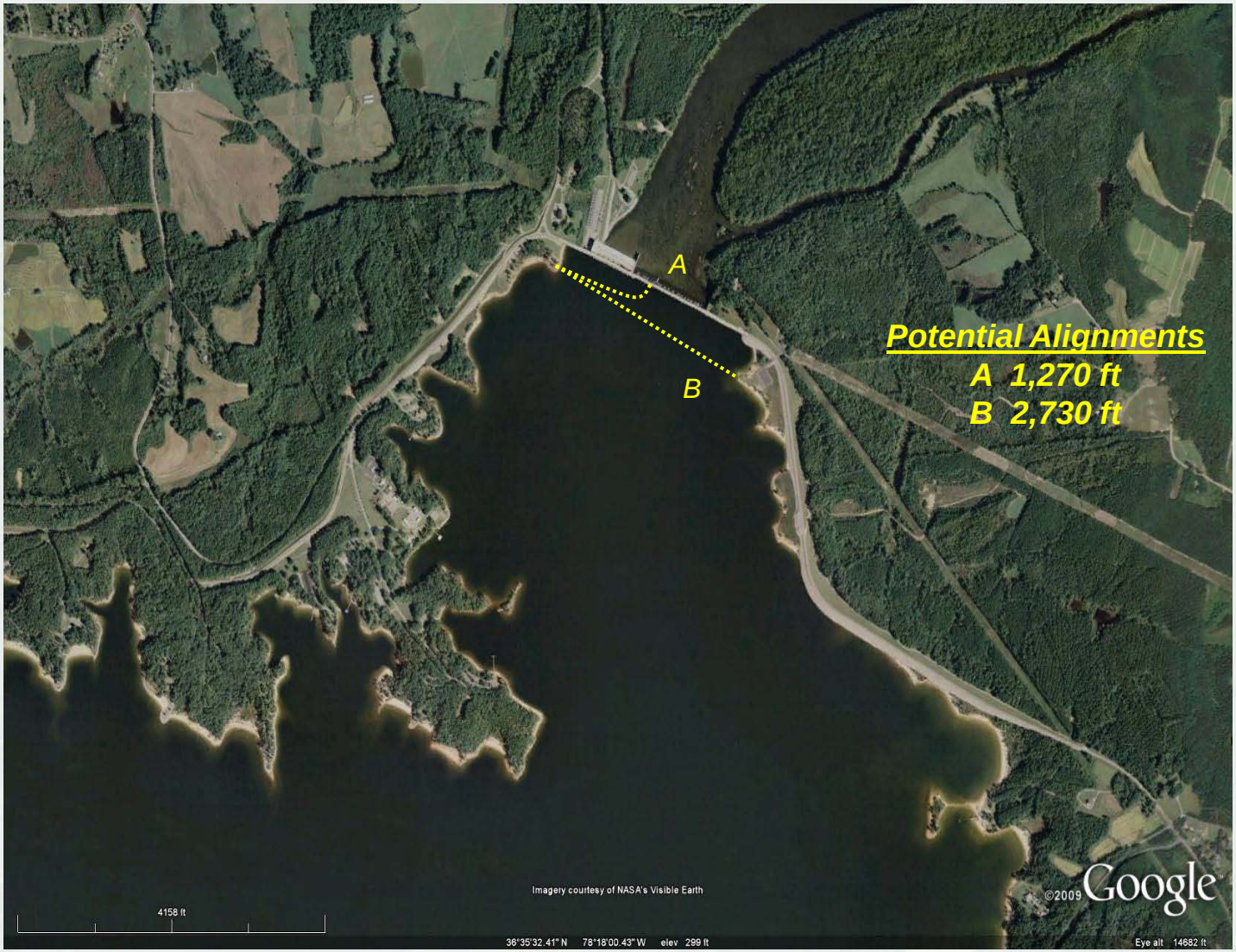
1. Modify reservoir guide curve and more frequent release of 35,000 cfs (MGC_35K). MGC = modified guide curve
2. MGC_35K Year Round
3. Quasi Run-of-River, weekly outflow ≈ weekly inflow up to 35,000 cfs

Improve DO Downstream of Kerr Dam

Potential measures to address objective 3

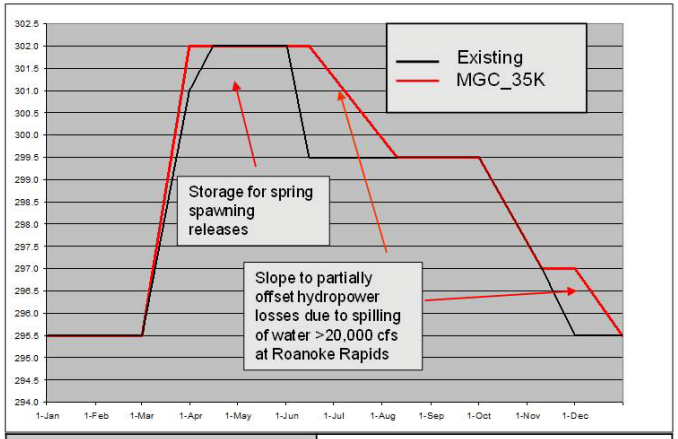
4. Inject oxygen into the hypolimnion upstream of the dam
5. Place a fabric weir upstream of the dam

Fabric Weir of Oxygen Injection



MGC_35k

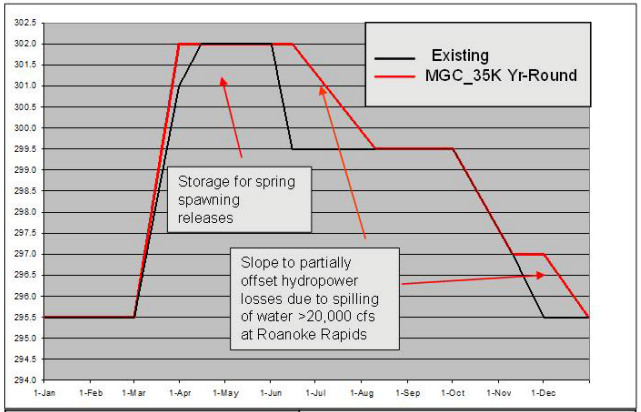
Measure MGC_35K
January 1-June 30



Existing Operations		Alternative MGC_35K	
Kerr lake level (ft-msl)	Roanoke Rapids releases (cfs)	Kerr lake level (ft-msl)	Roanoke Rapids releases (cfs)
Below 300	Up to 8,000	Below 302	Up to 11,000*
300 – 312	Up to 20,000	302 - 303	Up to 20,000*
312 – 315	Up to 25,000	303 - 315	Up to 35,000*
315 – 320	Up to 35,000	Above 315	Existing operations
320 – 321	85% of inflow or up to 35,000, whichever is higher	* During April 1 – June 30; • From Jan 1 - March 31, releases up to 20,000 cfs whenever the elevation exceeds the guide curve up to an elevation of 303 feet. Above 303, follow the release protocol indicated above. • During the rest of the year, follow existing operations.	
Above 321	Inflow		

MGC_35k_year_round

Measure MGC_35K Year-Round



Existing Operations		Alternative MGC_35K Year Round	
Kerr lake level (ft-msl)	Roanoke Rapids releases (cfs)	Kerr lake level (ft-msl)	Roanoke Rapids releases (cfs)
Below 300	Up to 8,000	Below 302	Up to 11,000
300 – 312	Up to 20,000	302 - 303	Up to 20,000
312 – 315	Up to 25,000	303 - 315	Up to 35,000
315 – 320	Up to 35,000	Above 315	Existing operations
320 – 321	85% of inflow or up to 35,000, whichever is higher		
Above 321	Inflow		

Quasi Run-of-River

Existing Operations		Quasi "Run-of-River" Proposed Operations
Kerr (ft, msl)	Rapids Releases (cfs)	Roanoke Rapids Releases (cfs)
below 300	up to 8000	• Operated as quasi "Run of River" year round. • Above Guide Curve: Outflow ≈ Inflow up to 35,000 cfs but comply with fishery releases April 1-June 15, if feasible. • Below Guide Curve: 1) FERC minimum releases at Roanoke Rapids Dam, and 2) comply with fishery releases April 1-June 15, if feasible, and Minimum (Firm) Energy Generation • Above 320: Existing Operations
300 – 312	20,000	
312 – 315	25,000	
315 – 320	35,000	
320 – 321	85% of inflow	
321	inflow	

Hydropower Impact

Alternative	John H Kerr	Gaston	Roanoke Rapids	System Average Annual Generation	Difference from Baseline	
	mwh	mwh	mwh	mwh	mwh	%
Baseline	479,008	349,142	356,018	1,184,167	---	---
MGC_35k	473,066	349,127	345,459	1,167,652	16,515	1.39%
MGC_35k_ yr_rnd	471,194	349,303	339,462	1,159,960	24,207	2.04%
Plan QRR	462,729	349,490	332,870	1,145,090	39,078	3.30%

Environmental Benefit Lower Roanoke

Measure	Acres Affected	Average Annual Habitat Unit Change
Fabric Weir	501	254
O2 Injection	501	254
MGC_35k	91,500	-288
MGC_35k_yr_rnd	91,500	-170
QRR	91,500	1,976

Environmental Benefit

Measure	Acres Affected	Average Annual Habitat Unit Change
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QRR	91,500	1,976

Other Issues

- Water Supply - No significant impact by any release alternative since they only affect flood pool
- Flood reduction benefits of alternative releases
- Recreation in reservoir and downstream – boating, fishing, camping, etc
- Agriculture – Impacts of increased flooding downstream
- Costs of alternatives

Next Steps

1. AFB Meeting – **Fall 2012**

2. Draft Report (Public Review) – **Spring 2013**

3. Division Engineer Submits Final Report to HQ – **August 2013**

4. State and Agency and Public Review of Final Report – **Fall 2013**

5. Final Washington Level Review - **Spring 2014**

6. Chief's Report Submitted to Congress - **Summer 2014**