FALLS LAKE PROJECT OPERATIONS

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Water Management
Wilmington District

Lower Neuse Basin Association/
Neuse River Compliance Association
Operator Training Workshop

05 Aug 2021

U.S.ARMY

US Army Corps
of Engineers®

Water Management Goals

Maximize congressionally authorized purposes within existing operational guidelines

Predictable responses to varying conditions

Actively inform affected stakeholders

Flood Control

Water Supply

Water Quality & Low Flow Augmentation

Recreation

Fish & Wildlife Enhancement

Water Management Goals

Maximize congressionally authorized purposes within existing operational guidelines

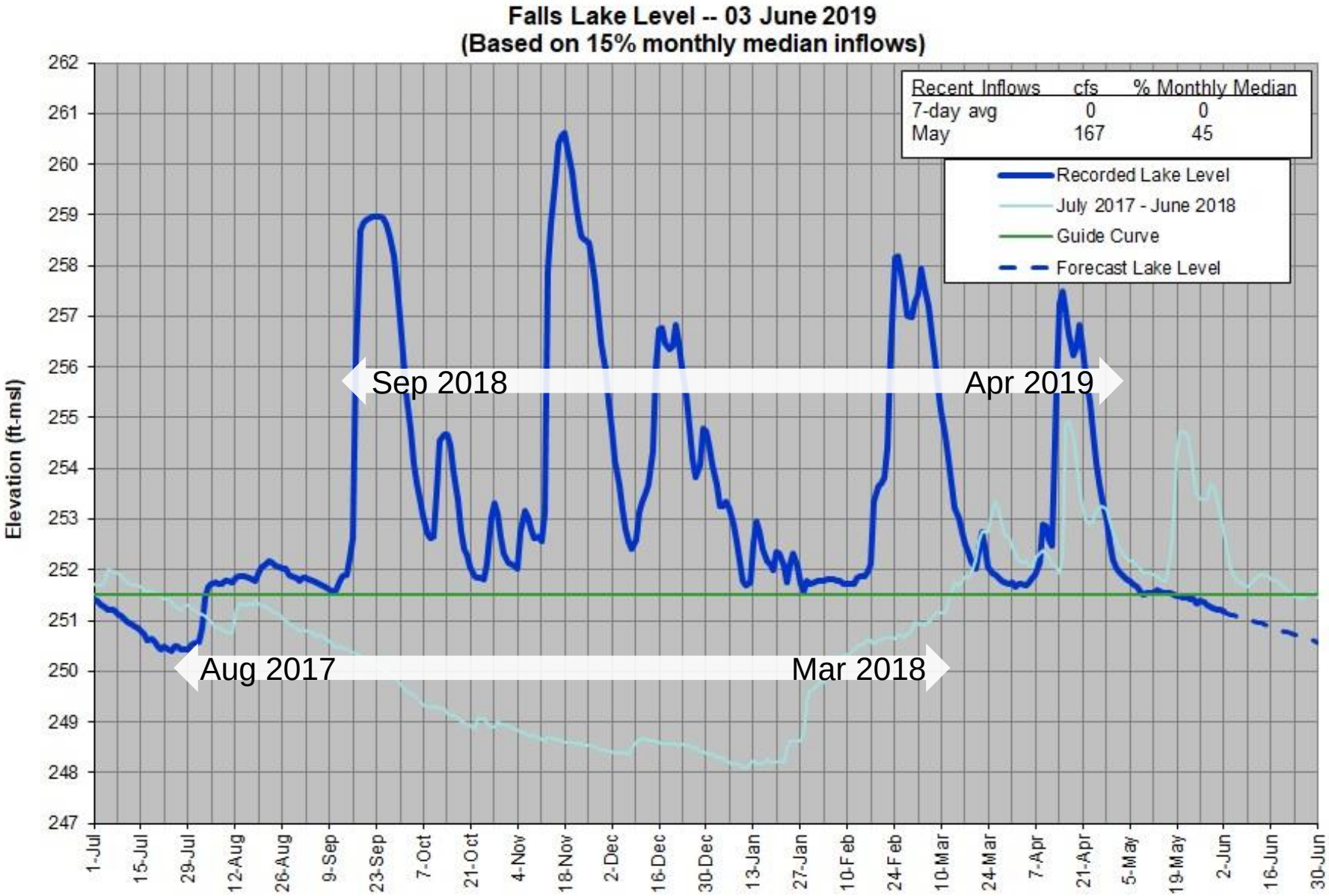
Predictable responses to varying conditions

Actively inform affected stakeholders

Specific Water Control Plan for each Project

- Flood Operations
- Low Flow & Drought Operations
- Deviations
- Some Flexibility/Discretion

Speaking of Varying Conditions…



Water Management Goals

Maximize congressionally authorized purposes within existing operational guidelines

Predictable responses to varying conditions

Actively inform affected stakeholders

Weekly status report & call

Face-to-face meetings

Positive, routine interaction

“Door to the Corps” for many stakeholders

Stakeholders/Partners

US Geological Survey

National Weather Service

US Fish and Wildlife Service

North Carolina State Climate Office

North Carolina DEQ

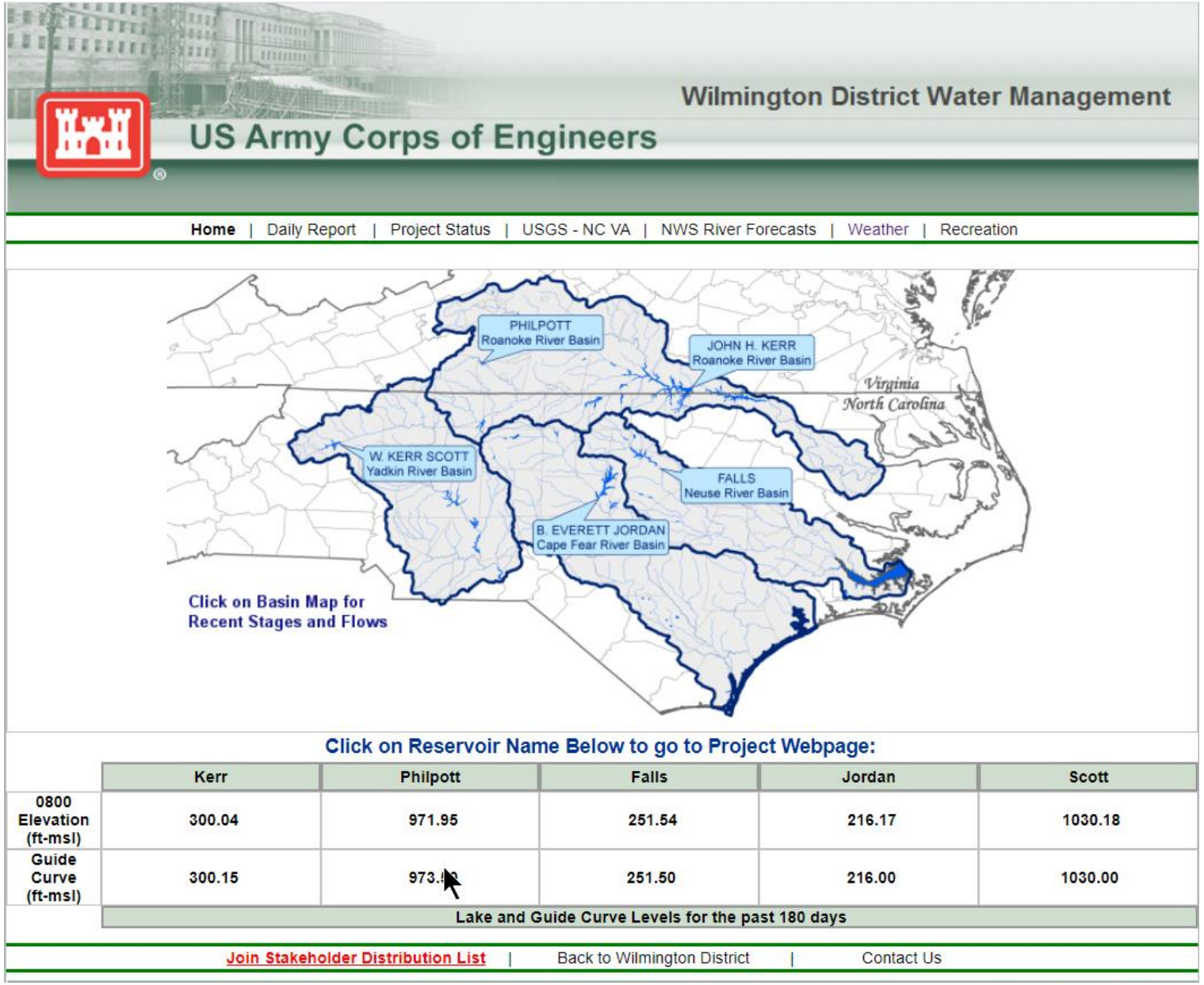
- Water Resources
- Water Quality
- Wildlife Resources Commission

Local Governments

- Utilities
- Emergency Mgmt

River Basin Associations

https://epec.saw.usace.army.mil



Weekly Status Report

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Wilmington District Water Management Weekly Status Report – 12 Jul 2021

Weather Summary:
Substantial rainfall across our piedmont projects over the past week ranging from 3 to 5 inches, most of which came from the remnants of Elsa. Much drier over the past week across our western projects (Scott and Philpott), which received below-normal rainfall. Scattered rain chances this week totaling less than a half-inch, with increased rain chances this weekend and near-normal rain chances for the 8-14 day outlook. Longer term, the July outlook calls for equal chances of below-, near-, and above-normal precip, and the Jul-Aug-Sep outlook favors above-normal precip (along with above-normal temps).

Tropical Outlook: No tropical cyclone activity of concern at this time.

Reservoir Summaries:

Reservoir	12Jul-21 0800 Elev (ft-msl)	Guide Curve (ft-msl)	Forecast * 19-Jul Elevation (ft-msl)	Average Net Inflows		Rainfall at Dam	
				7-day cfs (% median)	Jul cfs (% median)	7-day (inches)	Jul (inches)
Falls	252.47	251.5	251.6	1187 (599%)	836 (422%)	4.43	5.22
Jordan	216.66	216.0	216.1	1929 (359%)	1617 (301%)	3.26	5.35
Scott	1030.27	1030.0	1030.1	503 (115%)	581 (133%)	0.63	2.94
Kerr	300.89	300.9	300.0	5,868 (153%)	7,286 (190%)	4.89	6.30
Philpott	972.99	973.5	972.6	115 (77%)	165 (110%)	0.11	4.40

* NOTE: Forecast elevations do not include any future rainfall.

Reservoir	Current Flood Storage % Remaining	Current Water Quality % Remaining	Forecast 80% WQ Remaining	Forecast 60% WQ Remaining	Current Water Supply or Power Pool % Remaining	Forecast 80% WS or PP Remaining	Forecast 60% WS or PP Remaining
Falls	94	100	*	*	100	*	*
Jordan	98	100	*	*	100	*	*
Scott	99				100	*	*
Kerr	98				100	*	*
Philpott	100				97	*	*

NOTE: Water Quality, Water Supply, and Power Pool forecasts extend through end of September 2021.
* indicates that storage remaining does not drop below indicated threshold by end of forecast period.

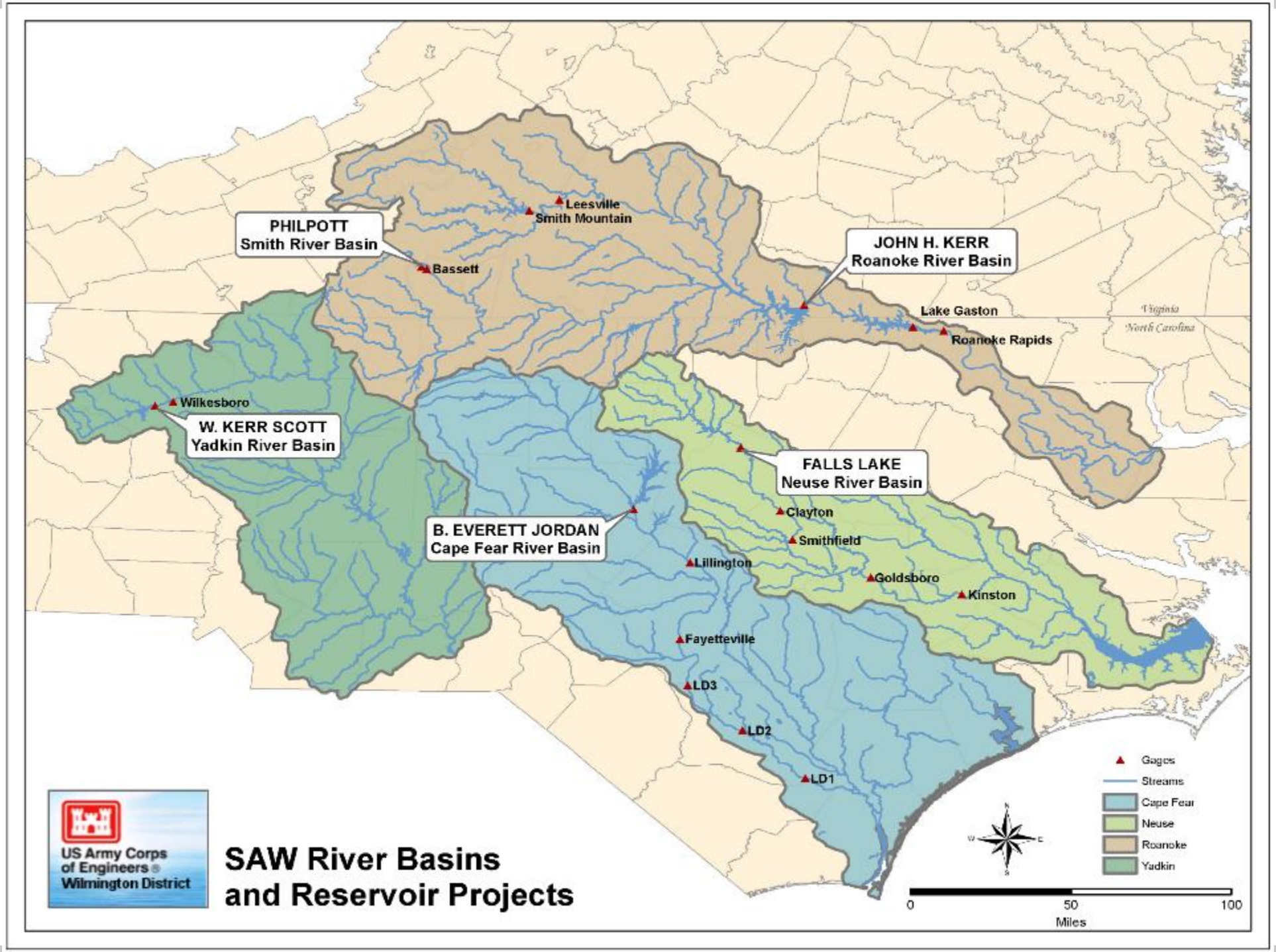
Falls: Currently near elev 252.47 ft (0.97 ft above guide curve) and falling due to increased releases. Releases are near 1,750 cfs. Flow at Clayton is currently near 1,670 cfs and should rise approximately 500 cfs due to today's (Monday's) gate change (minimum flow target is 254 cfs).

Jordan: Currently near elev 216.66 ft (0.66 ft above guide curve) and falling. Releases from Jordan are about 3,300 cfs and will begin a minor reduction in outflow today and then more tomorrow as the lake level approaches guide curve. Lillington flow is currently near 3,940 cfs and slowly falling (minimum flow target is 600+/-50 cfs). Deep River at Moncure is at 530 cfs and falling.

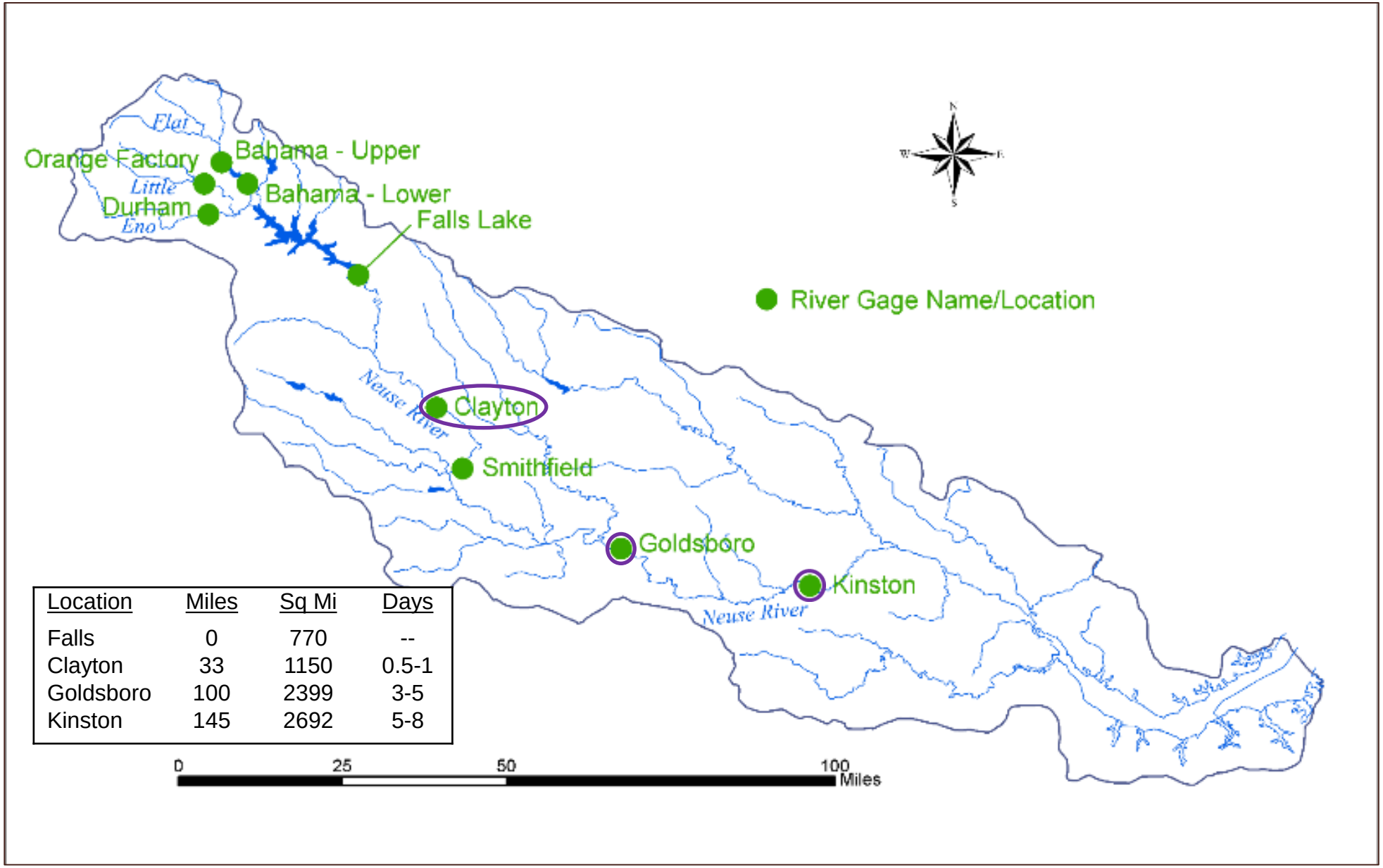
Scott: Currently near elev 1030.27 ft (0.27 ft above guide curve) and slowly falling. Releases from Scott are near 520 cfs after a minor increase today (Monday). Releases will continue matching inflow to keep the lake near guide curve. Flow at Wilkesboro is near 563 cfs (minimum flow target is 400 cfs).

Kerr: Currently near elev 300.9 ft (guide curve). This week's energy declaration was revised for 7500 cfs average for the rest of the week. Without additional rain, the lake is expected to be near elev 300 ft by the end of this week. Next week's releases will likely be 5-6,000 cfs without additional rain.

Philpott: Currently near elev 973.0 ft (0.5 ft below guide curve) and slowly falling. Releases are near 215 cfs. [Hydropower units out of service until further notice.]


PHILPOTT
Smith River Basin
Leesville
Smith Mountain
Bassett
JOHN H. KERR
Roanoke River Basin
Lake Gaston
Roanoke Rapids
Virginia
North Carolina
Wilkesboro
W. KERR SCOTT
Yadkin River Basin
FALLS LAKE
Neuse River Basin
Clayton
Smithfield
B. EVERETT JORDAN
Cape Fear River Basin
Lillington
Goldsboro
Kinston
Fayetteville
LD3
LD2
LD1
Gages
Streams
Cape Fear
Neuse
Roanoke
Yadkin
0
50
100
Miles
US Army Corps
of Engineers
Wilmington District
SAW River Basins
and Reservoir Projects

FALLS LAKE AND NEUSE RIVER BASIN



Location	Miles	Sq Mi	Days
Falls	0	770	--
Clayton	33	1150	0.5-1
Goldsboro	100	2399	3-5
Kinston	145	2692	5-8

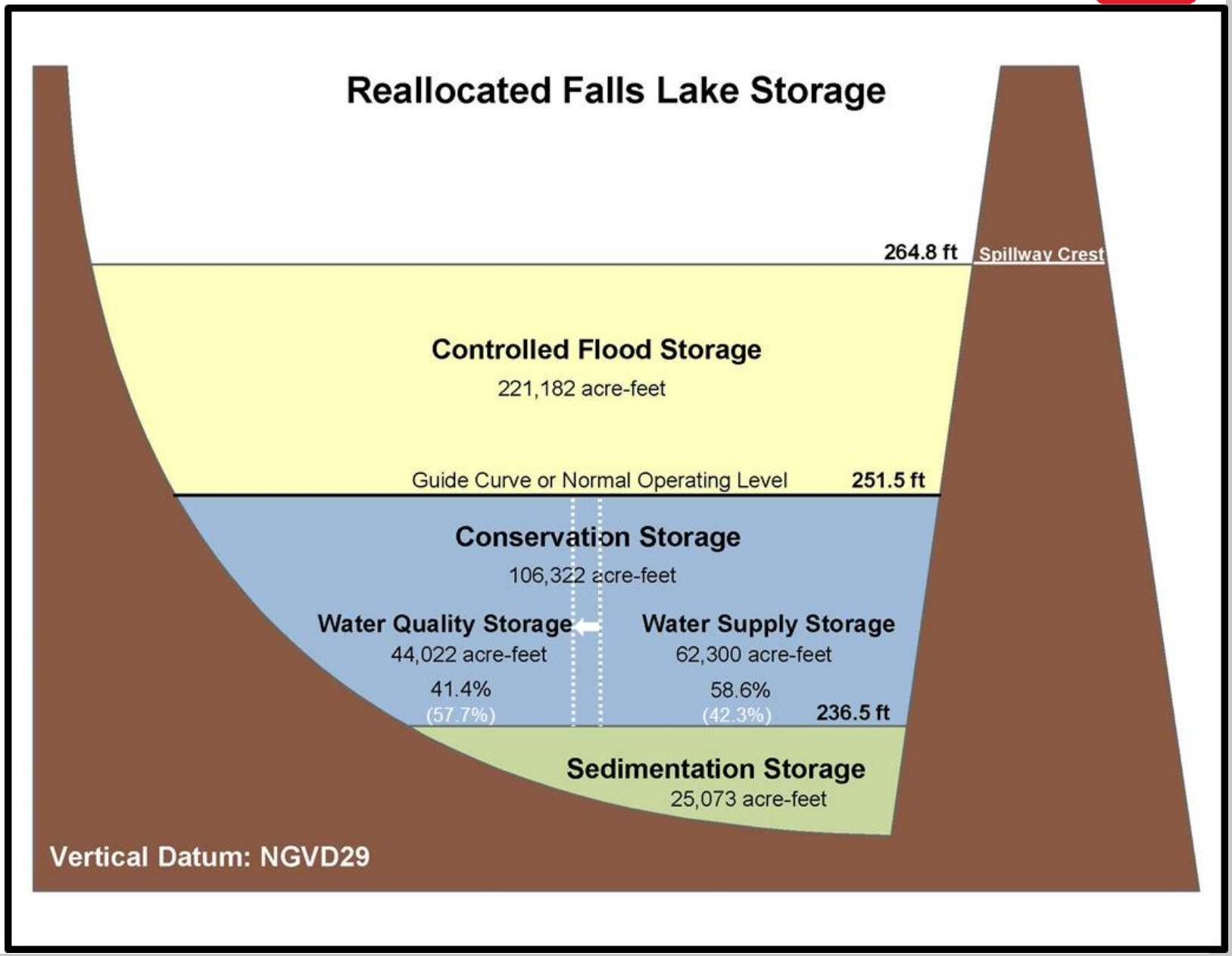
Fall Lake Storage

Guide Curve

- Target lake level (fully meets project purposes)
- 251.5 year-round
- Flood storage above
- WS & WQ storage below

2019 Reallocation

- Increased Raleigh's WS
- Reduced WQ storage
- No change to guide curve
- No loss of flood storage
- No change in downstream flows below Clayton



Water Supply & Water Quality

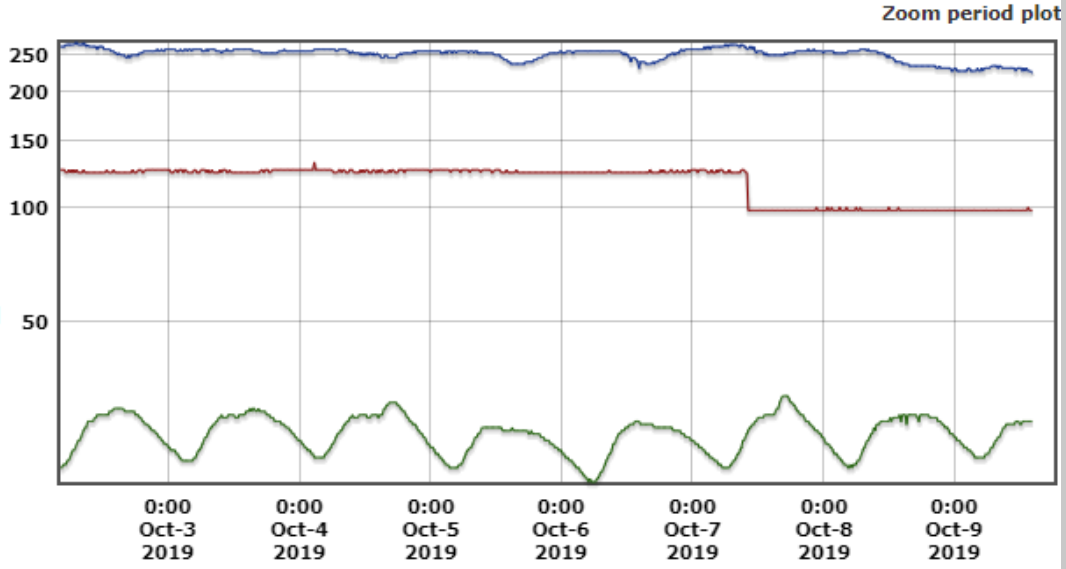
Water Supply

- City of Raleigh owns 100% of WS storage
- Recently reallocated additional storage
- Approx 84 MGD safe yield
- No special operations for WS (direct withdrawal from lake by City of Raleigh)

USGS 02087183 NEUSE RIVER NEAR FALLS, NC
USGS 02087324 CRABTREE CREEK AT US 1 AT RALEIGH, NC
USGS 02087500 NEUSE RIVER NEAR CLAYTON, NC

Water Quality

- Releases to meet minimum flow at dam and at Clayton (~33 miles below dam)
  - At dam (100 cfs Apr-Oct; ~60 cfs Nov-Mar)
  - At Clayton gage (254 cfs Apr-Oct; 184 cfs Nov-Mar)
- Can be reduced when WQ storage below 80%
- Near-surface releases when stratified for better WQ



Flood Control

Flood risk mgmt along Neuse River is primary project purpose

Flood operations prescribed in Falls Water Control Plan

Primary flood control point is Clayton

Consideration also given to conditions downstream to Kinston due to uncontrolled flooding potential (travel times / existing & forecast river stages)

Flood Control (cont'd)

13.3 ft of flood storage (251.5-264.8)

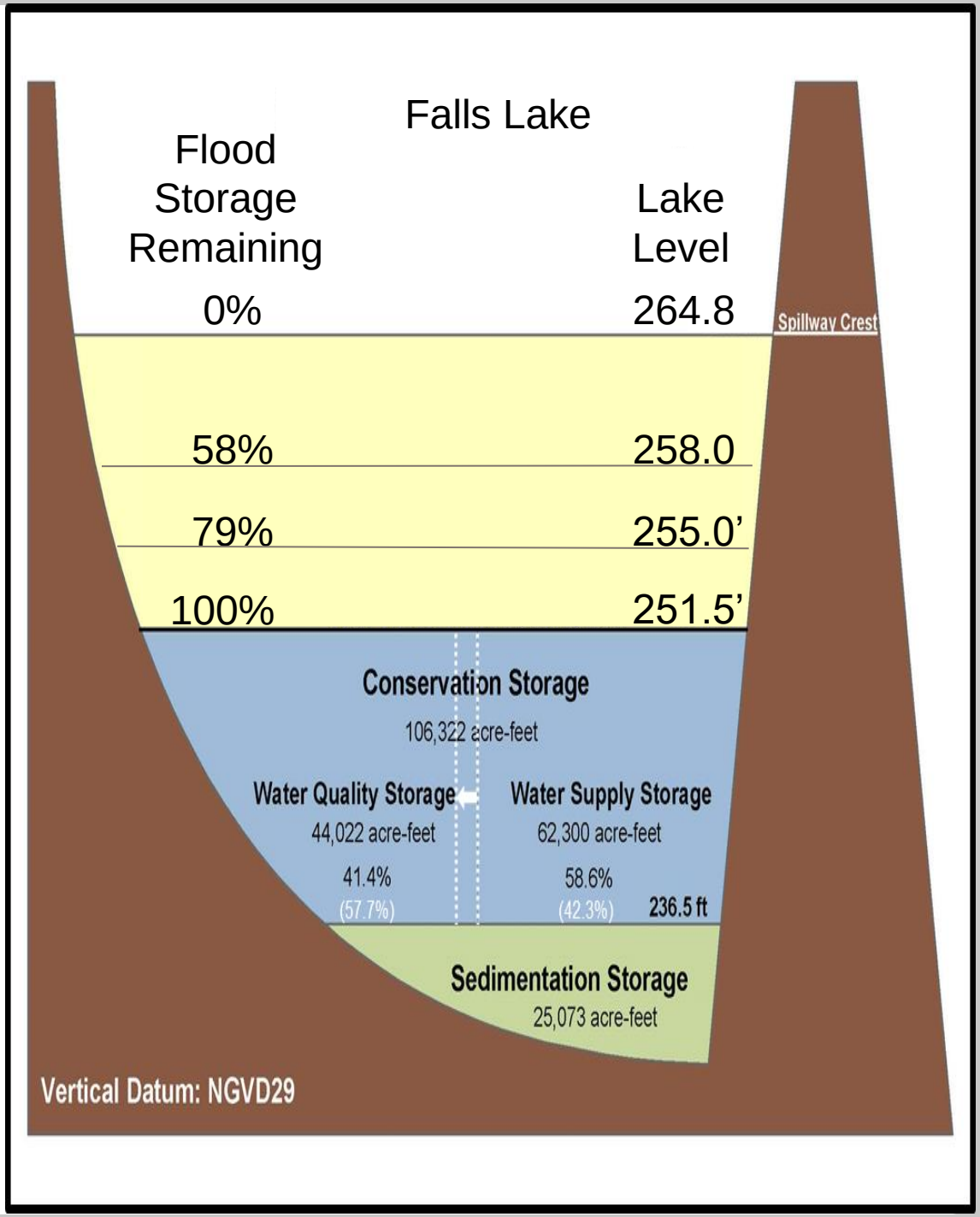
- accommodates 5.38" of watershed runoff

Release flows that produce non-damage downstream stages whenever possible

Typically cut back to minimum (100 cfs) prior to flood event

Allowable flood releases per WCM:

- 251.5-255.0: up to 4000 cfs releases or 7000 cfs at Clayton (whichever is less)
- 255.0-258.0: regulate up to 7000 cfs at Clayton
- 258.0-264.8: regulate up to 8000 cfs at Clayton
- 264.8-268.0: spillway overflow only if Clayton >8000 cfs, then maintain peak at Clayton
- Above 268.0: spill+max discharge (12,000 cfs+)



Flood Control (cont'd)

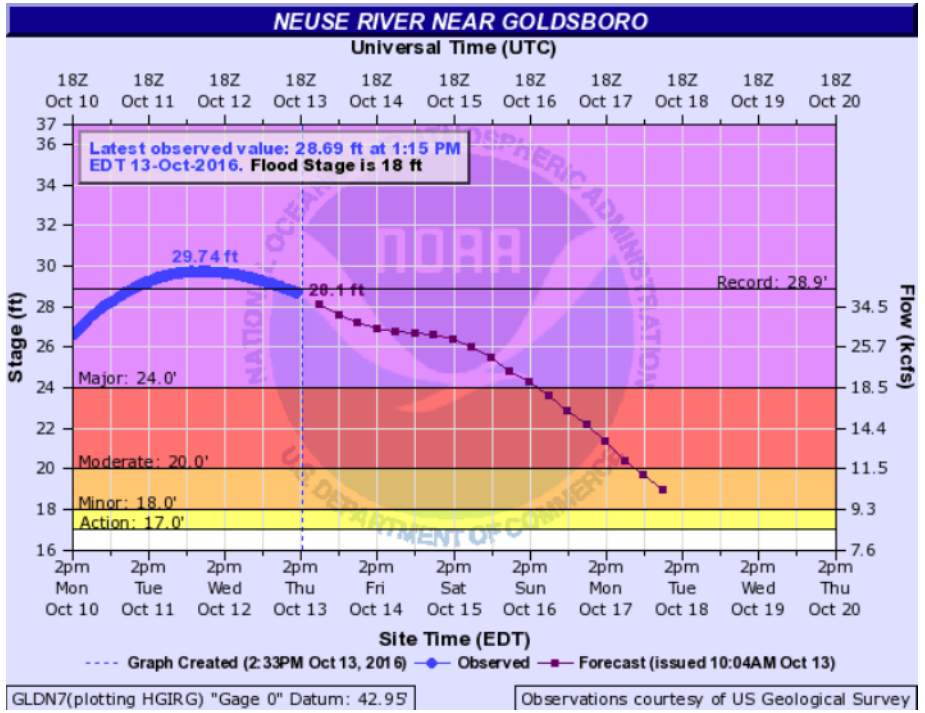
Close coordination with Southeast River Forecast Center

Official NWS River Stage Forecasts:

- Reflect our current and planned releases
- Only include 48-hr additional rain
- May not extend far enough out to show effect of releases due to travel time

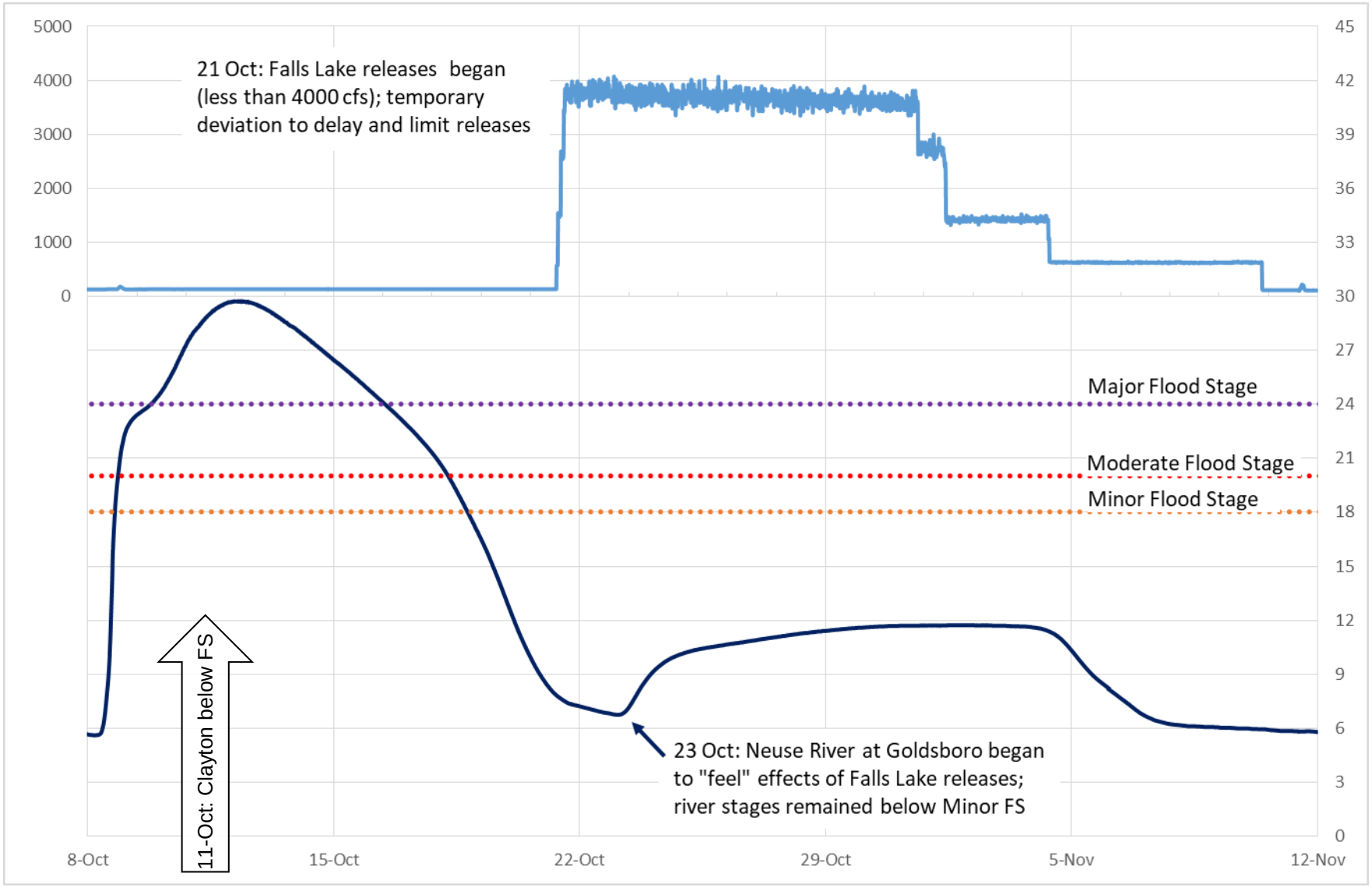
Corps has developed basin models:

- For operational decisions…not official forecast
- Includes 7-day rainfall forecast
- Inundation mapping capability

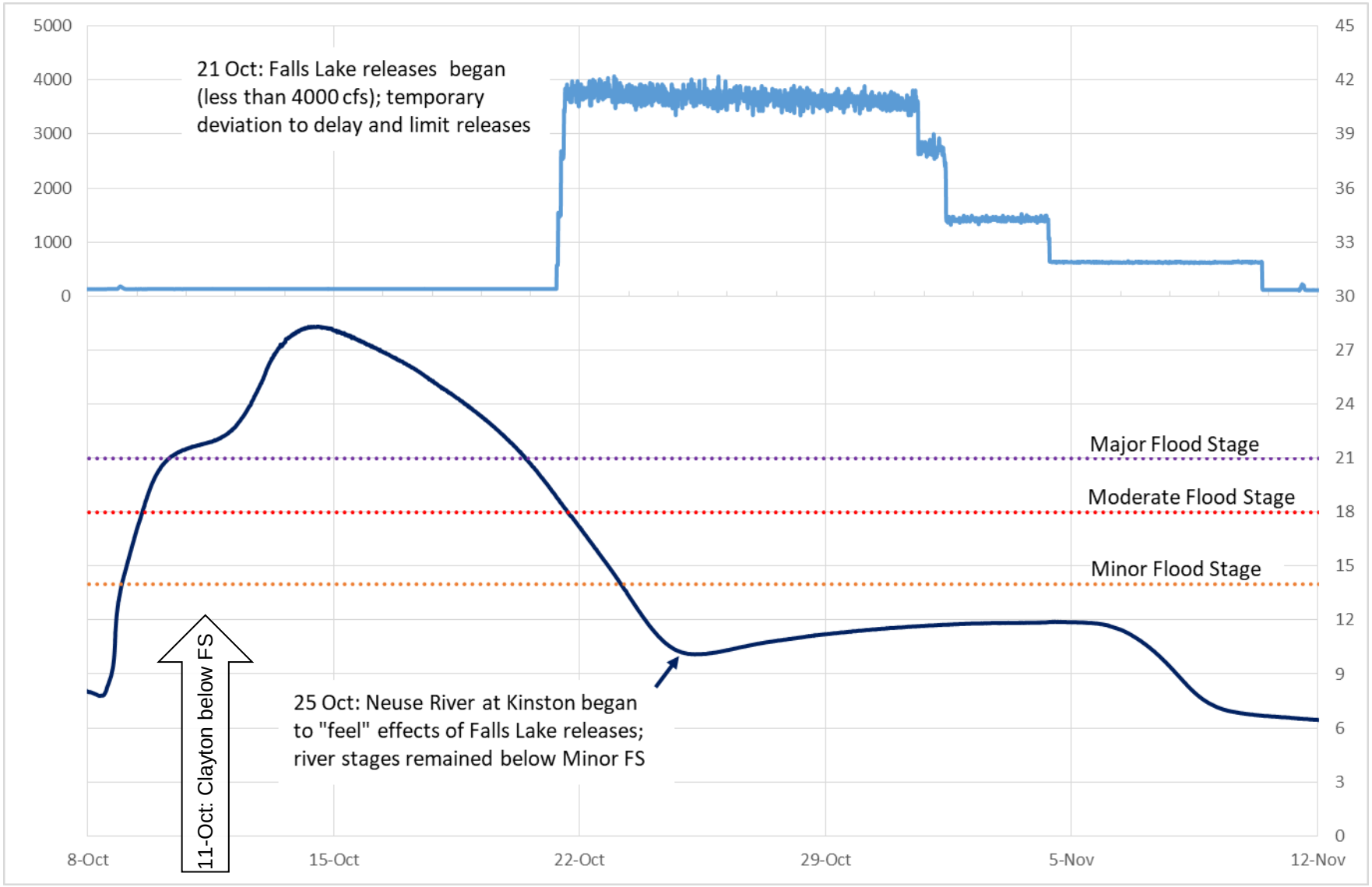


	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S
1	OCTOBER 17, 2016 8AM UPDATE							TODAY											
2		below	action	Minor	Moderate	Major		Mon	Tue	Wed	Thu	Fri	Sat	Sun	Mon	Tue	Wed	Thu	Fri
3	NEUSE RIVER:							10/17/16	10/18/16	10/19/16	10/20/16	10/21/16	10/22/16	10/23/16	10/24/16	10/25/16	10/26/16	10/27/16	10/28/2016
4	FALLS RELEASE							100 to 2000	2000-4000	4000	4000	4000	4000	4000	4000	4000	4000	4000	4000
5	Clayton 8AM Stage/ Forecast			9	13	16		1.99	2.9	5.7	7	7.3	7.4	7.4	7.4	7.4	7.3	7.3	7.3
6	Smithfield 8am Stage/Forecast		14	15	18	20		6.26	5.8	10	13.3	14.1	14.3	14.3	14.3	14.3	14.2	14.2	14.2
7	Goldsboro 8am Stage/Forecast		17	18	20	24		22.3	19.6	16.7	13.4	12.5	12.4	12.3	12.3	12.3	12.4	12.5	12.5
8	Kinston 8am Stage / Forecast		13	14	18	21		25.91	24.3	22.2	19.8	17.4	15.4	14.3	13.7	13.1	13	12.8	12.7
9																			
10	OCTOBER 17, 2016 8AM UPDATE							TODAY											
11								Mon	Tue	Wed	Thu	Fri	Sat	Sun	Mon	Tue	Wed	Thu	Fri
12	CAPEFEAR RIVER:	below	action	Minor	Moderate	Major		10/17/16	10/18/16	10/19/16	10/20/16	10/21/16	10/22/16	10/23/16	10/24/16	10/25/16	10/26/16	10/27/16	10/28/16
13	JORDAN RELEASE							3k-5k-9k-12K	12000	12000	12000	12000	12000	12000	8000	4000	2000	2000	2000
14	Lillington		13	14	19	27		4.4	7.3	8.5	8.5	8.5	8.4	8.4	8.3	6.6	4.5	3.5	3.2
15	Fayetteville			35	48	58		17.3	17.6	21.8	23.3	23.2	23	22.8	22.6	21	17.5	15	14.5
16	W.O. Huske		41	42	50	65		37.7	37.5	39.3	41	41.2	41	40.7	40.4	39.9	38	36.4	35.6
17	Elizabethtown		20	25	35	47		Est: 18.4	16.8	17.7	20	20.8	20.7	20.5	20.2	19.9	18.4	16.5	15
18	Lock/Dam 1 (Kelly)		22	24	26	28		22.9	21	19.4	19.4	20	20.3	20.3	20.2	20.2	20.1	19.5	18.5
19																			

Hurricane Matthew River Stages @ Goldsboro



Hurricane Matthew River Stages @ Kinston



OPERATIONAL DEVIATIONS/CHANGES

Obligated to follow approved water control plans

Some flexibility/discretion:

- timing/magnitude of releases (to an extent)
- holding pools slightly higher if drought concerns
- spawning considerations (formal/informal)

Deviations (temporary)

- emergency
- unplanned minor
- planned (stakeholder coordination)
- SAD notification/approval

Permanent changes

- Section 216 study / water control plan revision
- Division Commander approval

CONTACT

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910-251-4455

QUESTIONS?