



System Approach to Water Supply in the Savannah River Basin

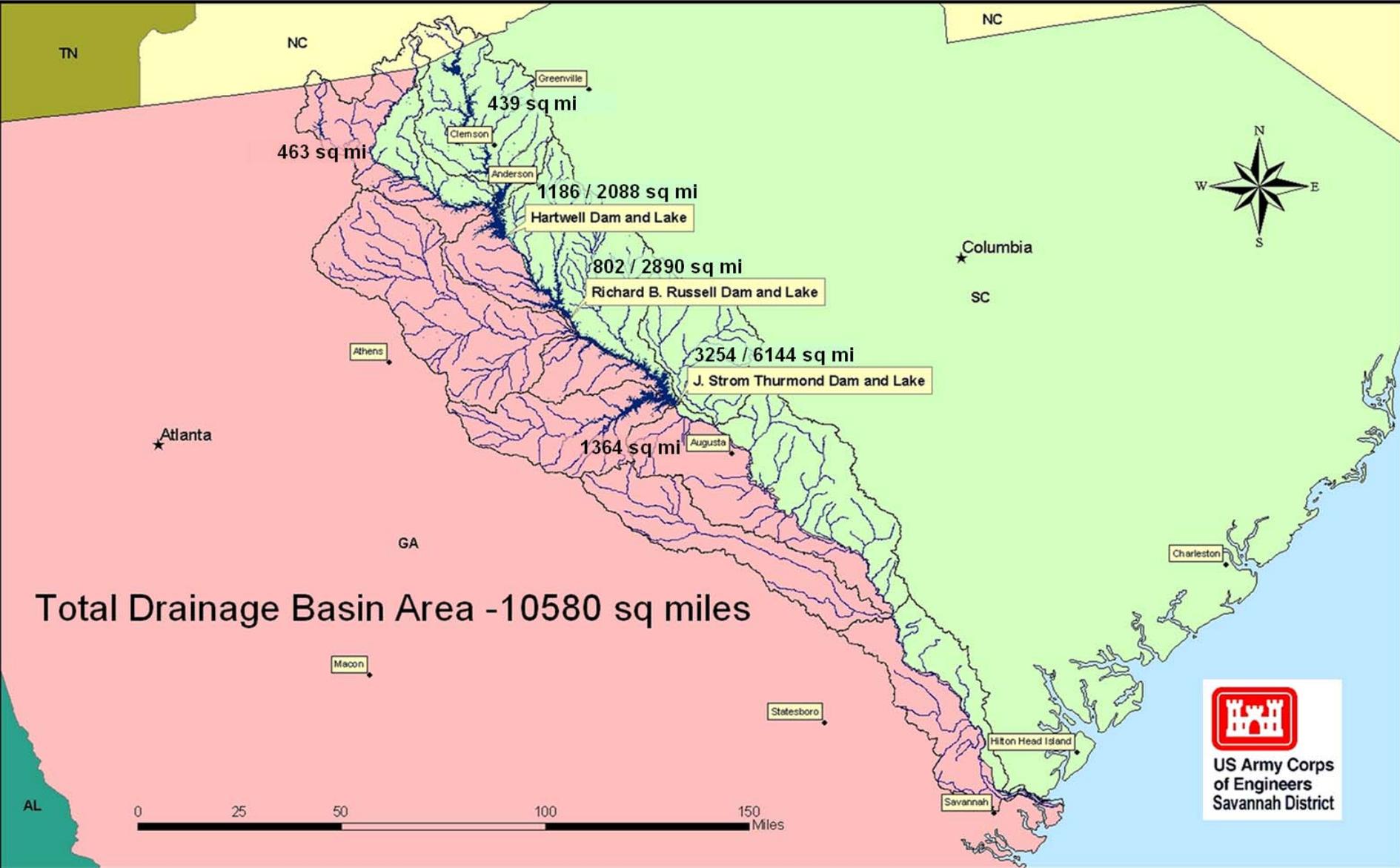


June 03, 2009

US Army Corps of Engineers, Savannah District

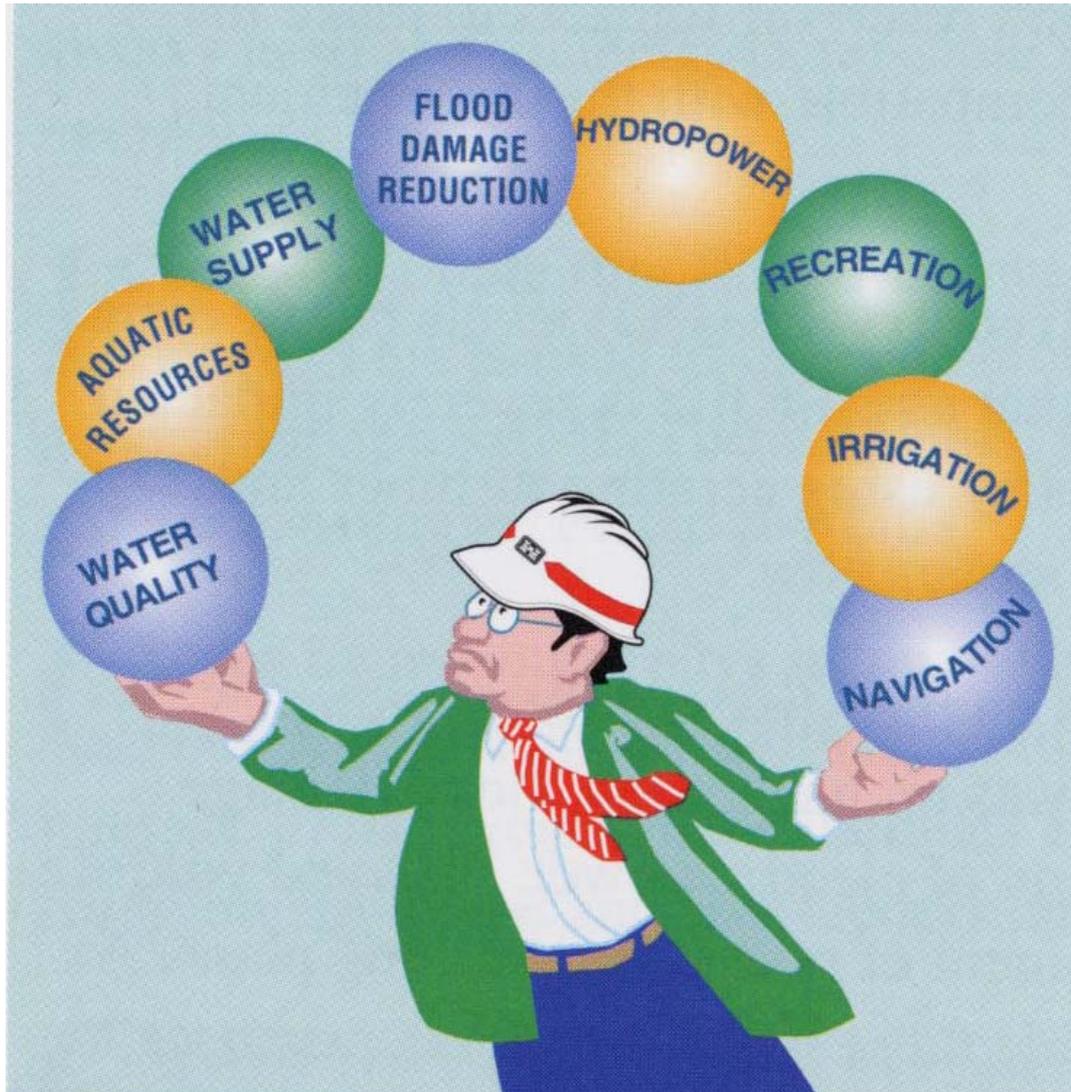


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Total Drainage Basin Area - 10580 sq miles





Multi-Purpose Projects



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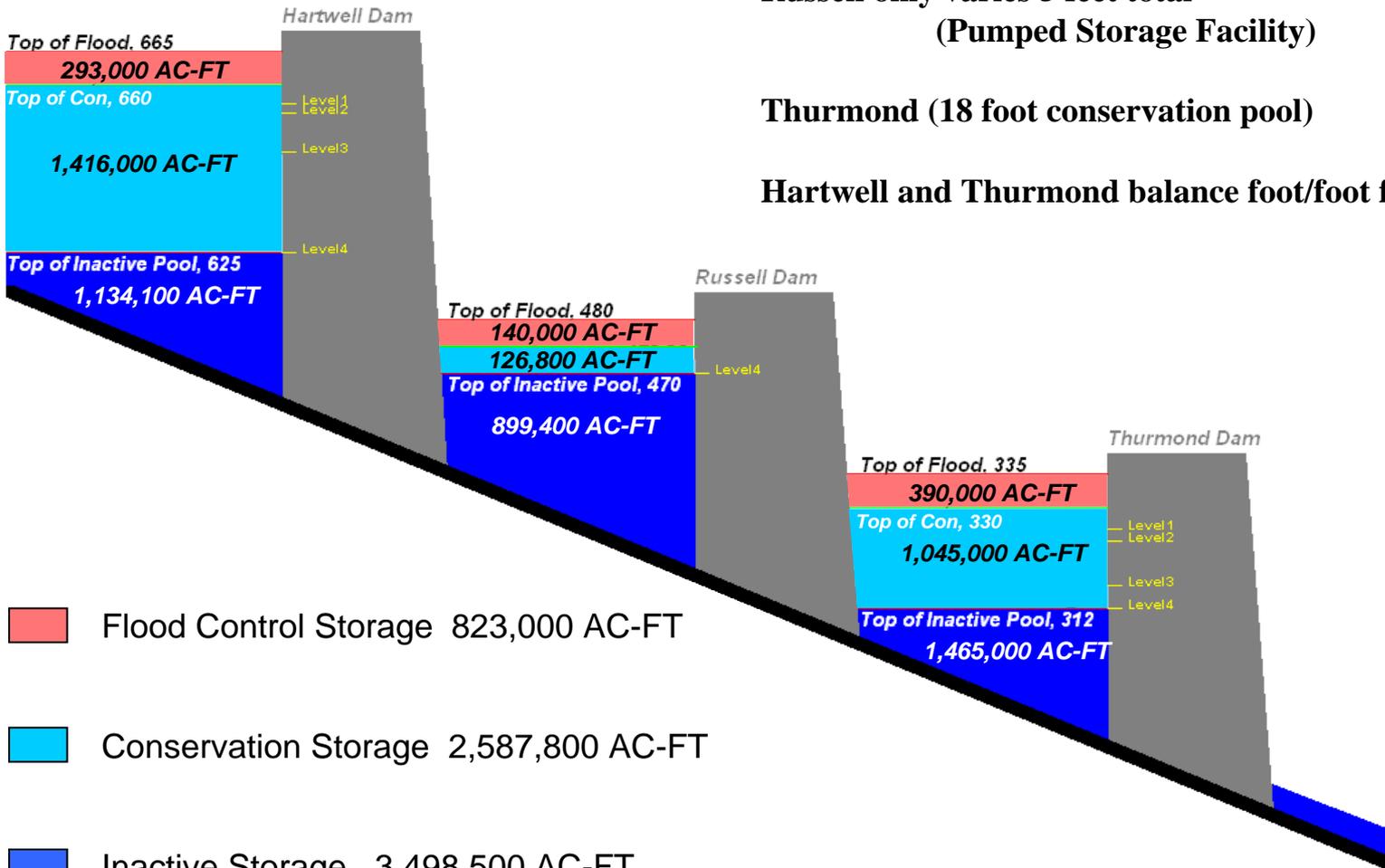


Hartwell (35 foot conservation pool)

**Russell only varies 5 feet total
(Pumped Storage Facility)**

Thurmond (18 foot conservation pool)

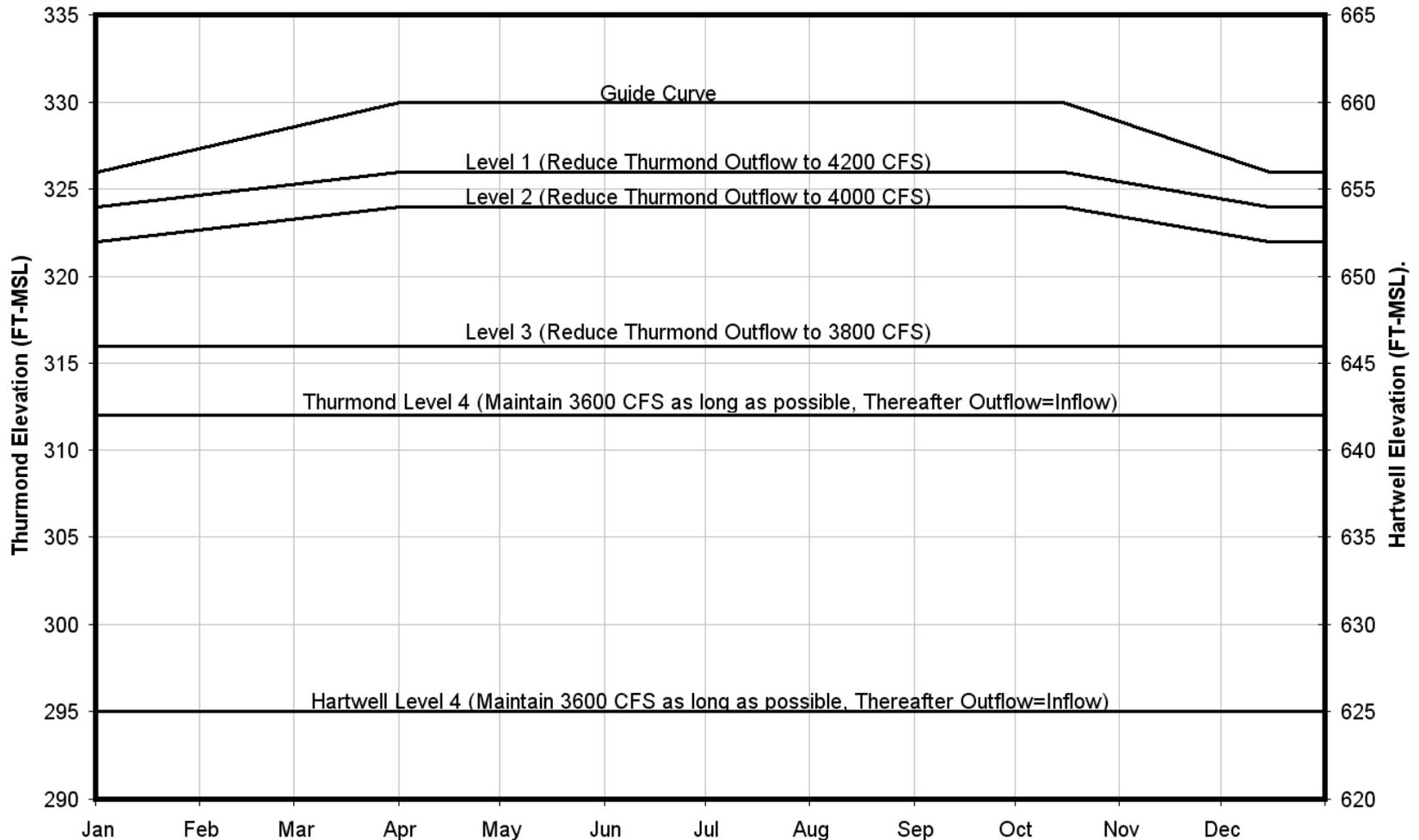
Hartwell and Thurmond balance foot/foot for top 15 feet





Savannah River Basin Drought Contingency Plan

Action Levels





In Lake Water Supply Intakes

Hartwell	RBR	JST
Bottom of Conservation Pool		
625	470	312
Lavonia, GA 636	RBR State Park 468	Savannah Lakes 324
Hartwell, GA 620	Elberton, GA 465	Lincolnton, GA 307
Anderson County, SC 618	Santee Cooper 460.5	Thomson, GA 304
Milliken Corp 611	Abbeville, SC 457.5	Columbia County, GA 304
	Calhoun Falls, SC 457	Washington, GA 307
		McCormick, SC 300



Water Supply Reallocation Cost

- ER 1105-2-100 states that cost of water supply reallocation to customer be the highest of the following:
 - Updated cost of storage
 - Power benefits foregone
 - Power revenues foregone
 - Replacement cost of power
- This discussion centers on the updated cost of storage term



Approaches To Water Supply

- Calculate Projects Separately
 - Use yield of each project
 - Problem - How to separate dependent project costs
- Combine Conservation Storage
 - Use total system yield
 - Use total system costs



Existing Independent Analysis Problem – Inconsistency

- The amount of storage required at each project to yield 1 mgd of water supply
 - Hartwell 702 Ac-Ft per mgd
 - Russell 55 Ac-Ft per mgd
 - Thurmond 315 Ac-Ft per mgd



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Source: IWR 06-PS-1

					Realloc.	Contract	Cost per
<u>Project</u>	<u>Sponsor</u>	<u>St</u>	<u>Date</u>	<u>Ac-Ft</u>	<u>From</u>	<u>Price</u>	<u>Ac-Ft</u>
Hartwell	Anderson County	SC	Jul-76	24,620	Cons	\$3,025,000	\$122.87
	Lavonia	GA	Feb-90	127	Cons	\$21,500	\$169.29
	Hart County	GA	Feb-97	1,827	Cons	\$335,200	\$183.47
Russell	Elberton	GA	Sep-90	381	Cons	\$419,000	\$1,099.74
	Santee Cooper	SC	Aug-01	491	FldCtrl	\$1,615,200	\$3,289.61
Thurmond	Lincolnton	GA	May-64	92	Cons	\$12,000	\$130.43
	McCormick	SC	Dec-99	506	Cons	\$75,000	\$148.22
	Sav Valley	SC	Oct-89	92	Cons	\$27,400	\$297.83
	Columbia	GA	Nov-89	1,056	Cons	\$313,000	\$296.40
	Thompson/McDuffie	GA	Aug-90	1,056	Cons	\$334,700	\$316.95
	Lincolnton	GA	Apr-90	83	Cons	\$24,600	\$296.39
	Washington	GA	Jun-82	632	Cons	\$72,800	\$115.19
	McCormick	SC	Aug-01	316	Cons	\$66,500	\$210.44



Technical Questions

- What is the impact of a withdrawal from each individual reservoir on the operation of the system?
- What are resulting storage requirements?
- How should updated cost of storage be calculated from multiple reservoirs?
- What will be system power impacts?
- How should reallocations from flood control be treated?



Project management Questions

- Carry system computation forward, or re-calculate all contracts for system approach? New drought likely reduces yield from previously contracted storage amounts.
- Who pays for a system approach study?
- For small reallocations, study cost exceeds water contract amount.
- Cost per Ac-Ft for Russell storage appears out of line – seems to be because very little conservation storage; mostly inactive storage – to maintain head for hydropower and pumpback efficiency



Summary

- Projects act as a system, not independent
- How (who) to pay for system study?
- How to transition from individual to system approach?

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