

**US Army Corps  
of Engineers**

# Reservoir Sedimentation (RESSED) Project Update

*September 12, 2013*

Reston, Virginia

*Joint USGS-USACE Meeting*

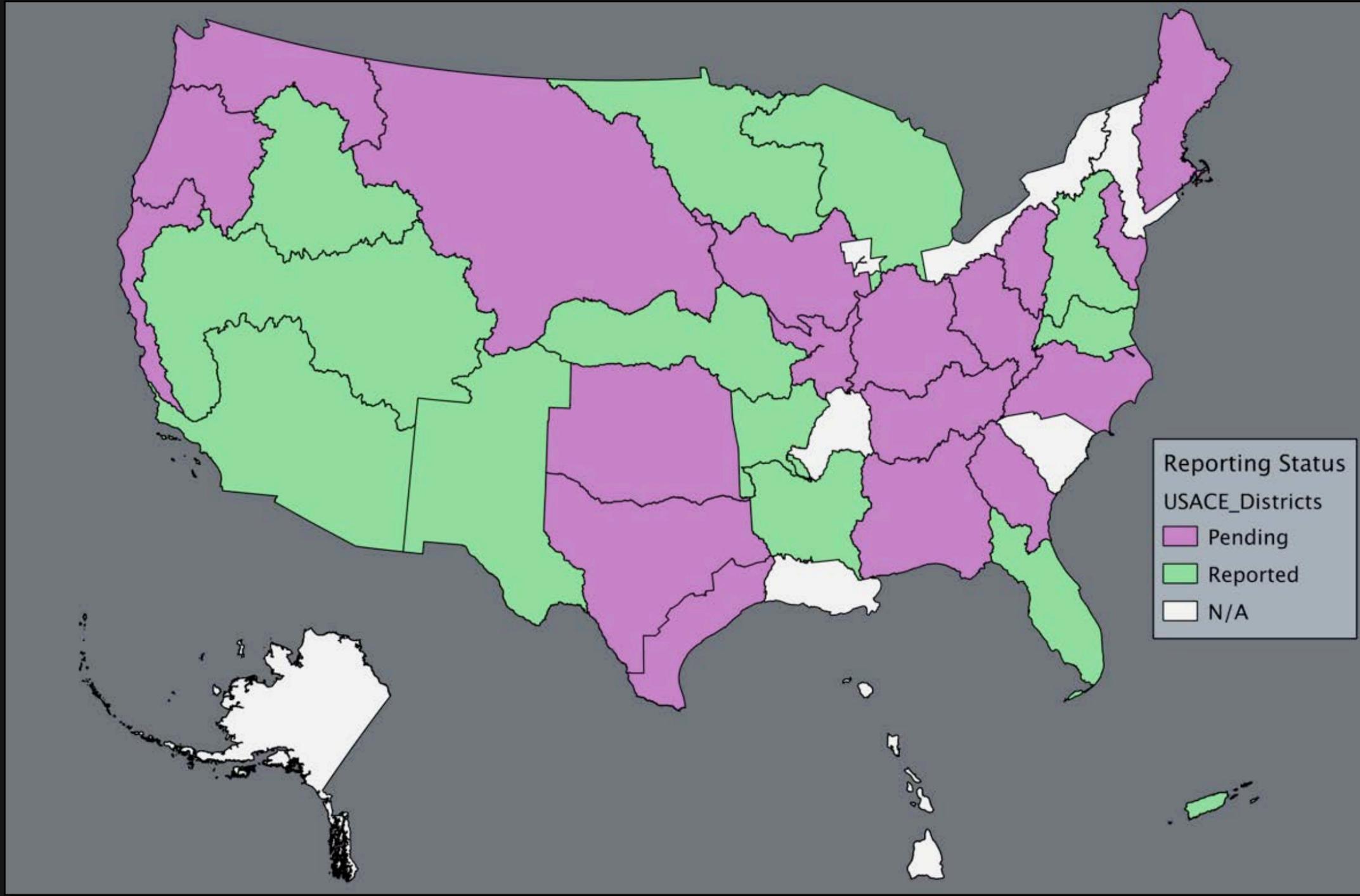
# RESSED Project Update

- Last reported January 2013
- Status of Corps reservoir sedimentation data call
- April 2013 Data release + *RESSED Data Explorer*
- RESSED customers and project funding

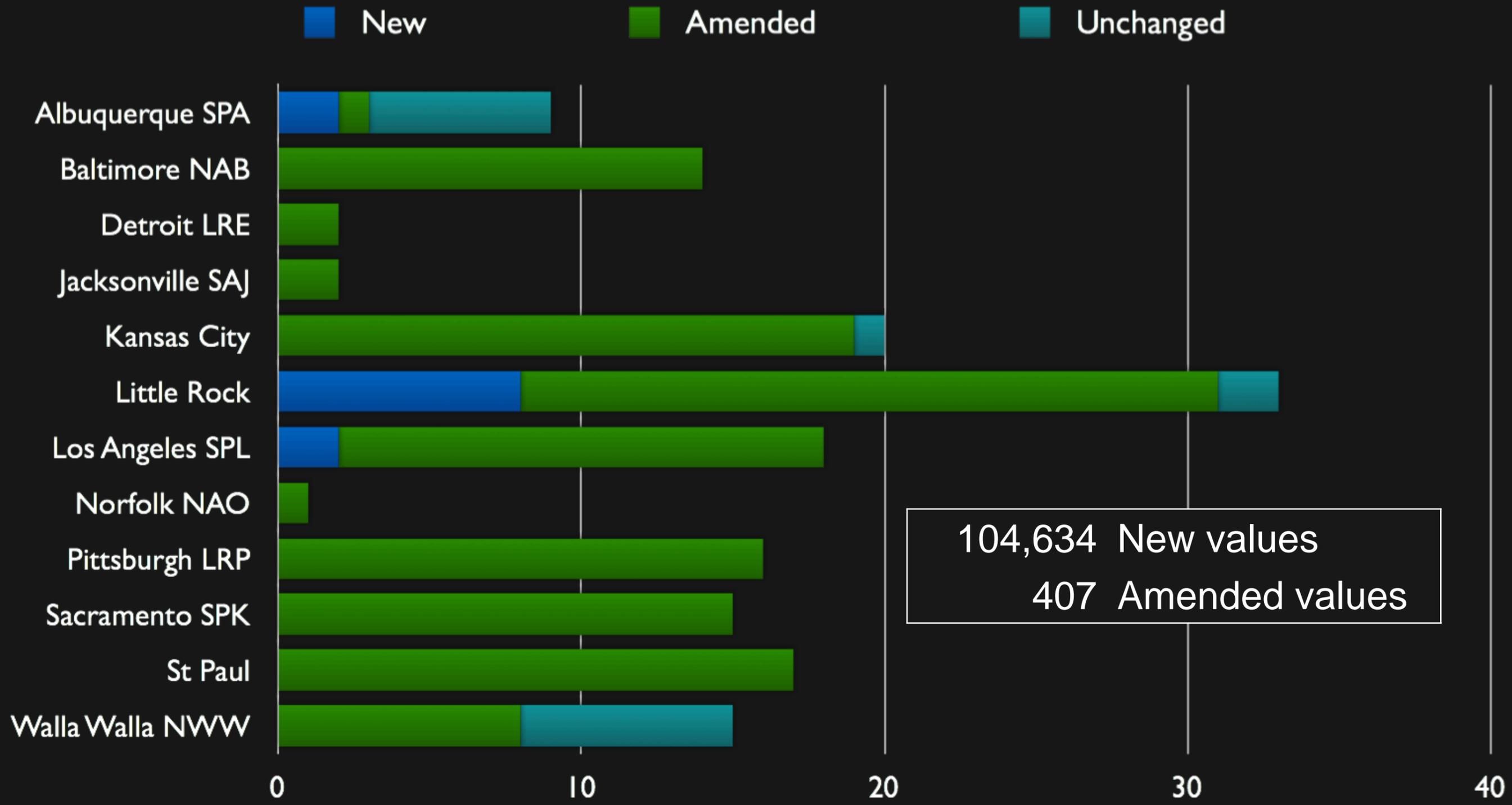
# What is RESSED?

- Reservoir Sedimentation dataset based on capacity data maintained by the Soil Conservation Service
- Period of record dates back to 1700s, but most survey data is from 1900 to 1970
- US Bureau of Reclamation update completed in 2012; Corps update is in progress
- Currently maintenance-level funded by USGS component of DOI WaterSMART initiative

# USACE RESSED Data Call



# Reservoir Changes for Reporting Districts



104,634 New values  
407 Amended values

Current as of 9/9/2013



# RESSED Database Table Hierarchy

## Reservoir

Purpose

Sed Mgmt Practices

Storage Allocations

Obstacles

## Survey

Depth

Reach

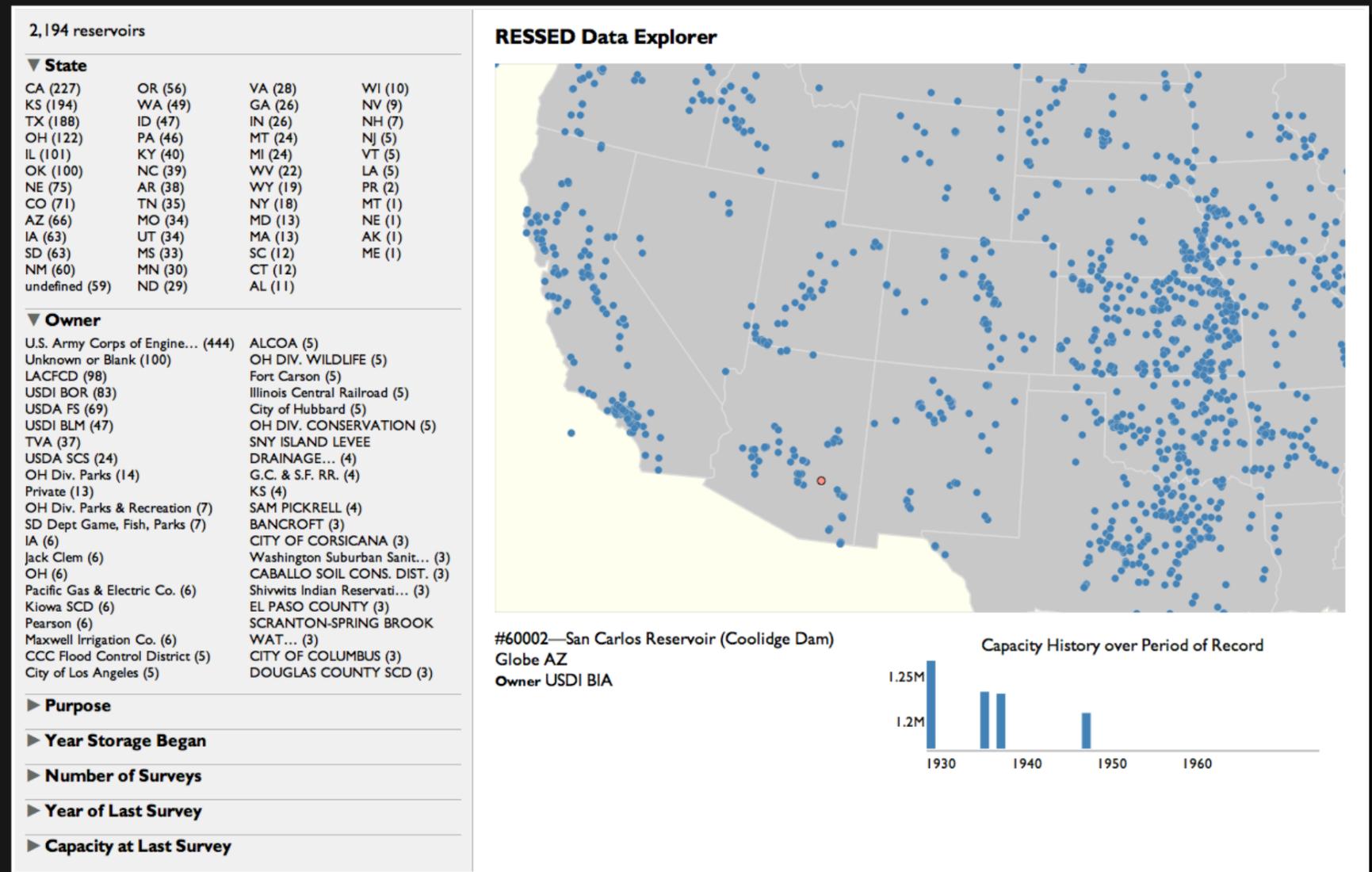
**Capacity**

# RESSED April 2013 Release

- Preliminary release—Includes updates from both USACE and USBR
- Publicly available in multiple formats from updated website
- Co-release of the *RESSED Data Explorer* demonstration online application

# RESSED Data Explorer

- Demonstration Application: Use online or download source code and modify as needed
- Faceted search paradigm
- Uses JSON version of released RESSED dataset
- Additional charts and maps will be available with next data release



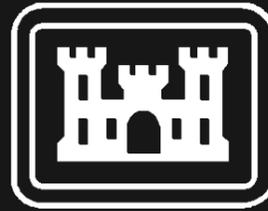
# *RESSED Data Explorer* Demonstration



# RESSED Customers

- ACWI-SoS (Data owner)
- USACE/USBR/DOI Reservoir Managers
- DOI WaterSMART Initiative
- USBR (Common Storage Medium)
- USGS National Research Program (Global Carbon Budget Research)
- USGS NAWQA Program (Relevance to Water Quality)
- U. South Carolina (Capacities of Western Reservoirs)
- Miami of Ohio U. (National Reservoir Capacity Loss)
- West Consultants (Unknown)
- House of Representatives Senior Staff (Concern about Reservoir Sedimentation)
- Federal—National Assessments, agency-specific assessments
- State and Local Government—Water Supply, Flood Control, etc.
- Tribes
- Private owners
- Researchers





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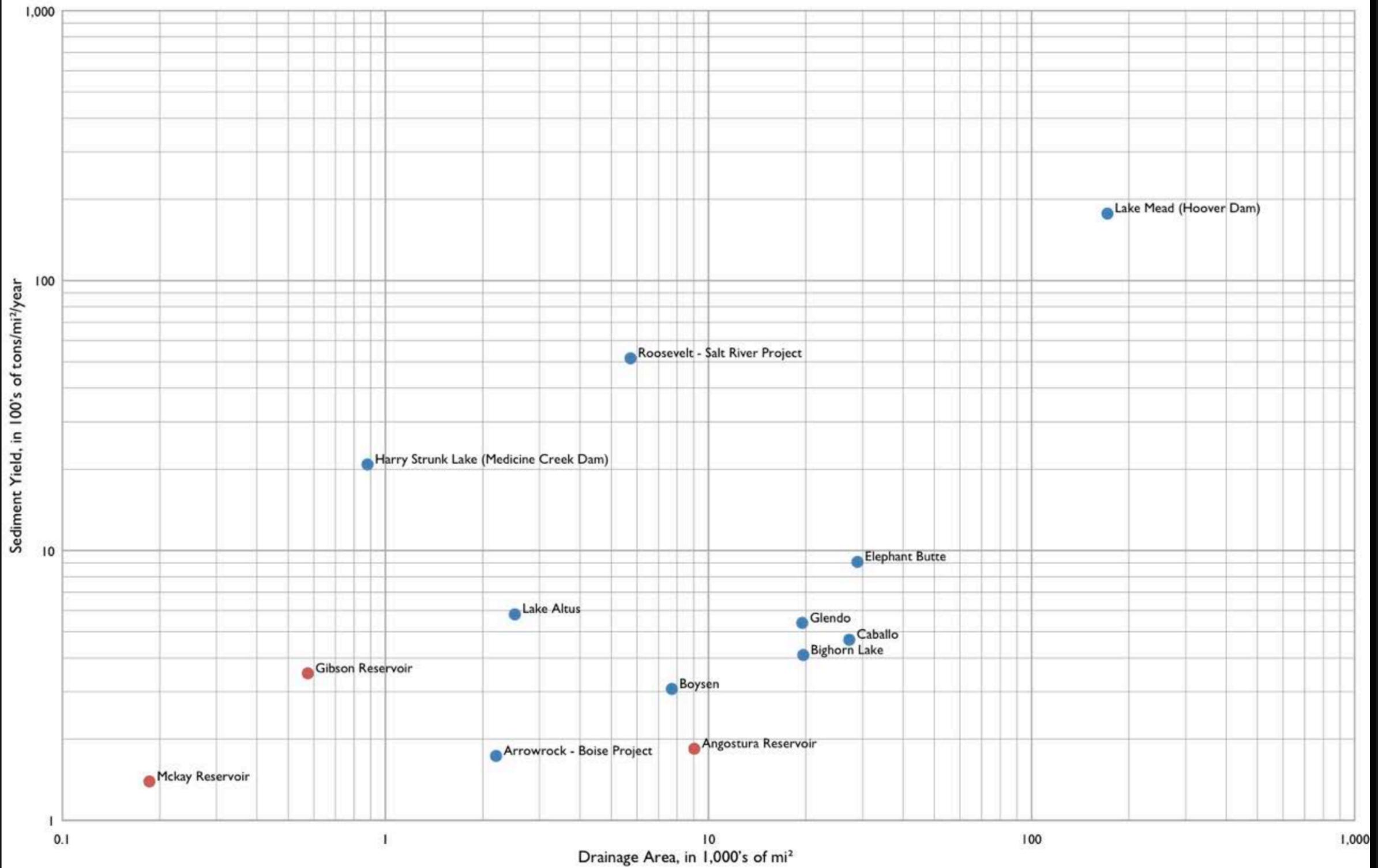
ID Name

57002 Caballo

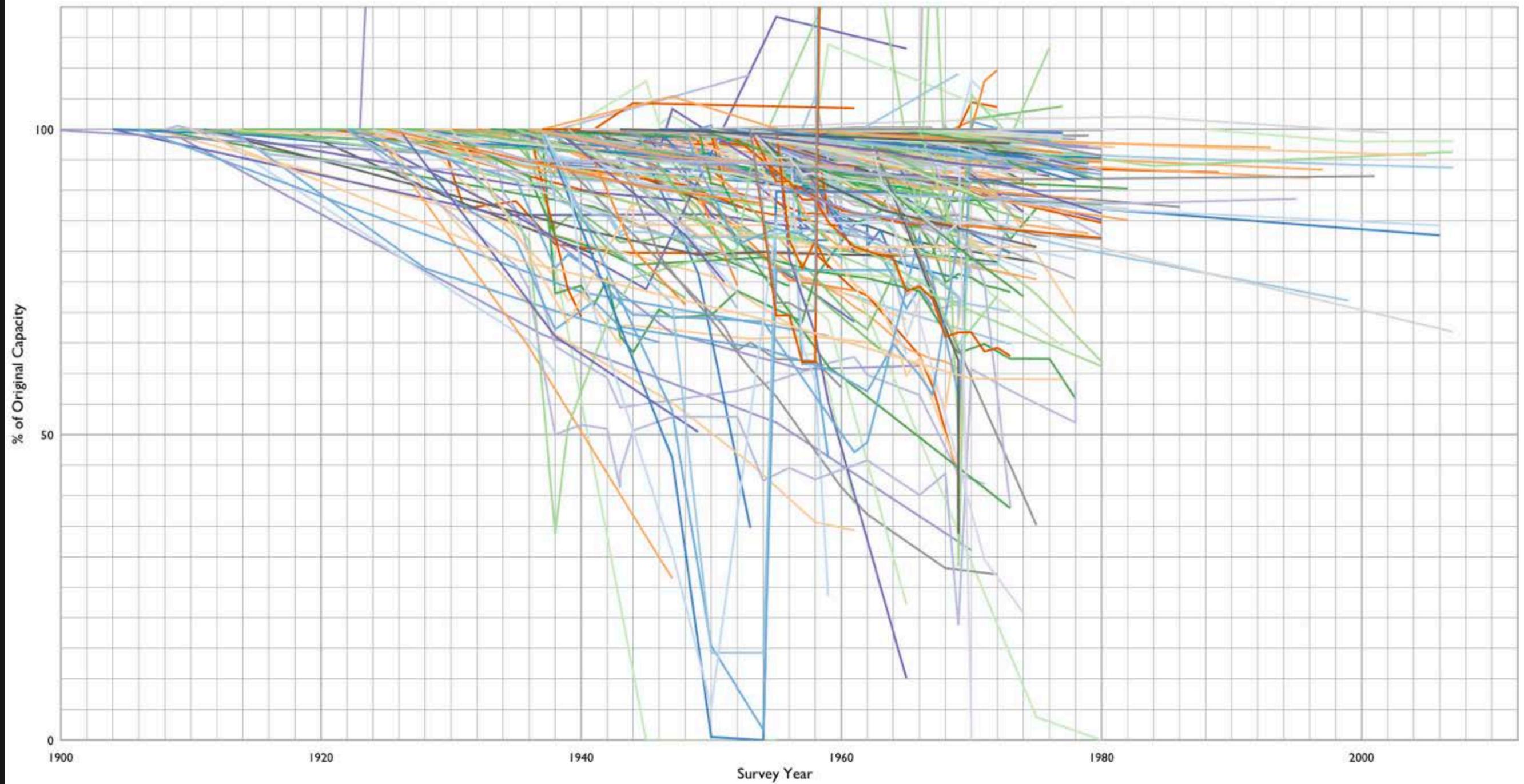
### Depth & Capacity History



Drainage Area vs. Sediment Yield for RESSED Reservoirs



Survey Capacity History for RESSED Reservoirs



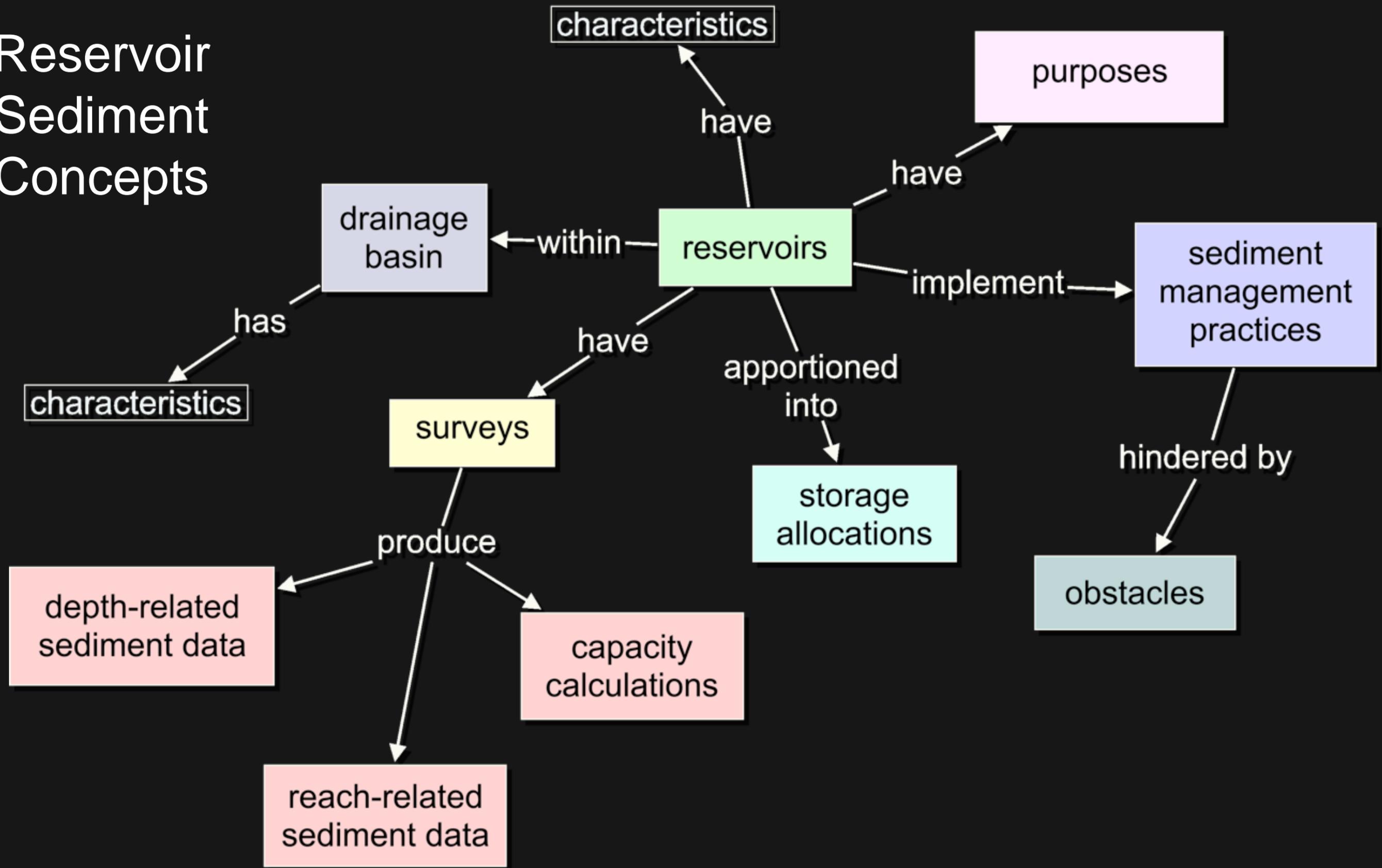
# RESSED Data Release

## Formats

- XML—Has formal schema. Data interchange format. Suitable for extraction of subsets or importation into other databases
- JSON—Subset of information reformulated for use by web applications
- SQLite—Full SQL database contains tables and indexes. (Scheduled for next data release.)



# Reservoir Sediment Concepts



# Form 1787

- Uses XML output from RESSED
- XSLT-based stylesheet
- Browser display
- Print to hardcopy or PDF

## RESERVOIR SEDIMENT DATA SUMMARY, PAGE 2

26. DATE OF SURVEY	43. DEPTH DESIGNATION RANGE IN FEET ABOVE, AND BELOW, CREST ELEVATION									
	59:56	56:48	48:40	40:32	32:24	24:16	16:8	8:0	0:-12	
s Sep 1963 s Mar 1974 u Sep 1983 u Aug 1991 u Aug 1993 u Jul 2000	0.5	12.2	24.29	25.4	10.3	5.09	7.4	5.5	9.3	

26. DATE OF SURVEY	44. REACH DESIGNATION PERCENT OF TOTAL SEDIMENT			
	0-10	10-20	20-30	30-4
s Sep 1963 s Mar 1974 u Sep 1983 u Aug 1991 u Aug 1993 u Jul 2000	42.5	23.6	7	4.69

45. RANGE IN RESERVOIR OPERATION	WATER YEAR	MAX. ELEV.	MIN. I
	1963 <sup>(4)</sup>	1,021.72	
	1964	1,035.10	
	1965	1,062.39	
	1966	1,039.02	
	1967	1,059.51	
	1968	1,047.26	

46. ELEVATION—AREA—CAPACITY DATA		
CAPACITY YEAR: 1963		
ELEVATION	AREA	CAPACITY
1,080	45,610	1,100
1,068	31,690	600
1,060	24,120	400

CAPACITY YEAR: 1974		
ELEVATION	AREA	CAPACITY
1,080	45,610	1,100
1,076	40,660	900
1,072	36,070	700
1,068	31,660	600
1,064	27,520	400
1,060	23,800	300
1,056	20,470	200

**NOTES**  
<sup>(1)</sup>Excludes Areas above Council Grove and  
<sup>(2)</sup>Completed by USACE, Tulsa District  
<sup>(3)</sup>Used the Project Office Gage.  
<sup>(4)</sup>One Month.

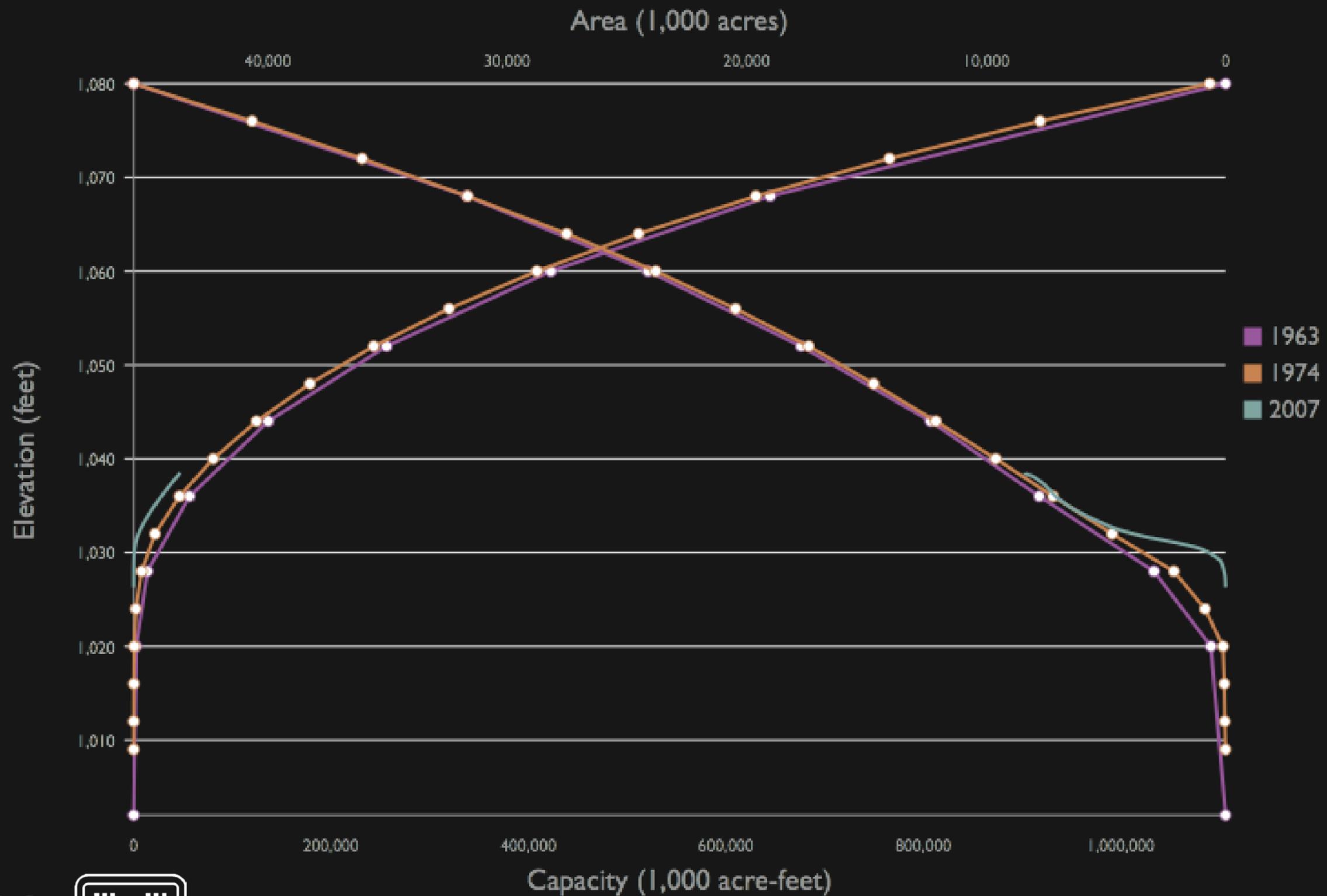
**48. AGENCY MAKING SURVEY** DOD; CE;  
**49. AGENCY SUPPLYING DATA** DOD; CE

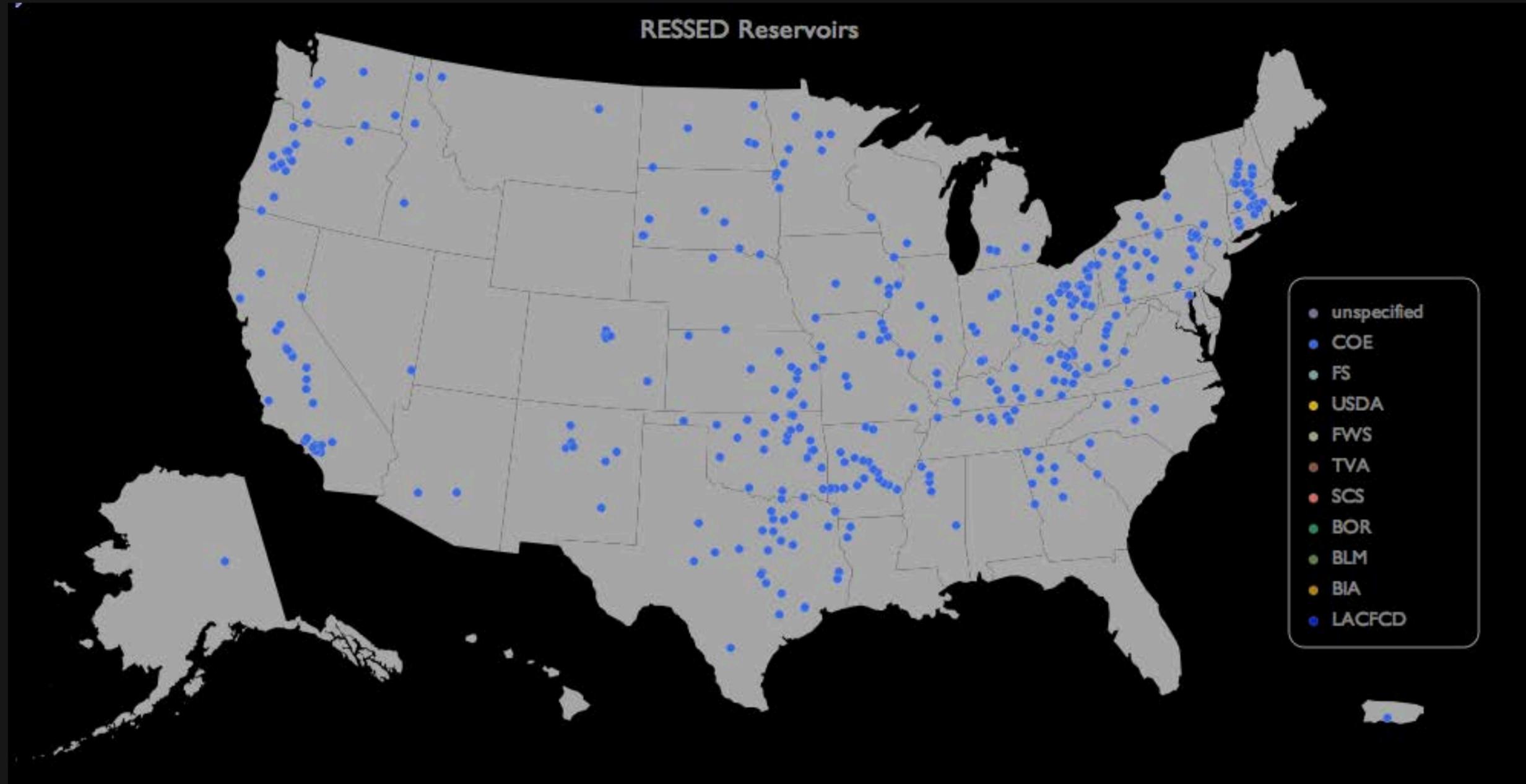
RESERVOIR SEDIMENT DATA SUMMARY									
NAME OF RESERVOIR John Redmond Dam and Reservoir									
RESERVOIR ID 45056									
1. OWNER U.S. Army Corps of Engineers		2. STREAM Grand (Neosho) River		3. STATE KS					
4. SEC,TWP,RNG S-09,T-21s,R-15e		5. NEAREST TOWN Burlington		6. COUNTY Coffey					
7. LAT 38.24 LONG -95.76		8. TOP OF DAM ELEVATION 1,085.1		9. SPILLWAY CREST ELEV.					
10. STORAGE ALLOCATION		11. ELEVATION TOP OF POOL		12. ORIGINAL SURF. AREA ACRES		13. ORIGINAL CAPACITY ACRE-FEET		14. GROSS STORAGE ACRE-FEET	
a. MULTIPLE USE									
b. FLOOD CONTROL		1,068		31,690		588,140		07 Sep 1963	
c. POWER									
d. WATER SUPPLY								16. DATE NORM. OPER. BEGAN	
e. IRRIGATION									
f. CONSERVATION		1,036		7,780		54,090		01 Jul 1964	
g. SEDIMENT									
h. INACTIVE		1,020		610		2,570			
17. LENGTH OF RESERVOIR 28.54 MILES					AV. WIDTH OF RESERVOIR MILES				
18. TOTAL DRAINAGE AREA 3,015 SQ. MI.					22. MEAN ANNUAL PRECIPITATION 32.41 INCHES				
19. NET SEDIMENT CONTRIBUTING AREA 2,519 <sup>(1)</sup> SQ. MI.					23. MEAN ANNUAL RUNOFF 6.38 INCHES				
20. LENGTH 88.5 MILES		AV. WIDTH 34.09 MILES			24. MEAN ANNUAL RUNOFF 1,025,839.88 AC.-FT.				
21. MAX. ELEV. 1,600		MIN. ELEV. 1,002			25. ANNUAL TEMP. MEAN 56.4 RANGE -7 TO				
26. DATE OF SURVEY	27. PERIOD YEARS	28. ACCUM. YEARS	29. TYPE OF SURVEY	30. NO. OF RANGES OR CONTOUR INT.	31. SURFACE AREA ACRES	32. CAPACITY ACRE- FEET	33. C/I RATIO AC.-FT. / AC.-FT.		
s Sep 1963 s Mar 1974 u Sep 1983 u Aug 1991 u Aug 1993 u Jul 2000 <sup>(2)</sup>	10.5	10.5	RNG (D)	30 ranges 30 ranges	31,690 31,660	644,800 630,290	0.63 0.61		
26. DATE OF SURVEY	34. PD. ANN. PRECIP.	35. PERIOD WATER INFLOW ACRE- FEET			36. WATER INFL. TO DATE AC.-FT.				
s Sep 1963 s Mar 1974 u Sep 1983 u Aug 1991 u Aug 1993 u Jul 2000	36.02 <sup>(3)</sup>	a. MEAN ANNUAL	b. MAX ANNUAL	c. PERIOD TOTAL	a. MEAN ANNUAL	b. TOTAL TO DATE			
		1,192,954		12,526,020	1,192,954	12,526,020			
26. DATE OF SURVEY	37. PERIOD SEDIMENT DEPOSITS ACRE- FEET			38. TOTAL SED. DEPOSITS TO DATE ACRE- FEET					
s Sep 1963 s Mar 1974 u Sep 1983 u Aug 1991 u Aug 1993 u Jul 2000	a. PERIOD TOT.	b. AVG. ANNUAL	c. PER SQ. MI.-YR.	a. TOTAL TO DATE	b. AVG. ANNUAL	c. PER SQ. MI.-YEAR			
	15,992	1,522.45	0.604						
26. DATE OF SURVEY	39. AV. DRY WT. LBS. / CU. FT.	40. SED. DEP. TONS / SQ. MI.-YR.		41. STORAGE LOSS PCT.		42. SED. INFLOW PPM			
s Sep 1963 s Mar 1974 u Sep 1983 u Aug 1991 u Aug 1993 u Jul 2000	62.9	a. PERIOD	b. TOTAL TO DATE	a. AV. AN.	b. TOT. TO DATE	a. PERIOD	b. TOT. TO DATE		



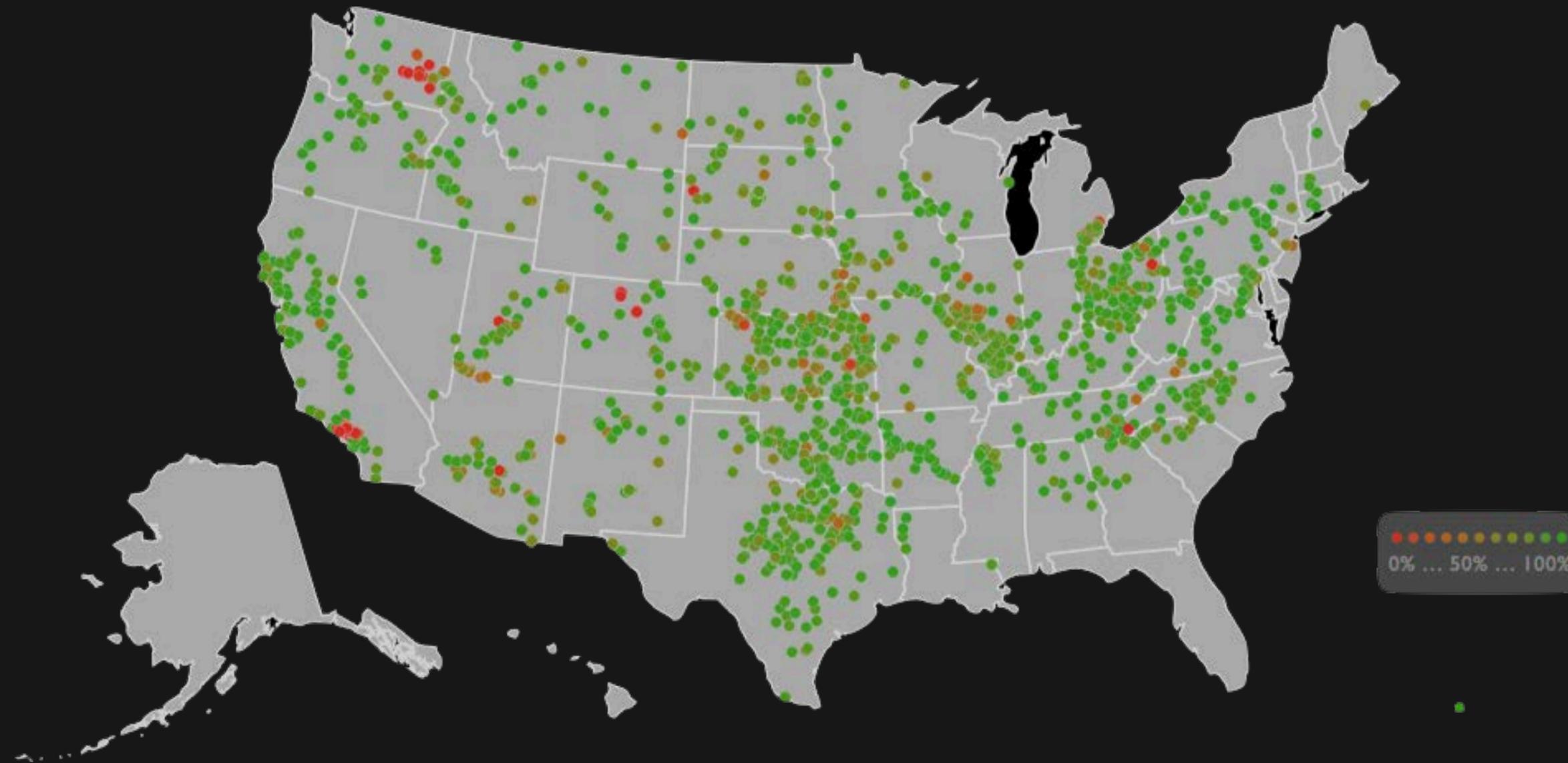
# Elevation-Area-Capacity for John Redmond Dam and Reservoir



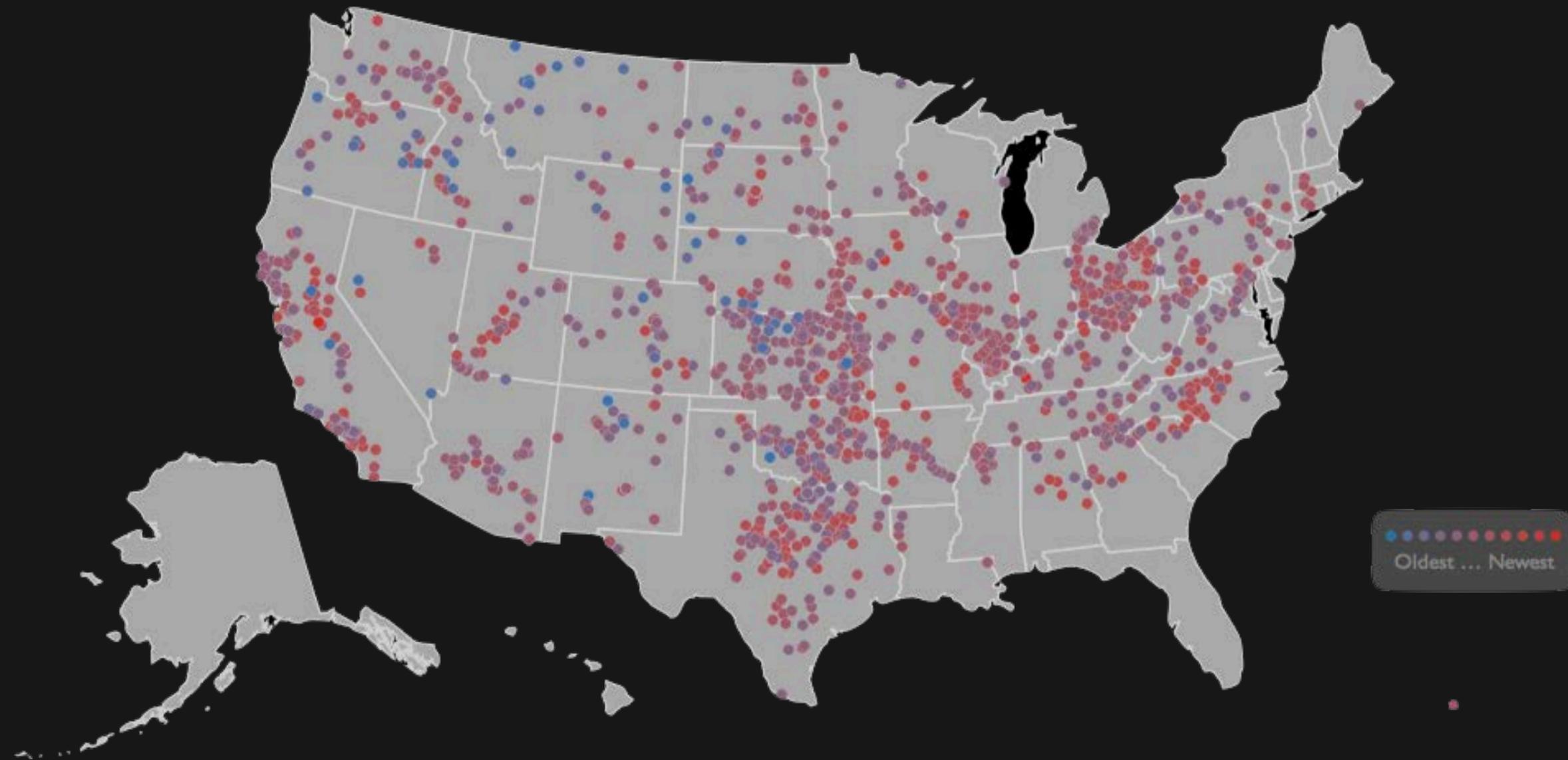
# Interactive Mapping Application



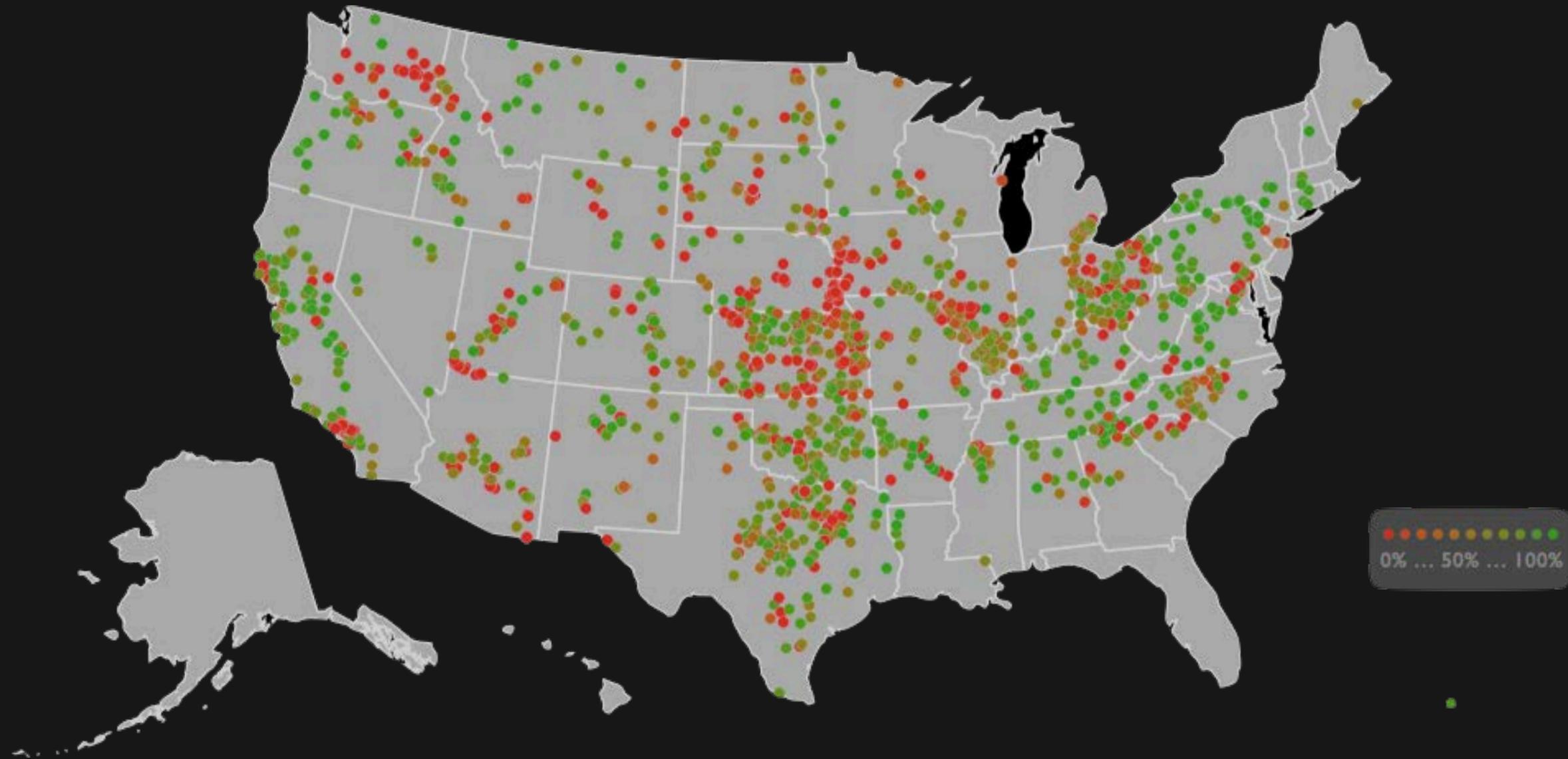
# Capacity at Last Survey



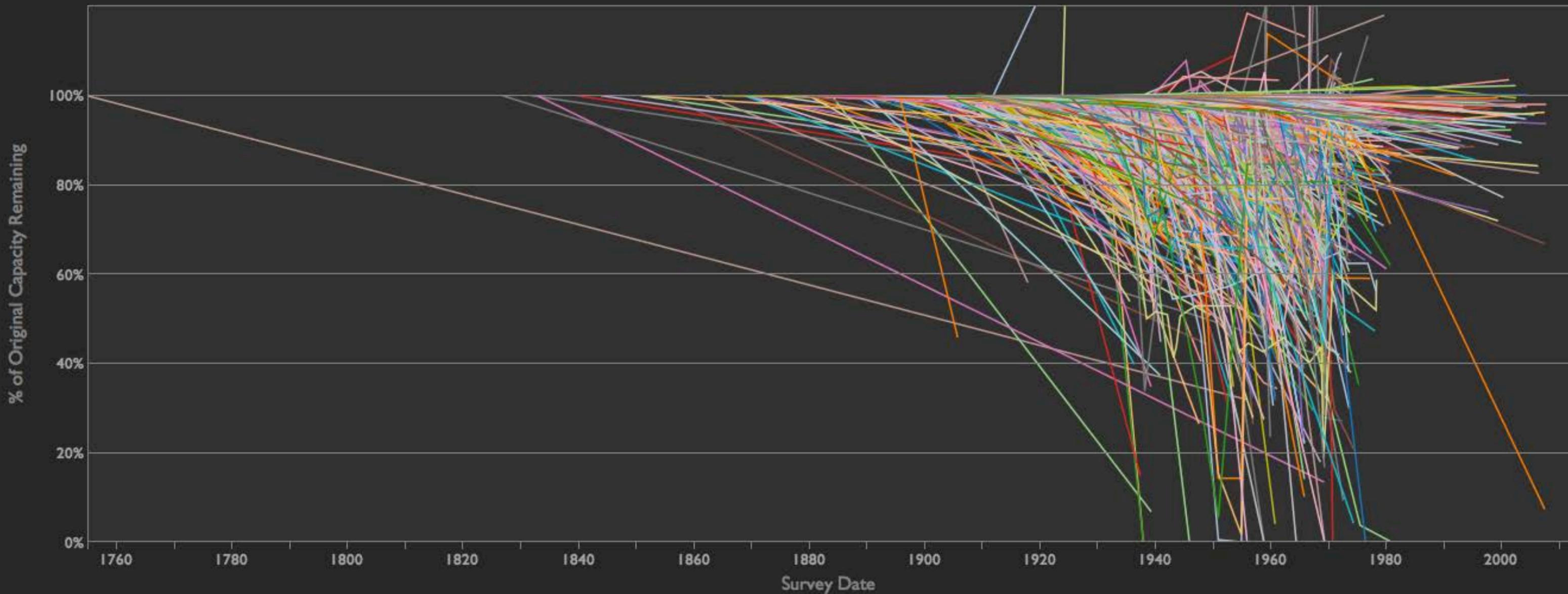
# How Current is RESSED?



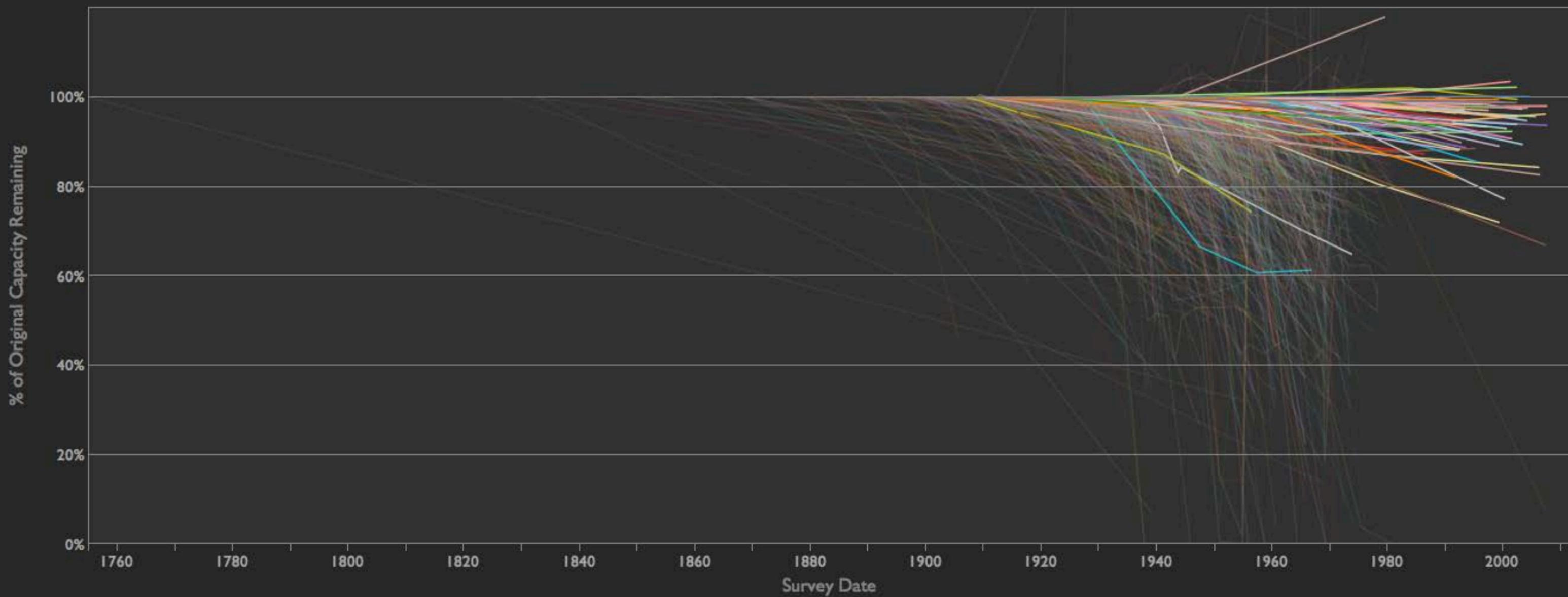
# Estimated Current Capacity



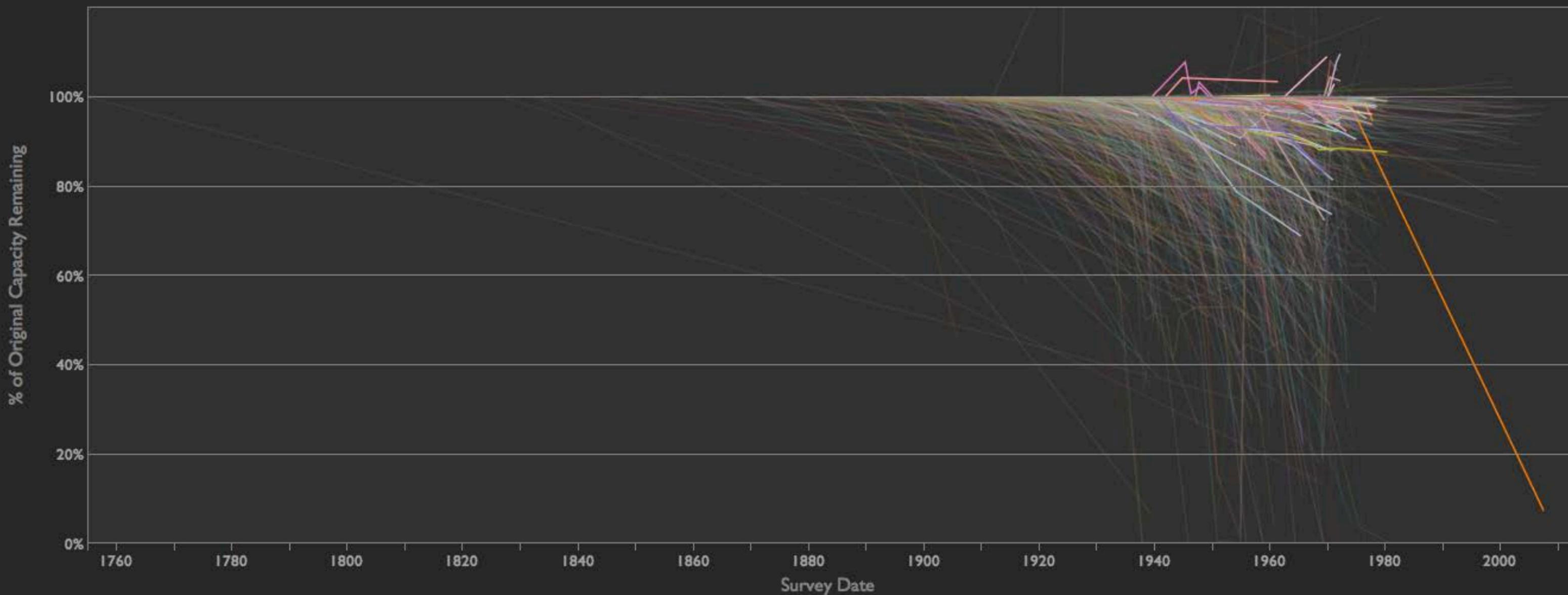
# Capacity History (R=1,693; S=5,909)



# Capacity History (BOR Highlighted)

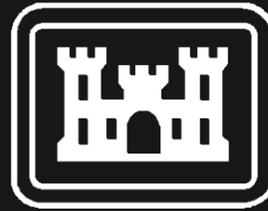


# Capacity History (COE Highlighted)



RESSED—Reservoir Capacity (John Redmond Dam and Reservoir) [1 reservoirs; 3 surveys]





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