

KANSAS CITY DISTRICT

Clinton Lake's Role in the Wakarusa Watershed

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Clinton & Hillsdale Lakes

5 November 2014

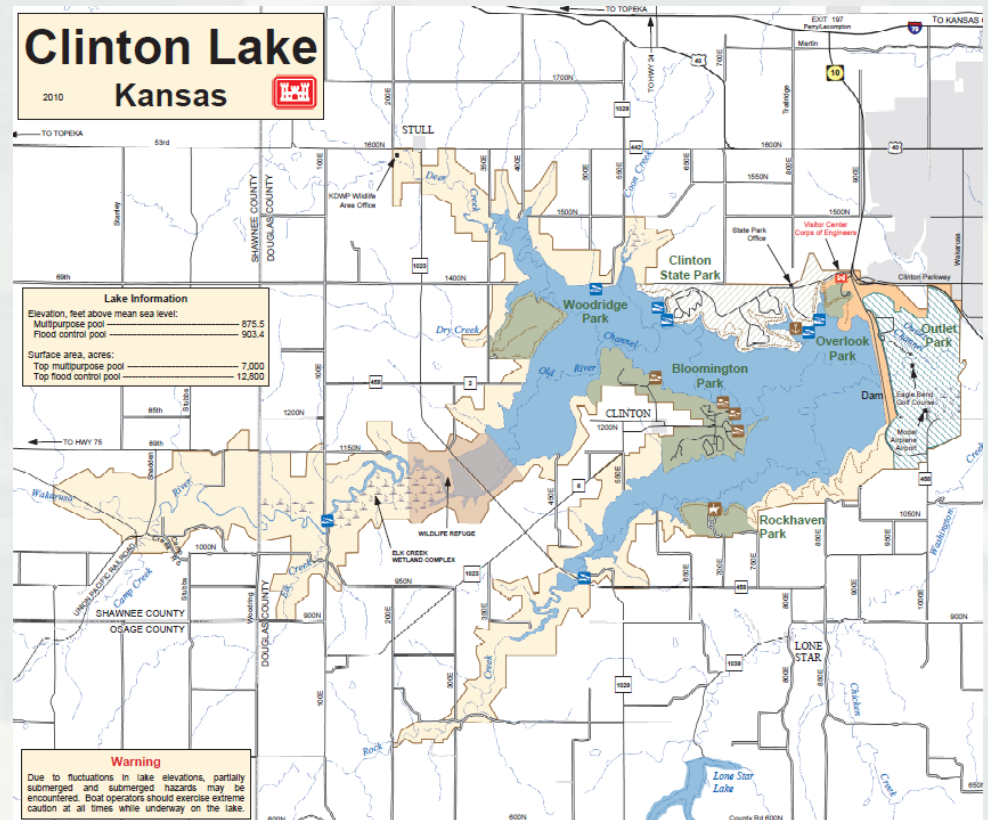


US Army Corps of Engineers
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Clinton Lake

- Basic Information
 - ▶ History/Purpose
 - ▶ Importance to Area
- Sediment Status
- Corps' Role
- Questions



Clinton Lake History



- Project Authorization
 - ▶ 1958 Water Supply Act
 - ▶ Senate Document 122
 - ▶ 1962 Flood Control Act
- Dam Completed August 23, 1975
- Filled MP Pool April 3, 1980



Clinton Lake's Purpose

- Authorized Project Purposes
 - ▶ Flood Control
 - ▶ Water Supply
 - ▶ Water Quality
 - ▶ Recreation
 - ▶ Fish and Wildlife

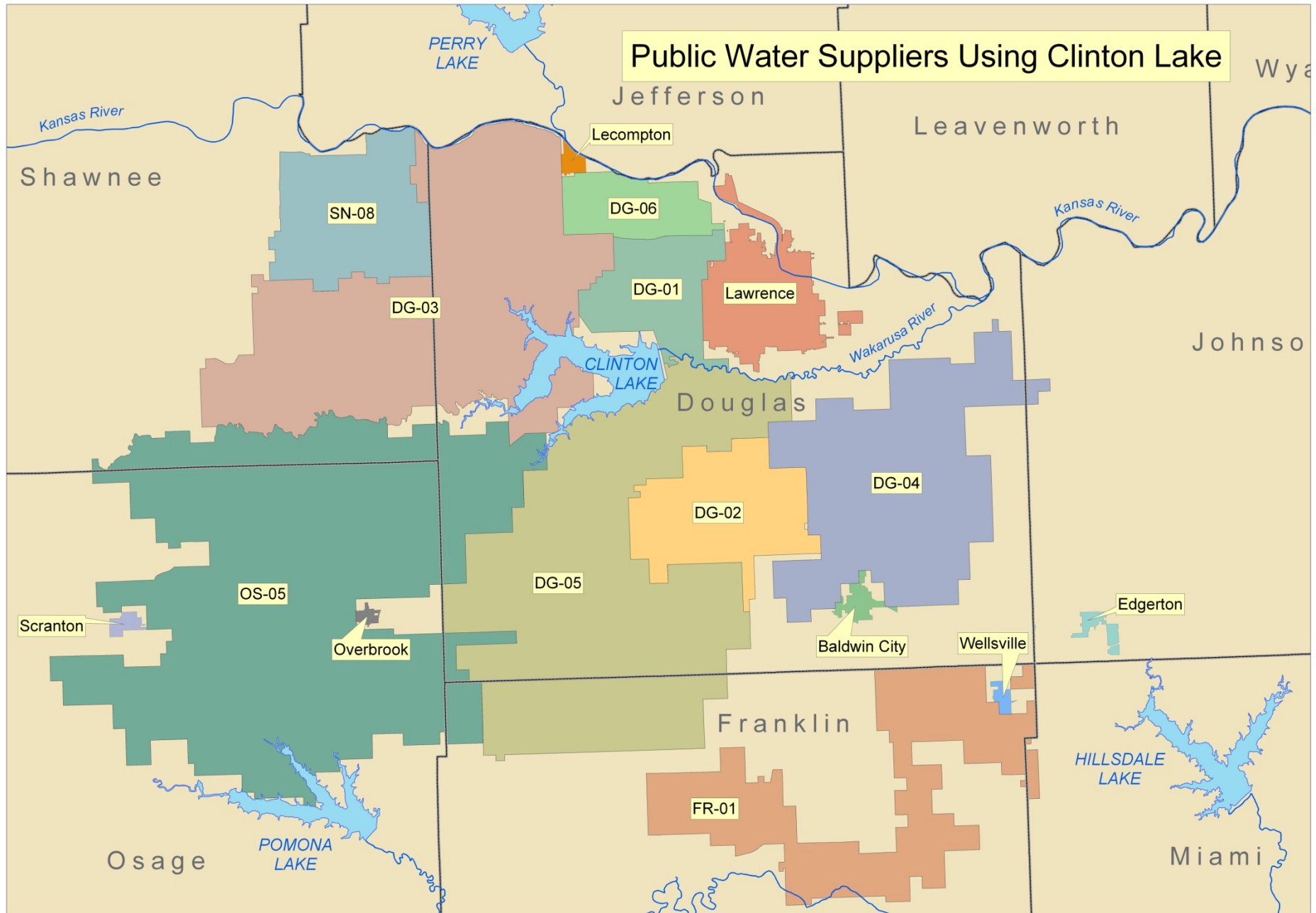


Importance of Clinton Lake (FY13)

- 1.6 million visitors
 - ▶ Est. Regional Economic Impact
 - Regional sales ~ \$22,000,000
 - Regional income ~ \$12,800,000
 - Regional employment of 371 jobs
- \$158,800 in flood damages prevented (156 sq mi)
- \$1.21 Billion flood damages prevented since '77
 - ▶ Cost to build dam was \$54,415,433
- Supplied 2.9 Billion gallons of water to City of Lawrence and Tri-District water plants



Public Water Suppliers Using Clinton Lake

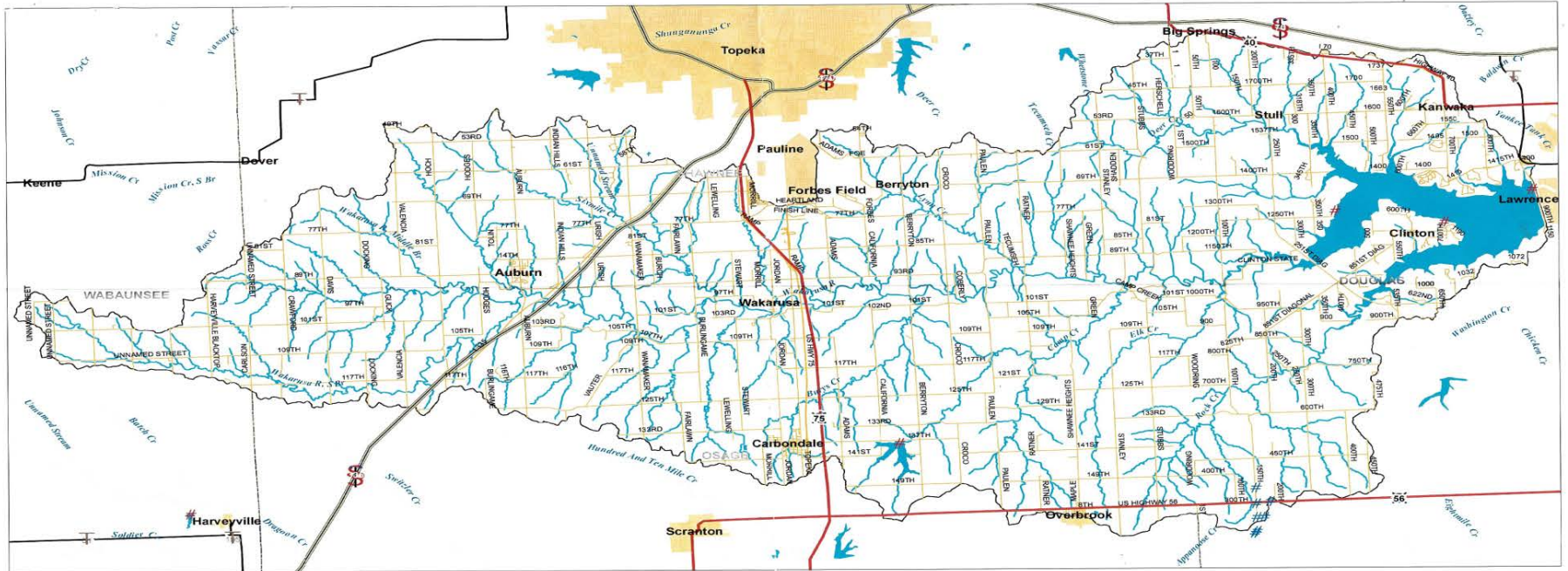


Clinton Lake Sediment Status



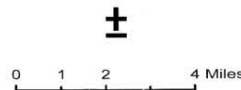
UPPER WAKARUSA RIVER BASIN

Upper Wakarusa Stream Network



Map Key

- | | | |
|--------------------------|-----------------------------|------------------------------------|
| Upper Wakarusa Watershed | Roads Classification | Public Water Supply Sources |
| River or Stream | Interstate | # Well |
| Lake | US | # Intake |
| City or Developed Area | State | # Reservoir |
| County Boundary | Local Roads | # Spring |
| | | # Infiltration Gallery |



Political - Counties



Physical - HUC 8 Watersheds



Map area shown in blue.

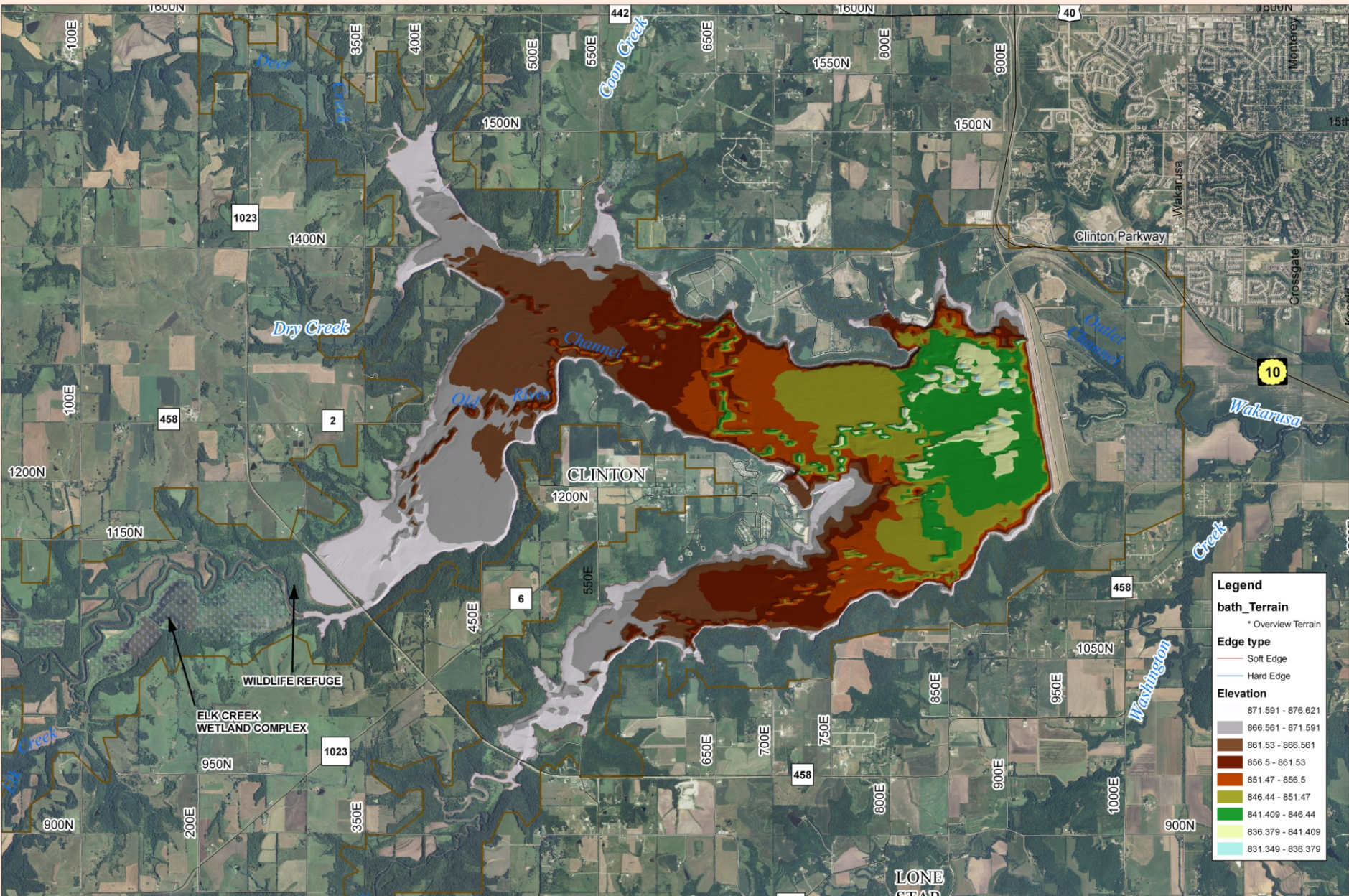


Map produced by
Kansas Department of Health & Environment
September 2008

356 square miles

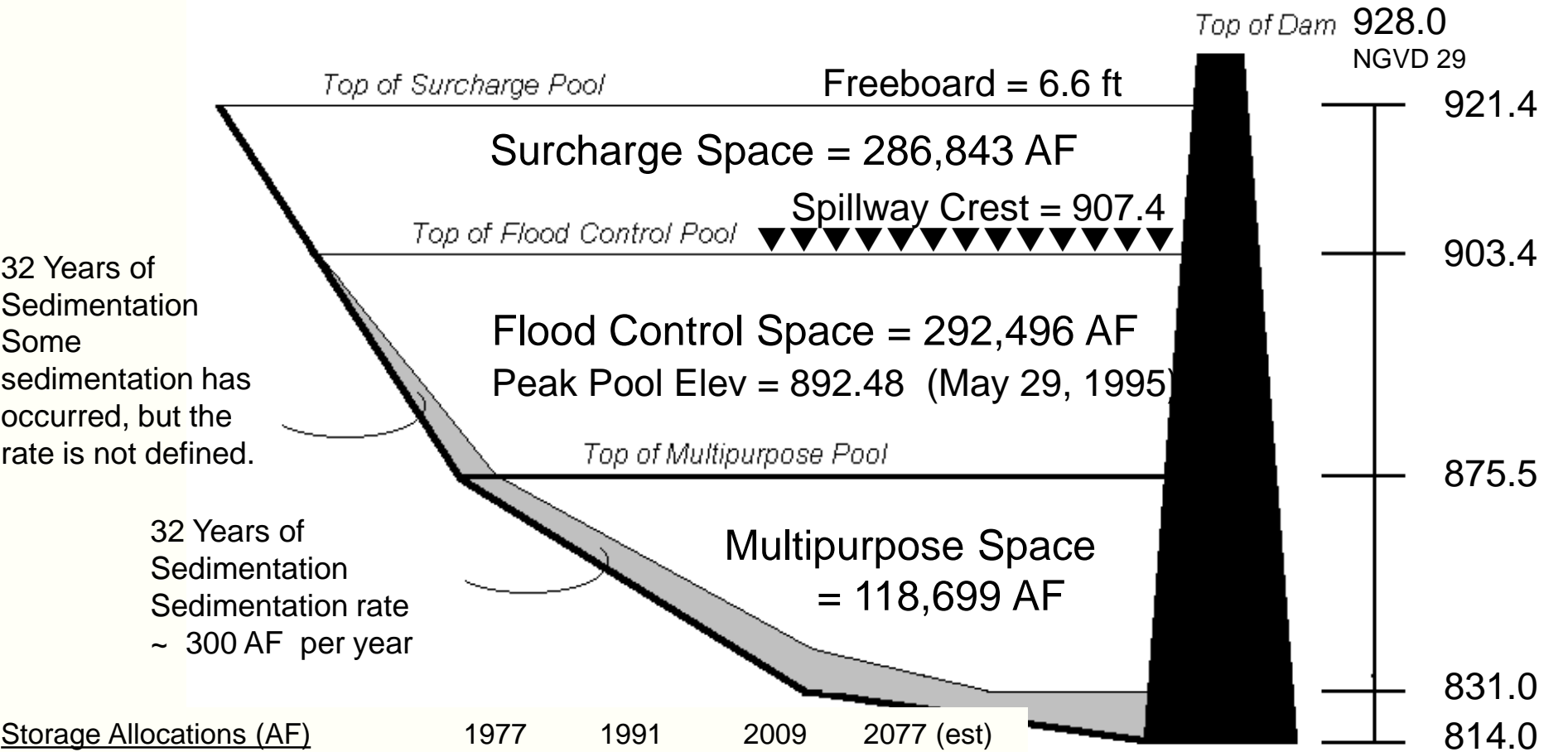


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Clinton Lake Storage Allocations

Storage Began November 1977 Last Sediment Survey June 2009

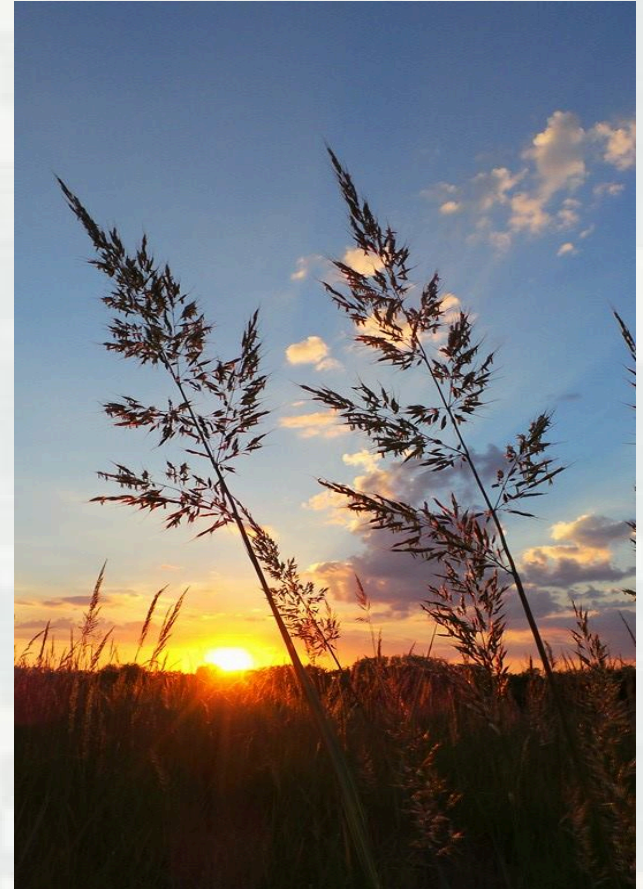


<u>Storage Allocations (AF)</u>	1977	1991	2009	2077 (est)
Total Flood Control Pool	268,367	268,783	292,496	258,300
Exclusive Flood Control	258,300	258,300	258,300	258,300
FP Sediment Reserve	10,067	10,483	34,196	0
Total Multipurpose Pool	129,171	125,334	118,699	110,400
In-Service Water Supply	53,500	53,500	53,500	89,200
Future Use Water Supply	35,700	35,700	35,700	0
Water Quality	21,200	21,200	21,200	21,200
MP Sediment Reserve	18,771	14,934	8,299	0

2009 tables now used for lake ops. Water supply allocation contracted to the State of Kansas (KWO) in 1977, with an initial in-service increment of 53,500 AF; the available water is subcontracted to the cities of Lawrence, Baldwin City, and six Douglas County rural water districts.

Corps' Role

- Original Design of Lake
- NRM Practices – ongoing
- Studies for Future Improvement



Corps' Role - Design of Lake

- Built with sediment allowance
- Stilling Basin dissipates energy to reduce erosion downstream



Corps' Role - NRM Practices

- Native Grass
- Buffer Strips
- Fertilizer Restrictions
- Bank Stabilization
 - ▶ Limiting Factors – Access, \$\$\$, Private Ownership



Corps' Role - Studies

- Clinton
 - ▶ Corps surveyed erosional hotspots upstream from Clinton and suggested corrections
 - Worst Banks Stabilized by KWO



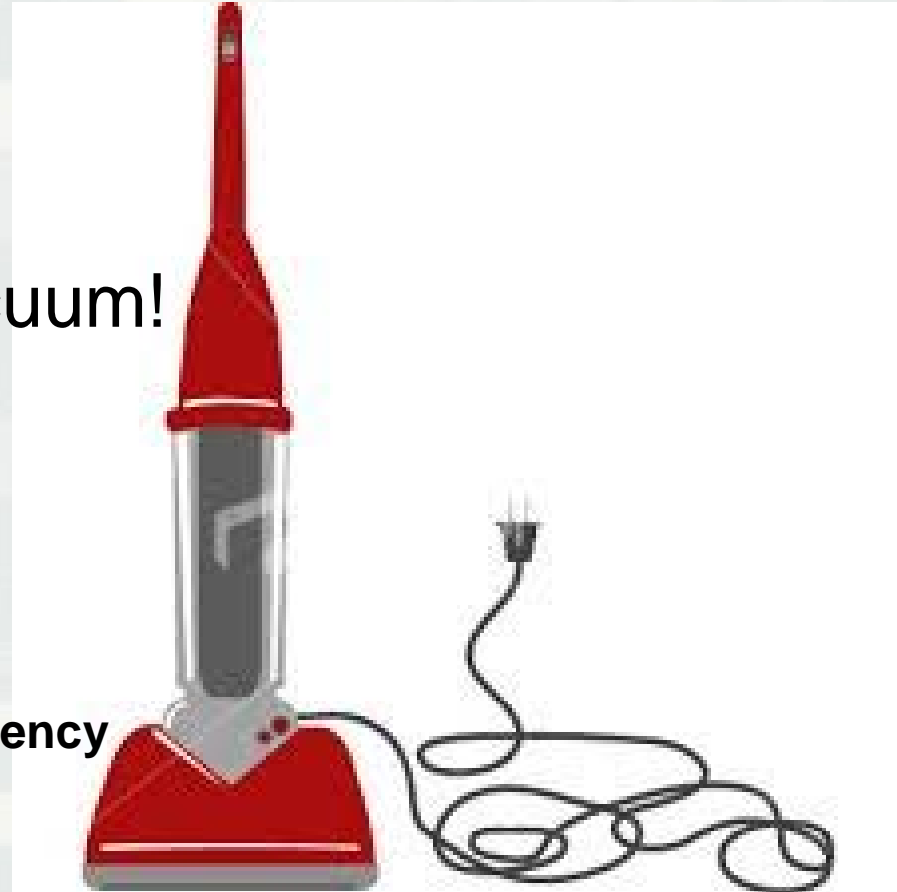
Corps' Role - Studies

- Tuttle Creek Lake (still in research phase)
 - ▶ Open Gates Early During High Flow Events
 - ▶ Flush with High Releases
 - Impact Downstream vs Benefit
- Alternative – Dredging



Clinton Lake

- Basic Information
- Sediment Status
- Corps' Role
- Does not operate in a vacuum!
 - ▶ USACE District, Division, HQ
 - ▶ Private Interest Groups
 - ▶ Water Supply Districts
 - ▶ State Agencies
 - ▶ U.S. Bureau of Reclamation
 - ▶ U.S. Environmental Protection Agency
 - ▶ National Weather Service
 - ▶ U.S. Fish and Wildlife Service
 - ▶ Emergency Responders
 - ▶ and *many* others. . .



Questions?



Thanks for your interest in keeping Kansas' waters clean!

