

RESSED – An Online Reservoir Sedimentation Survey Database for the United States

BACKGROUND: The U.S. Geological Survey (USGS) and Natural Resources Conservation Service have created the **Reservoir Sedimentation Survey (RESSED)** website and database (<http://ida.water.usgs.gov/RESSED/>). Sponsored by the Subcommittee on Sedimentation, Advisory Committee on Water Information (<http://acwi.gov/sos/index.html>), the RESSED database is the most comprehensive compilation of data from reservoir bathymetric and dry-basin surveys in the U.S. RESSED data can be useful for a number of purposes, including calculating changes in reservoir storage characteristics, quantifying sediment budgets, and estimating erosion rates in a reservoir's watershed.

As of 2009, the RESSED database contained results from 6,618 surveys at 1,823 reservoirs in the conterminous United States and one in Puerto Rico (in Feb. 2011 ~300 additional Army Corps of Engineer-owned reservoirs were added to the database). Those data span the period 1755-1993. Ninety-five percent of the surveys were performed between 1930-90. Few surveys are available from the last 25 years. The average date of the reservoir surveys is 1960. Reservoir surface areas range from sub-hectare-scale farm ponds to 658 km² Lake Powell. California leads all States with a total of 214 reservoirs in RESSED. No data currently reside in RESSED for Alaska, Delaware, Florida, Hawaii, Rhode Island, Vermont, or the District of Columbia.

PROGRESS: Starting in FY2010, a collaborative effort between the U.S. Army Corps of Engineers and the USGS to enhance RESSED has resulted in:

1. Porting the Access database to the flexible and web-friendly Filemaker Pro environment,
2. Providing update and revision capabilities through a web-browser (in alpha testing), and
3. Producing 'standard' and custom reports for the Corps.

PROBLEM: By summer 2011, all Corps RESSED enhancement funds for the current effort will expended. No means for programmatic support for the RESSED project has been identified. The prospect of this effort coming to a halt would be unfortunate and undesirable for a number of reasons, including:

1. The RESSED database provides the only such national view, albeit incomplete, of the rates at which reservoirs are losing capacity to store water for a number of purposes including public and industrial water supply, irrigation, flood control, and navigation.
2. Based on an extrapolation of RESSED data to 2010, almost a quarter of RESSED reservoirs were predicted to have lost 100% of storage capacity (figure 1). Use of Google Earth indicates that some RESSED reservoirs have completely filled with sediment. Although this extrapolation should not be accepted as completely reliable, the trend is disturbing and should be of concern to those responsible for managing water resources.

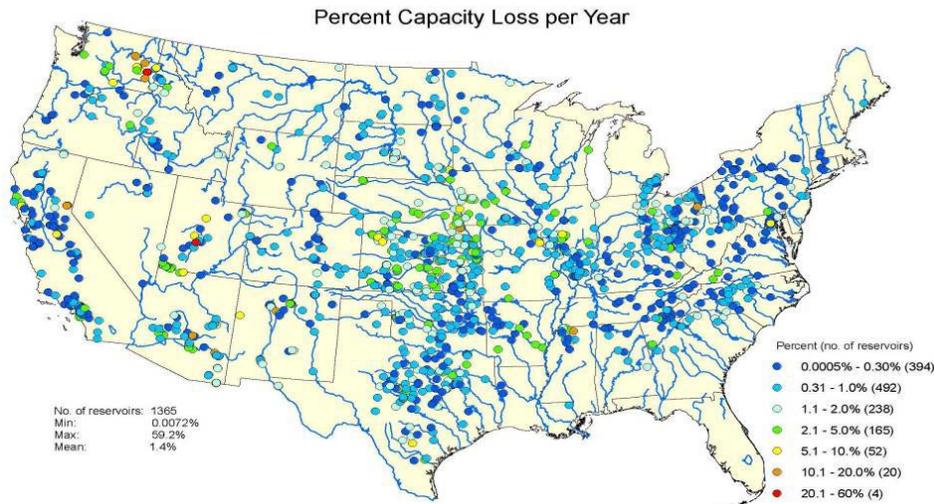
NEED: The RESSED database development team has indicated that a RESSED project funded at \$1 million over a 4-year period (or, a smaller sum a proportionally longer period) is needed to address a number of deficiencies associated with historical RESSED data; render the application fully supportable on-line; and to construct a RESSED for the 21st century that takes advantage of the huge number of reservoir surveys 'just waiting' to be included in a national reservoir sedimentation database.

Figure 1: Extrapolated capacity losses for RESSED reservoirs (July 14, 2010, for ACWI)

See: http://ida.water.usgs.gov/ressed/references/Gray_ressed_9fisc_header_3_4_2010.pdf

This provisional/subject to revision handout supplements the RESSED Presentation to ACWI, 7/14/2010.

- Average year of last bathymetric reservoir survey in RESSED (last year of multiple surveys)– 1960
- Lower plot developed by extrapolating the long-term mean annual capacity-change rate to 2010
- USGS doubts veracity of lower plot, surmising that the “truth” is somewhere between the two



Extrapolated to 2010 Total % Capacity Loss

