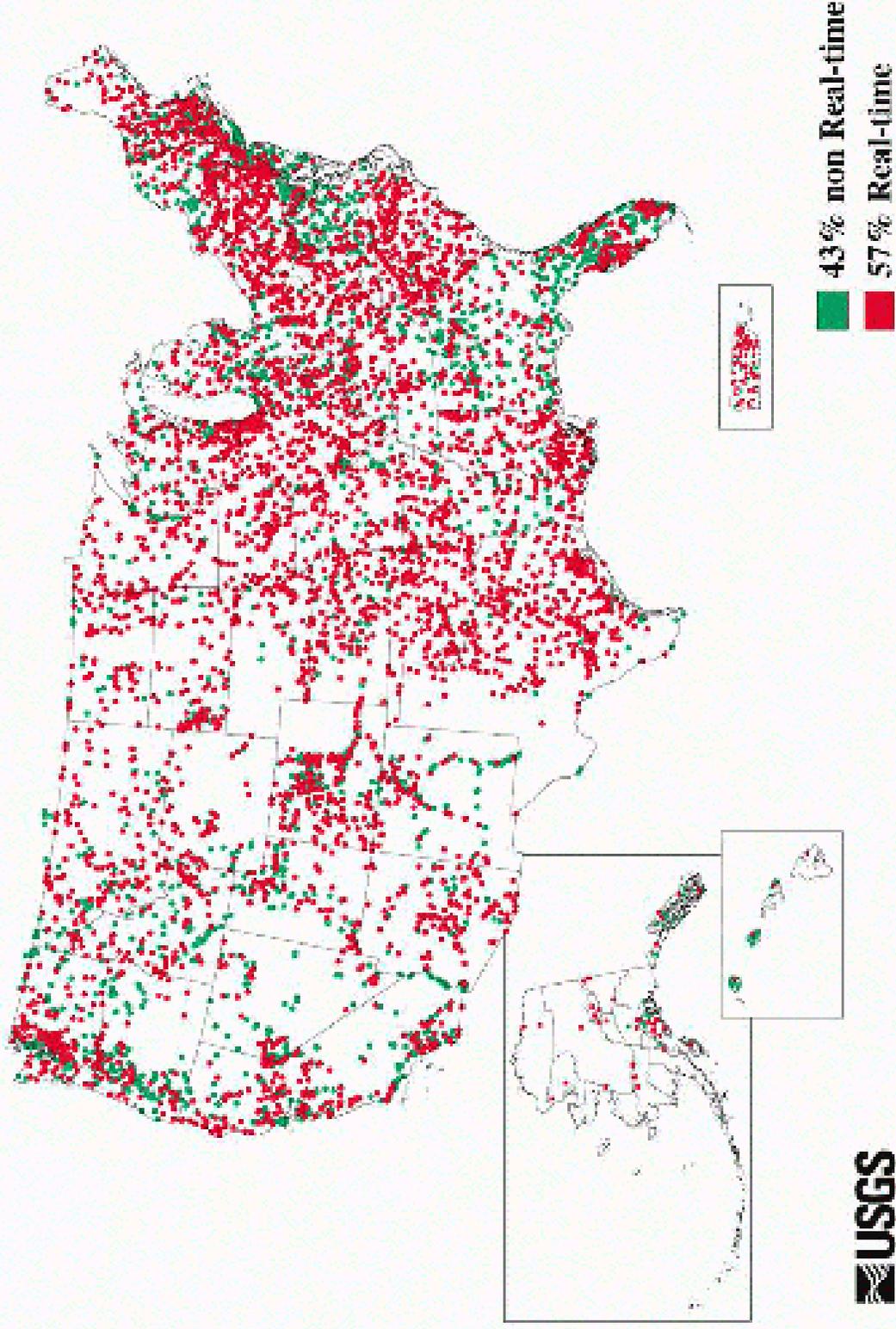


The Streamgaging Network of the U.S. Geological Survey

- Guiding principles
- Funding
- What is a gage?
- Expanding uses
- New Products
- Network evaluation
- Major issues

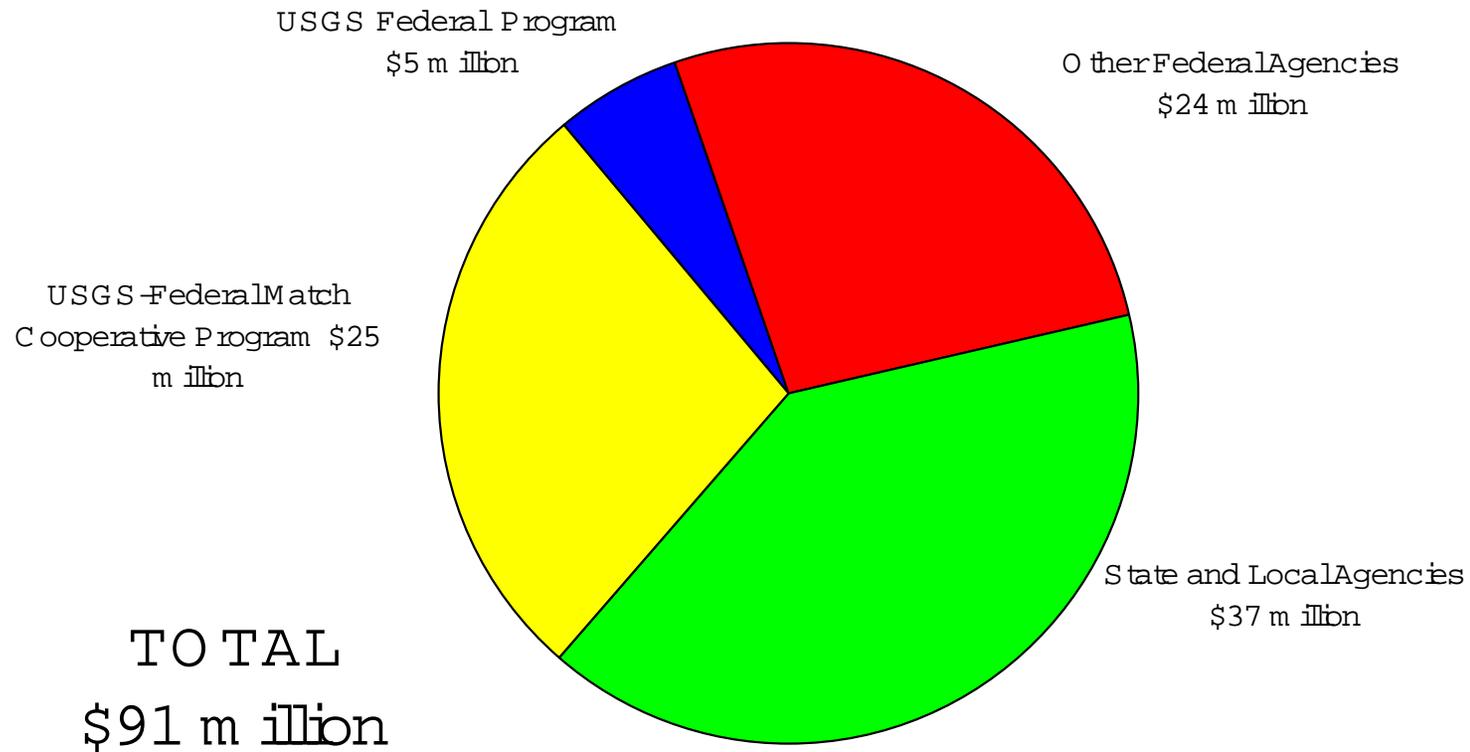
USGS Streamgaging Network



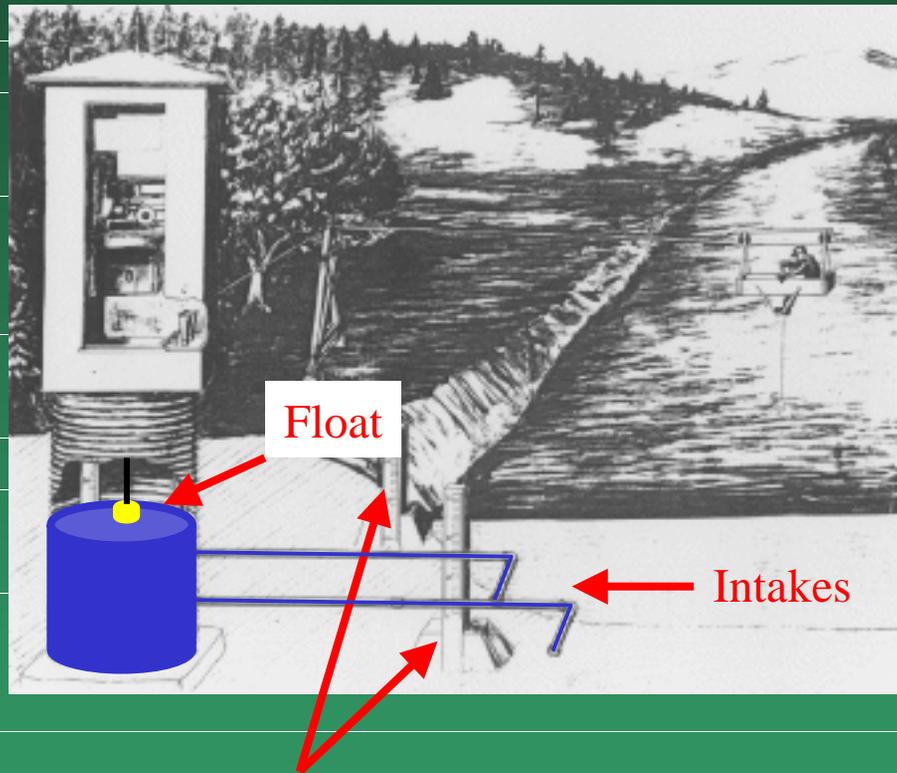
Guiding Principles of the Streamgaging Network

- Many partners contribute funding
- All data are freely available
- USGS operates the network on behalf of all

Fiscal Year 1999 Funding Sources for USGS Streamgaging Program



River level is measured using STILLING WELLS



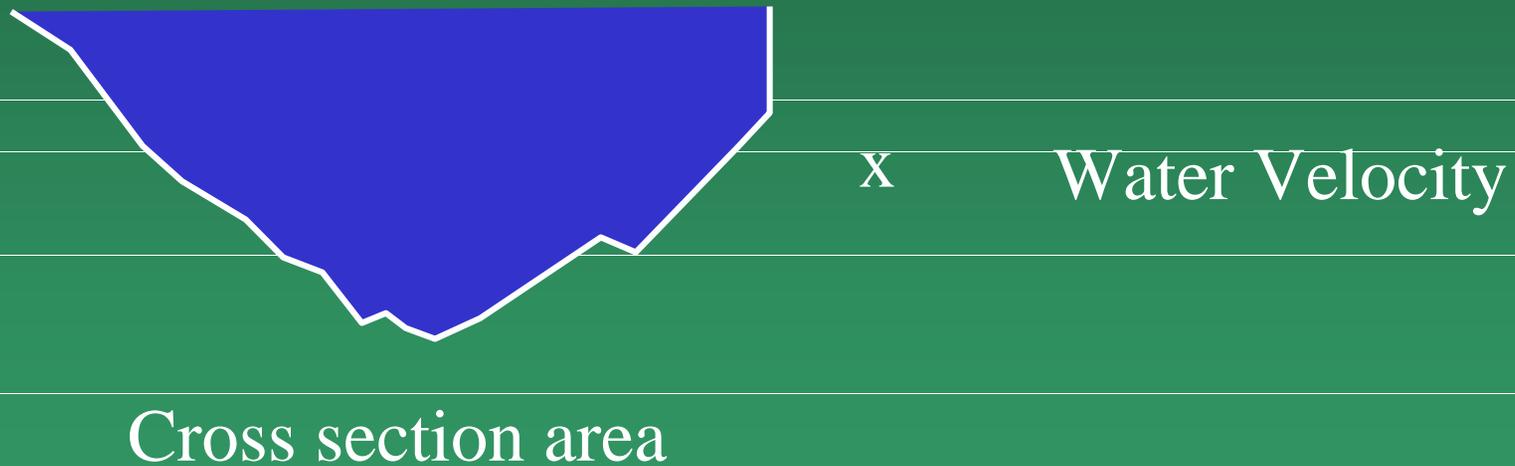
Outside reference gages



San Francisquito Cr. at
Stanford, CA

DISCHARGE IS USUALLY MEASURED USING THE VELOCITY-AREA METHOD

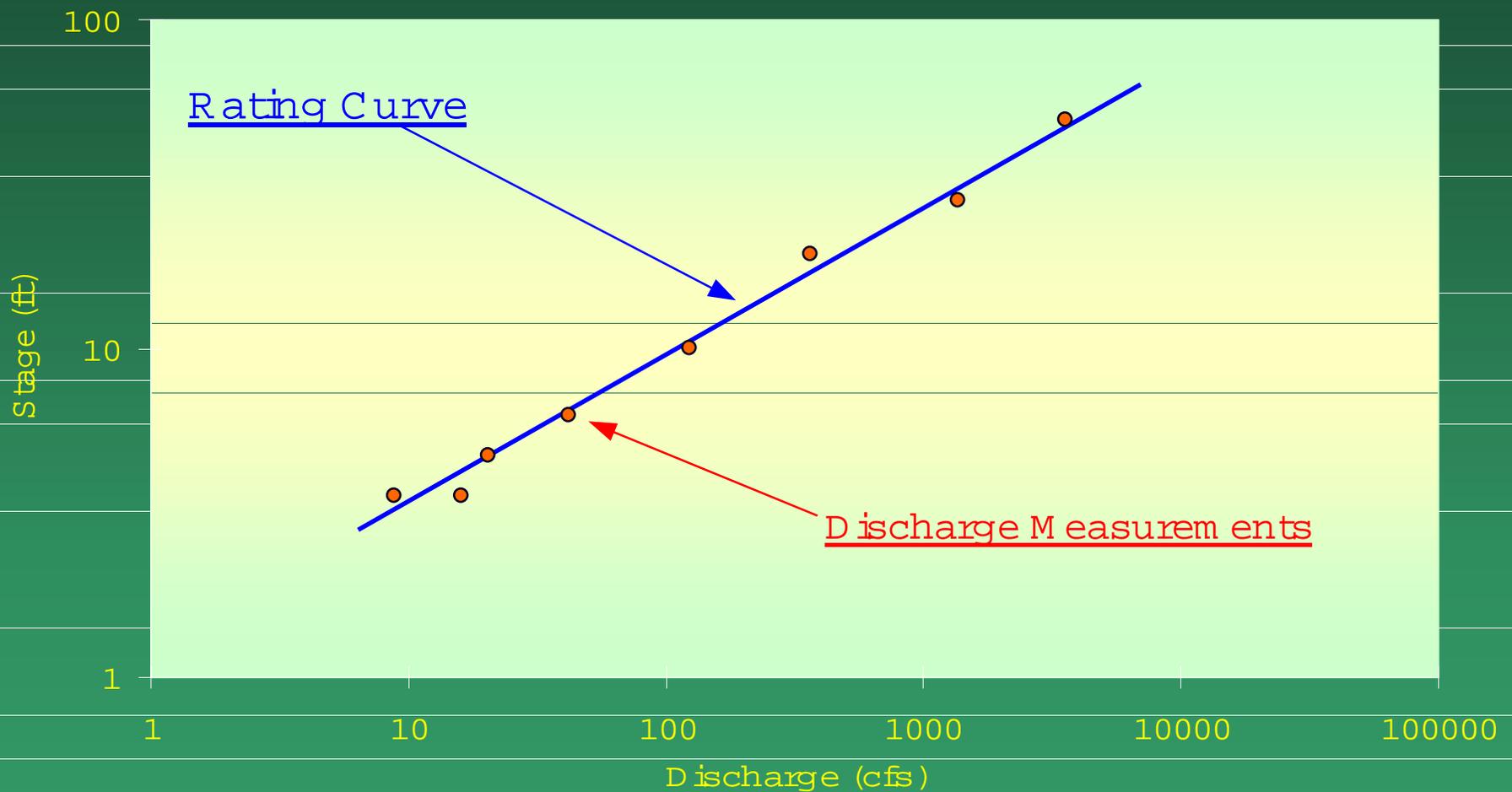
Discharge = (Area of water in cross section) x (Water velocity)



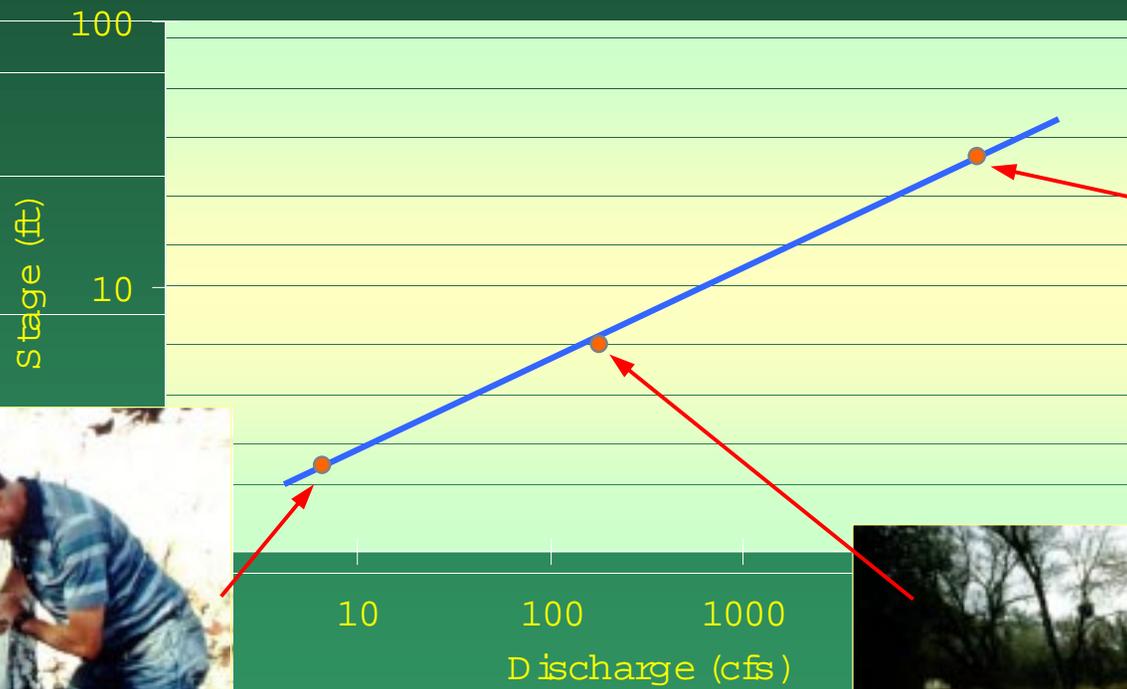
Water velocity in each sub-section estimated using a current meter to measure water velocity at selected locations



Discharge measurements are used to develop rating curves



Discharge must be measured at all stages



Expanding Uses of Streamflow Information

- Resource Appraisal and Allocation
 - Water-supply planning
 - Interstate compacts
- Design
 - Reservoirs
 - Bridges, roads, culverts
 - Treatment plants

Expanding Uses of Streamflow Information

- Flood-Hazard Planning
 - Flood-frequency analysis
 - Flood-plain zoning
- Operations
 - Multipurpose reservoirs
 - Power production
 - Navigation

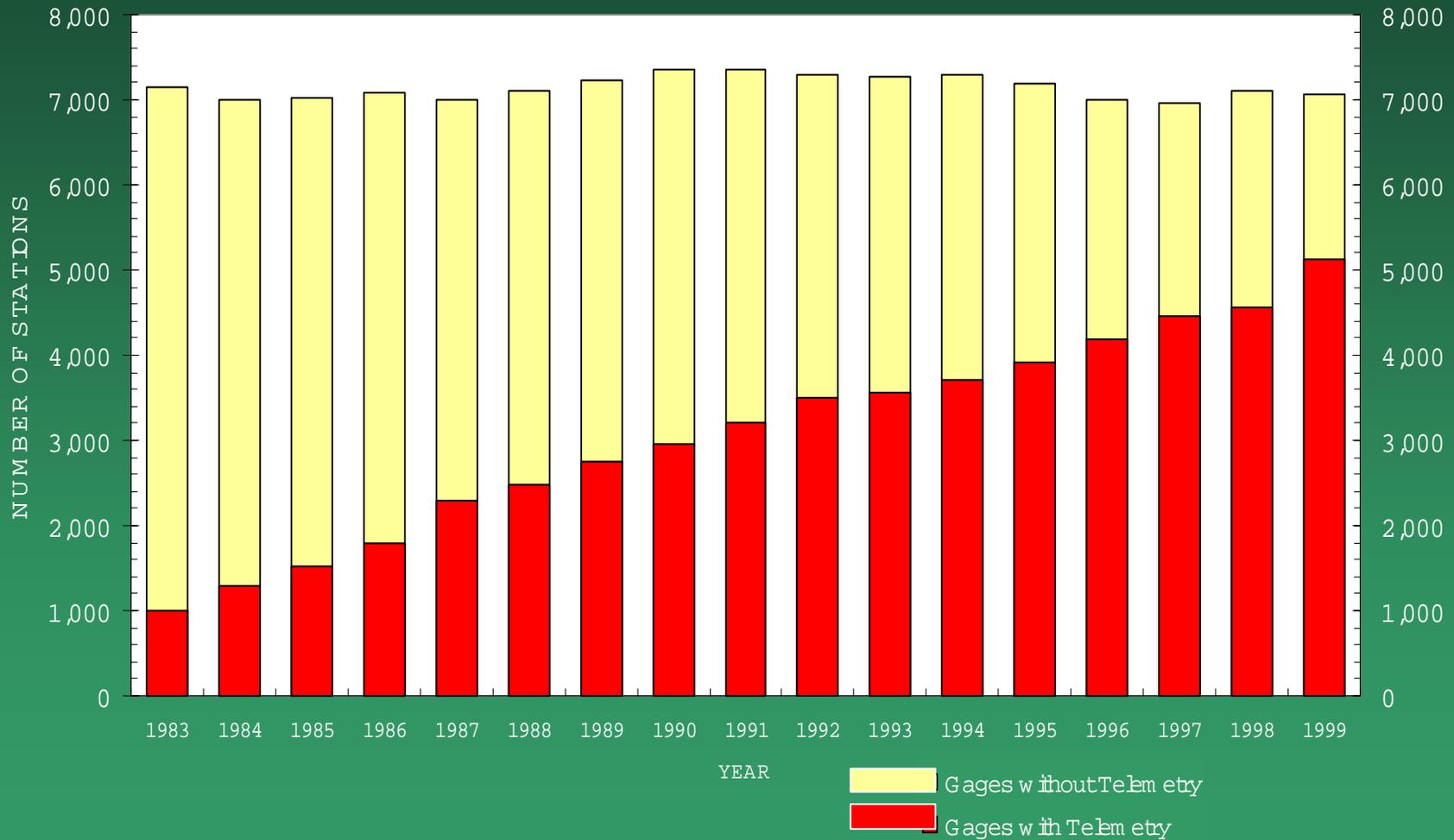
Expanding Uses of Streamflow Information

- Water Quality
 - Water-quality conditions and trends
 - Contaminant transport
 - Total Maximum Daily Load
- Instream Conditions
 - Habitat studies
 - Instream-flow requirements
 - Recreation

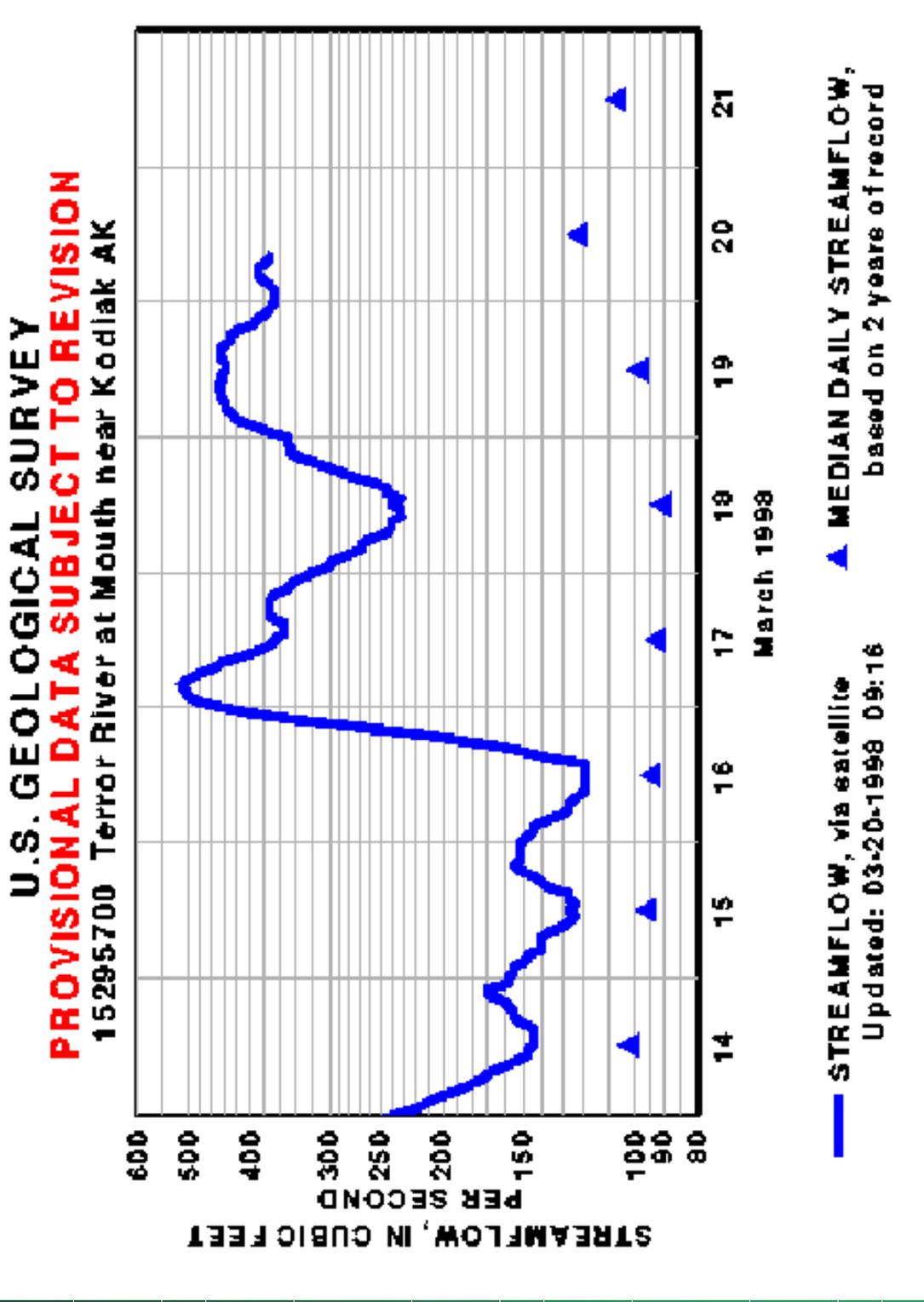
Expanding Uses of Streamflow Information

- Flood-Hazard Warnings
 - Preparedness
 - Mitigation
 - Response
 - Recovery
- Understanding changes in streamflow characteristics due to:
 - Alterations in land and water use
 - Climate variability and change

USGS Streamgaging Stations

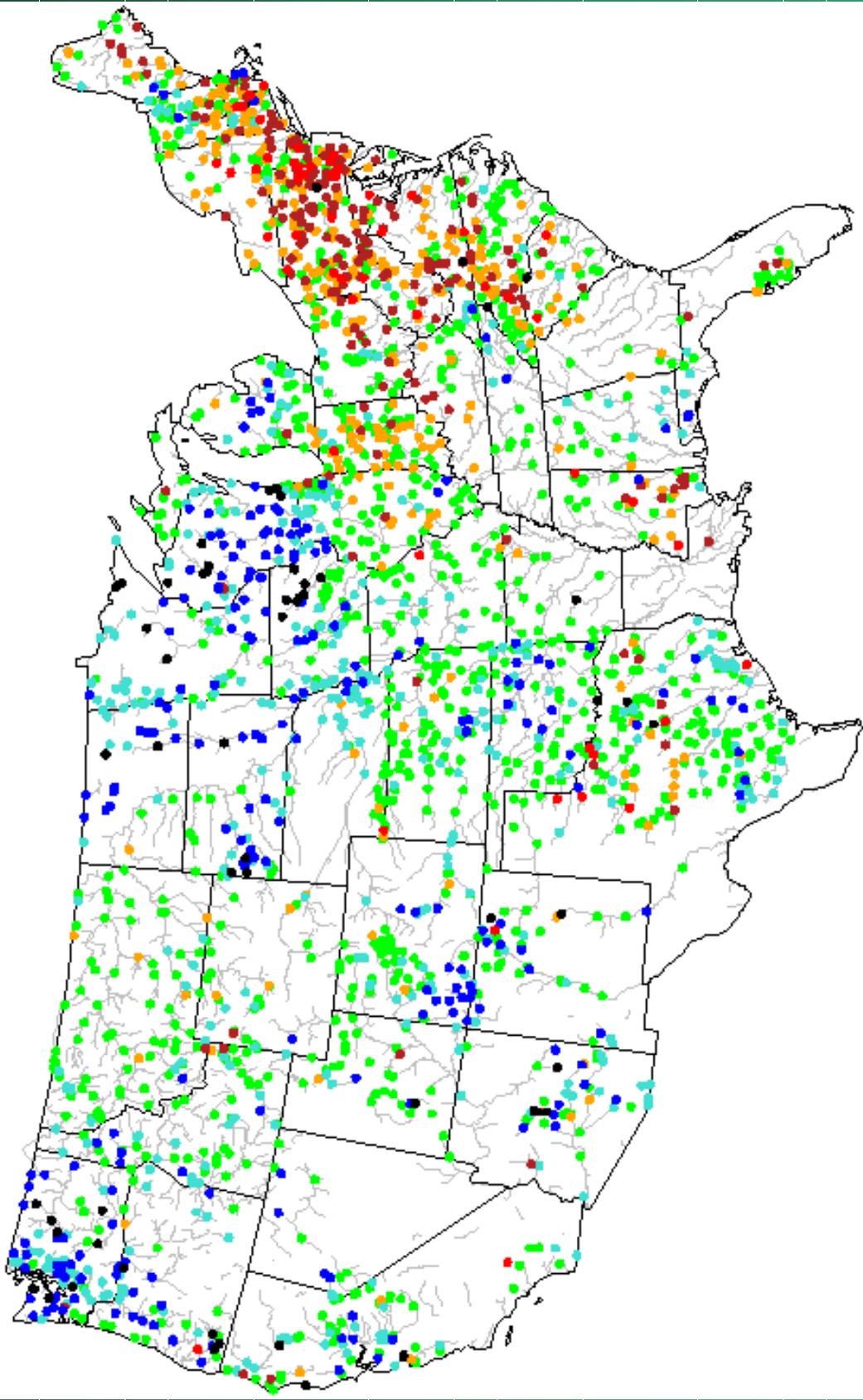


Real-Time Data Delivery

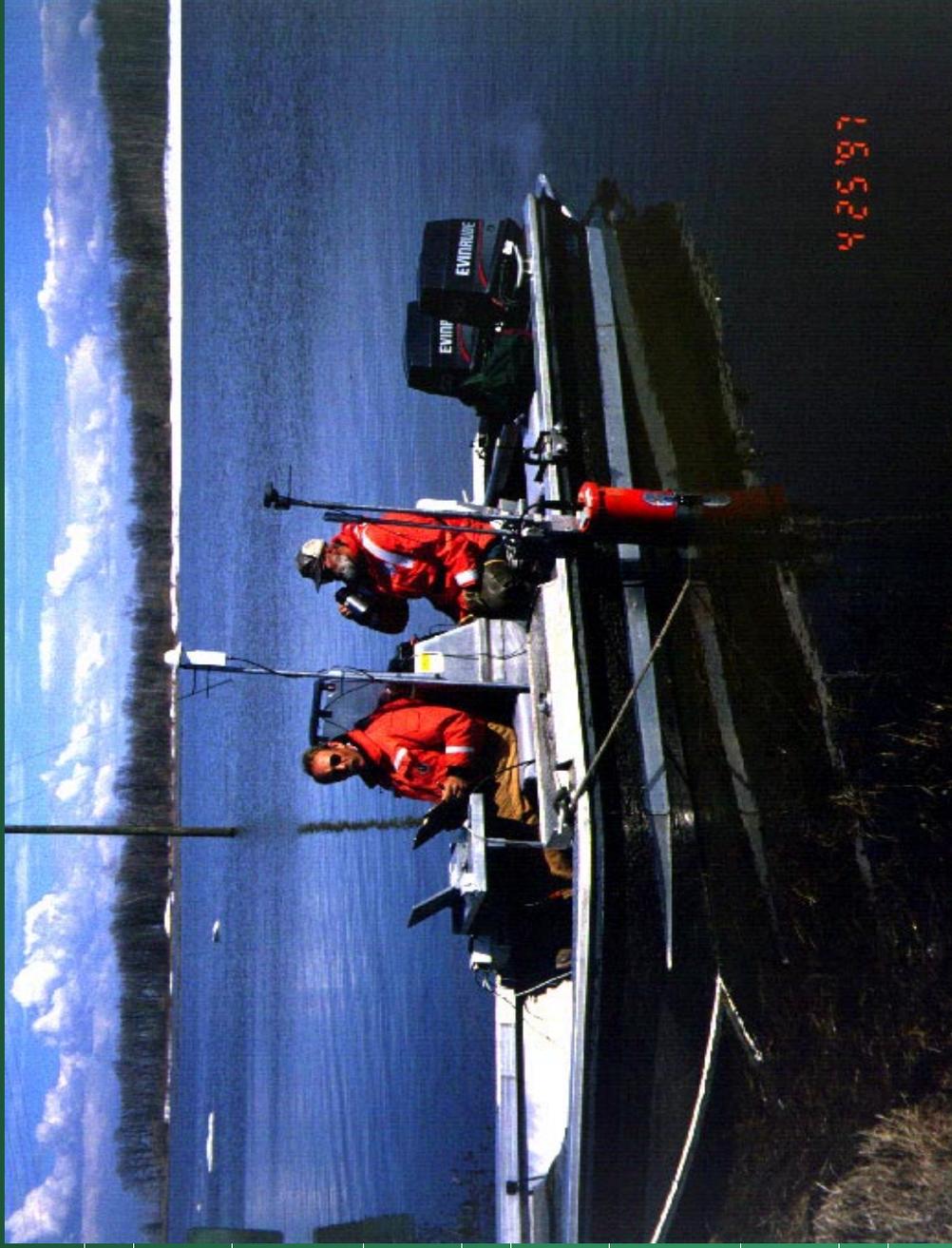


National Streamflow Conditions Map

Monday July 26, 1999 11:03 PM CT



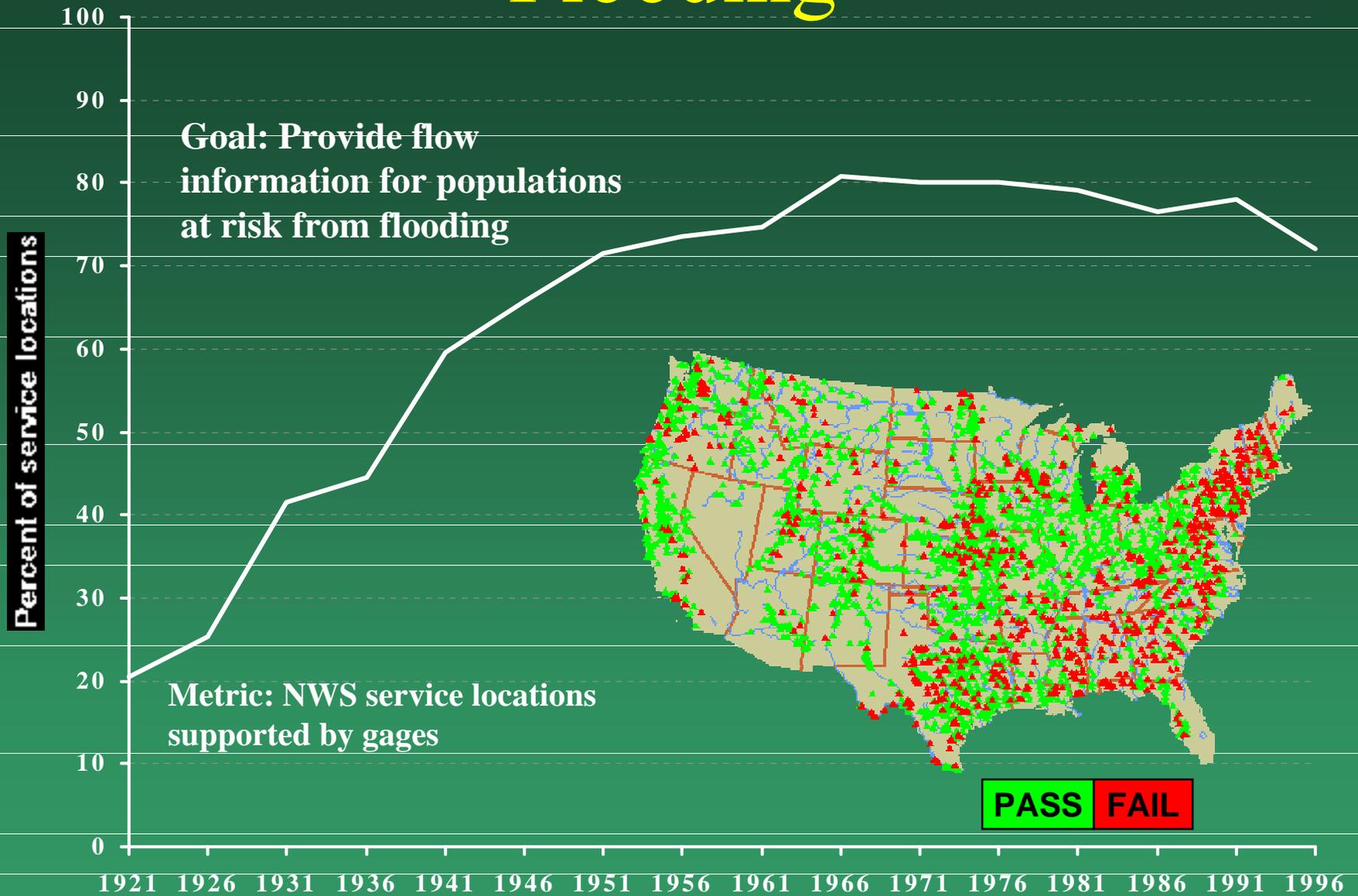
Using New Technology for Streamflow Measurements



A New Evaluation of the USGS Streamgaging Network



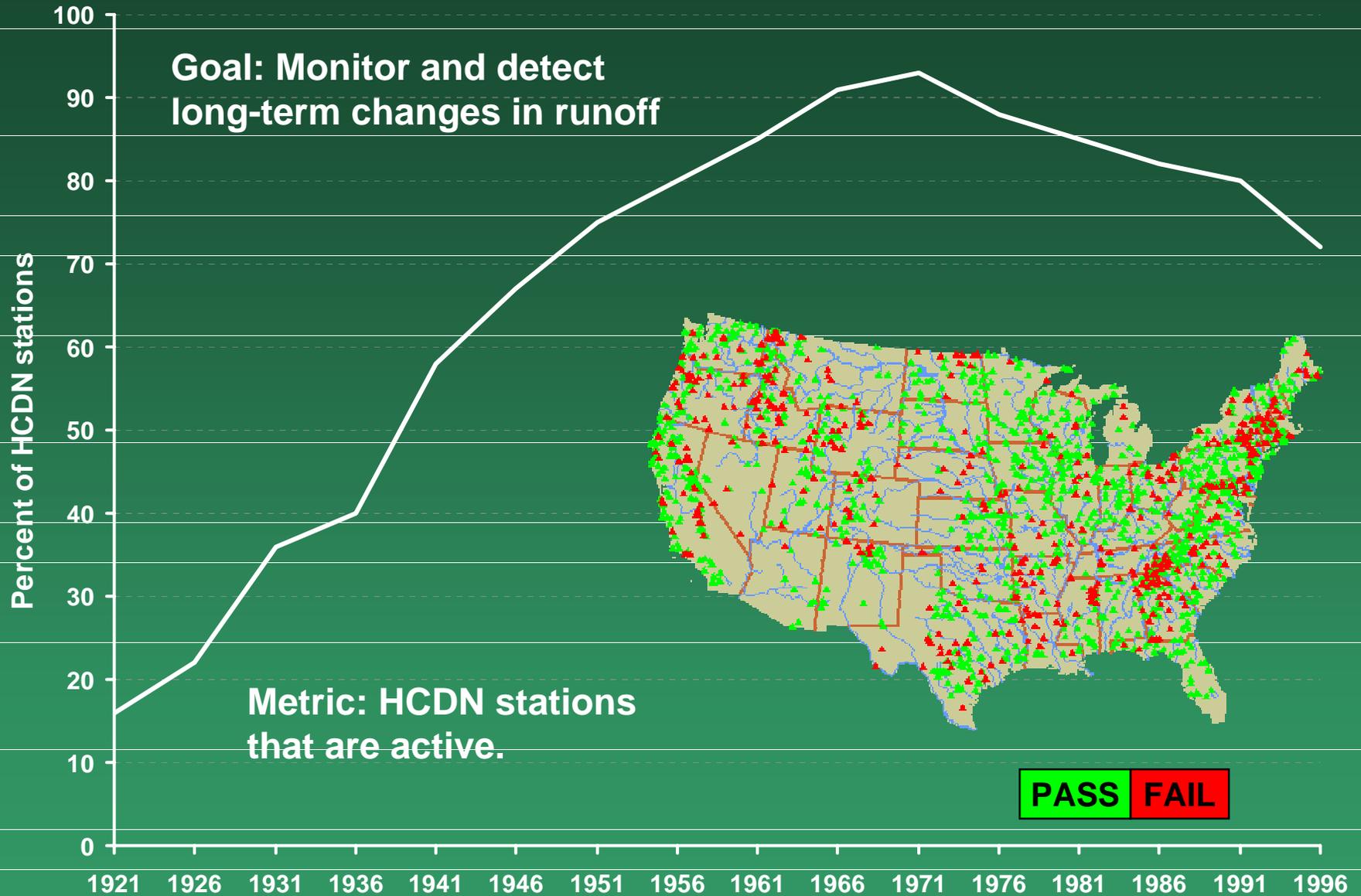
Flooding



Federal Interests Evaluated

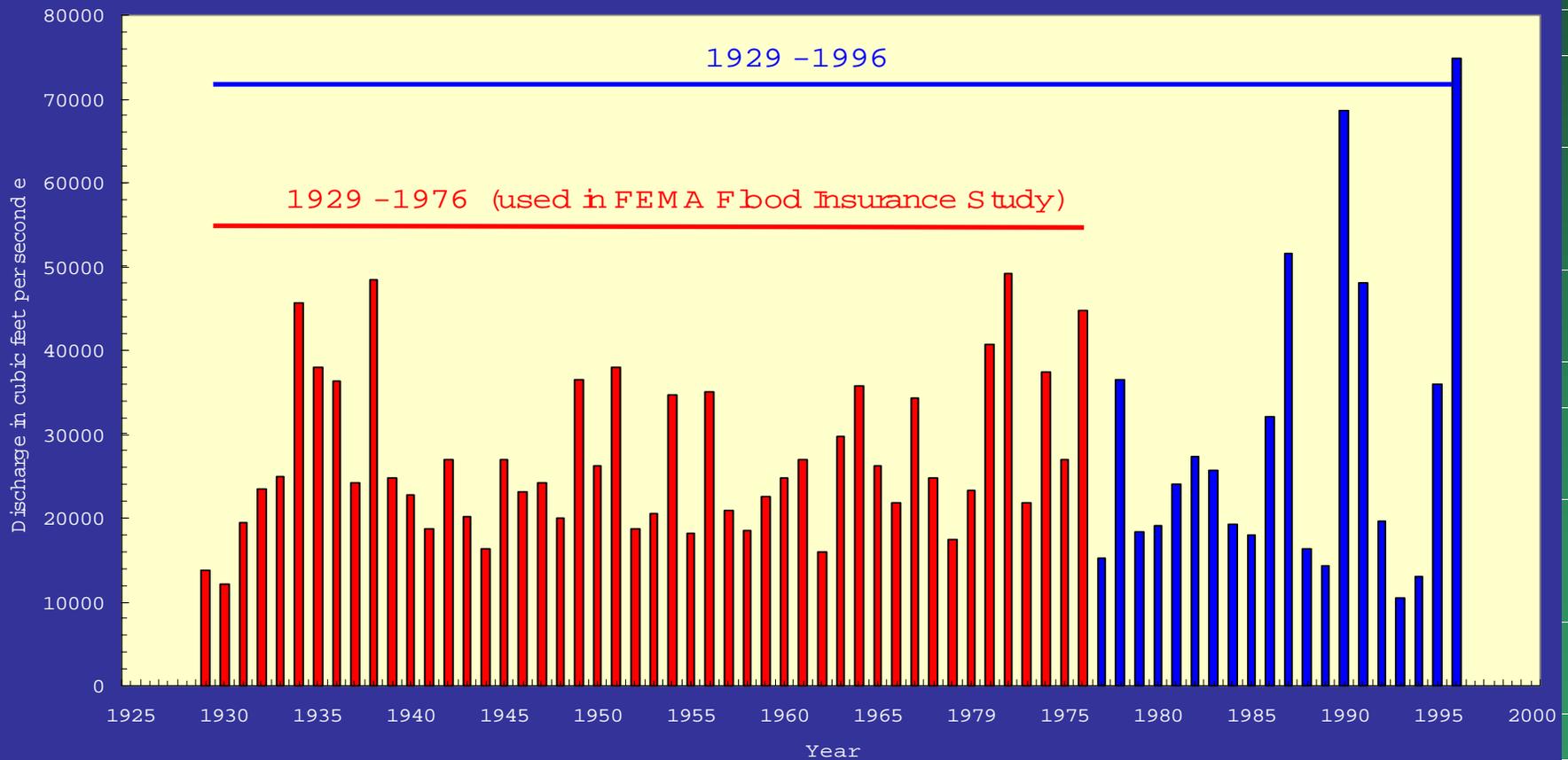
- Interstate and international transfers
- Water budgets
- Flooding
- Water quality
- Long-term changes

Hydro-Climatic Data Network

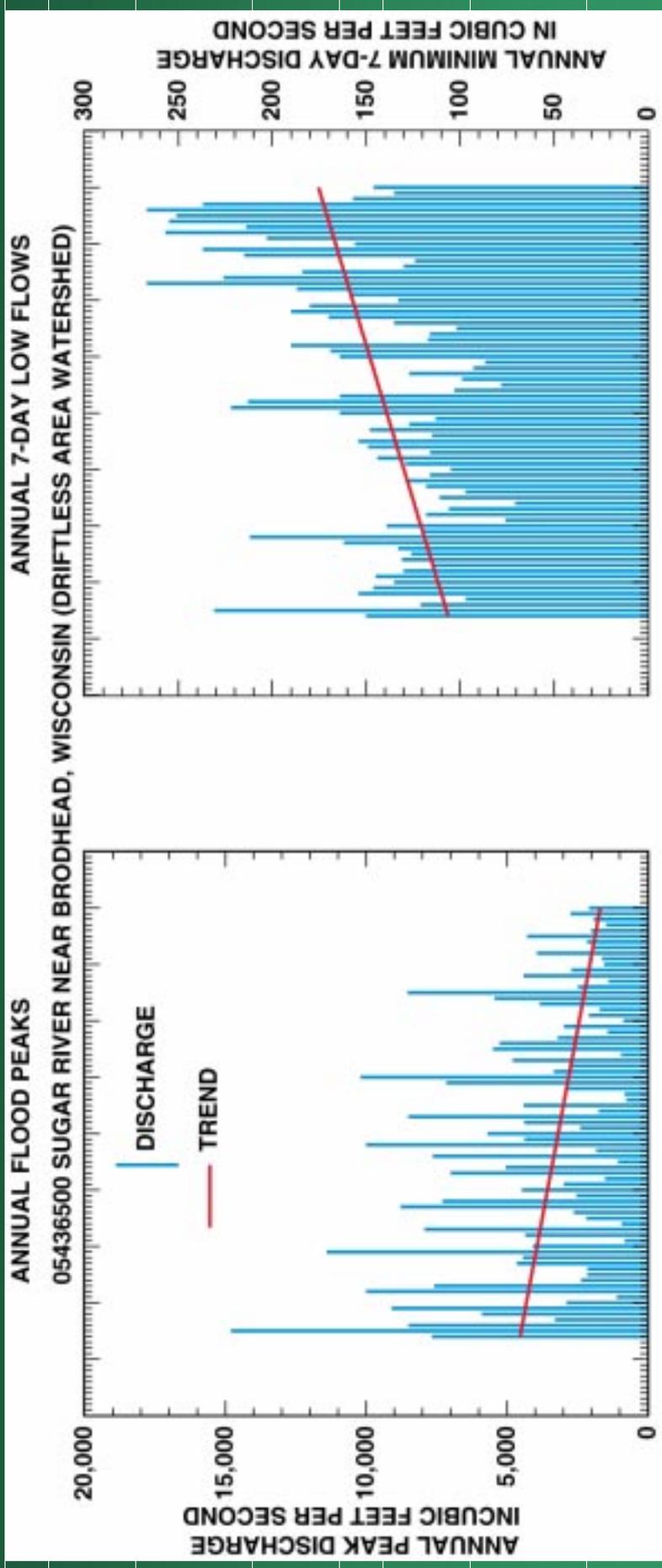


Changes in Flood Estimates

Chehalis River near Grand Mound, WA
100-Year Flood Computed for Two Different Periods

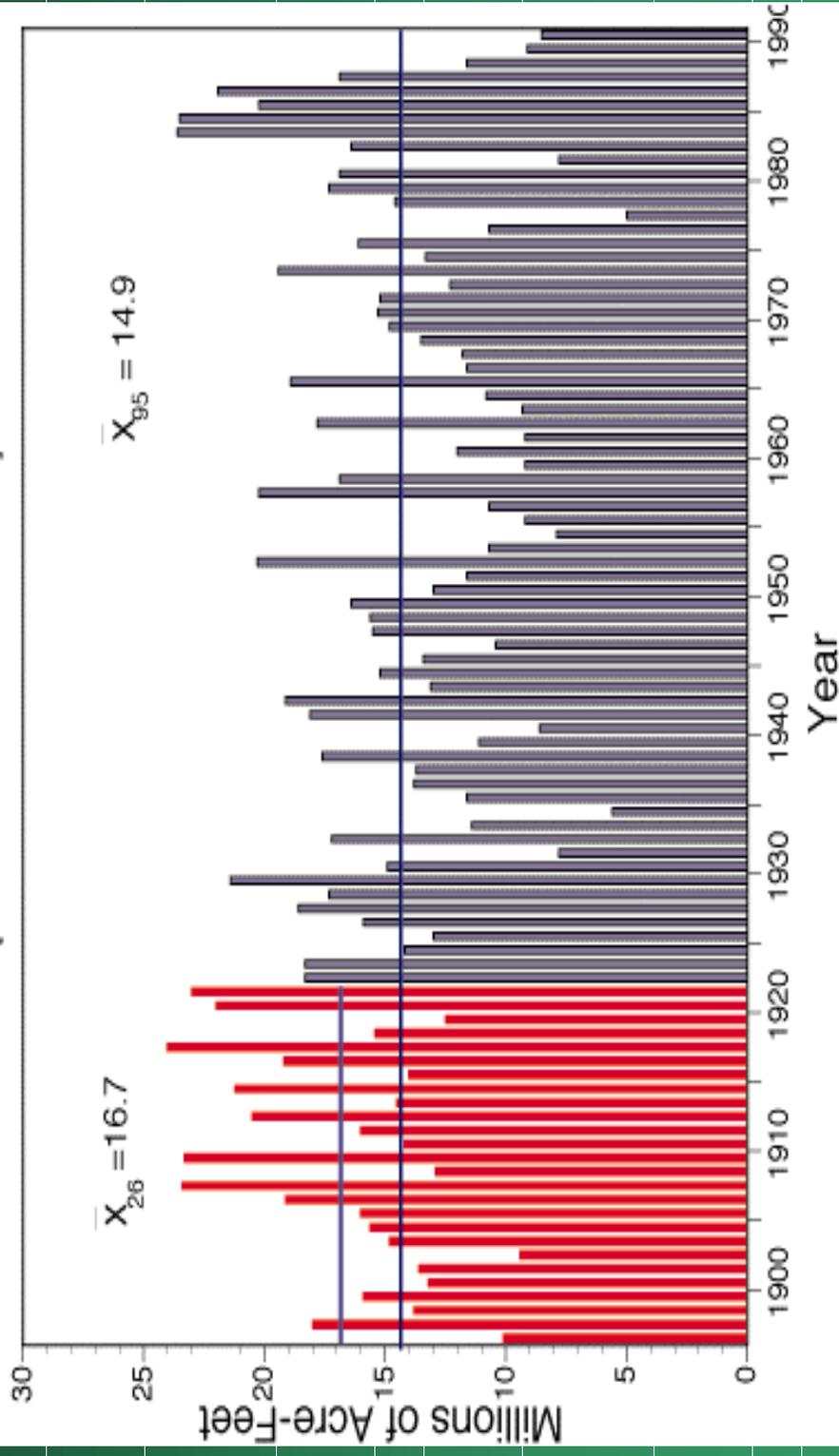


Trends in High and Low Flows

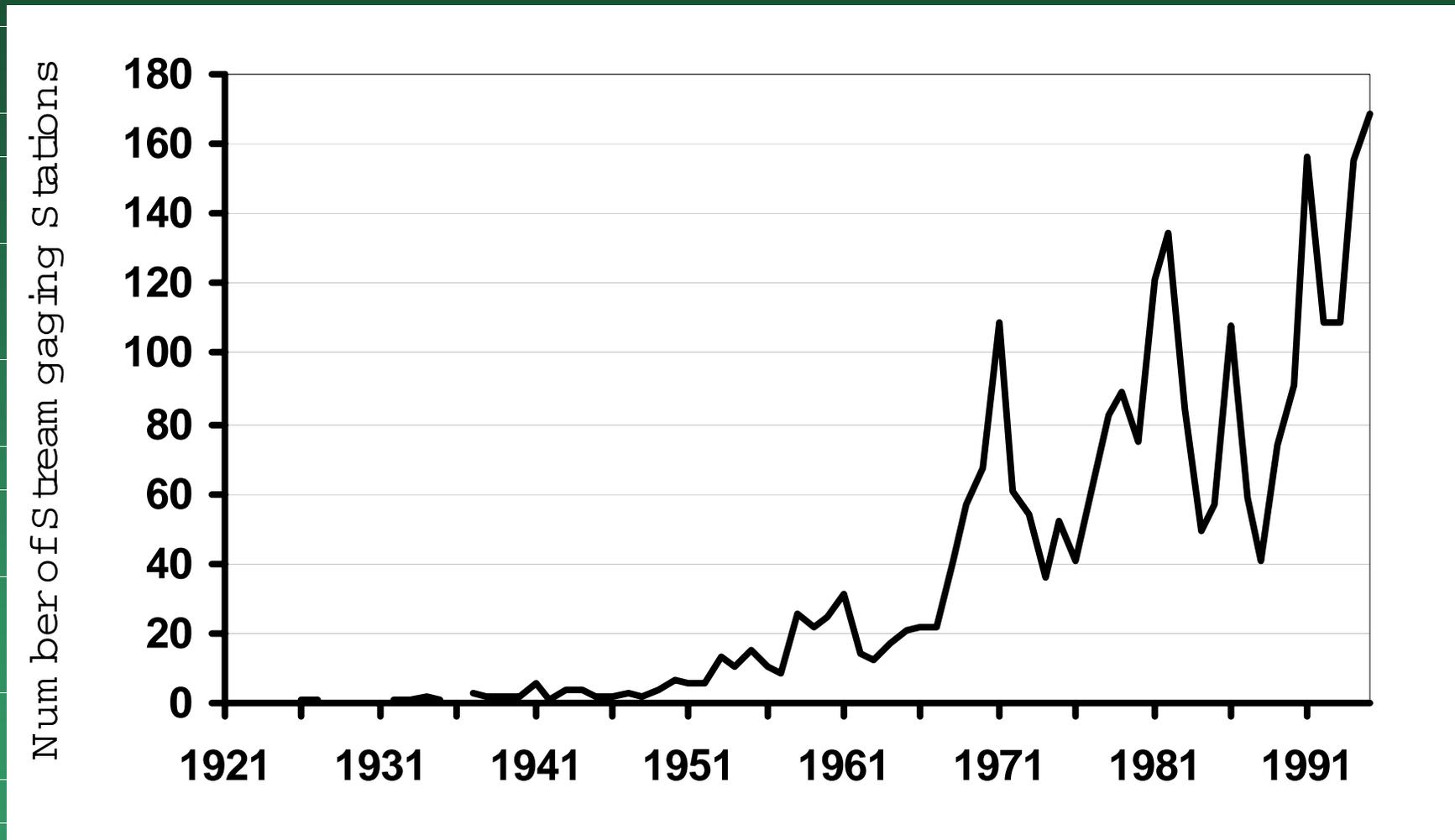


Overallocation

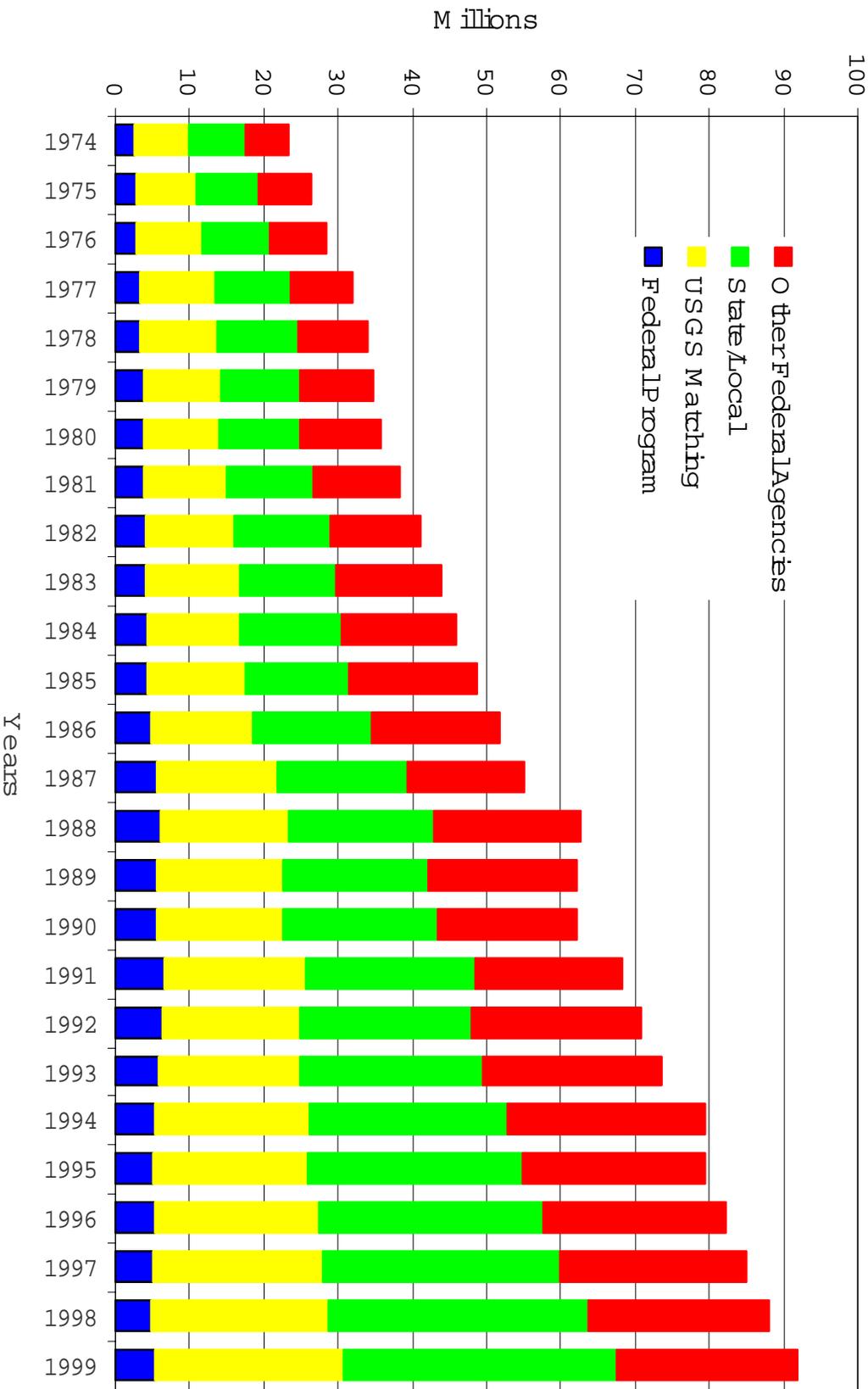
Colorado River at Lees Ferry
[Period of Record 1896-1990]



Annual Loss of Long-Term Gages



Funding Sources



What are the Issues?

- Network's ability to meet long-standing Federal goals has declined because of:
 - an absolute loss of stations
 - and our declining ability to continue operating high-priority stations when partners decide to discontinue funding
- New issues and new technology have increased the demand for streamflow information.

What are the Issues? (2)

- New technologies are needed to:
 - Improve reliability
 - Decrease costs
 - Decrease uncertainty