



Drought Management Plan

October 11, 2007

Gene Gibson
River Operations

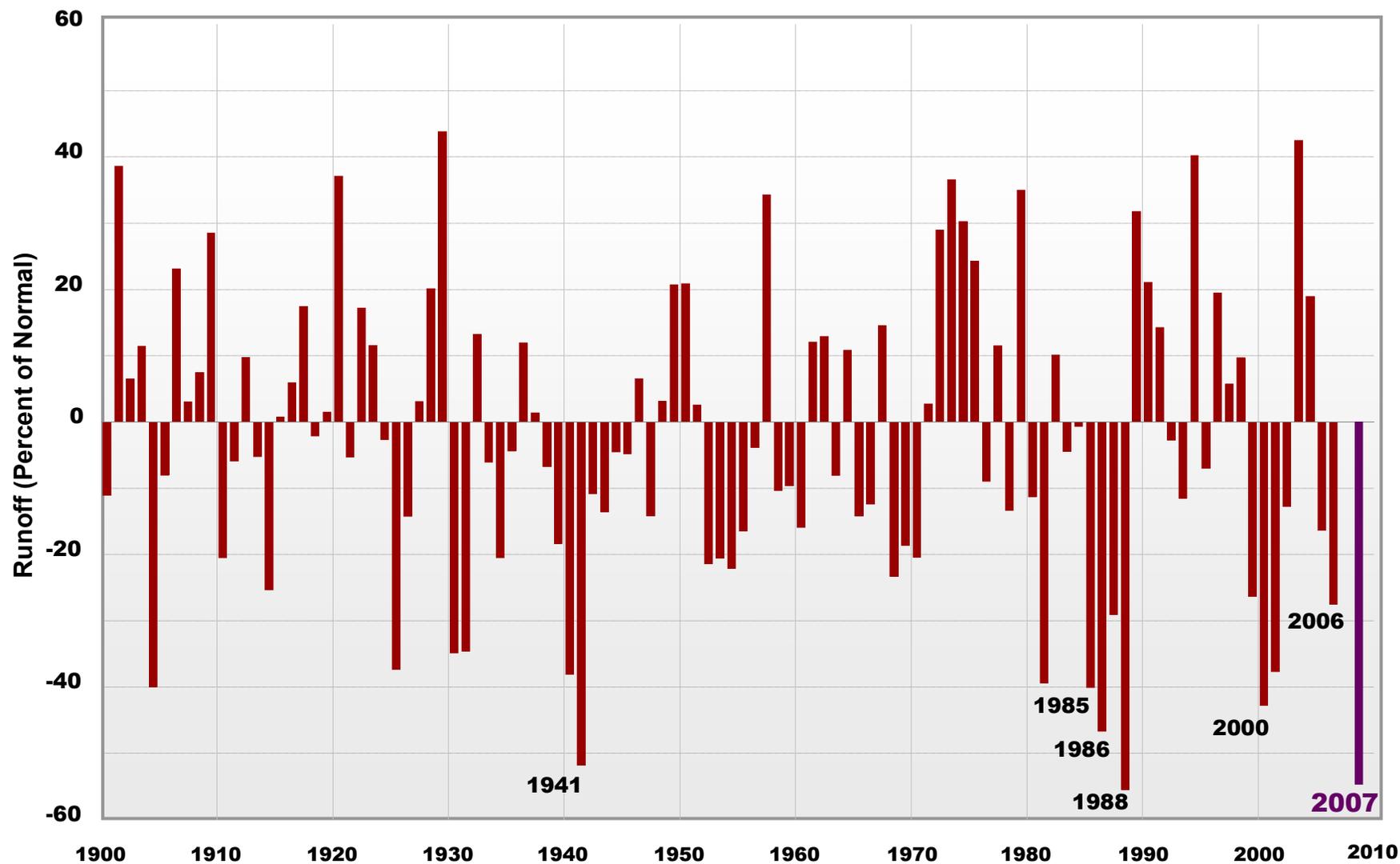
Outline

- Background
- Defining drought
- Overview of Drought Management Plan
- Comments/questions and answers

Background

- Reservoir Operations Study completed
 - Environmental Impact Statement/Record of Decision—
TVA to evaluate need for Drought Management Plan
- Regional Resource Stewardship Council—
recommended TVA facilitate Tennessee Valley
Water Partnership

Annual runoff variability (Eastern Valley)

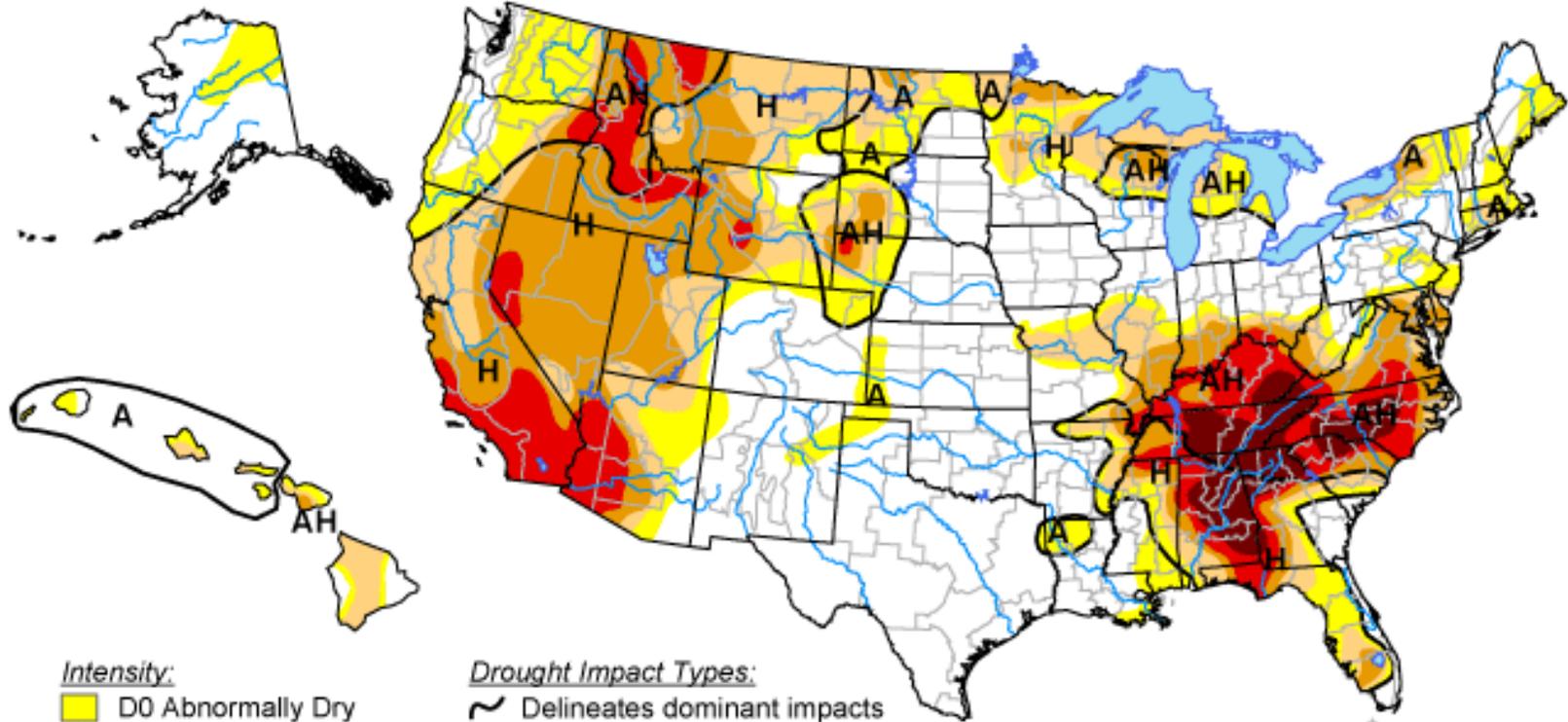


Defining drought

- National Drought Index
- For TVA:
 - System inflow
 - Tributary storage

U.S. Drought Monitor

October 2, 2007
Valid 8 a.m. EDT



Intensity:

-  D0 Abnormally Dry
-  D1 Drought - Moderate
-  D2 Drought - Severe
-  D3 Drought - Extreme
-  D4 Drought - Exceptional

Drought Impact Types:

-  Delineates dominant impacts
- A = Agricultural (crops, pastures, grasslands)
- H = Hydrological (water)

The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. See accompanying text summary for forecast statements.

<http://drought.unl.edu/dm>



Released Thursday, October 4, 2007

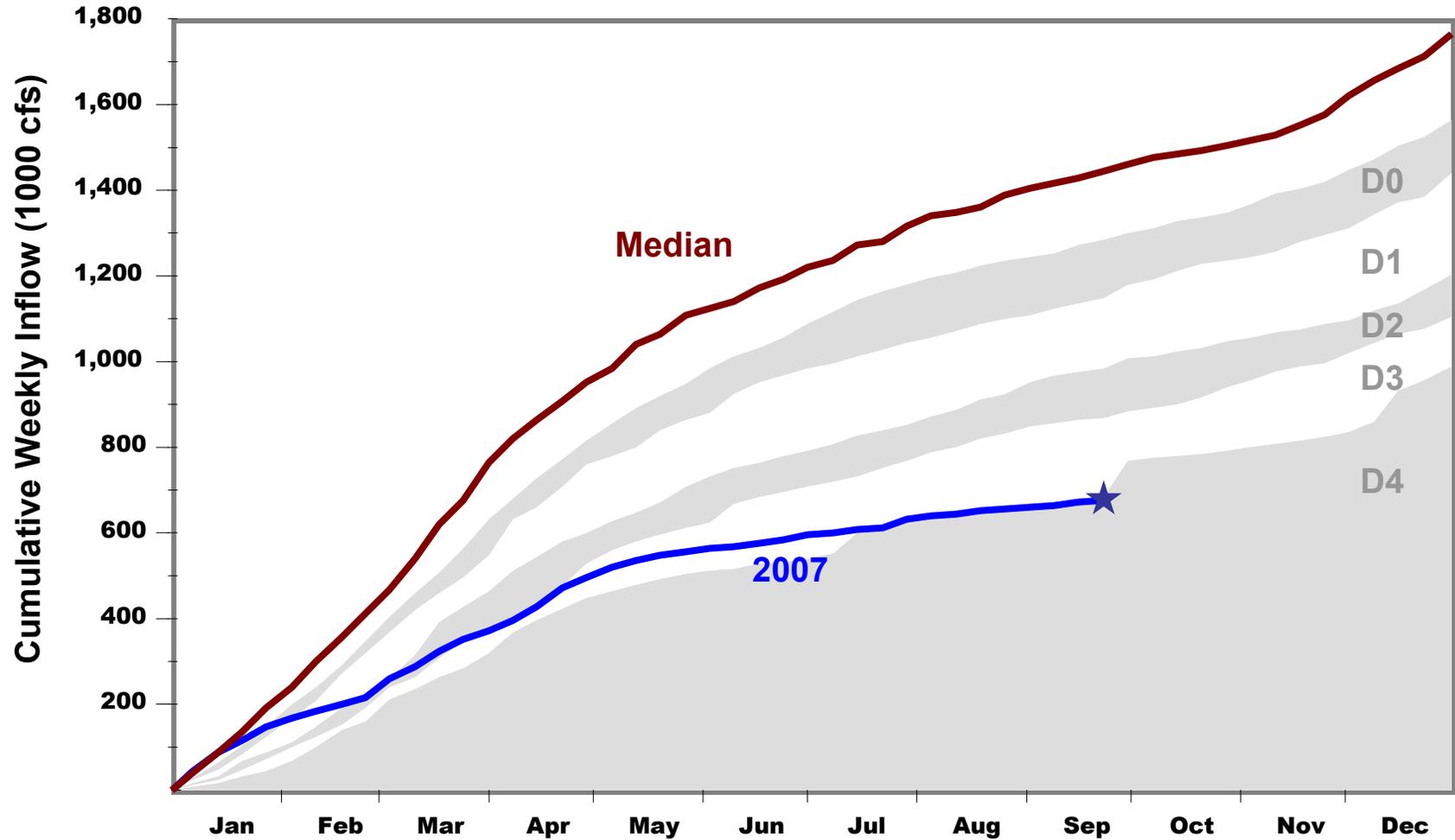
Author: Jay Lawrimore/Liz Love-Brotak, NOAA/NESDIS/NCDC



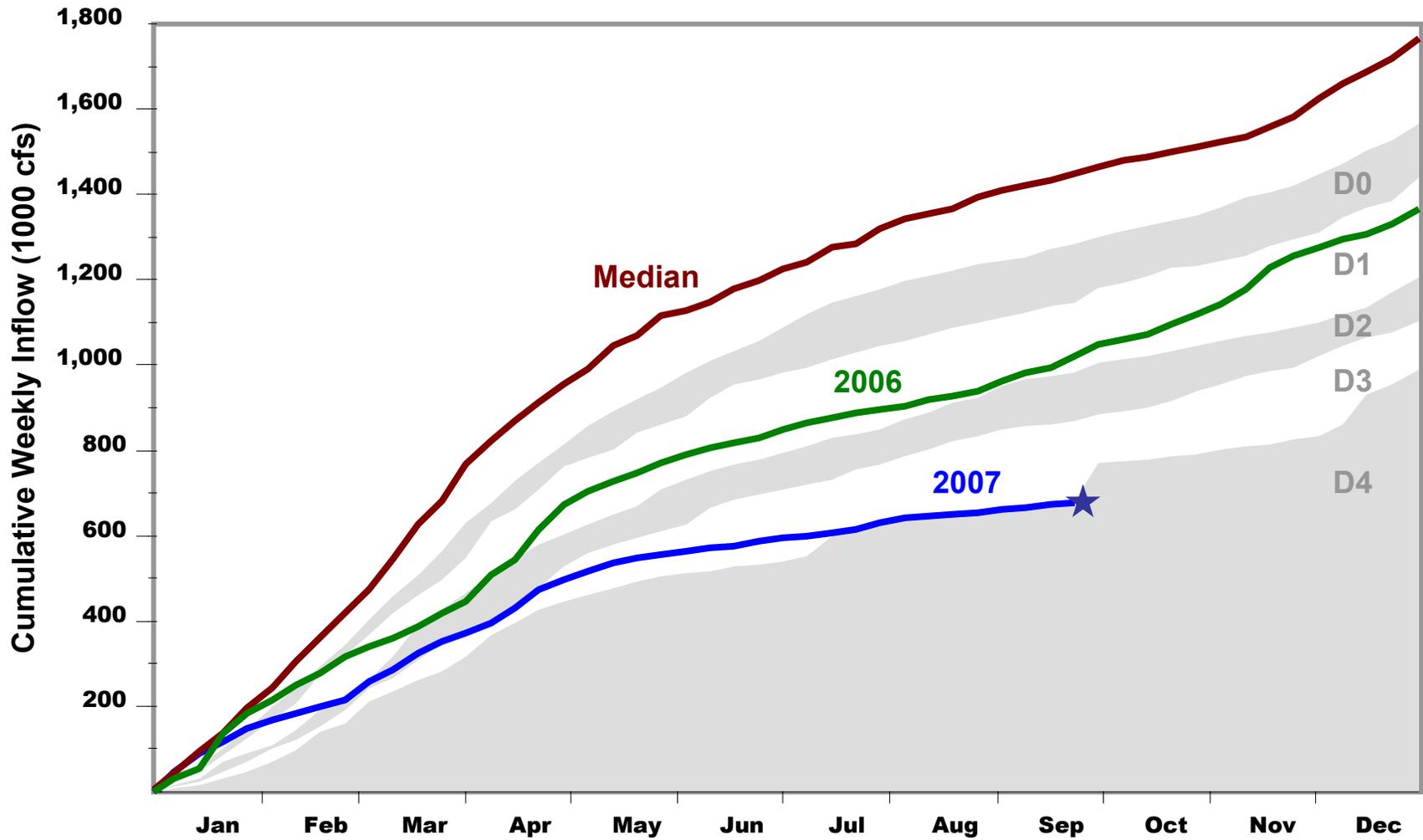
Drought categories and impacts

Category	Description	Possible Impacts
D0	Abnormally Dry	Going into drought: short term dryness slowing planting, growth of crops or pastures; fire risk above average. Coming out of drought: some lingering water deficits; pastures or crops not fully recovered.
D1	Moderate	Some damage to crops, pastures; fire risk high; streams, reservoirs, or wells low, some water shortages developing or imminent, voluntary water-use restrictions requested.
D2	Severe	Crop or pasture losses likely; fire risk very high; water shortages common; water restrictions imposed.
D3	Extreme	Major crop/pasture losses; extreme fire danger; widespread water shortages or restrictions.
D4	Exceptional	Exceptional and widespread crop/pasture losses; exceptional fire risk; shortages of water in reservoirs, streams, and wells, creating water emergencies.

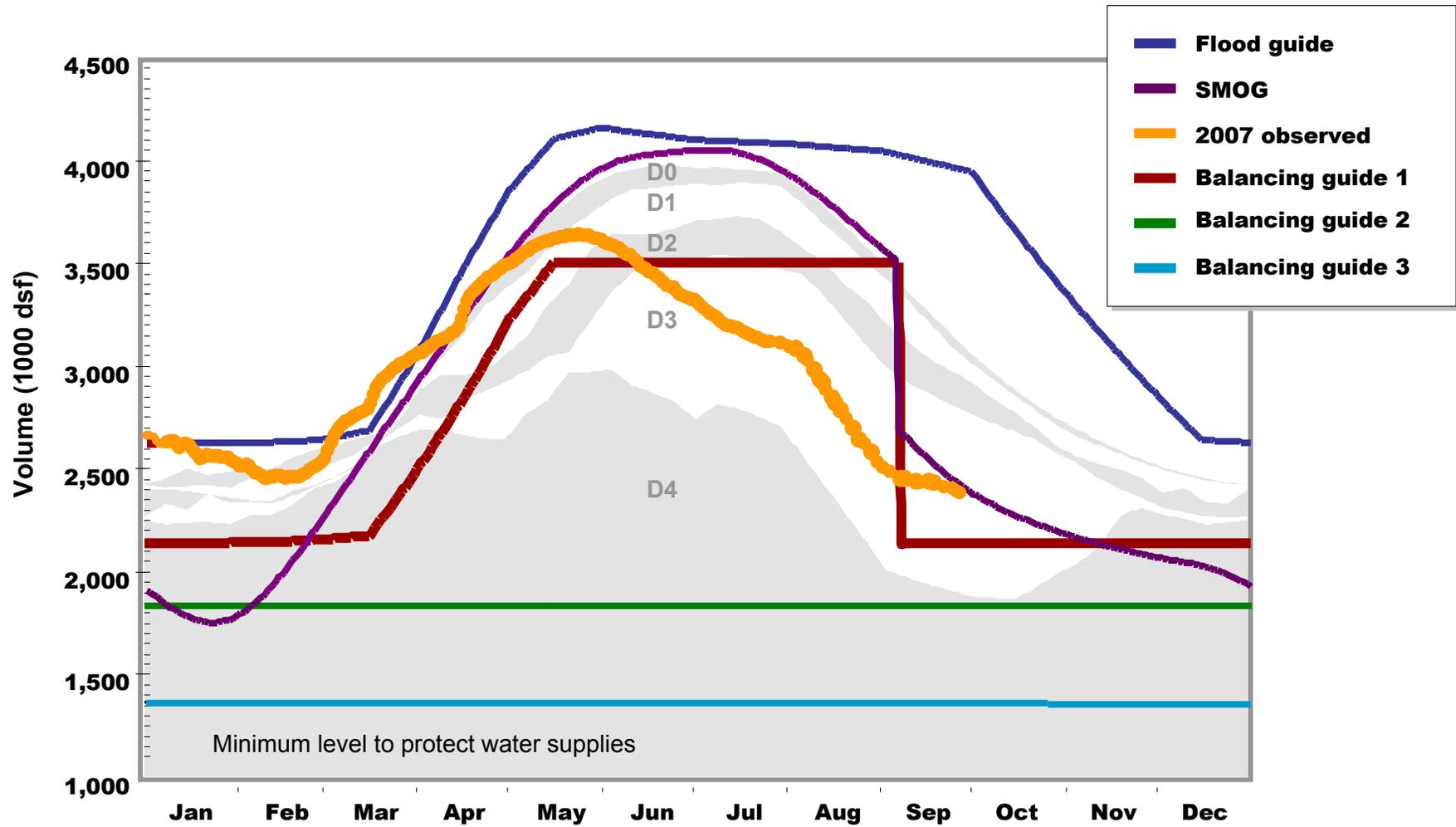
Inflow drought indicator above Chattanooga, 2007



2007 vs. 2006 system inflow above Chattanooga



Tributary system storage for 2007



Drought Management Plan

- Plan objective
- Potential drought impacts
- Drought phases
- Response actions
- Communications

Plan objective

- Goal
 - To facilitate coordination and communication of drought conditions, impacts, and responses
- Authorities and responsibilities
 - States—Development and use of water resources within the state
 - TVA—Integrated operation and management of the Tennessee River System

Potential drought impacts (examples)

- Navigation
 - Lower water levels and reduced barge loads
- Power generation
 - Reduced hydro generation and peaking
 - Increased cooling tower usage and thermal derates
- Water supply
 - Increased pumping and treatment costs
- Water quality
 - Higher water temperatures and aquatic plant growth
- Recreation
 - Loss of boat access and marina facilities
- Aquatic environment
 - Reduced aquatic habitat and increased mortality

Drought phases

- Watch phase
 - Abnormally dry trends in precipitation and runoff
- Precautionary phase
 - Prolonged period of below normal rainfall and stream flows with potentially significant adverse impacts (D0-D1)
- Action phase
 - Storage volume in tributary reservoirs below the System Minimum Operating Guide (D2 to D4)
- Emergency phase
 - Continued low system inflows and reservoir elevations with potential for not maintaining both minimum reservoir releases and operating elevations (D4)
- Recovery phase
 - Above normal or prolonged periods of rain and runoff sufficient to mediate drought

TVA Response actions—**watch phase**

- Monitor drought conditions and forecasts
- Initiate preliminary assessment of potential impacts
- Identify and update contact information for water managers and key stakeholders
- Determine potential resource and logistic needs
- Prepare periodic drought updates

Response actions—**precautionary phase**

- Activate routine condition assessments
- Initiate preliminary coordination and communication activities
- Conserve system water within normal ranges and operating flexibility
- Issue regular drought updates



Response actions—**action phase**

- Implement water-conservation measures as defined by operating guidelines
- Activate Tennessee Valley Water Partnership Drought Committee
- Contact key water utilities and river stakeholders to discuss potential problems
- Activate TVA teams to assess impacts and response actions (e.g., Hydrothermal, Navigation, Water Supply, Recreation, and monitoring teams)
- Activate Drought Communications Plan
- Implement coordination activities and communication updates
- Issue news releases on drought conditions, impacts, and response actions
- Assess and revise monitoring efforts to obtain and distribute drought data
- Evaluate alternative drought response actions and plan for deployment

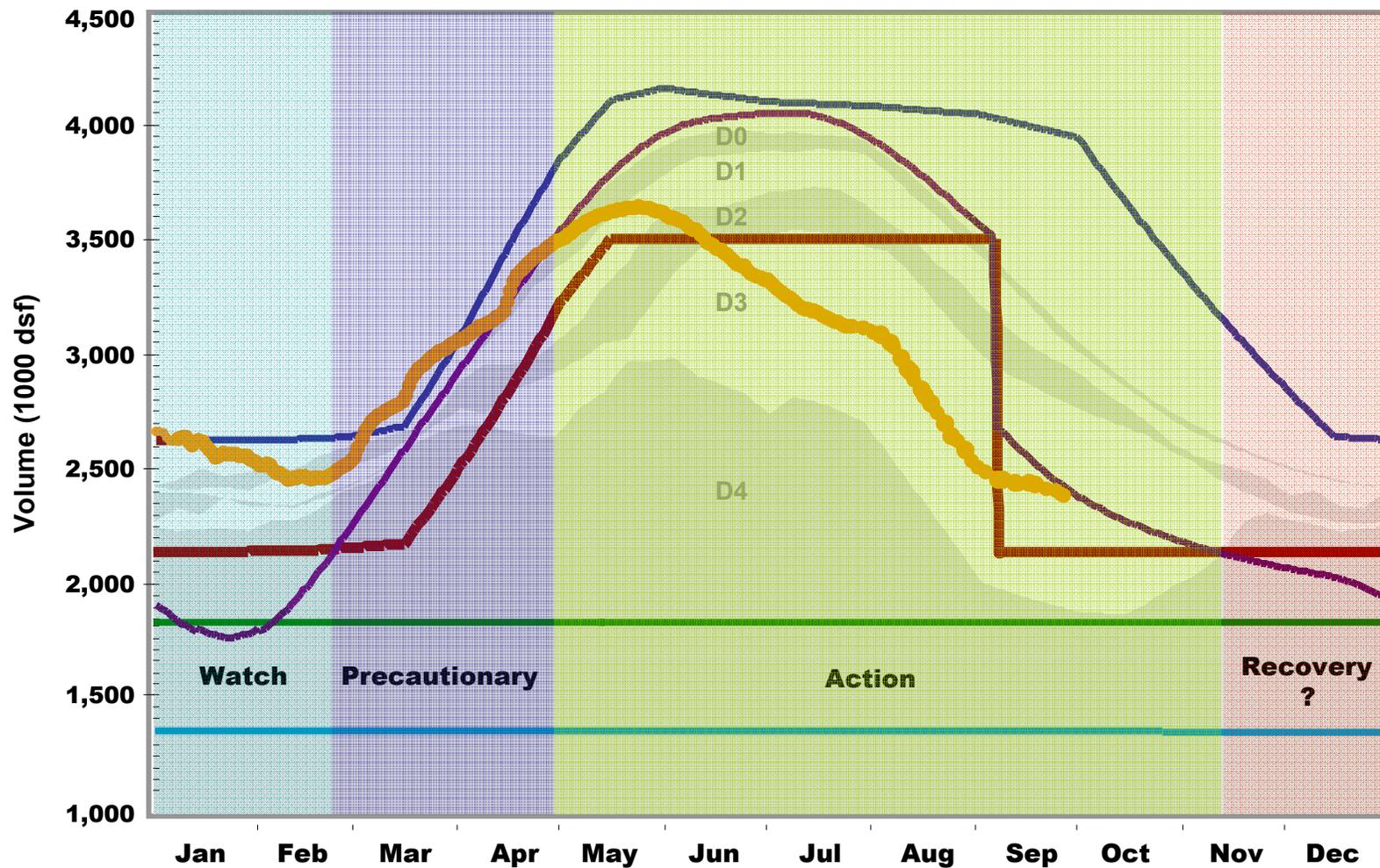
Response actions—**emergency phase**

- Assess potential impacts and options
- Meet with key agencies and stakeholders to discuss potential impacts and response options
- Reaffirm and activate operational drought priorities established in 1988
- Notify key water utilities, wastewater dischargers, and other stakeholders of conditions
- Issue news release describing drought conditions and mitigation measures
- Implement response actions as appropriate

Response actions—**recovery phase**

- Restore normal operating priorities
- Evaluate and maintain water-conservation measures as appropriate
- Conduct debriefing of the drought operation and lessons learned
- Collect and archive pertinent records of response actions
- Return dedicated staff to normal job functions

Example of drought phases for 2007



Communications Examples

- Ongoing drought communication plan
- Biweekly conference calls
- Tennessee Valley Water Partnership Drought Committee
 - Mission statement
 - Operating procedures