

# Missouri River Mainstem System

*US Army  
Corps of Engineers*

**Mike Swenson**

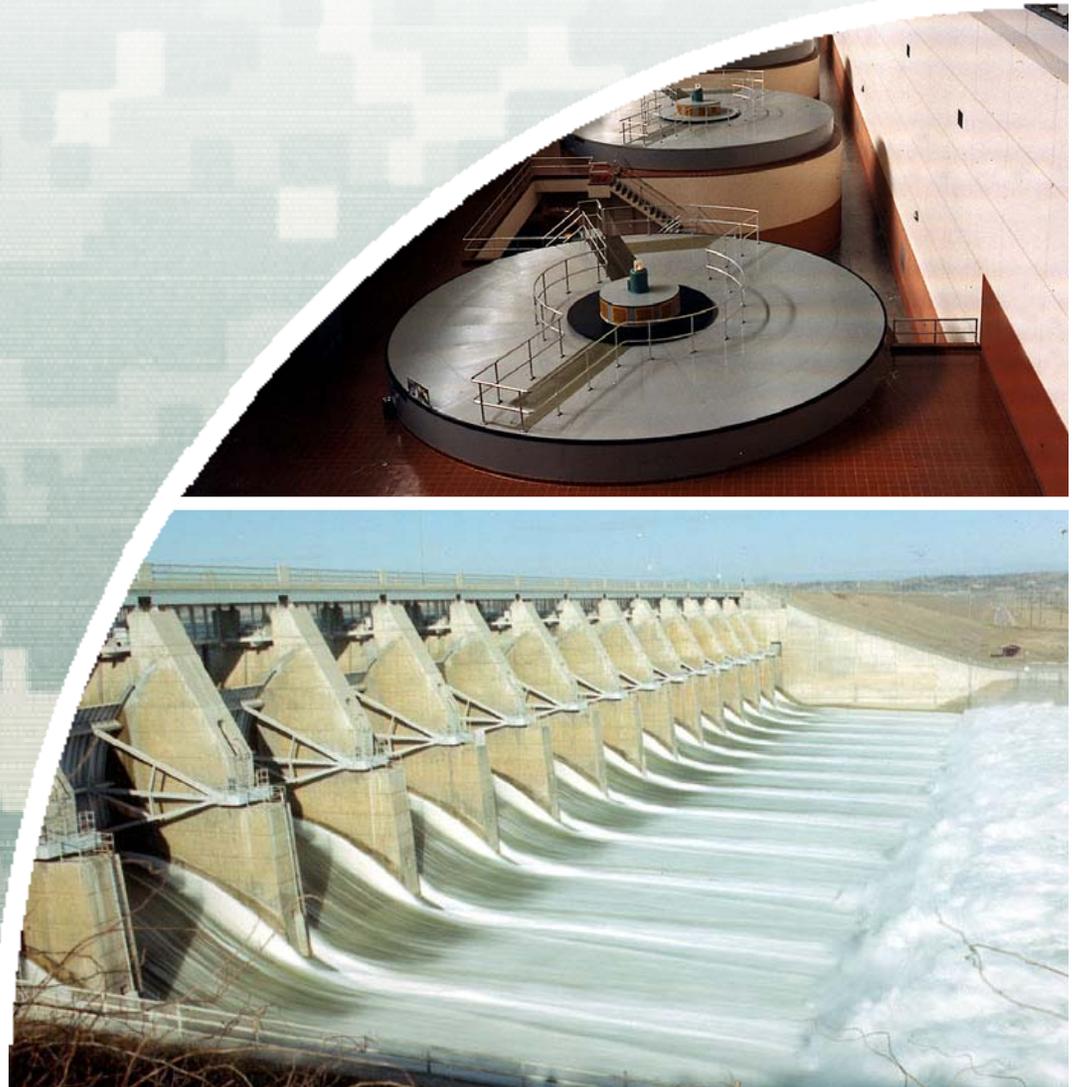
Power Production Team Leader

Missouri River Basin Water Management Division

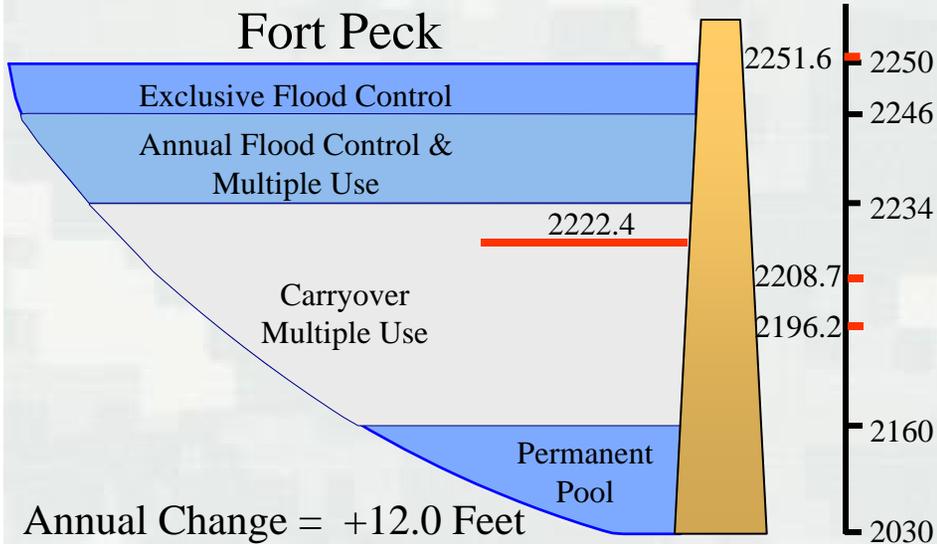
March 2010



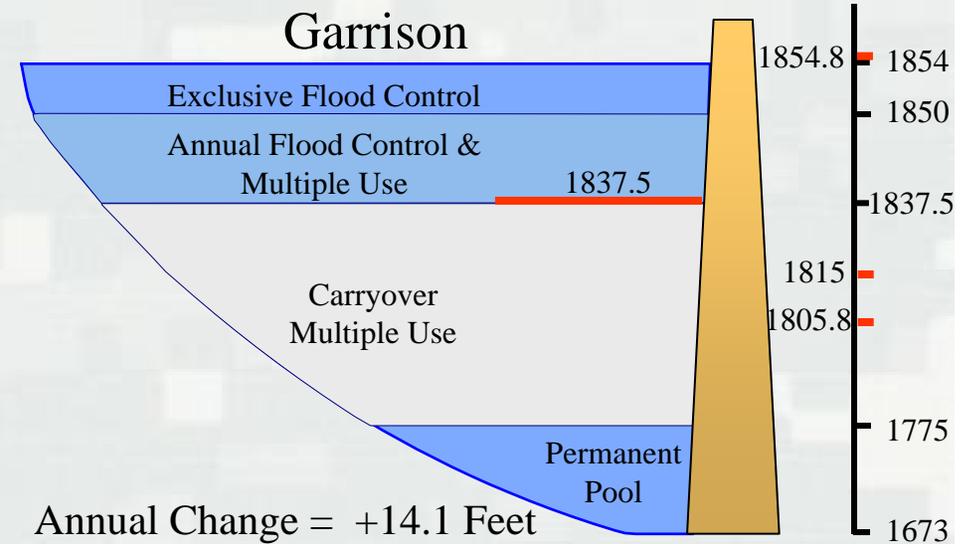
US Army Corps of Engineers  
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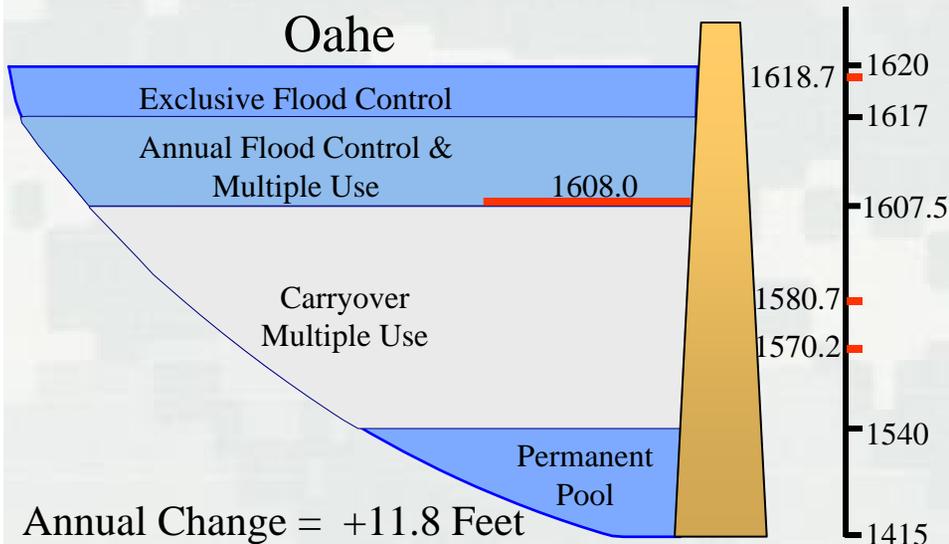
# Current Reservoir Levels – March 1, 2010



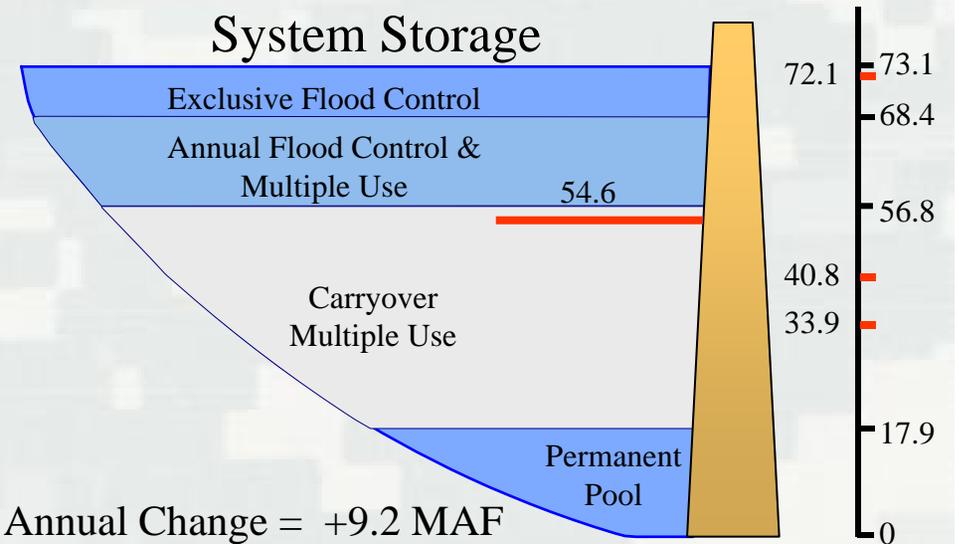
Annual Change = +12.0 Feet  
 11.6 feet below desired



Annual Change = +14.1 Feet  
 0.0 feet below desired



Annual Change = +11.8 Feet  
 0.5 feet above desired

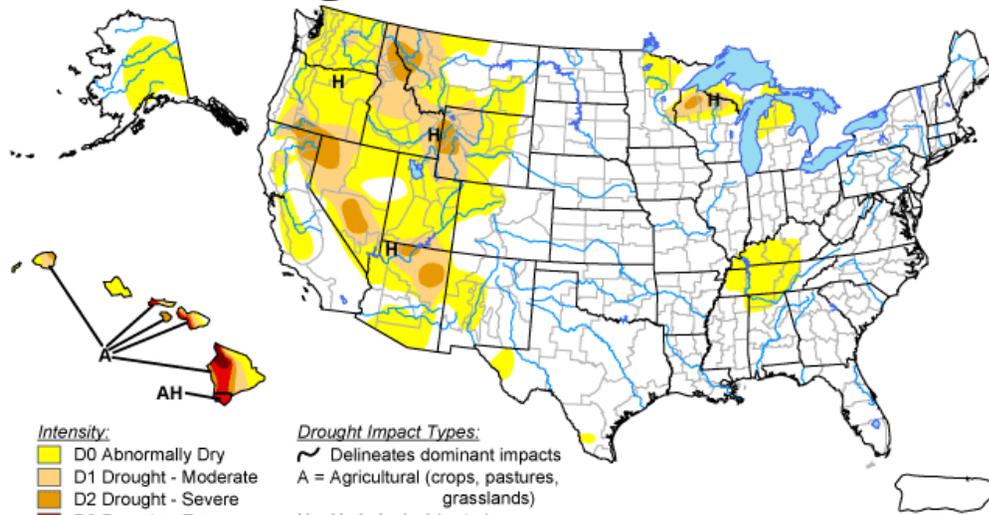


Annual Change = +9.2 MAF  
 2.2 MAF below desired

# Drought Monitor & Outlook

## U.S. Drought Monitor

March 9, 2010  
Valid 7 a.m. EST



**Intensity:**

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

**Drought Impact Types:**

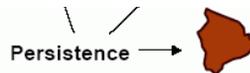
- Delineates dominant impacts
- A = Agricultural (crops, pastures, grasslands)
- H = Hydrological (water)

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, March 11, 2010  
Author: Rich Tinker, NOAA/NWS/NCEP/CPC

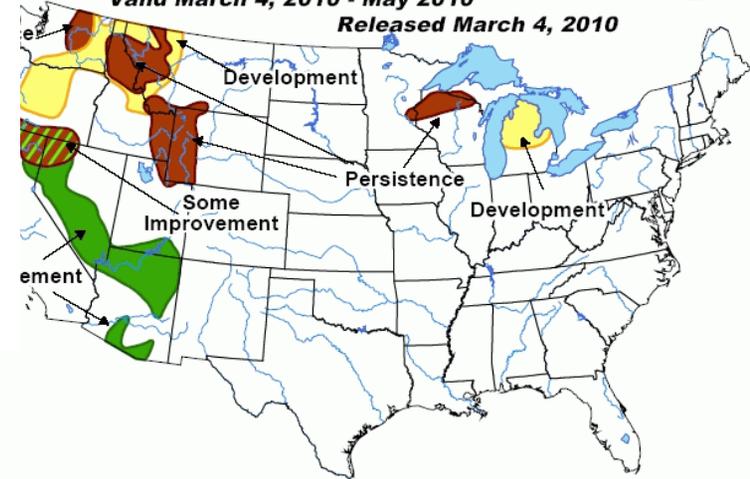


**KEY:**

- Drought to persist or intensify
- Drought ongoing, some improvement
- Drought likely to improve, impacts ease
- Drought development likely

## Seasonal Drought Outlook

Light Tendency During the Valid Period  
Valid March 4, 2010 - May 2010  
Released March 4, 2010

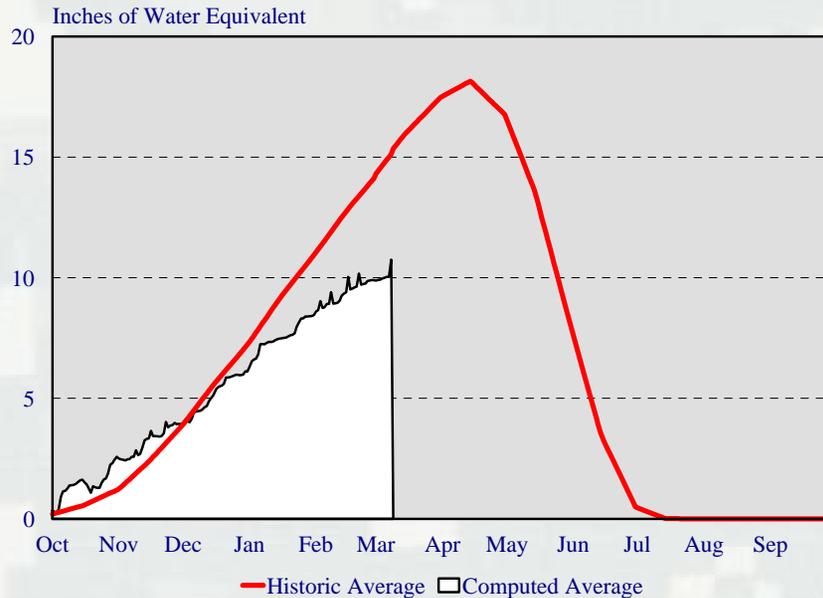


No Drought Posted/Predicted

Depicts large-scale trends based on subjectively derived probabilities guided by short- and long-range statistical and dynamical forecasts. Short-term events -- such as individual storms -- cannot be accurately forecast more than a few days in advance. Use caution for applications -- such as crops -- that can be affected by such events. "Ongoing" drought areas are approximated from the Drought Monitor (D1 to D4 intensity). For weekly drought updates, see the latest U.S. Drought Monitor. NOTE: the green improvement areas imply at least a 1-category improvement in the Drought Monitor intensity levels, but do not necessarily imply drought elimination.

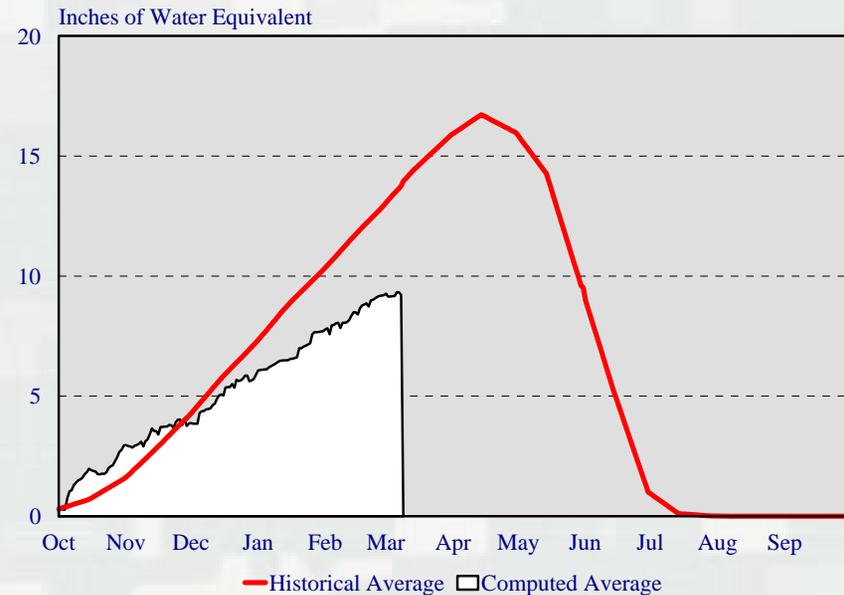
# Missouri River Basin Mountain Snowpack Water Content 2009-2010

*Total Above Fort Peck*



Snowpack Water Content Percent of Average  
Total above Fort Peck 71 percent.

*Total Fort Peck to Garrison*



Snowpack Water Content Percent of Average  
Total Fort Peck to Garrison 67 percent.

Missouri River basin Mountain Snowpack normally peaks near April 15.  
Normally 79 percent of the peak accumulation has occurred by March 1.

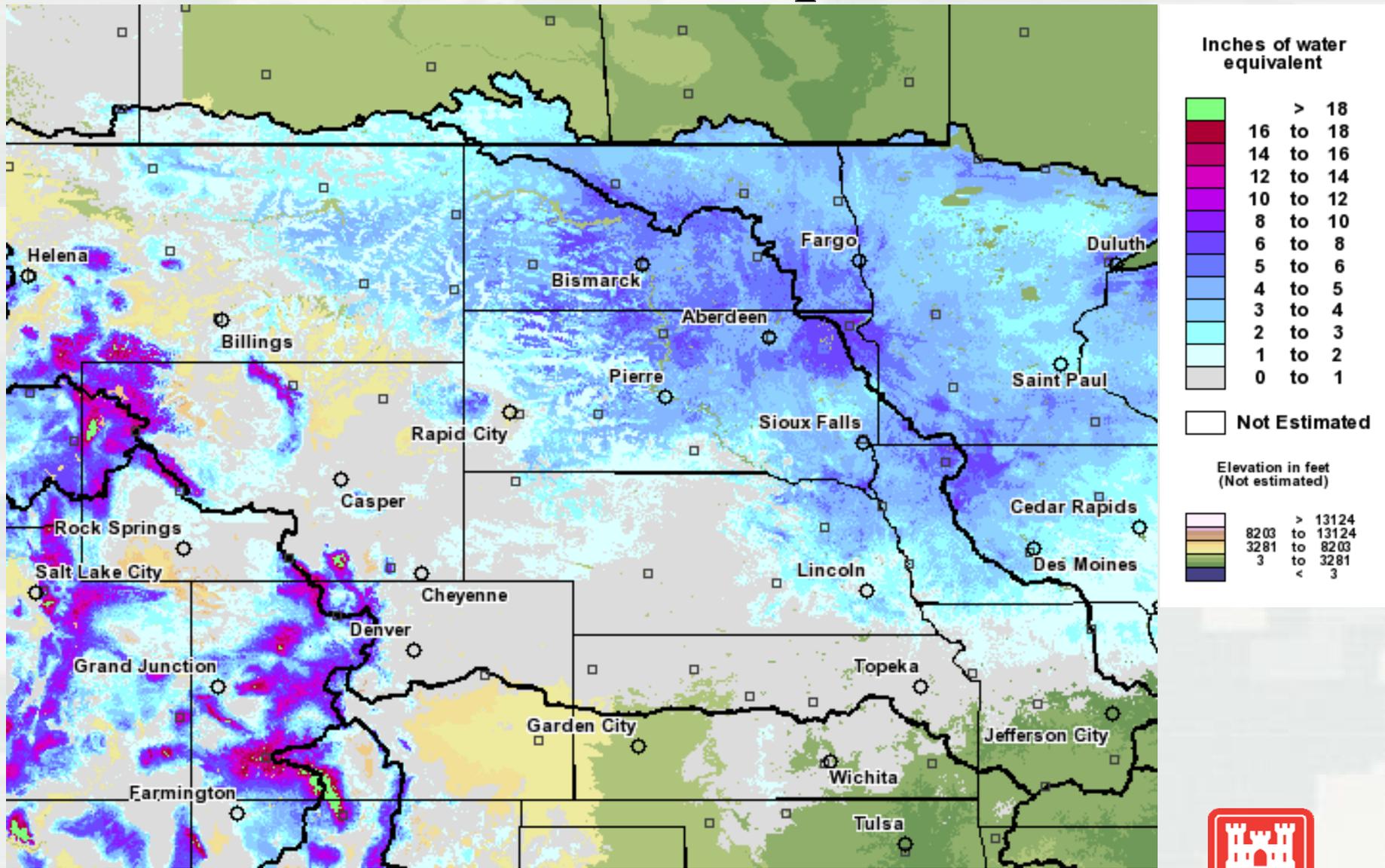


March 8, 2010

Provisional data subject to revision.

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# Snow Water Equivalent

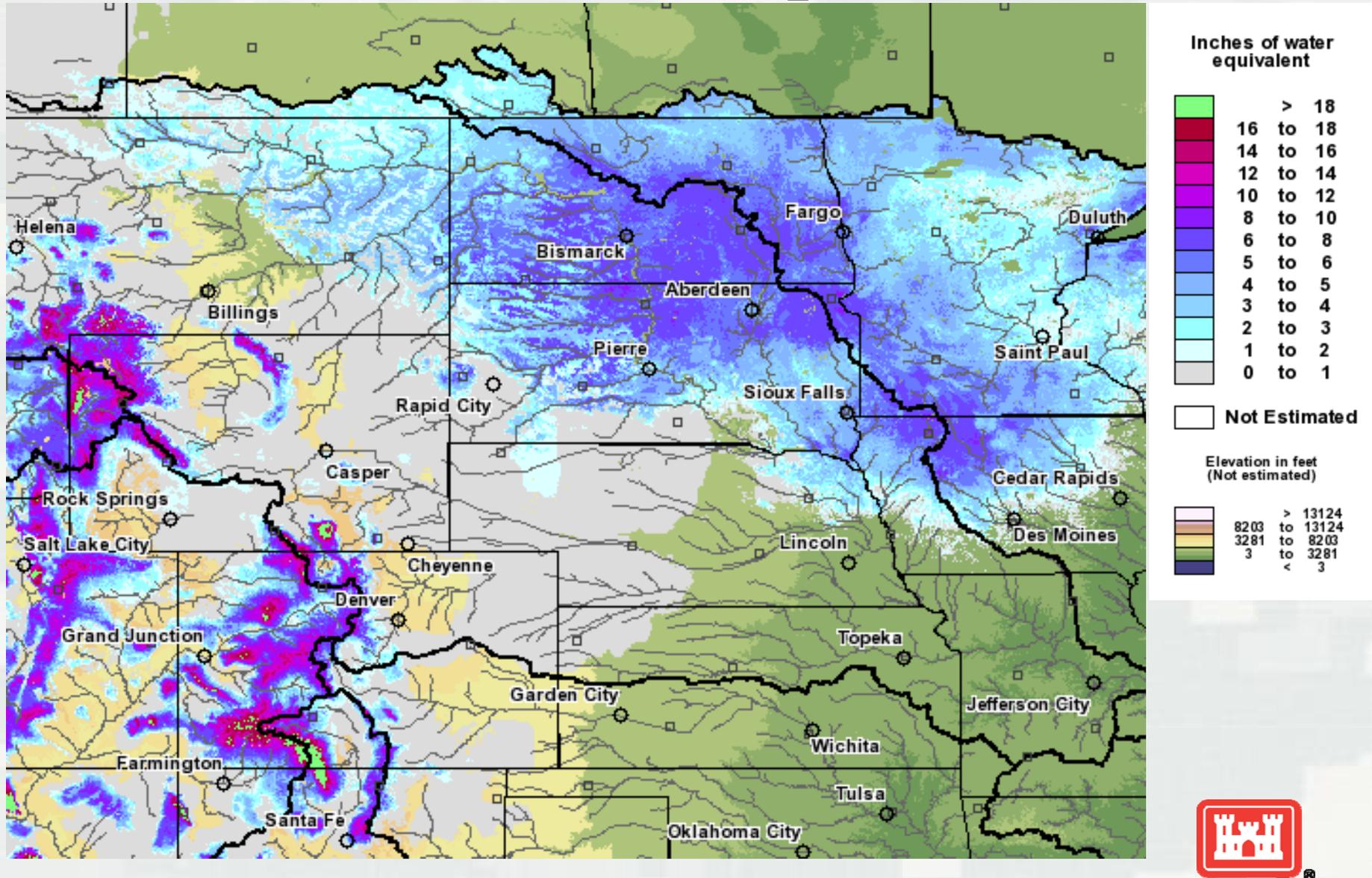


25 February 2010

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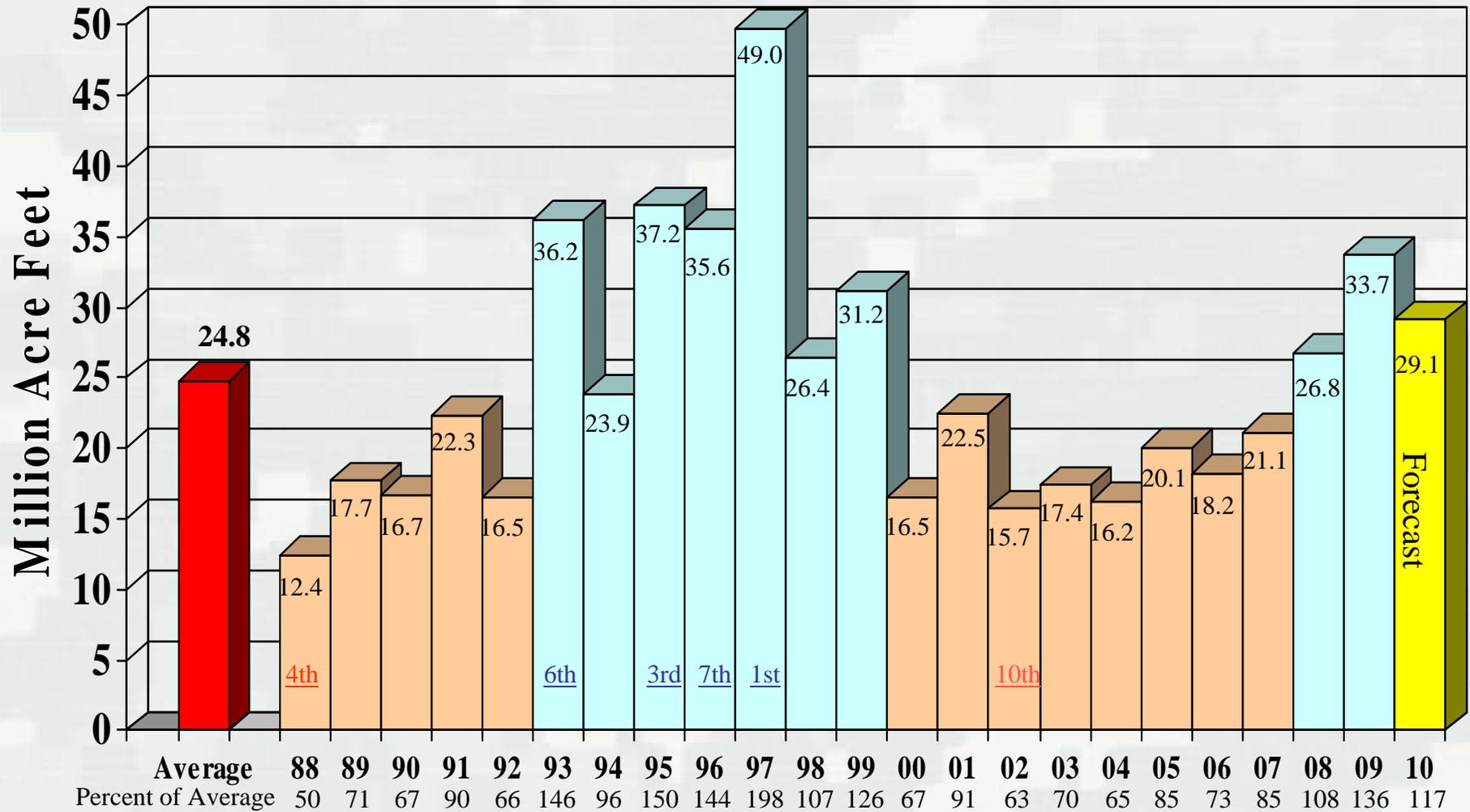
# Snow Water Equivalent



11 March 2010

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# Missouri River Runoff above Sioux City

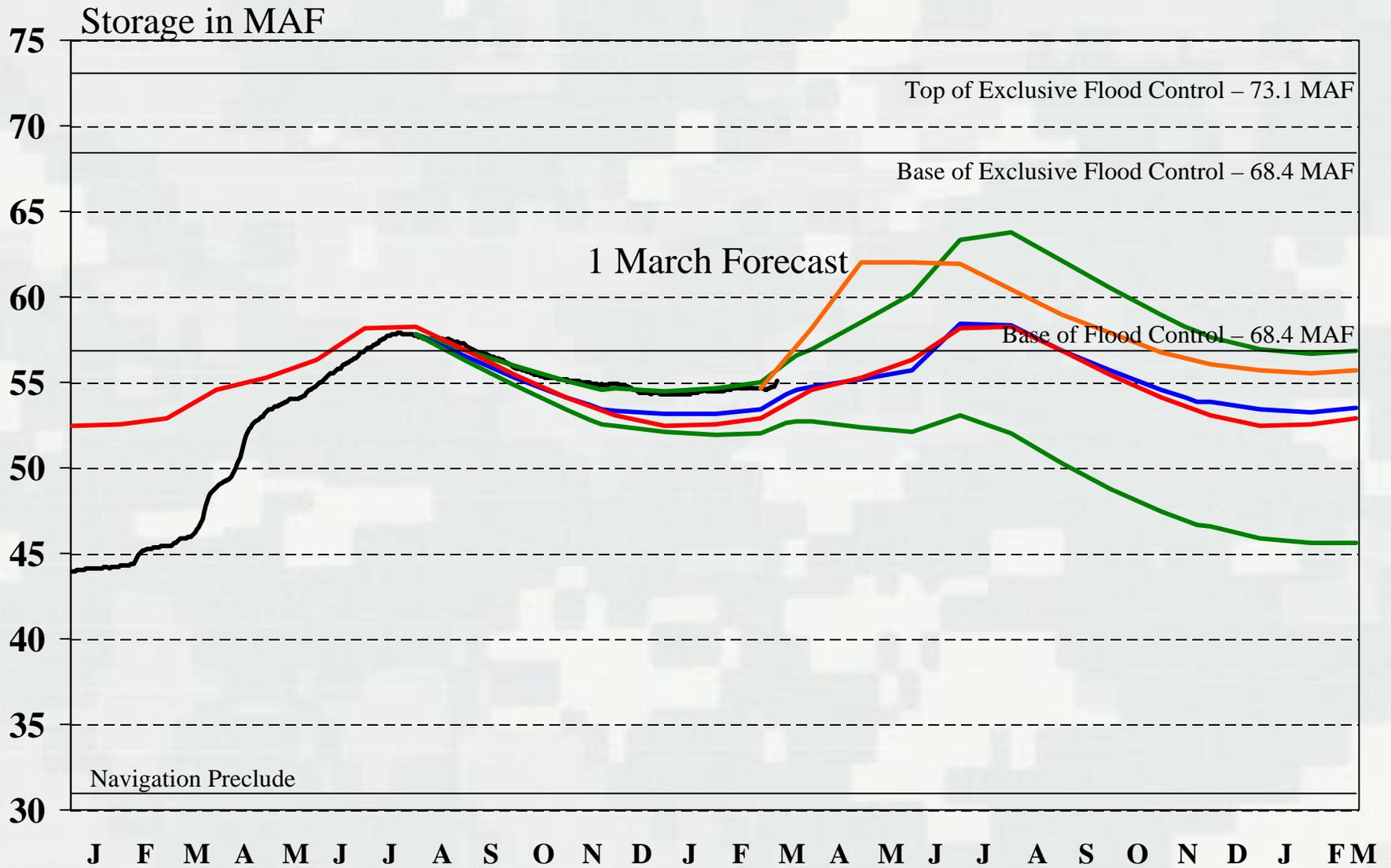


Statistics based on 112 years of record (1898 – 2009)

Red text – lowest ranked in 112 years; Blue text – highest ranked in 112 years

# System Storage

## 2009-2010 AOP Simulations



# 2010 Navigation Season

- **March 15 Storage Check**
  - ▶ Full Service Level
  - ▶ Target Locations
    - Sioux City (31,000 cfs)
    - Omaha (31,000 cfs)
    - Nebraska City (37,000 cfs)
    - Kansas City (41,000 cfs)
  
- **July 1 Storage Check**
  - ▶ Full Length Navigation Season
  - ▶ Service Level

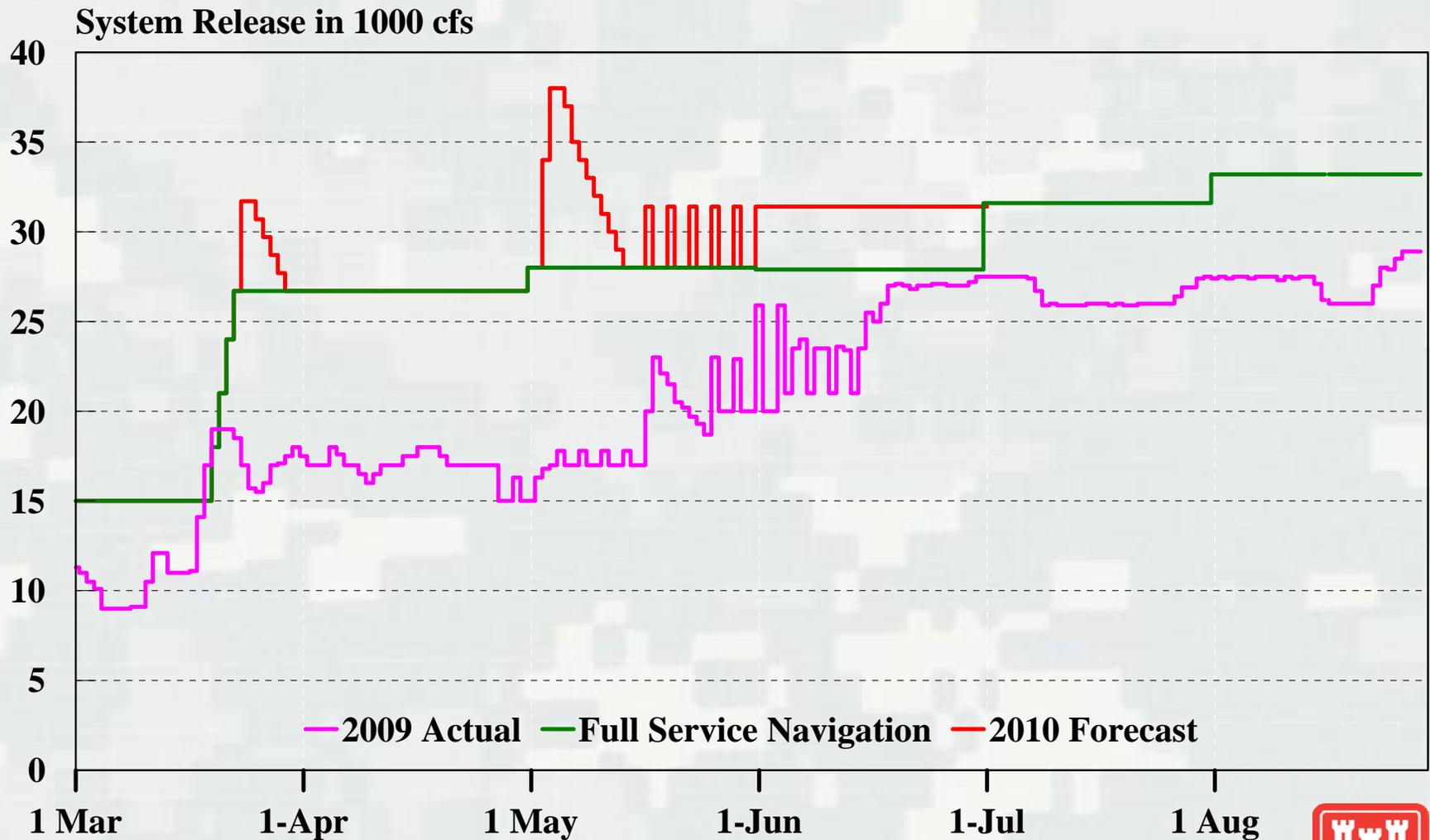


# Spring Pulses from Gavins Point Dam

- 2003 Biological Opinion – RPA
- March and May Pulses Planned
- March
  - ▶ 5,000 cfs for 2 days
  - ▶ Timing at Start of Navigation Season
- May
  - ▶ 9,700 cfs to 19,200 cfs for 2 Days Depending on 1 May System Storage and Runoff Forecast
  - ▶ Timing Between 1 May and 19 May
- Downstream Flow Limits
  - ▶ Omaha (41,000 cfs)
  - ▶ Nebraska City (47,000 cfs)
  - ▶ Kansas City (71,000 cfs)



# Gavins Point Releases



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# Summary for 2010

- Above Normal Runoff March/April
- CY2010 Runoff ~ 115% of Normal
- Full Navigation Season / Full Service
- Bi-modal Spring Pulse Planned
- Reservoir Elevations Higher
- Improved Service to Authorized Purposes

