

Wisconsin Valley Improvement Company

WVIC Overview and Drought Operations

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COMPANY PURPOSE

- **PROVIDE UNIFORM FLOW ON THE WISCONSIN RIVER**
- **COORDINATE DAM OPERATIONS ALONG THE RIVER**

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METHOD

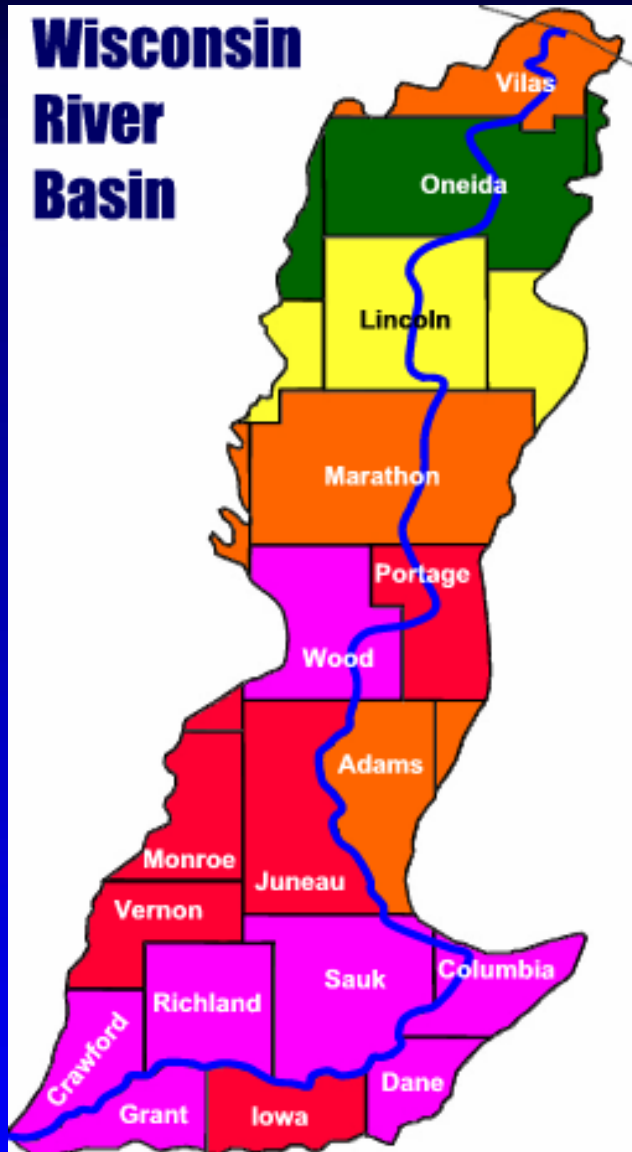
- **OWN AND OPERATE 21 WATER STORAGE RESERVOIRS**
- **STORE WATER DURING HIGH-FLOW PERIODS**
- **RELEASE WATER DURING LOW-FLOW PERIODS**
- **MAINTAIN COMMUNICATIONS NETWORK WITH HYDROPLANT OPERATORS**

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ORGANIZATION

- **PRIVATE CORPORATION**
- **OWNED BY WISCONSIN RIVER HYDROPLANT OWNERS**
 - **PAPER MILLS**
 - **UTILITIES**
- **FUNDED BY HYDROPLANT OWNERS**
- **REGULATED BY FERC, WDNR, PSCW, OTHERS**
- **UNIQUE, NORMALLY GOVERNMENT FUNCTION**

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WISCONSIN RIVER

- **LARGEST RIVER IN STATE**
- **430 MILES LONG**
- **1,050-FT FALL**
- **12,000 MI² DRAINAGE AREA**
- **90+ TRIBUTARIES**
- **AVERAGE FLOW**
 - **5 CFS AT SOURCE**
 - **12,000 CFS AT MOUTH**

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River Developments

- **21 Reservoirs**
 - **Control river flow**
 - **Owned and Operated by WVIC**
 - **5 Large Man-Made Reservoirs**
 - **Rainbow, Willow, Rice (Nokomis), Spirit, Eau Pleine**
 - **75% of storage**
 - **16 Natural-lake Reservoirs**

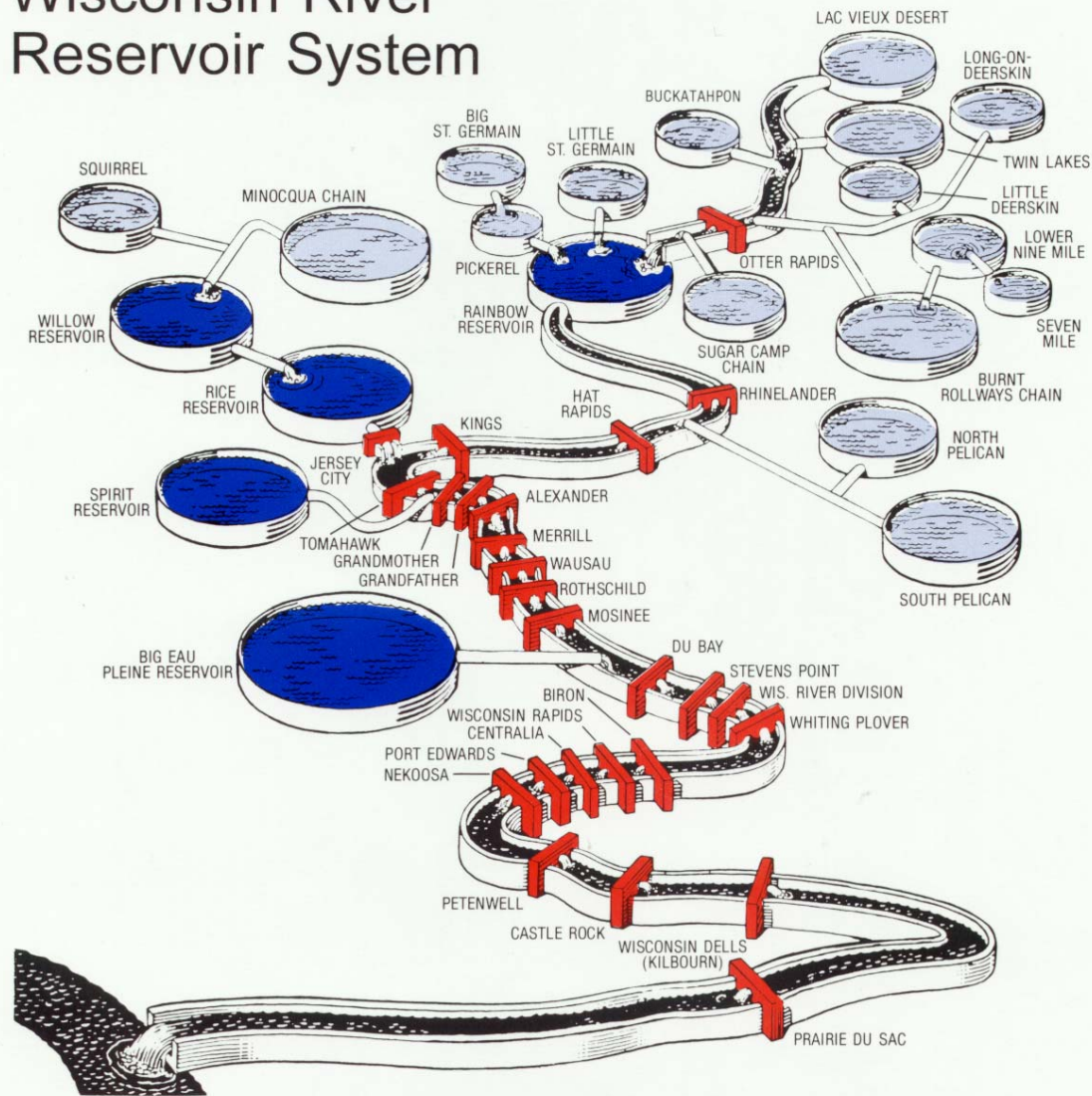
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River Developments

- **25 Hydroelectric Dams**
 - **Owned and Operated by WVIC Owner Companies**
 - **Provide electric power for**
 - **Paper production**
 - **Utility customers**

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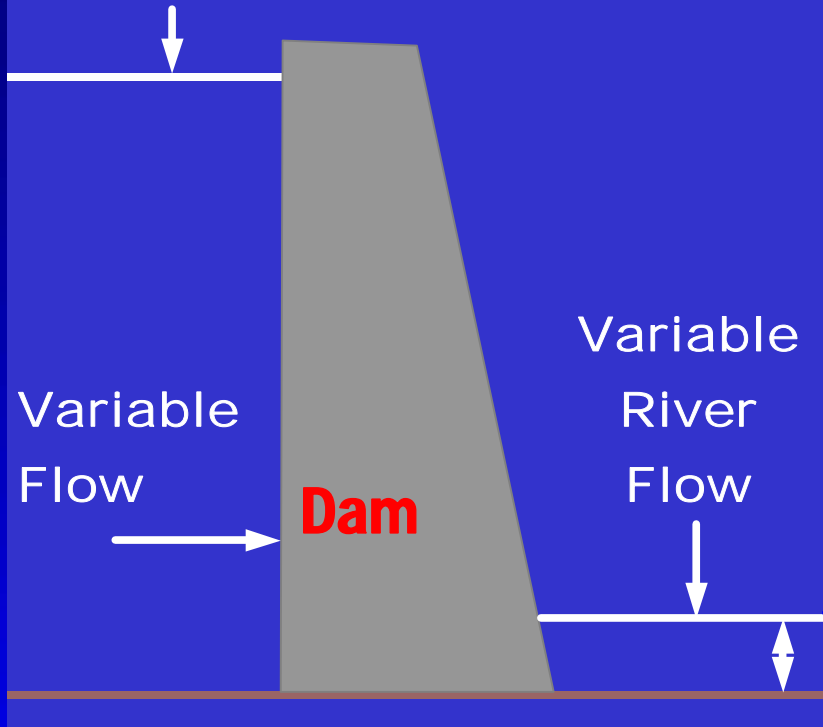
Wisconsin River Reservoir System



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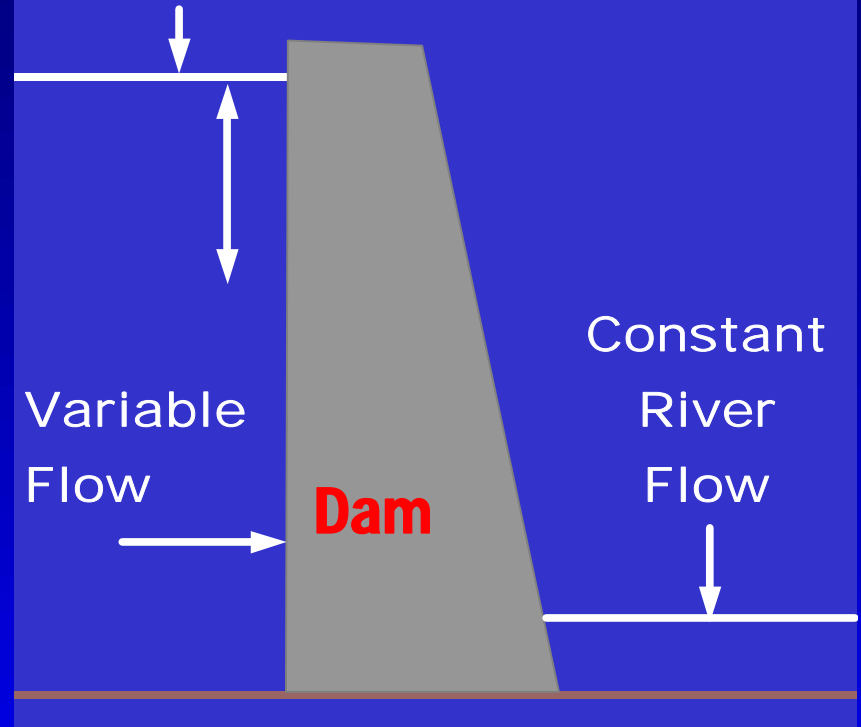
HYDROELECTRIC DAM

Constant Lake Level

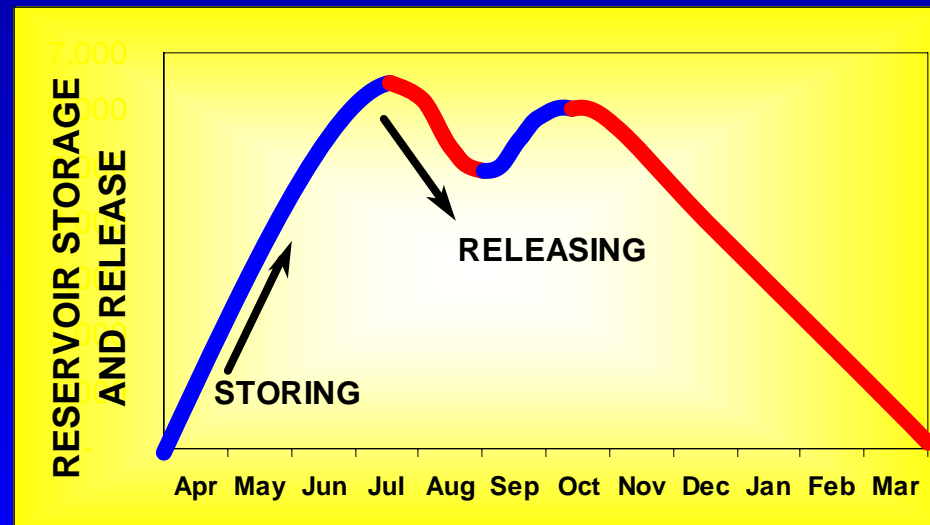
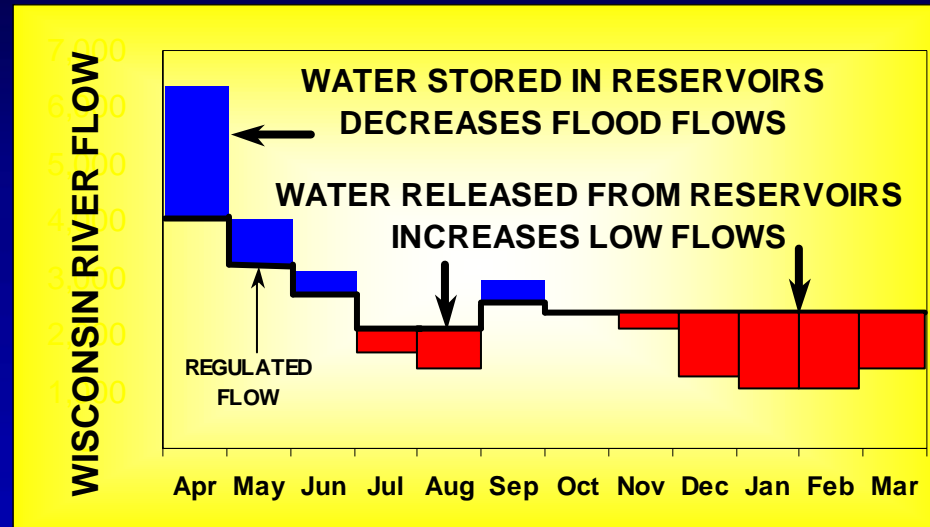


RESERVOIR DAM

Variable Lake Level



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BENEFITS

- **INCREASED HYDROPOWER PRODUCTION**
 - 150 MWH/YEAR
 - SERVE 75,000 PEOPLE
 - CLEAN & RENEWABLE
- **FLOOD CONTROL**
 - REDUCE PEAKS BY 20-30%
 - DECREASED FLOOD DAMAGE

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BENEFITS

- **IMPROVED WISCONSIN RIVER WATER QUALITY**
 - HIGHER FLOW -> HIGHER DISSOLVED OXYGEN
- **RECREATION**
 - RESERVOIRS ADD 25,000 ACRES OF WATER
 - UNIFORM FLOW -> MORE RIVER USE

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FERC LICENSE - GENERAL

- **PROJECT NO. 2113**
- **ISSUED JULY 1996**
- **30-YEAR TERM**
- **7+ YEAR PROCESS TO OBTAIN**
- **REQUIRED BALANCING OF POWER & NON-POWER BENEFITS**
- **SIGNIFICANT AGENCY AND PUBLIC INPUT**
- **EIS WRITTEN**

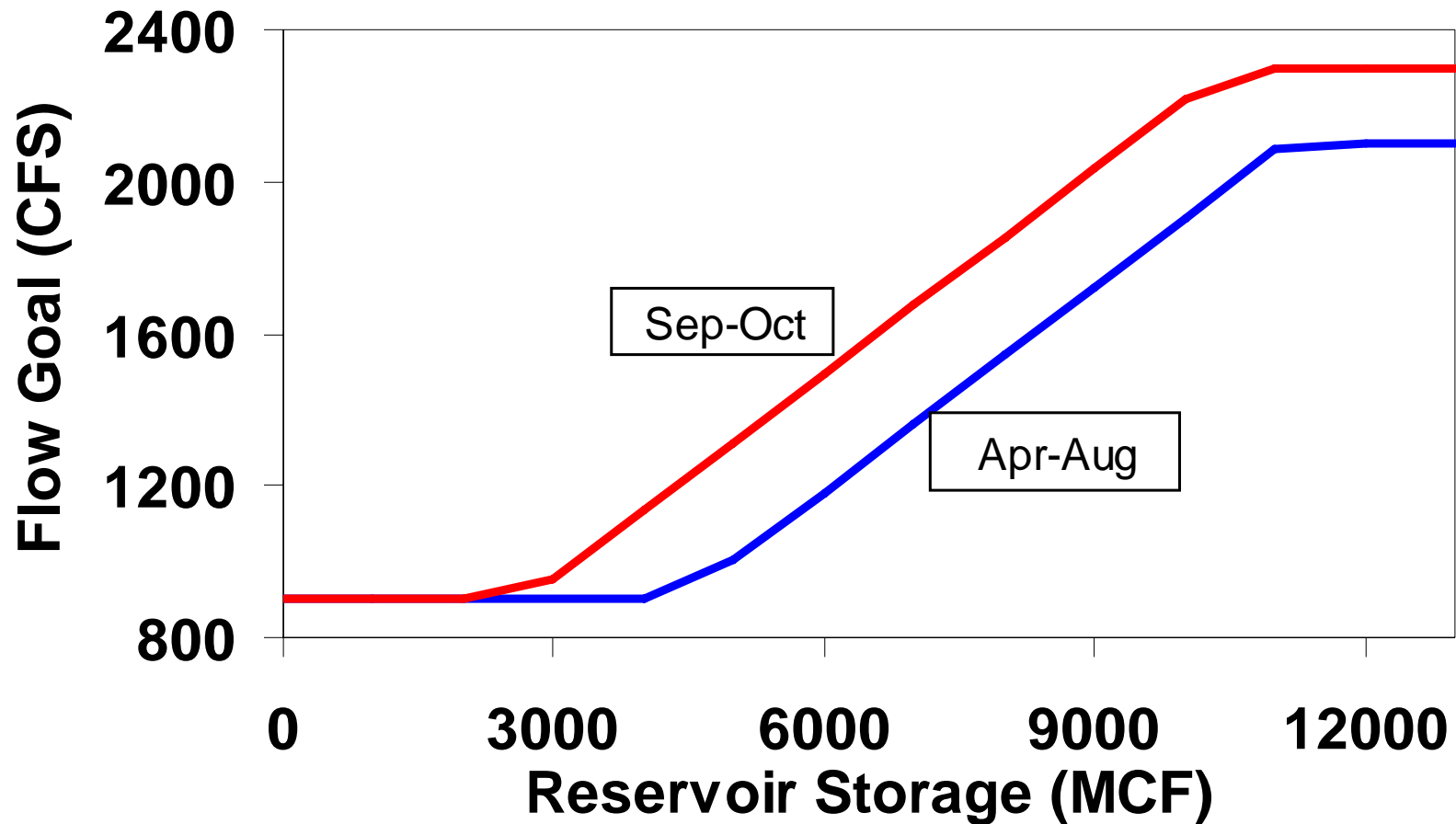
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LICENSE OPERATIONAL REQUIREMENTS

- **MAX AND MIN WATER LEVELS IN RESERVOIRS**
- **MINIMUM FLOW RELEASES FROM DAMS**
- **FLOW GOALS**
 - **MERRILL AND WIS. RAPIDS**
 - **DEPEND ON TIME OF YEAR AND STORAGE**
 - **APRIL-OCTOBER RULES SPECIFIED IN LICENSE**
 - **WINTER DRAWDOWN MORE FLEXIBLE**
 - **DROUGHT CONTINGENCY PLAN**

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Merrill Flow Goals

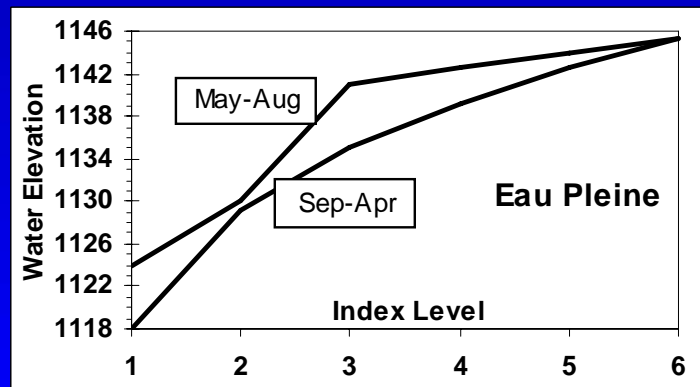
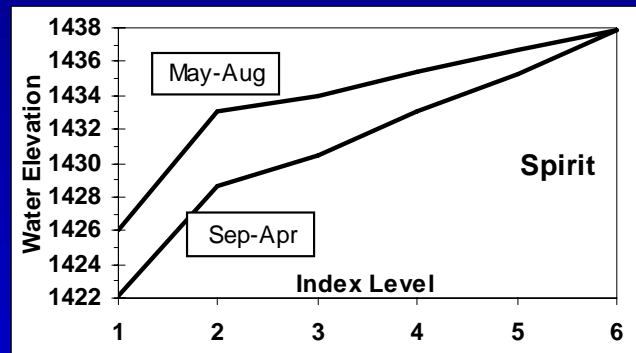
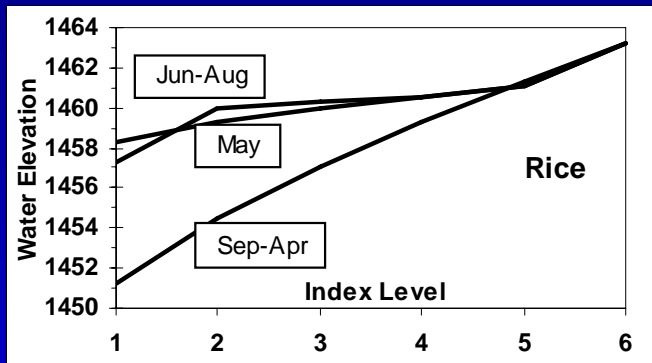
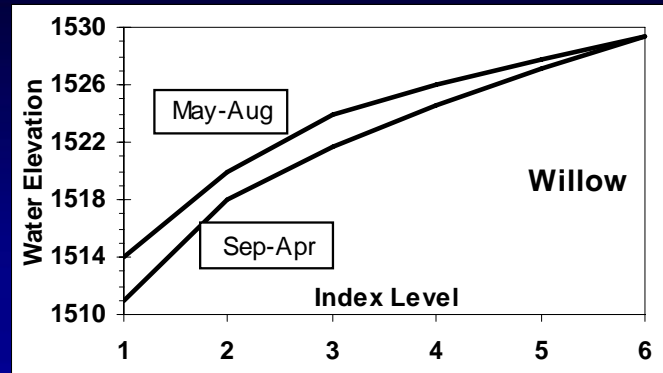
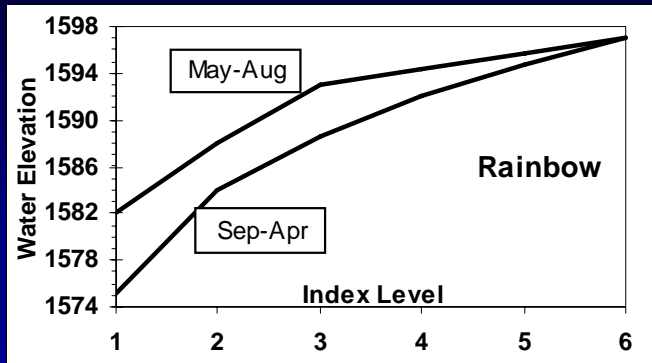


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LICENSE OPERATIONAL REQUIREMENTS

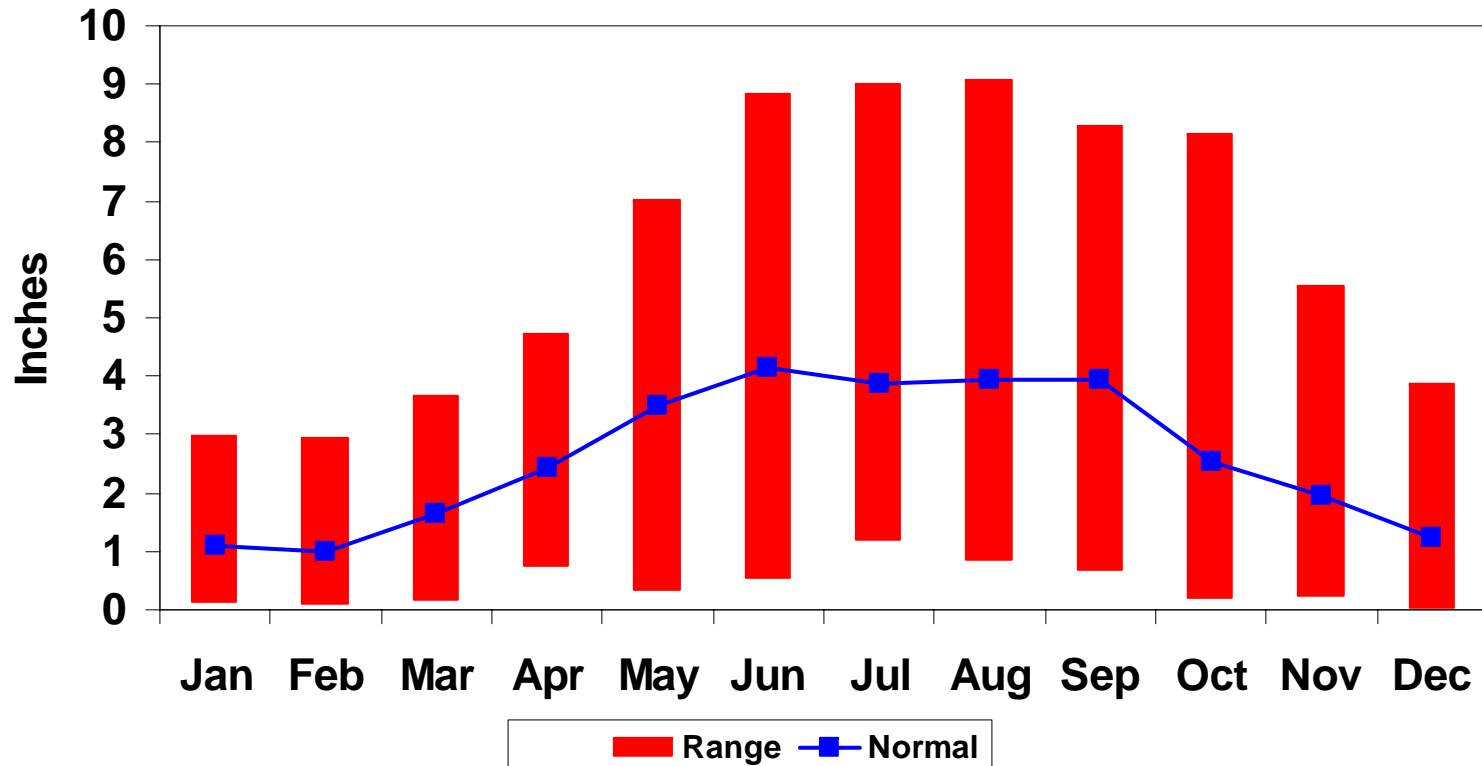
- **STORAGE BALANCING**
 - **INDEX LEVELS**

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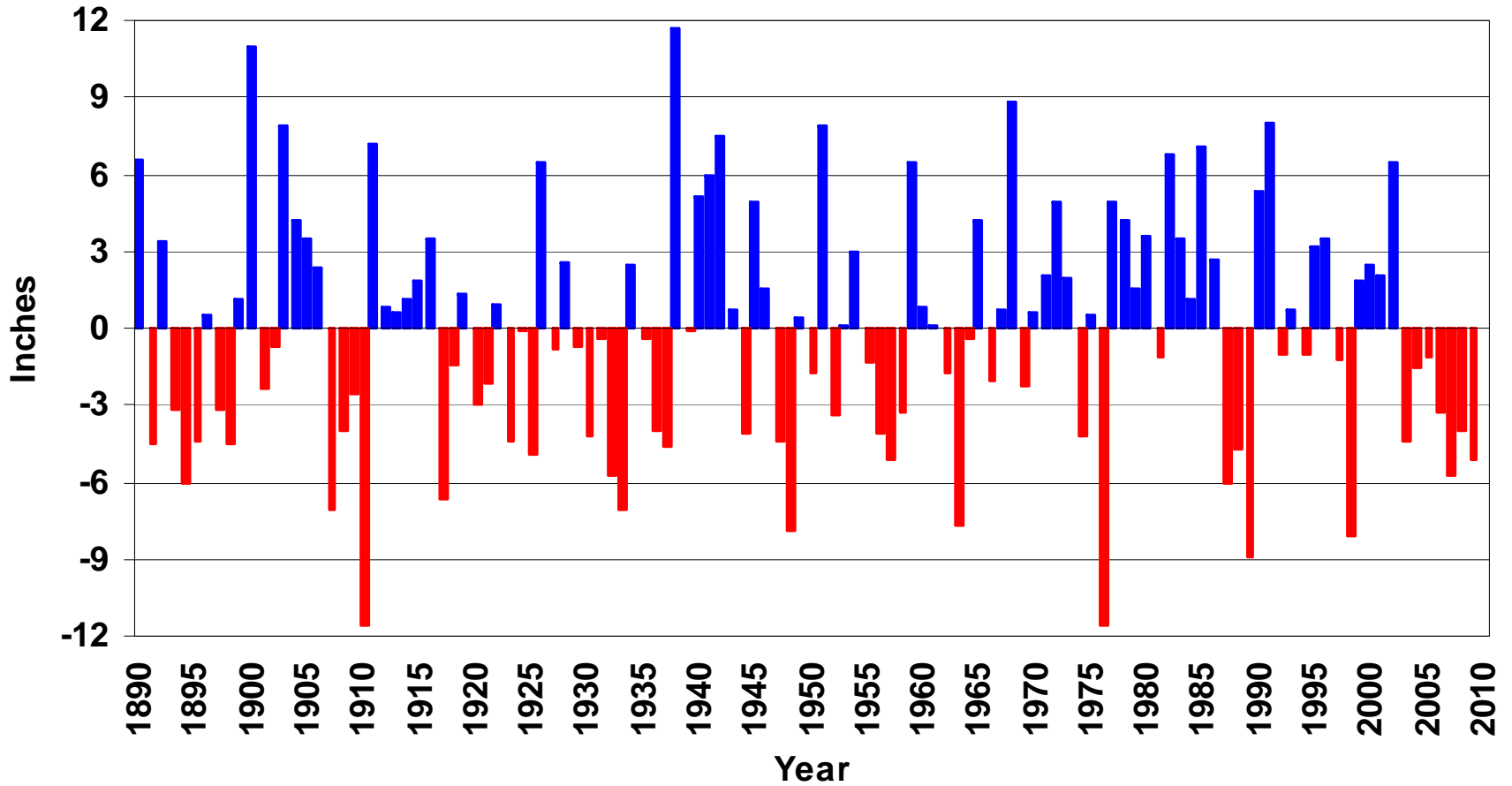
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Wisconsin River Basin Precipitation
Annual Normal: 31" Annual Range: 19" - 43"



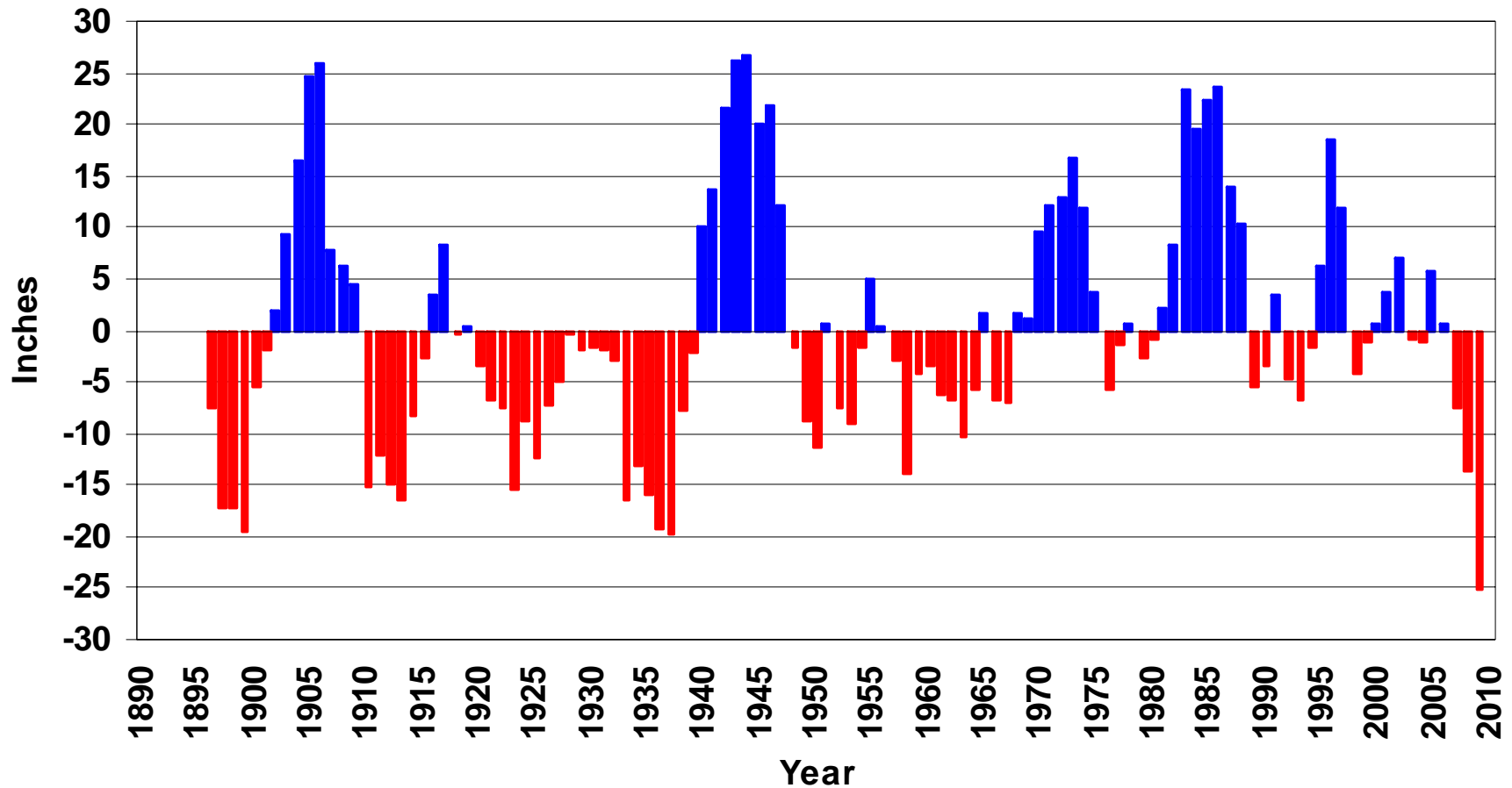
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Wisconsin River Basin Annual Precipitation
Departure From Normal (1890-2009)



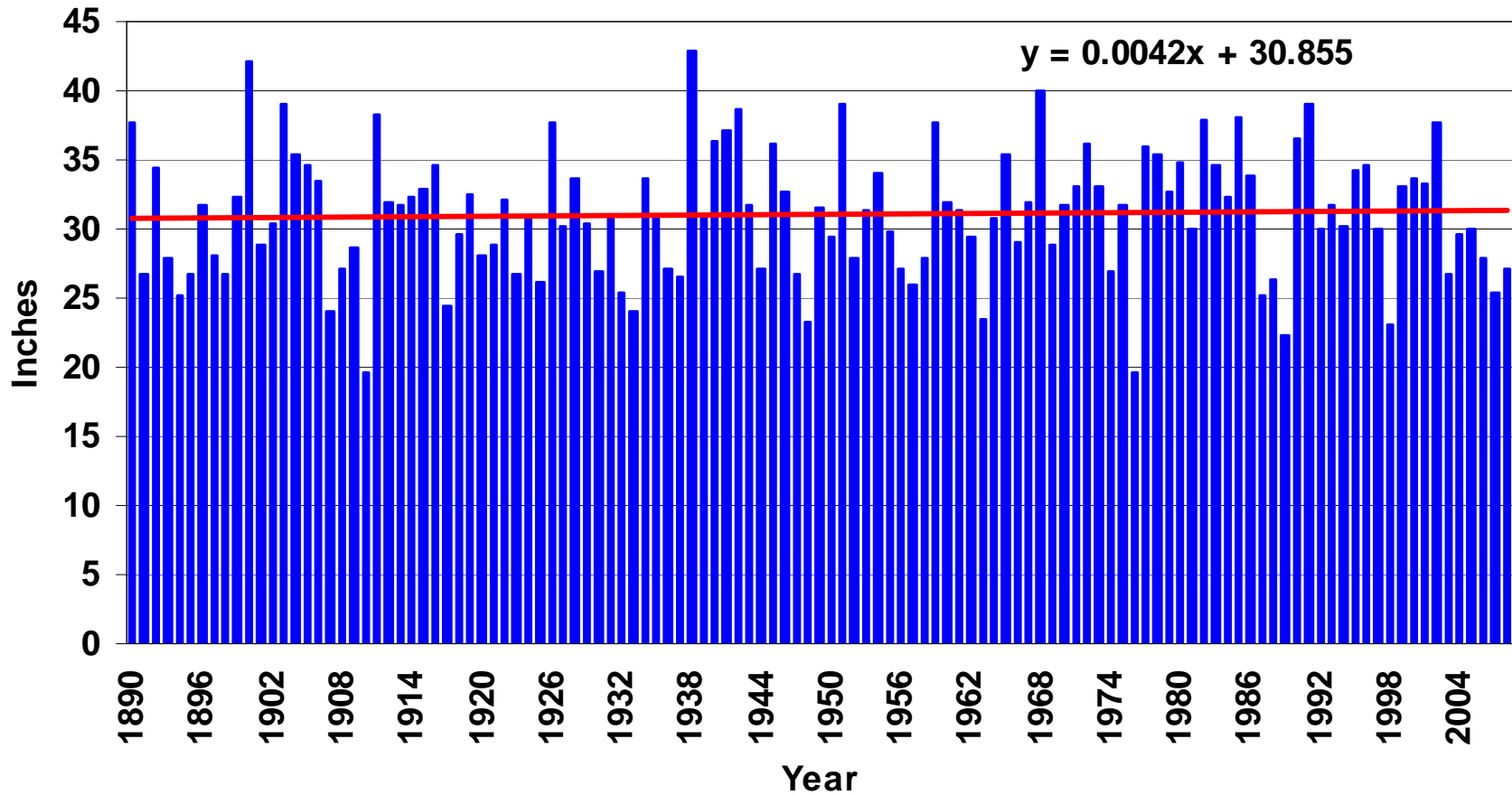
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Wisconsin River Basin Running 7-Year Precipitation
Departure From Normal (1890-2009)



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Wisconsin River Basin Annual Precipitation
(1890-2008)



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DROUGHT OPERATION 2009

- **FLOW GOALS REDUCED BECAUSE OF LOW RESERVOIR STORAGE - MERRILL**
 - **May Goal 1,400 cfs – Normal Flow 3,400**
 - **June Goal 1,200 cfs – Normal Flow 2,900 cfs**
 - **July Goal 1,000 cfs – Normal Flow 2,200 cfs**
 - **If Goal falls below 900 cfs – Implement Drought Contingency Plan**
 - **Consult with agencies**
 - **Possibly reduce Goals**

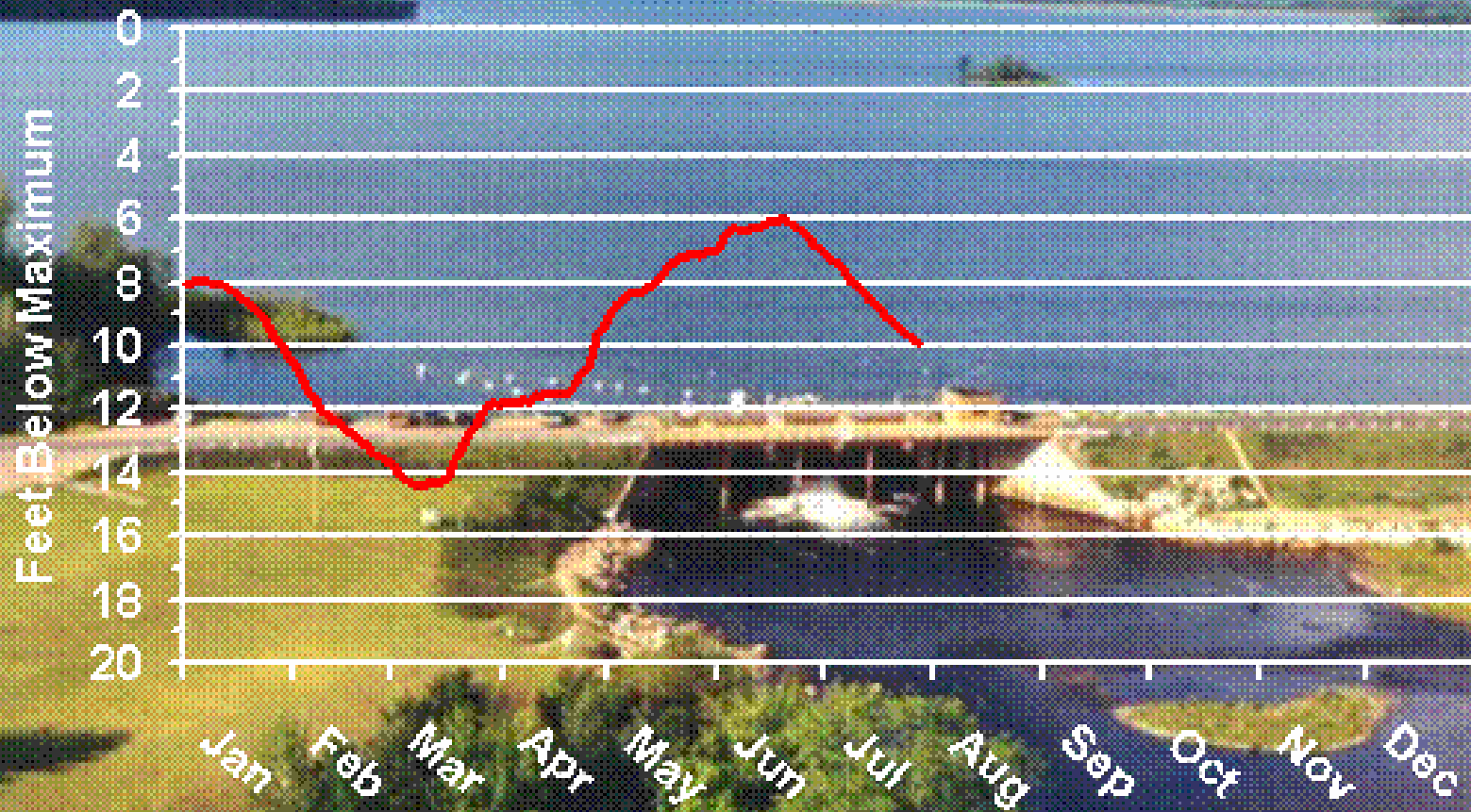
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DROUGHT OPERATION 2009

- **FLOW GOAL AT MERRILL IS NOW 1,000 CFS**
- **NATURAL RIVER FLOW AT MERRILL HAS DROPPED TO 250 CFS**
- **RESERVOIR WATER PROVIDING 75% OF FLOW**

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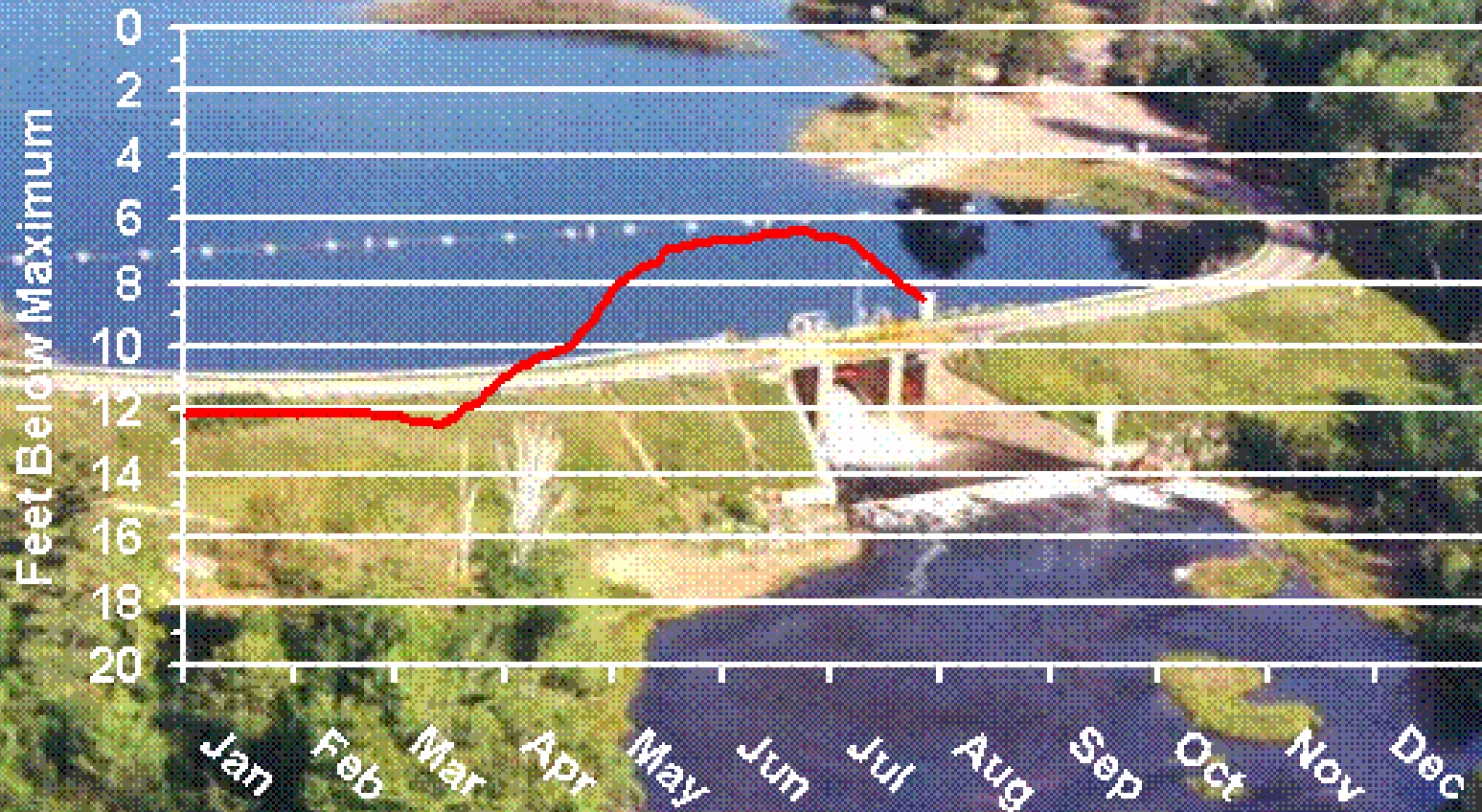
Rainbow Reservoir Water Level 2009



Updated: Jul 27, 2009

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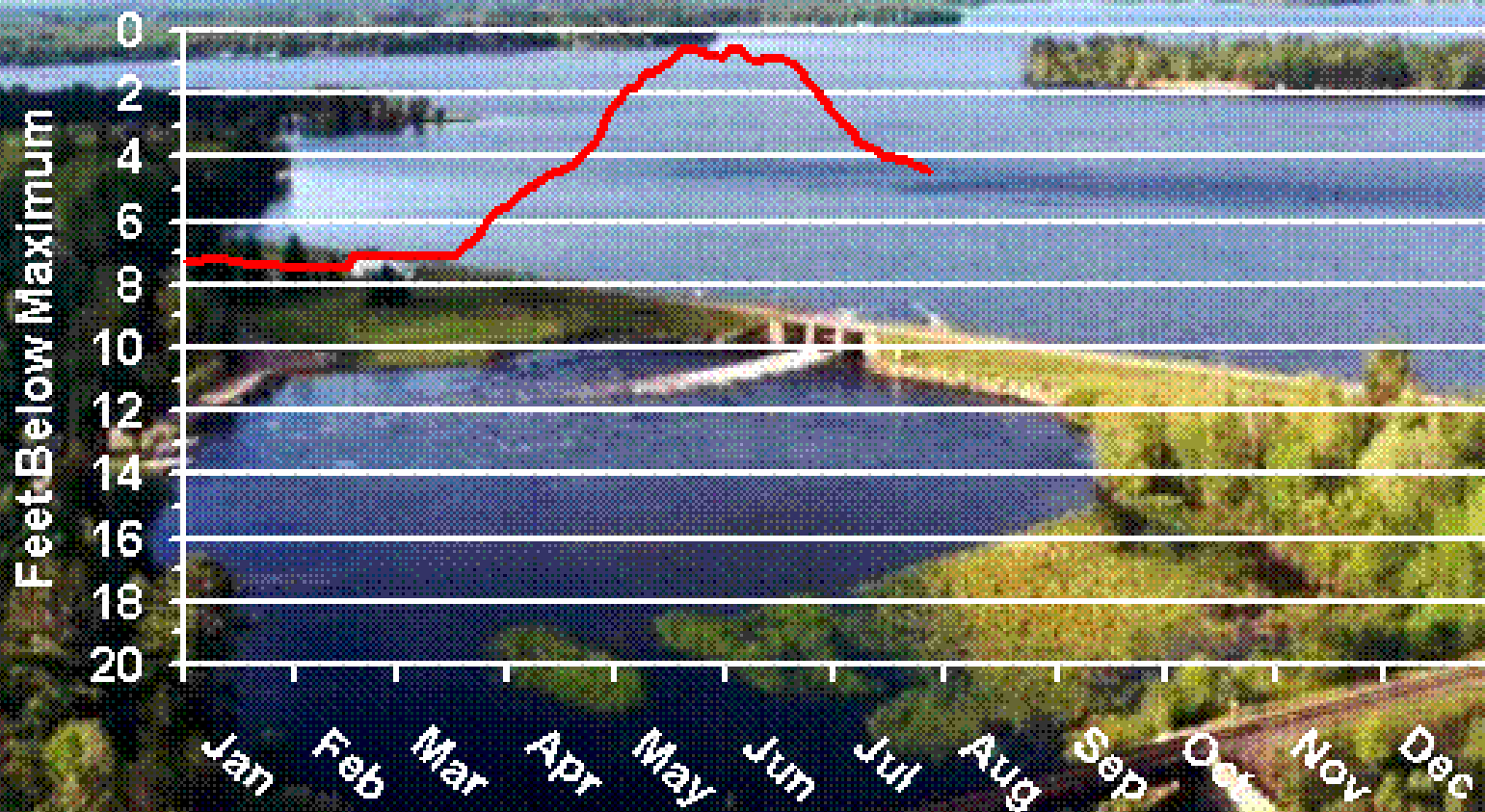
Willow Reservoir Water Level 2009



Updated: Jul 27, 2009

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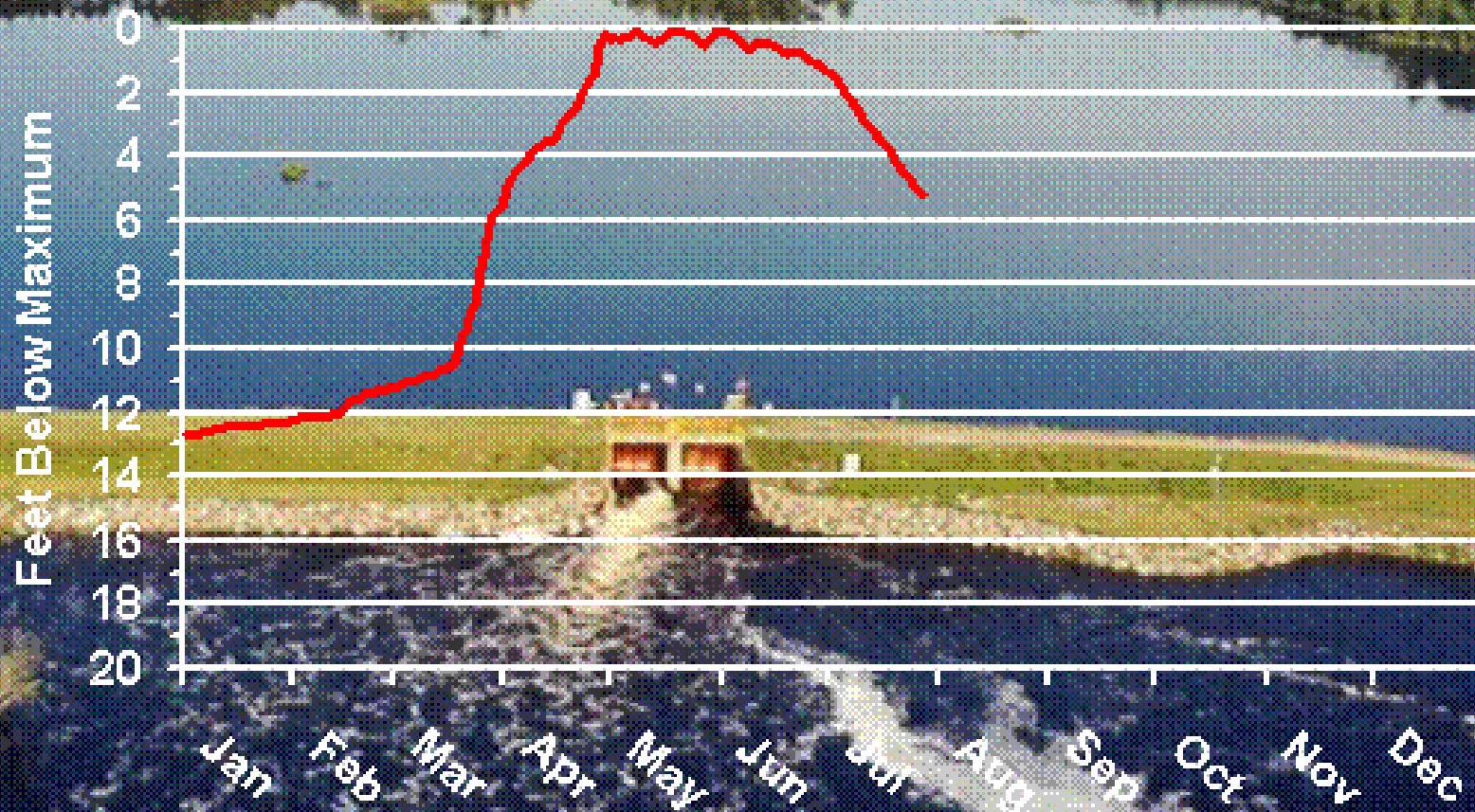
Rice Reservoir Water Level 2009



Updated: Jul 27, 2009

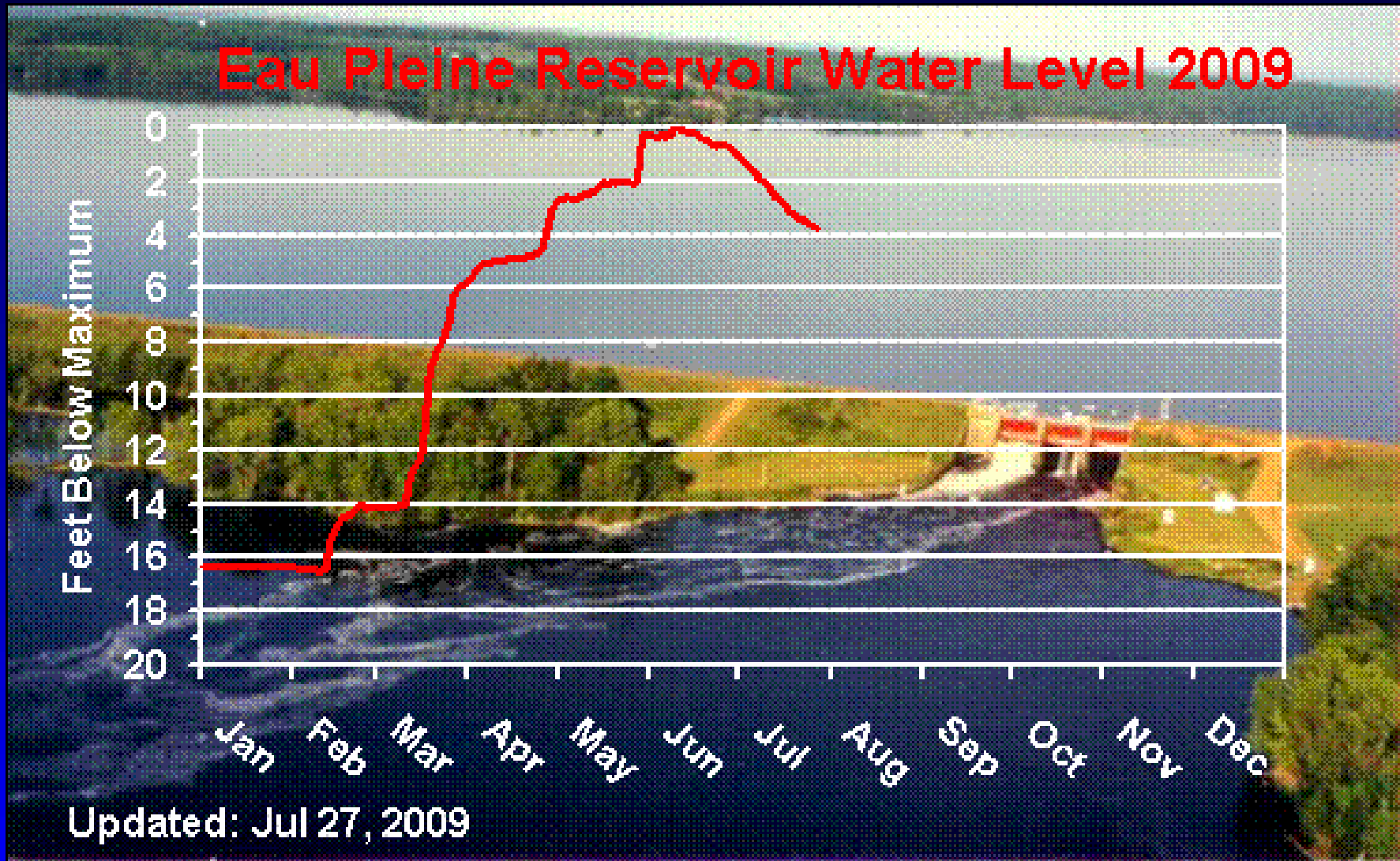
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Spirit Reservoir Water Level 2009

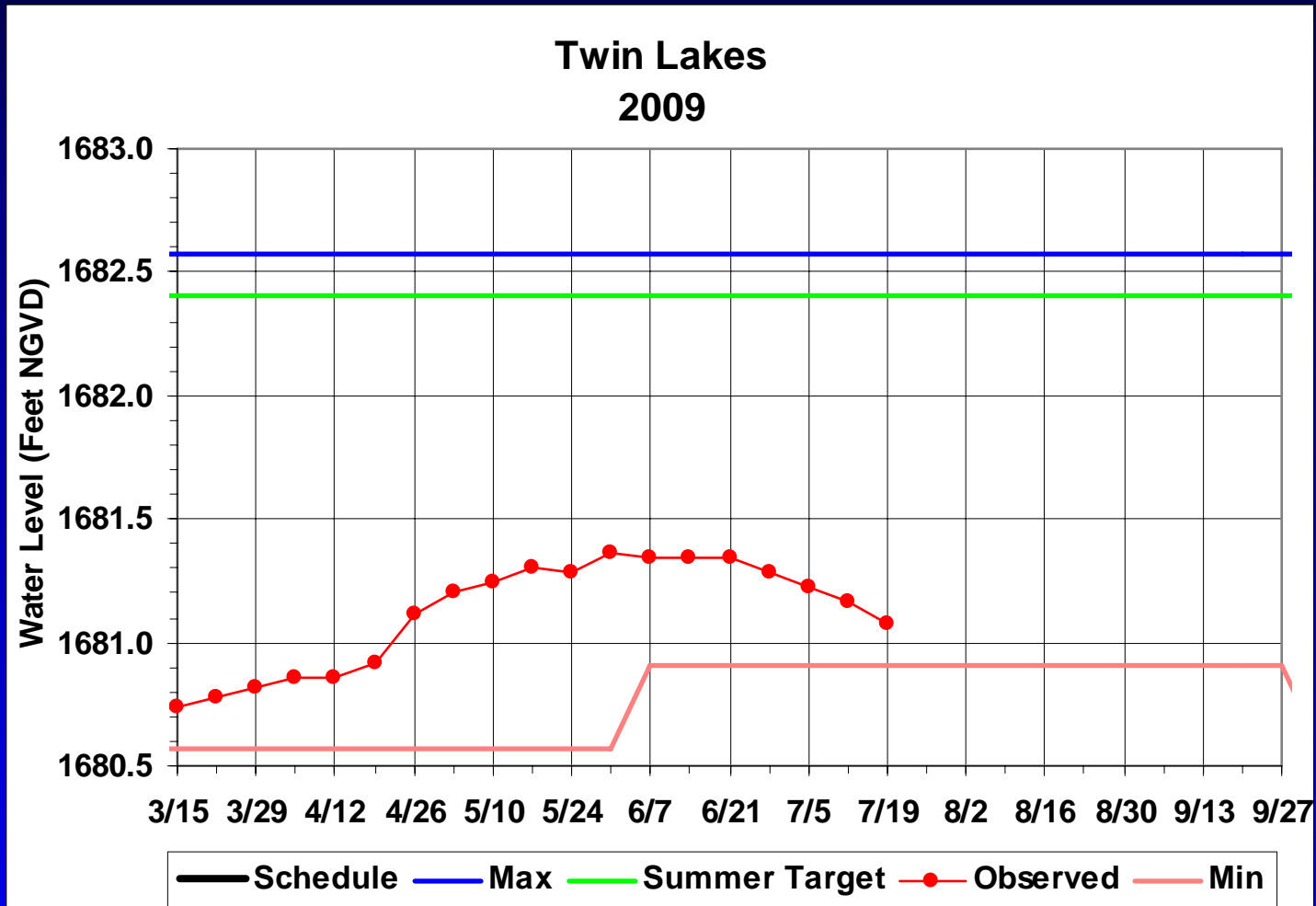


Updated: Jul 27, 2009

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DROUGHT OPERATION 2009

- **REGULATED RIVER FLOW LESS THAN HALF NORMAL**
- **HYDROPOWER PRODUCTION HALF NORMAL**
 - **LAST NORMAL MONTH WAS JUNE 2004**
- **FLOWS APPROACHING CRITICAL LEVEL FOR RIVER WATER QUALITY**
- **RIVER RECREATION IMPACTED**

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DROUGHT OPERATION 2009

- **RESERVOIR LEVELS VERY LOW**
 - **DIFFICULT ACCESS**
 - **RECREATION IMPACTED**
 - **POTENTIAL FOR FISHERY & WATER QUALITY IMPACTS**
- **HAVE CONSULTED WITH DNR & USFW ON MINIMUM FLOWS**
 - **DECISION WAS TO NOT MODIFY**

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DROUGHT OPERATION 2009

- **MAY NEED TO IMPLEMENT DROUGHT CONTINGENCY PLAN**
 - **CONSIDER REDUCING FLOW GOALS ON RIVER**
- **WINTER 2009-10**
 - **REDUCE OR ELIMINATE WINTER DRAWDOWNS**

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**THANK YOU
QUESTIONS?**