Missouri River
2005 Annual Operating Plan

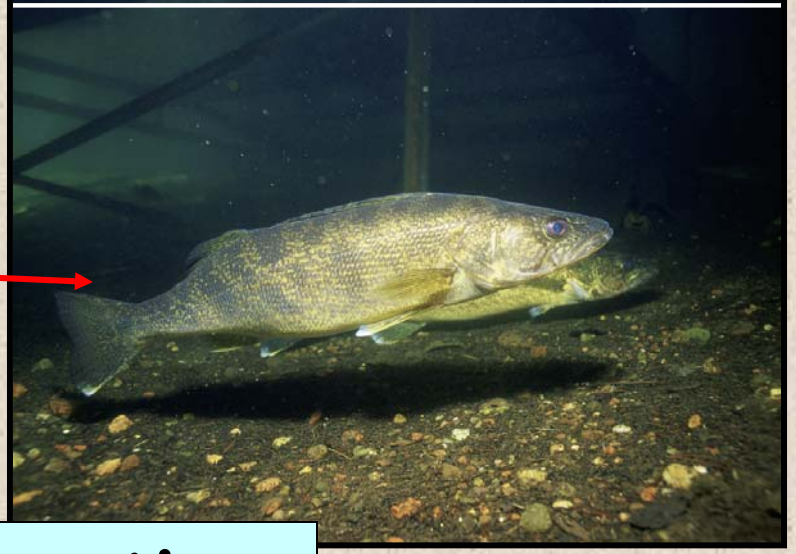
SDGF&P and SDDENR

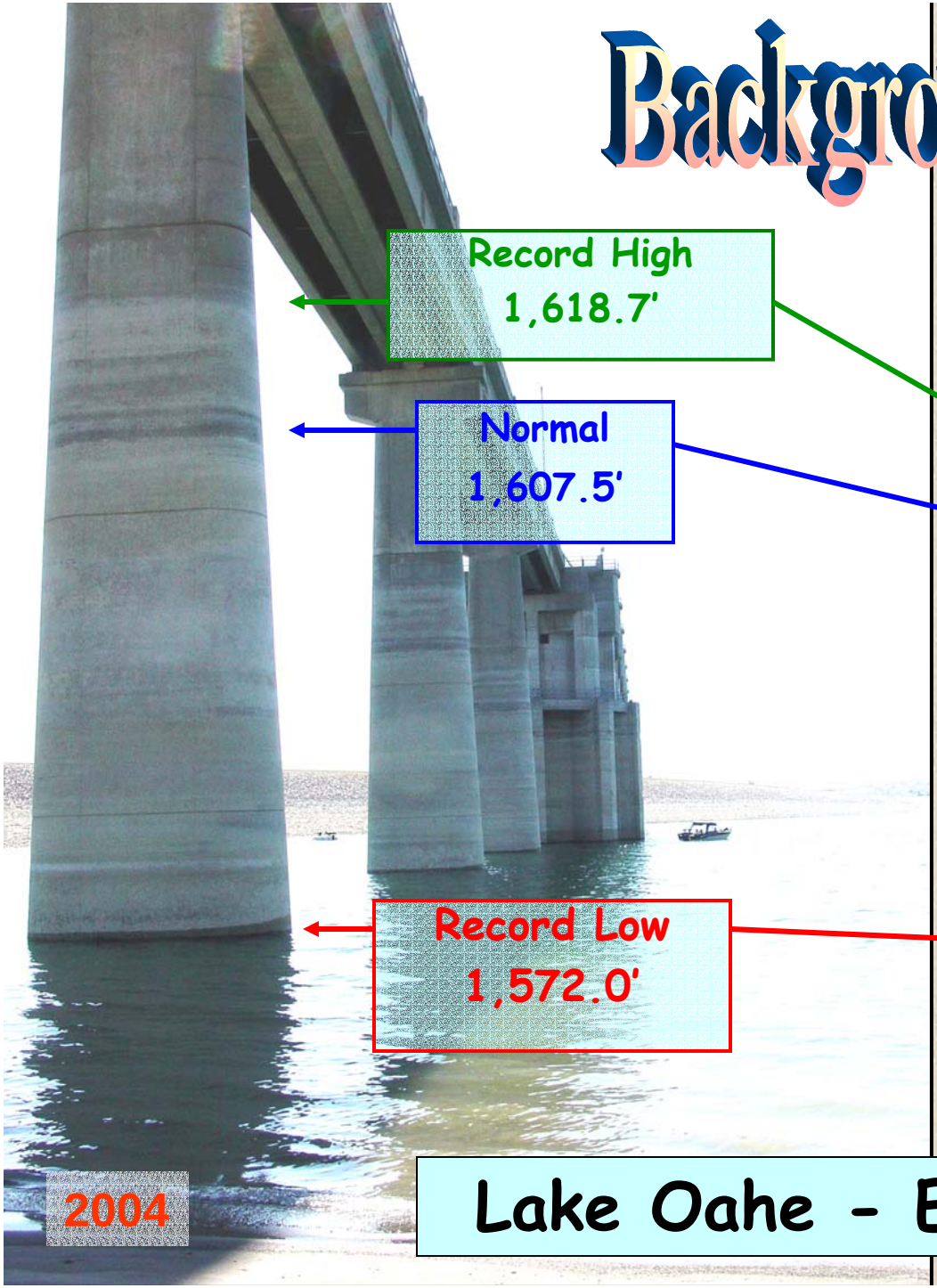
Background

Record High
1,618.7'

Normal
1,607.5'

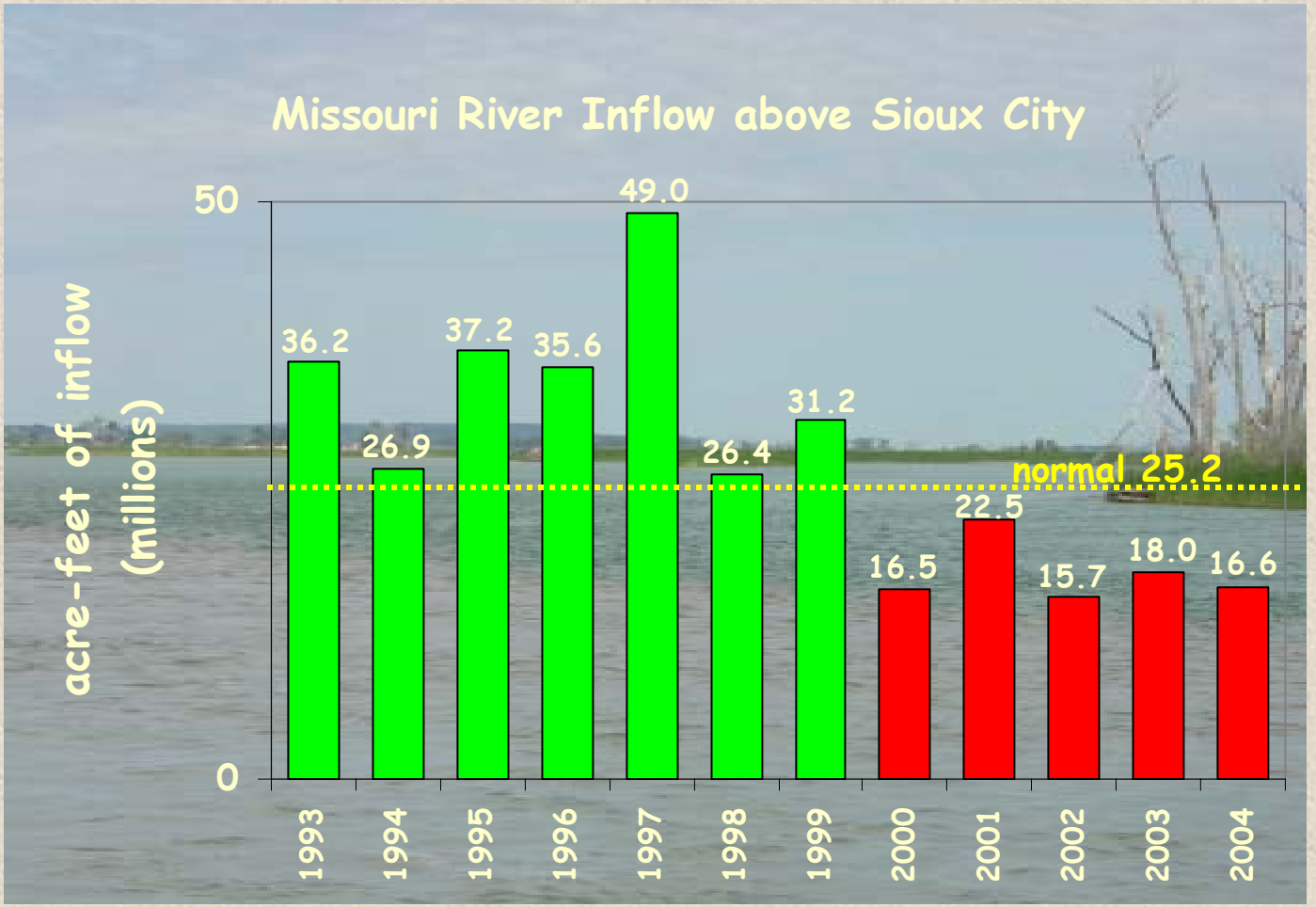
Record Low
1,572.0'



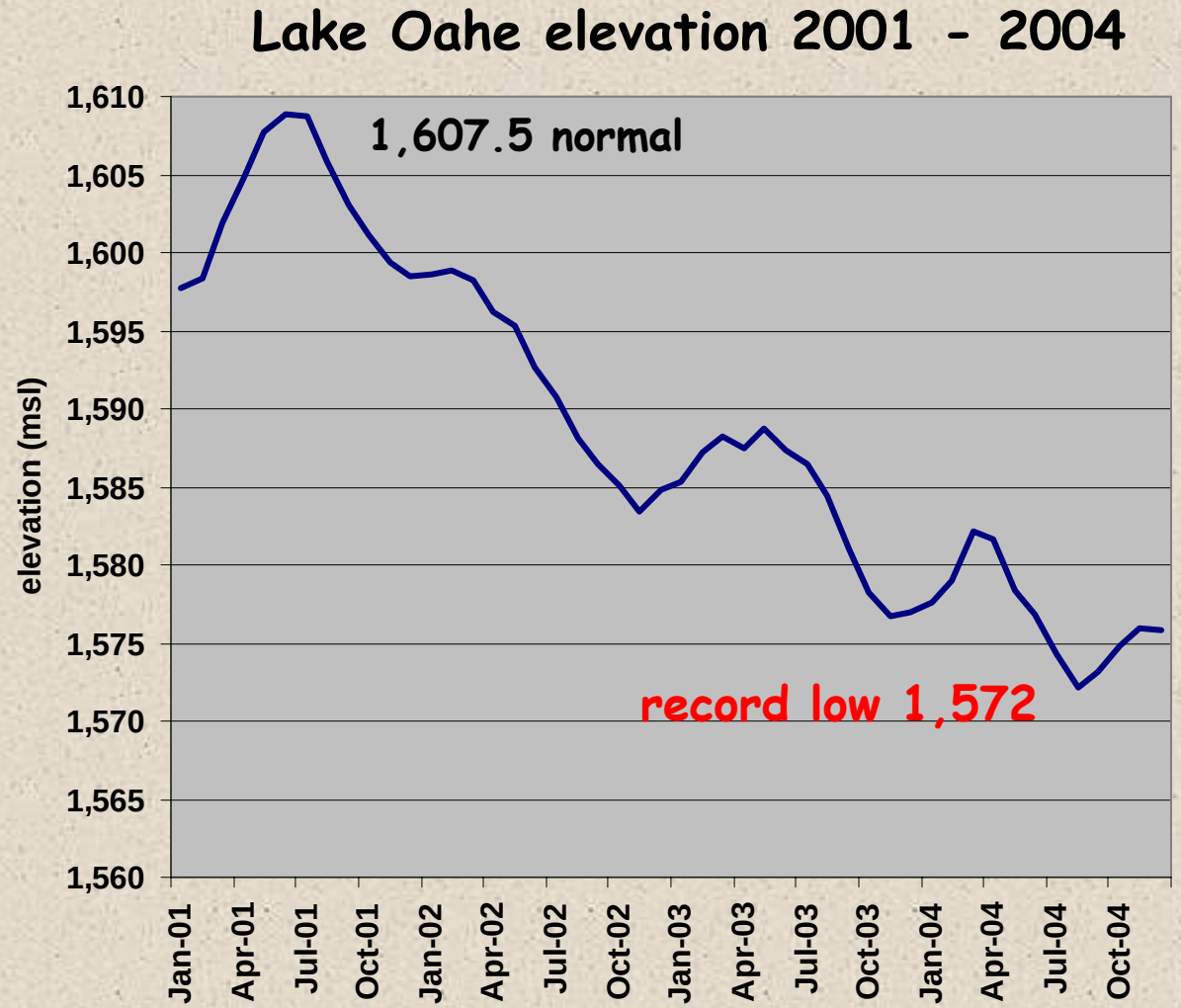


Lake Oahe - Elevation

Runoff into the Missouri River above Sioux City has averaged 17.9 million acre feet (MAF) the last five years.
Normal runoff is 25.2 MAF.



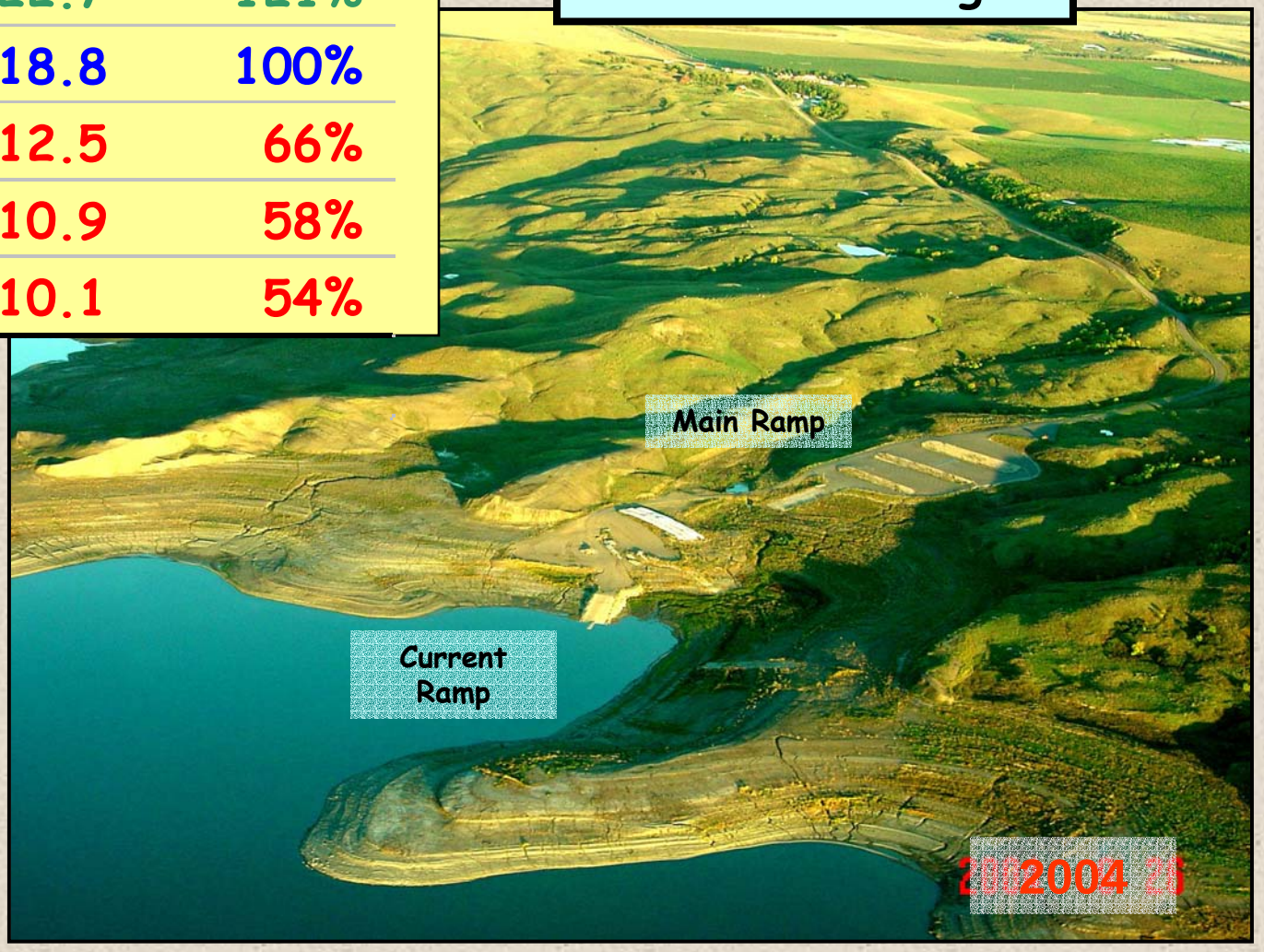
Lake Oahe, Lake Sakakawea and Fort Peck Lake all experienced record lows due to the combined impact of the drought and water allocation decisions.



Lake Oahe - Volume

Volume - million acre feet	(MAF)	(% of norm)
1995 & '96	22.7	121%
Aug. 2001	18.8	100%
Nov. 2002	12.5	66%
Dec. 2003	10.9	58%
Aug. 2004	10.1	54%

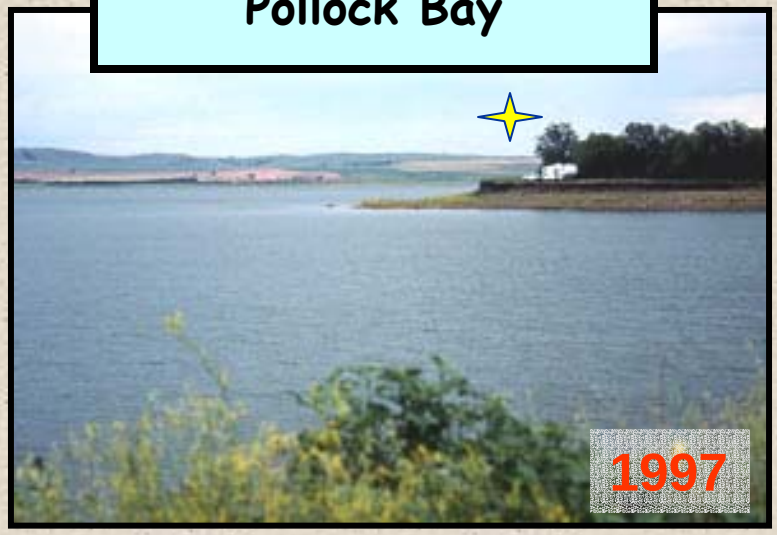
Bush's Landing



Lake Oahe - Surface Area

	Surface Area (acres)
1995 & '96	369,000
Aug. 2001	312,000
Nov. 2002	224,000
Dec. 2003	201,000
Aug. 2004	188,000
Below normal	-124,000

Pollock Bay



Pollock ~~Bay~~ Today

Mobridge, SD

Indian Memorial

The Bay

2004

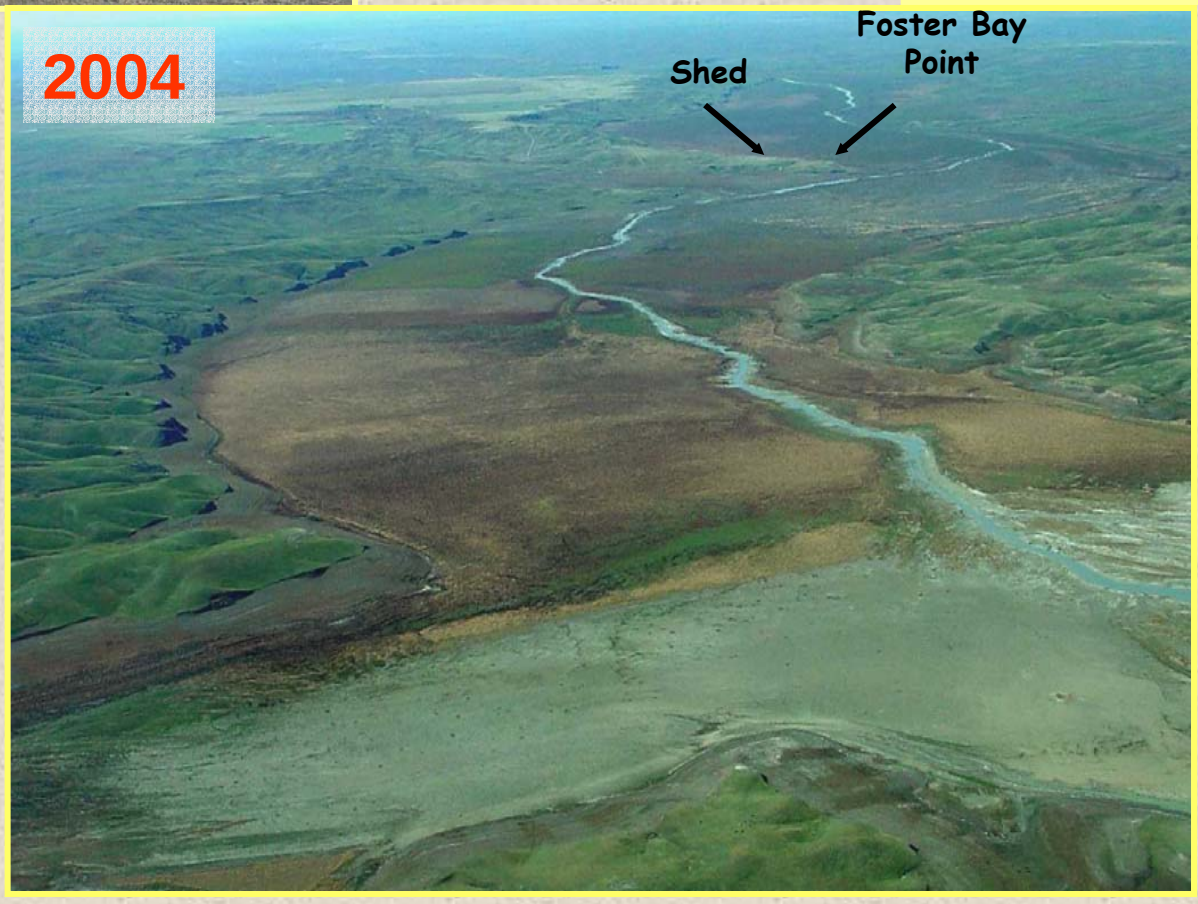
1997

Whitlock Bay

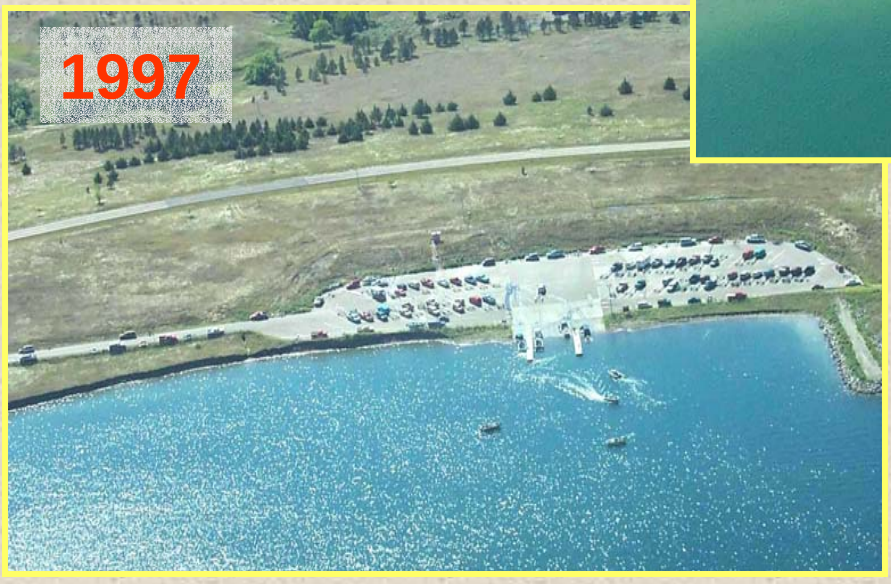
Boat Ramp

Foster Bay Walleye Spawning Shed

Cheyenne Arm of Lake Oahe



West Shore
Boat Ramp

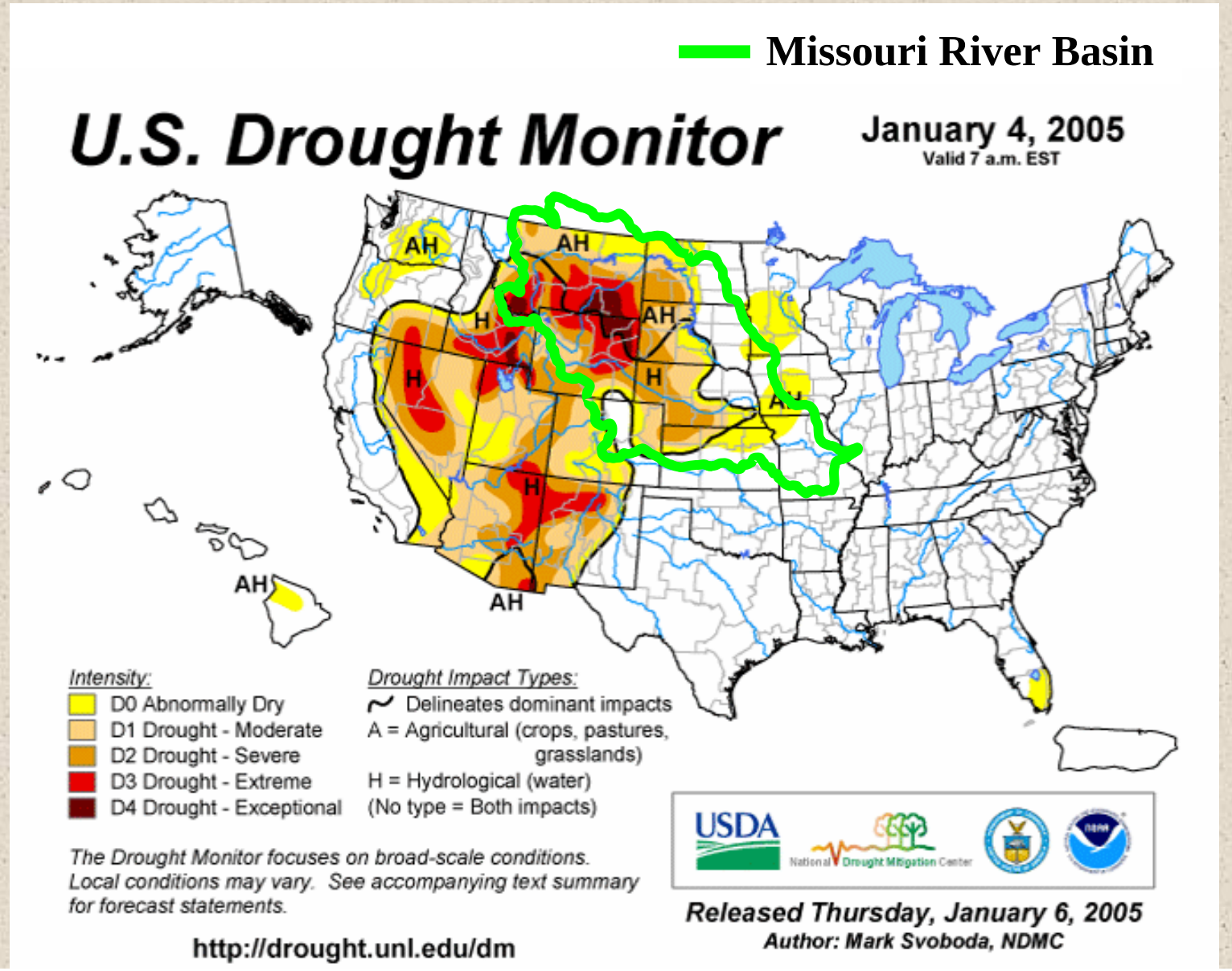


Outlook

Water management decisions and five consecutive years of below normal runoff have shrunk the largest of the Missouri River reservoirs to record lows.

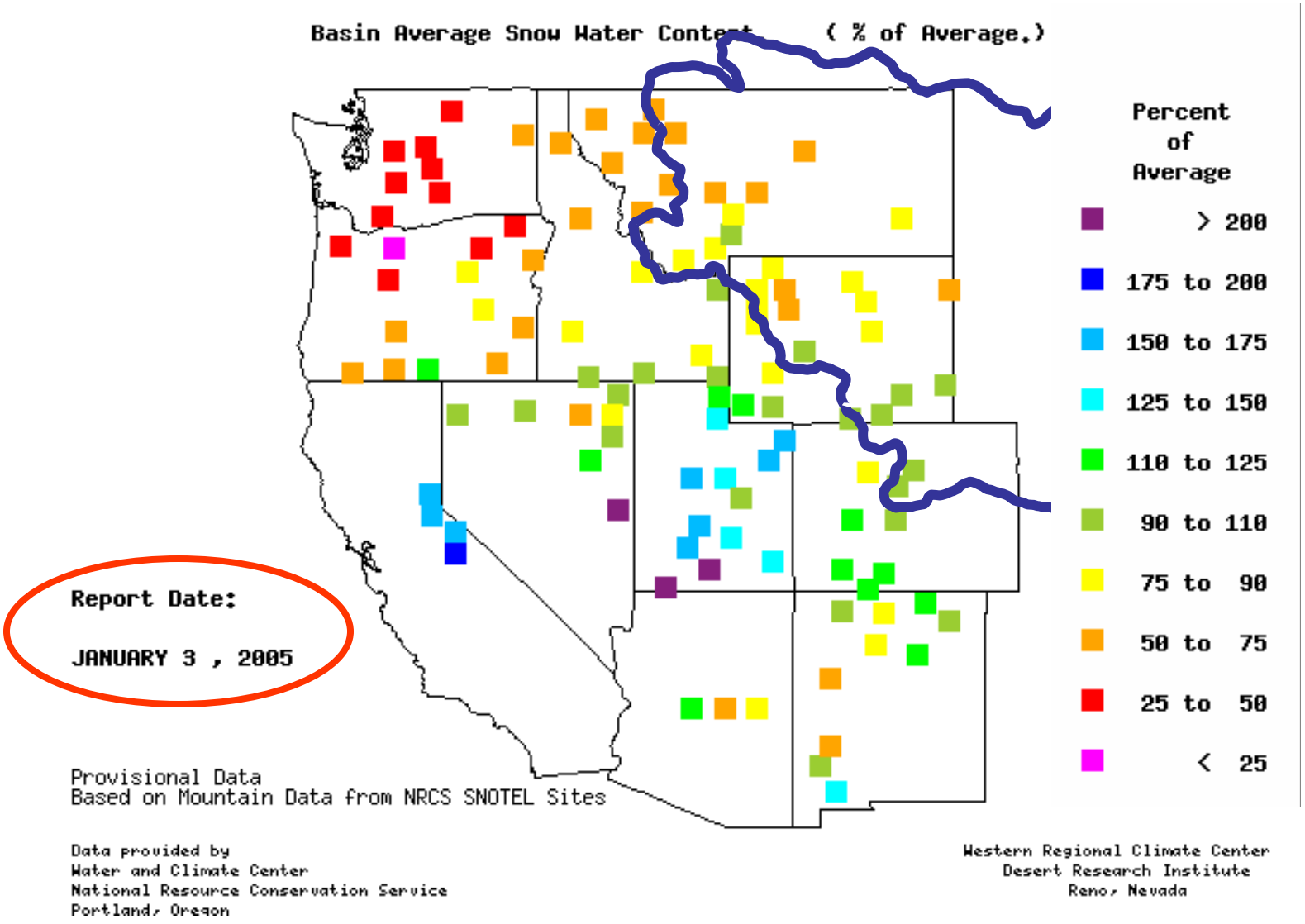
What can we expect in 2005?

Much of the Missouri River Basin is in either the 5th or 6th year of drought



Snowpack water content is well below average (50-75% of normal) for the portion of the basin supplying the majority of Missouri River runoff.

Missouri River Basin



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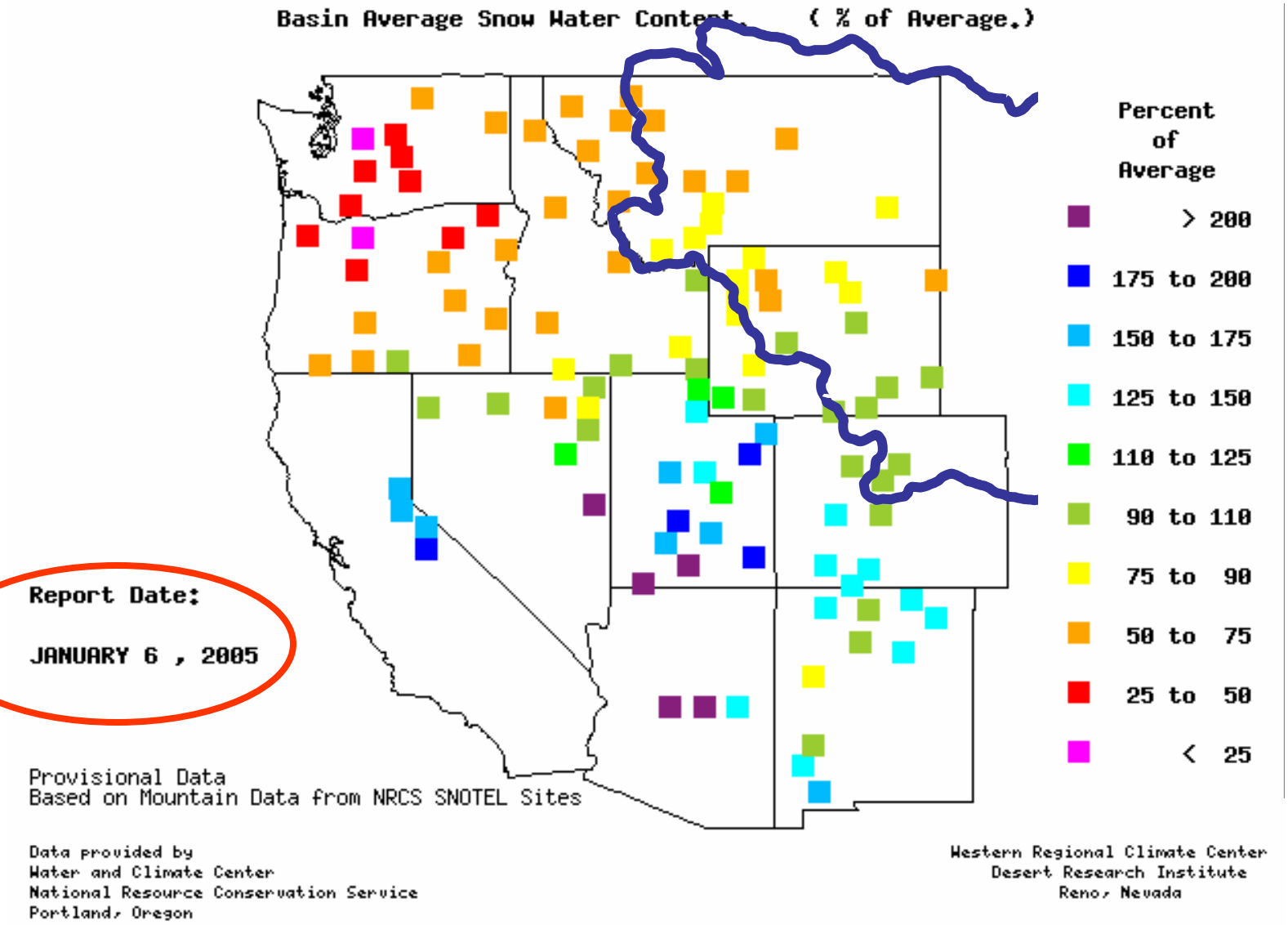
Missouri River Basin

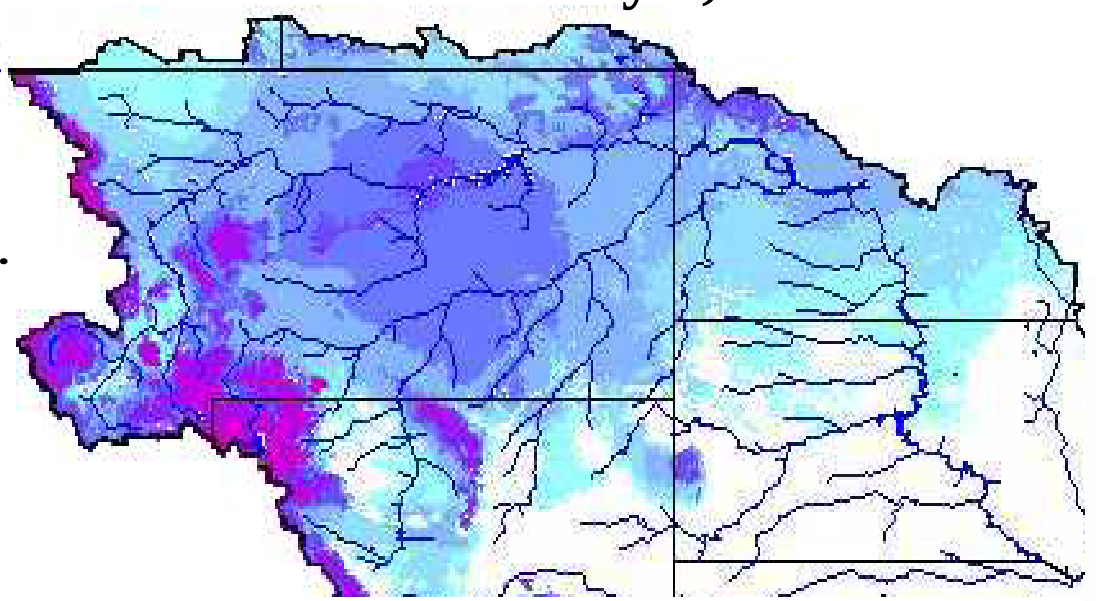


Inches of Snow Water Equivalent

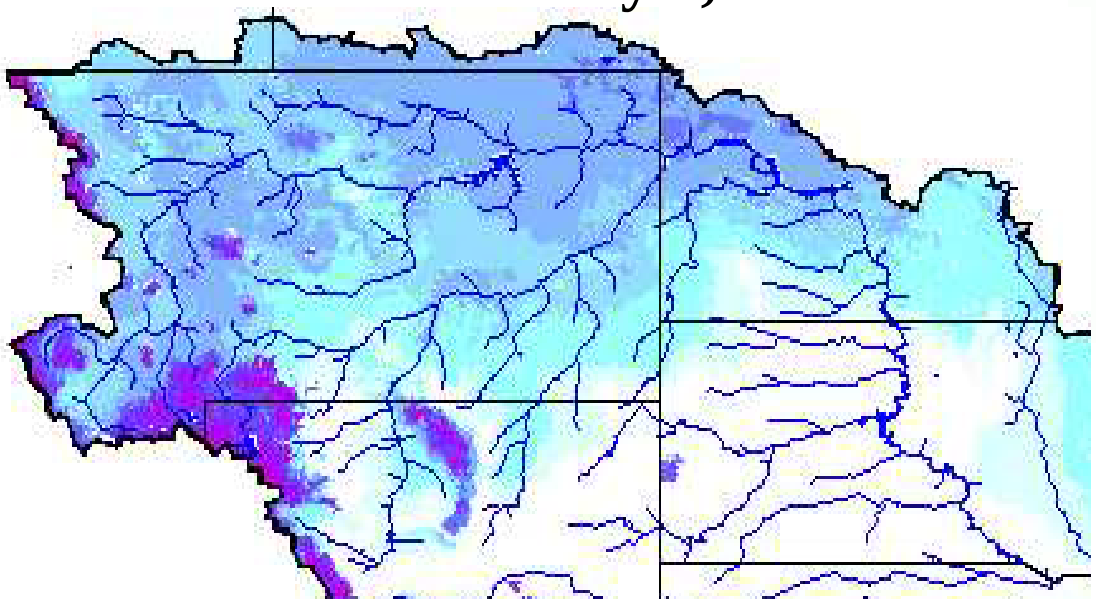
Runoff in 2004 was only 66% of normal.

Both mountain and plains snowpack are considerably lower than the same time last year.

January 3, 2004



January 3, 2005

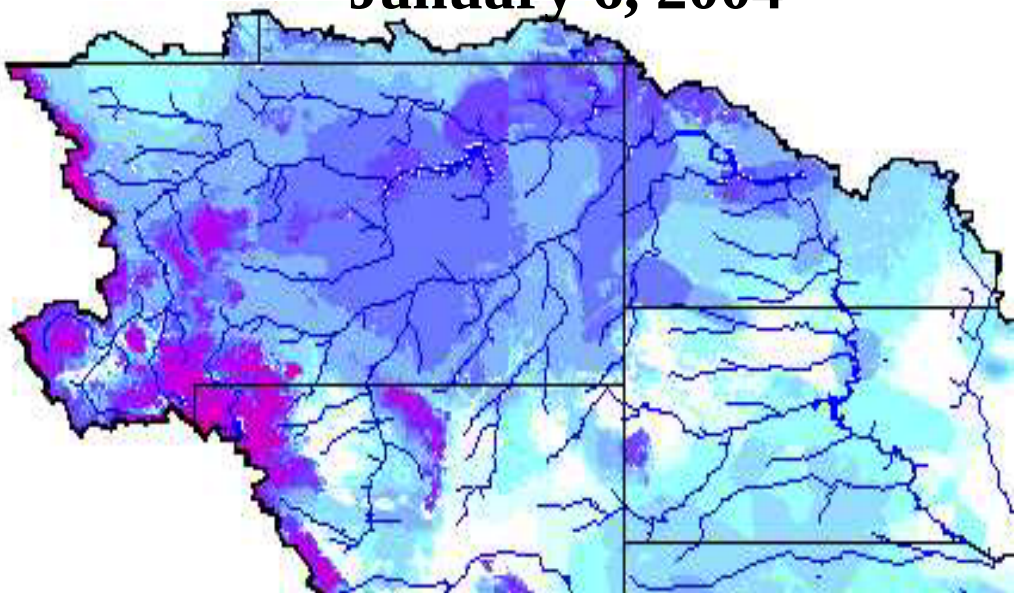


Inches of Snow Water Equivalent

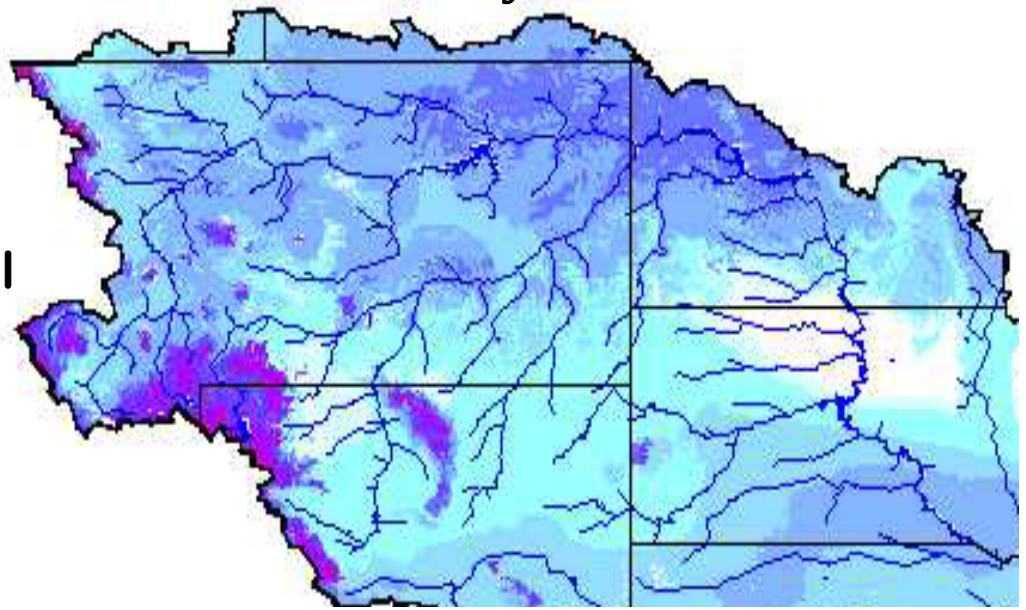
Runoff in 2004 was only 66% of normal.

Snow pack above the mainstem dams is still well below normal.

January 6, 2004



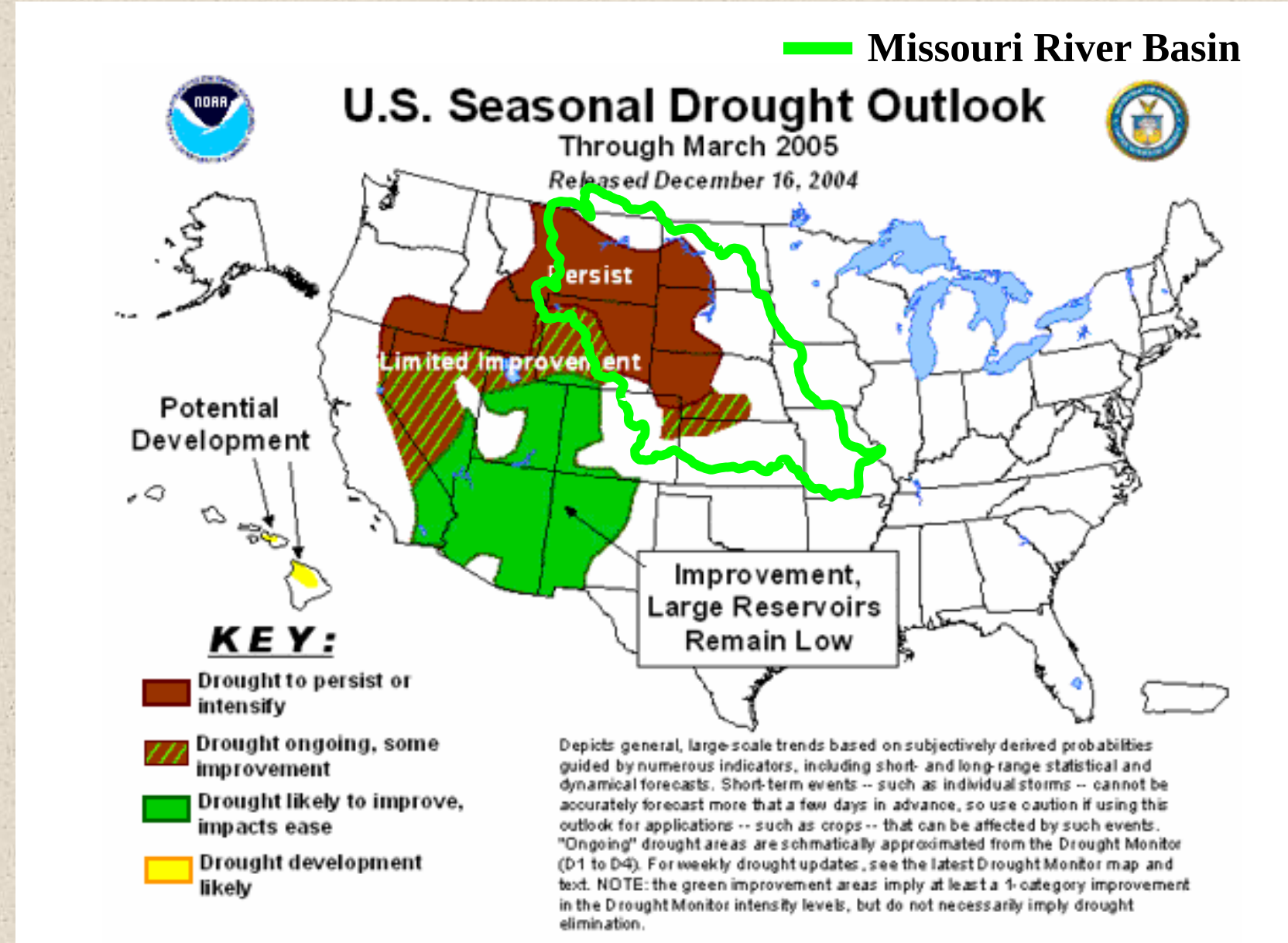
January 6, 2005



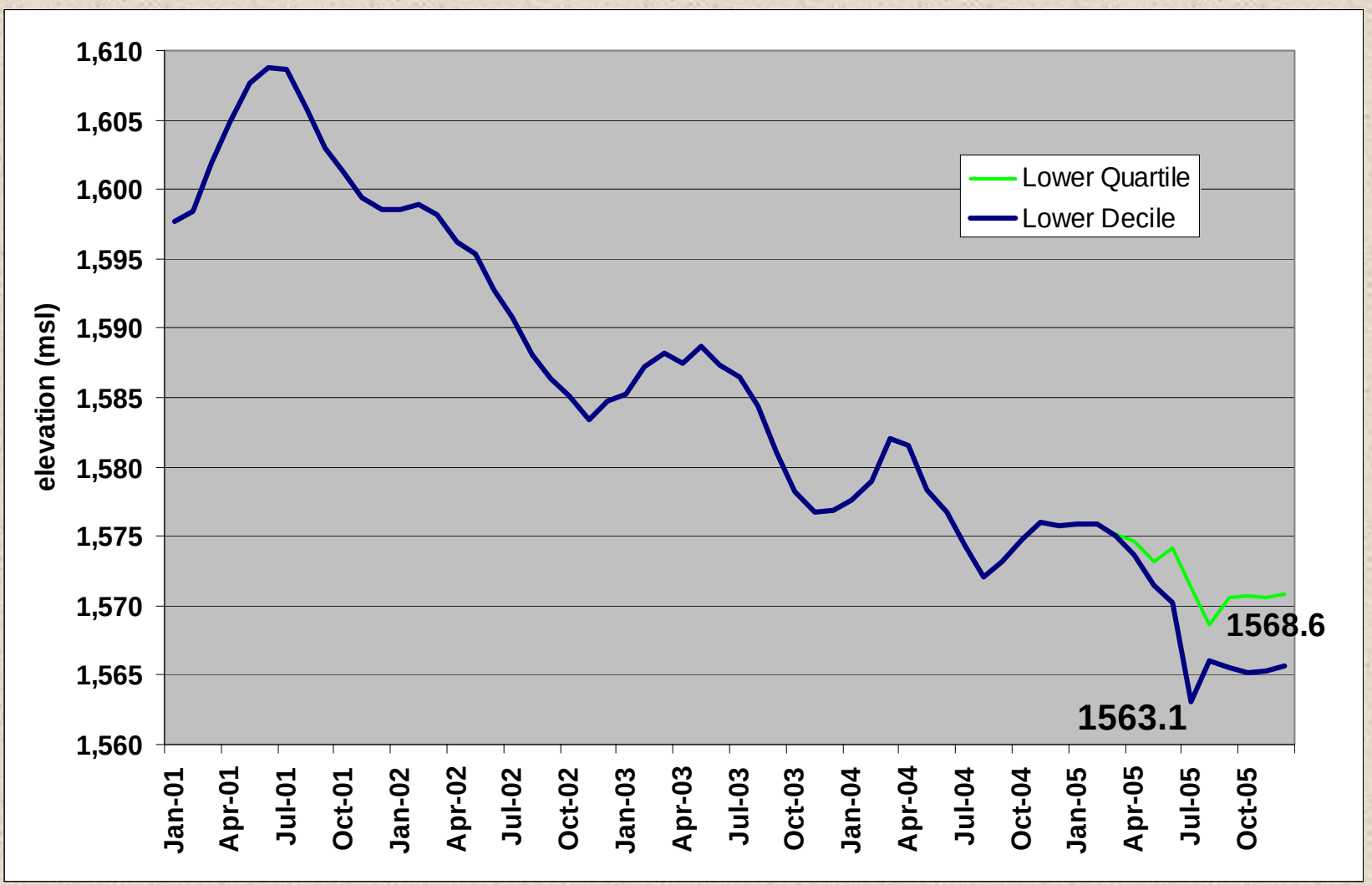
Inches of snow water equivalent

39 to	118
30 to	39
20 to	30
9.8 to	20
5.9 to	9.8
3.9 to	5.9
2.0 to	3.9
0.98 to	2.0
0.39 to	0.98
0.20 to	0.39
0.04 to	0.20
trace to	0.04
0.00 to trace	

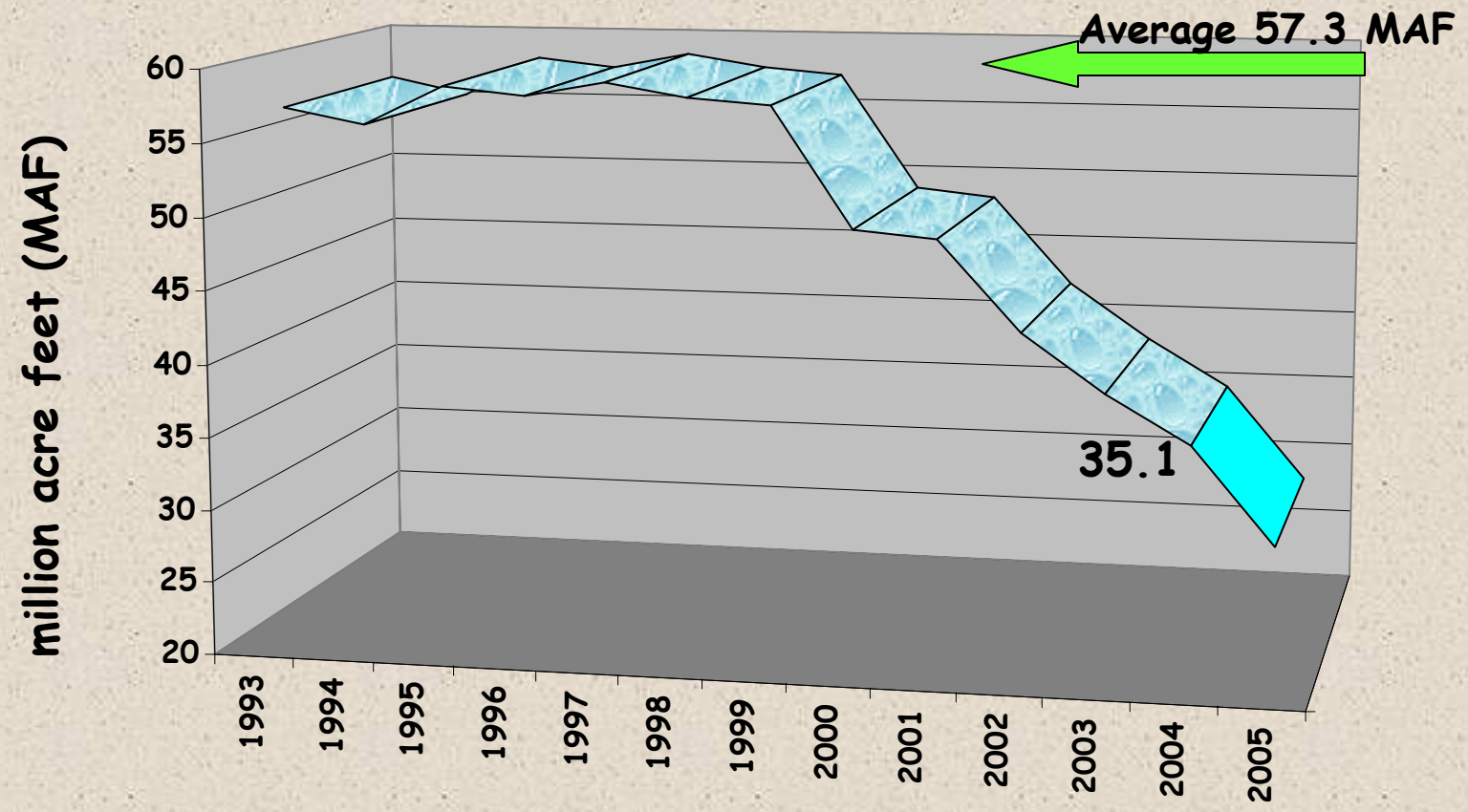
Drought is expected to persist at least through March in the majority of the Missouri River Basin.



In 2005, Lower Decile to Lower Quartile runoff conditions will be realized if drought conditions persist.
Lake Oahe will fall to a new record low.



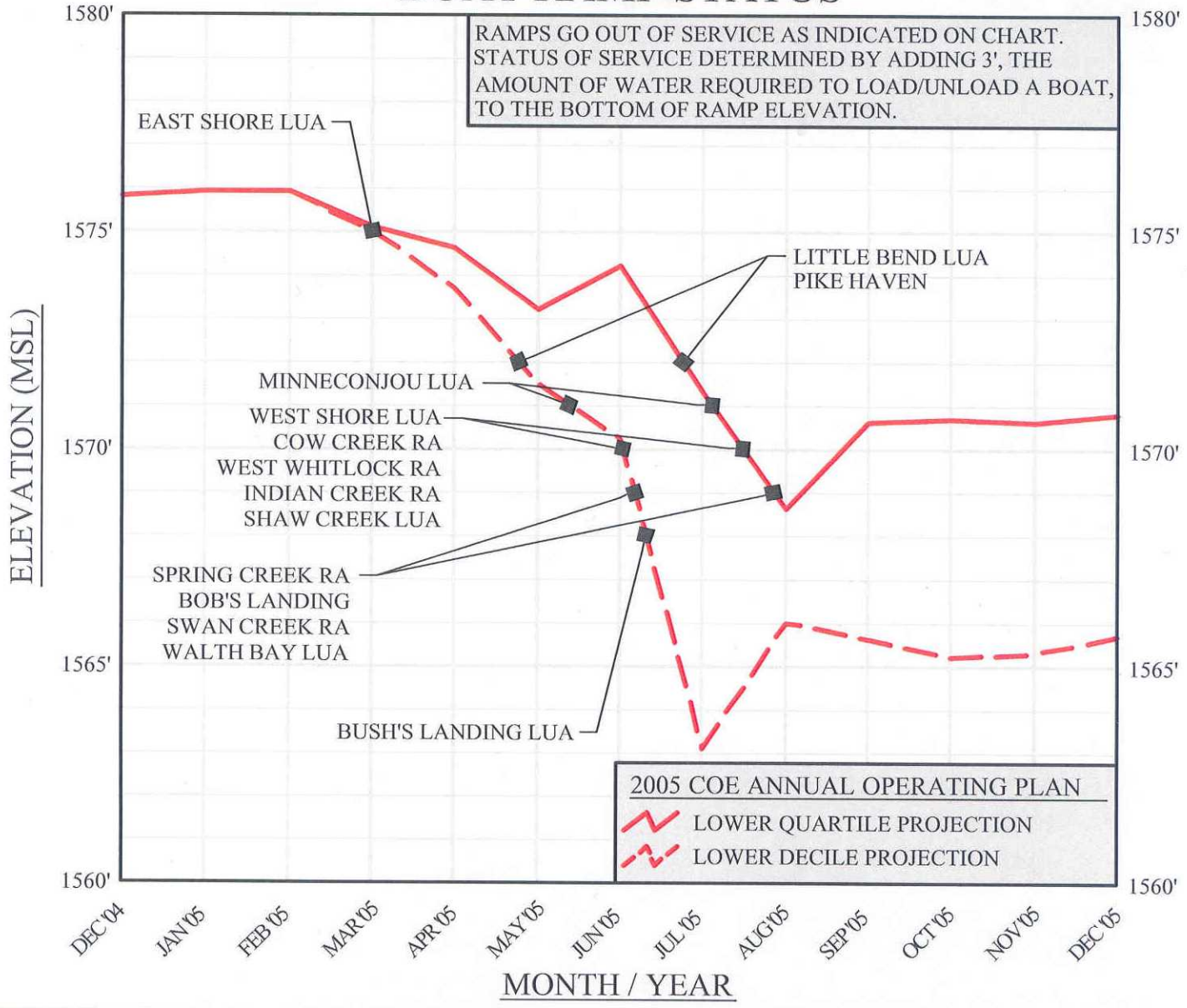
- System Storage is at an all time low of 35.1 MAF.
- If storage is at 31 MAF on March 15th of 2006 a navigation preclude will be implemented., (i.e. no navigation support & Gavins Point releases of 18 kcfs during the summer).
- All of the states lose if we hit the navigation preclude. The downstream states lose their navigation, power plants dependent on Missouri River flows will have to limit power production and upper basin states lose because we will be at 31 MAF of storage.



End of the Year System Storage

Lake Oahe Boating Access

LAKE OAHE WATER LEVEL
DECEMBER 2004 - DECEMBER 2005
AND
BOAT RAMP STATUS



Boating Access

Issues:

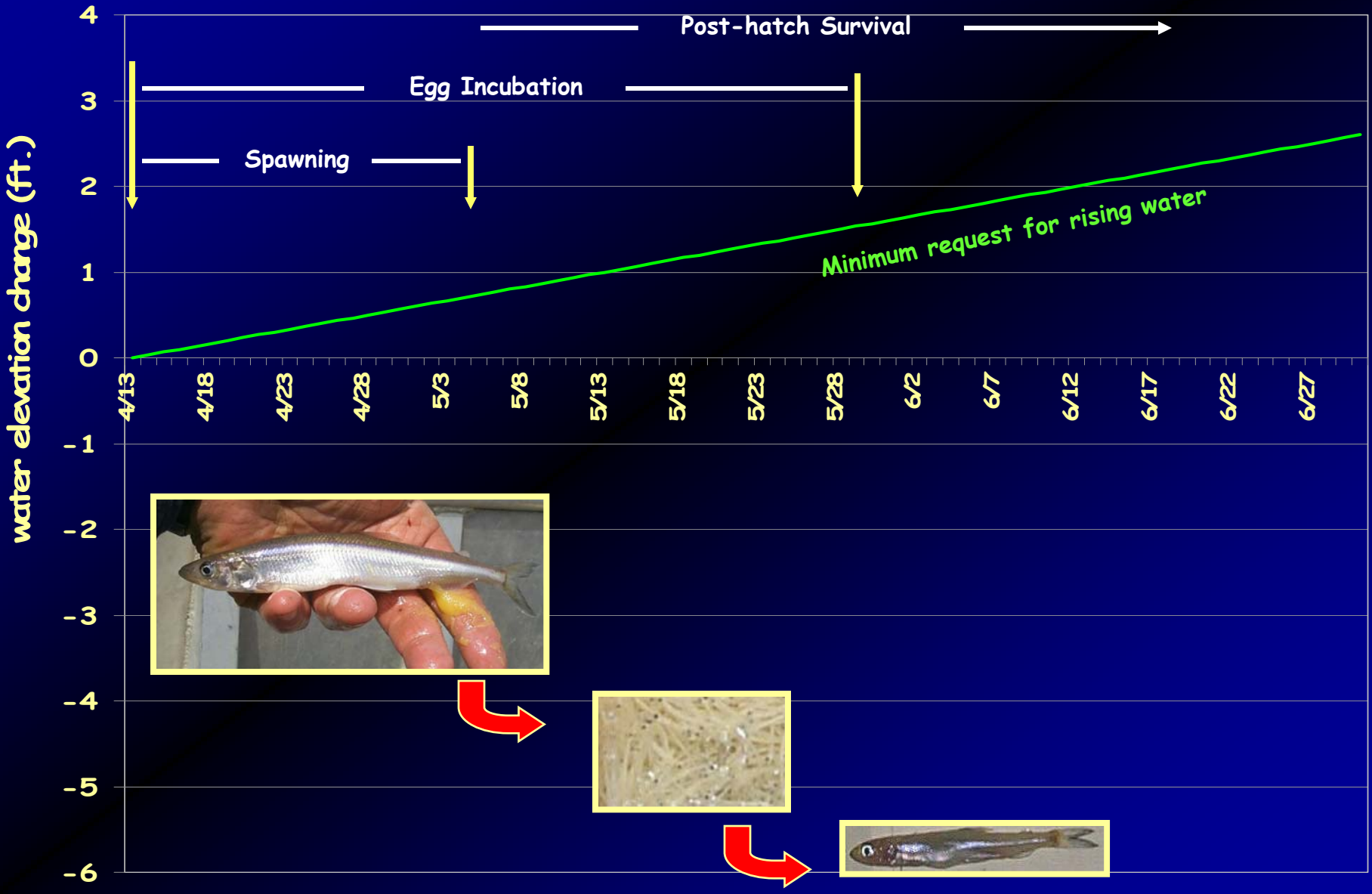
- From 2002-2004 SDGF&P has spent $3.1 million to extend and build new ramps on Lake Oahe.
- No ramps would be available today without these expenditures,
- At current lake levels 13 of 32 ramps are usable.
- Only 9 of 13 ramps can be extended to handle more than an additional 6 feet of lake level drop.
- Construction of new roads, parking lots and ramps will be required at the other 4 remaining sites.

Recommendations:

- Water conservation will lessen the impact to boating access and spending required to maintain access.
- The cost of extending boat ramps and building new boat ramps to maintain access on Lake Oahe will be at a minimum of $1 million and as much as $1.8 million.
- Without increased water conservation and/or extensions, all of Lake Oahe's boat ramps would be out of service by July or August.

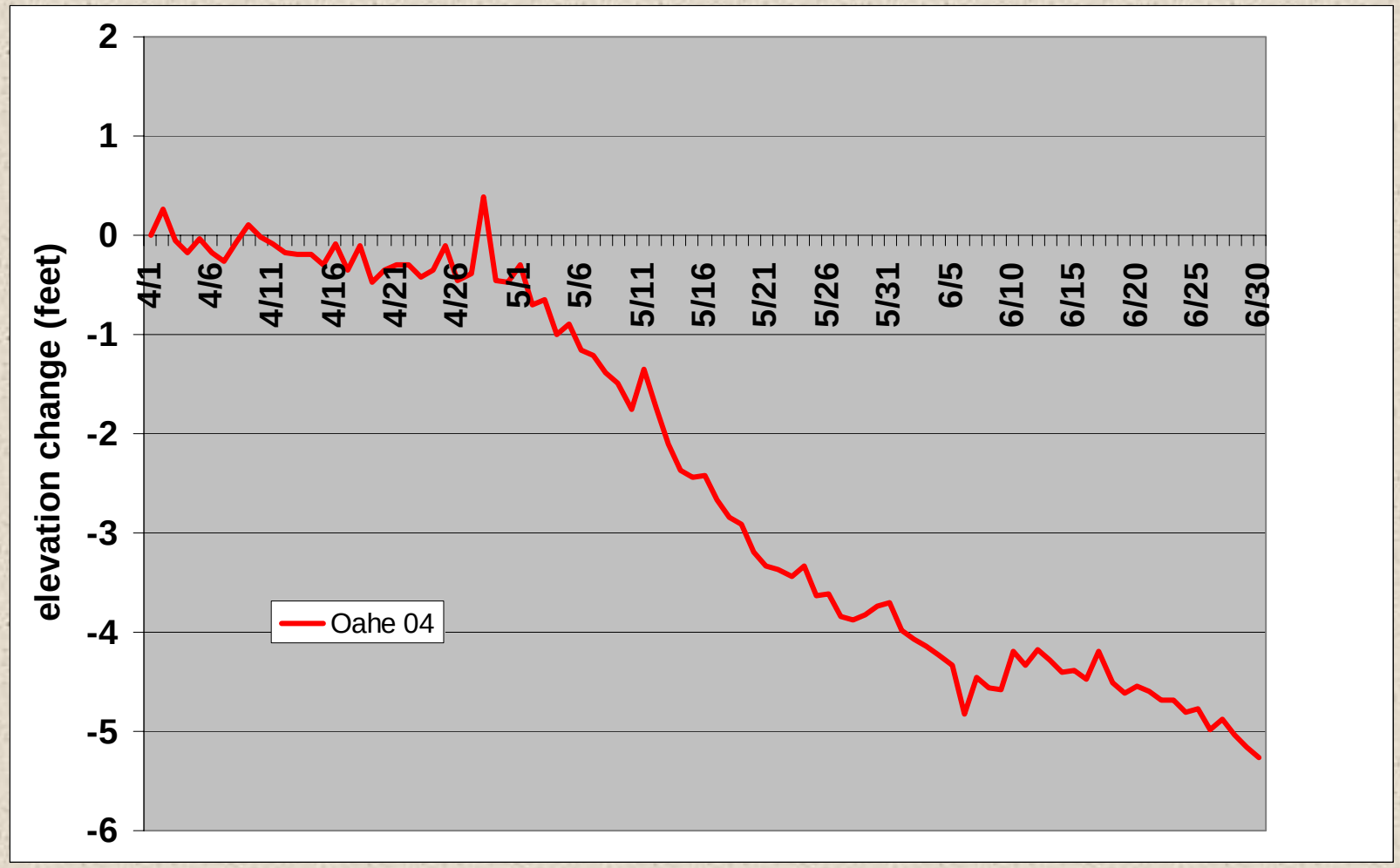
Lake Oahe Fishery

Lake Oahe Water Elevation Change During the Critical Period for Rainbow Smelt



The USACE attempted to hold Lake Oahe stable in April of 2004.

Navigation support and the rotation of emphasis to Lake Sakakawea and Fort Peck Lake caused Lake Oahe to decline rapidly after April.



Fishery

From the 2005 AOP:

- "For Lower Quartile and Lower Decile runoff scenarios, the Corps will, to the extent reasonably possible, set releases to result in steady to rising pools at Oahe during April and May, and steady to rising pools at Fort Peck during May and June."
- "Oahe pool levels will be maintained by local runoff and releases from Garrison Dam."
- "Adjustments to Garrison's releases, however, may be limited when the terns and plovers begin nesting."

Recommendations:

- Increase Water Conservation early in the season (April - May) to allow lake levels to rise as much as possible.
- Improve water conservation so reduction in lake volume (habitat) is not as significant.
- Garrison steady releases should be set high enough to maintain Oahe's elevation during April and May.
- Despite falling water levels, access will be maintained to Lake Oahe so anglers can continue to enjoy the great fishing Oahe has to offer.

Water Supply

Water Supply
Drinking Water

Issues:

- **Drinking water system intake access will continue to be a problem for some systems.**
- **Mid-Dakota and WEB rural water systems and City of Mobridge intakes are set at low enough elevations that they won't be affected for at least a couple of years if the drought continues.**
- **Wakpala and Tri-County water systems both are at levels that could potentially be affected by dropping water levels this year.**
- **All systems are experiencing increased water treatment and pumping costs.**

Recommendations:

- **The Wakpala system's intake was extended and lowered this year by the the US Bureau of Reclamation. If water levels continue to drop, the system may be impacted again this year. Reclamation funded the extension and is still the lead agency.**
- **Tri-County has submitted a Consolidated funding application to the Board of Water and Natural Resources for a portion of the costs of emergency operations. The Indian Health Service has also been providing technical assistance to Tri-County.**

Water Supply
Irrigation

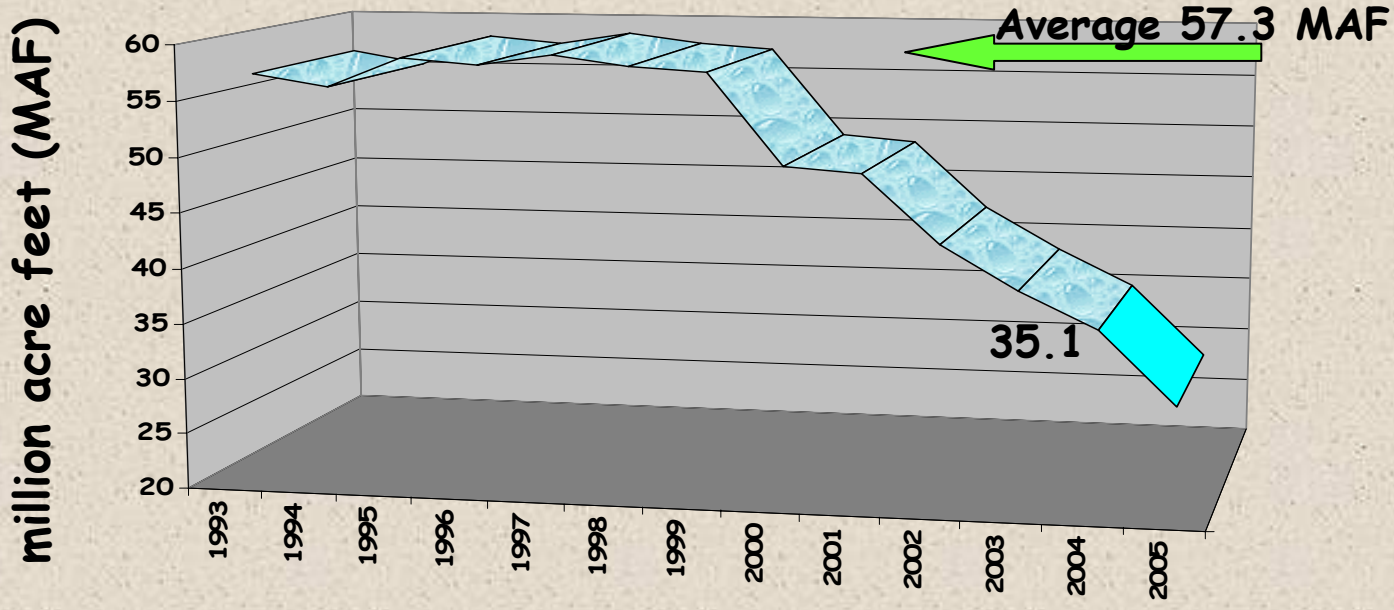
- Water right holders reported, in 2002, approximately 15% of the authorized acres were not irrigated from Oahe Reservoir due to low water levels.
- In 2003 water right holders reported not irrigating approximately 36% of the acres due to low water levels.
- With 68% of the irrigation water rights reporting, approximately 41% of the acres were not irrigated in 2004 due to low water levels.

Recommendations:

- Due to economics and physical limitations, much of the irrigation from Oahe Reservoir will not occur until reservoir levels recover.
- Continue to work towards more conservation in order to allow for quicker water level recovery when the drought breaks.

All of the states lose if we hit the navigation preclude. The downstream states lose their navigation, power plants dependent on Missouri River flows will have to limit power production and upper basin states lose because we will be at or below 31 MAF of storage.

It is to everyone's advantage to implement more stringent water conservation measures.



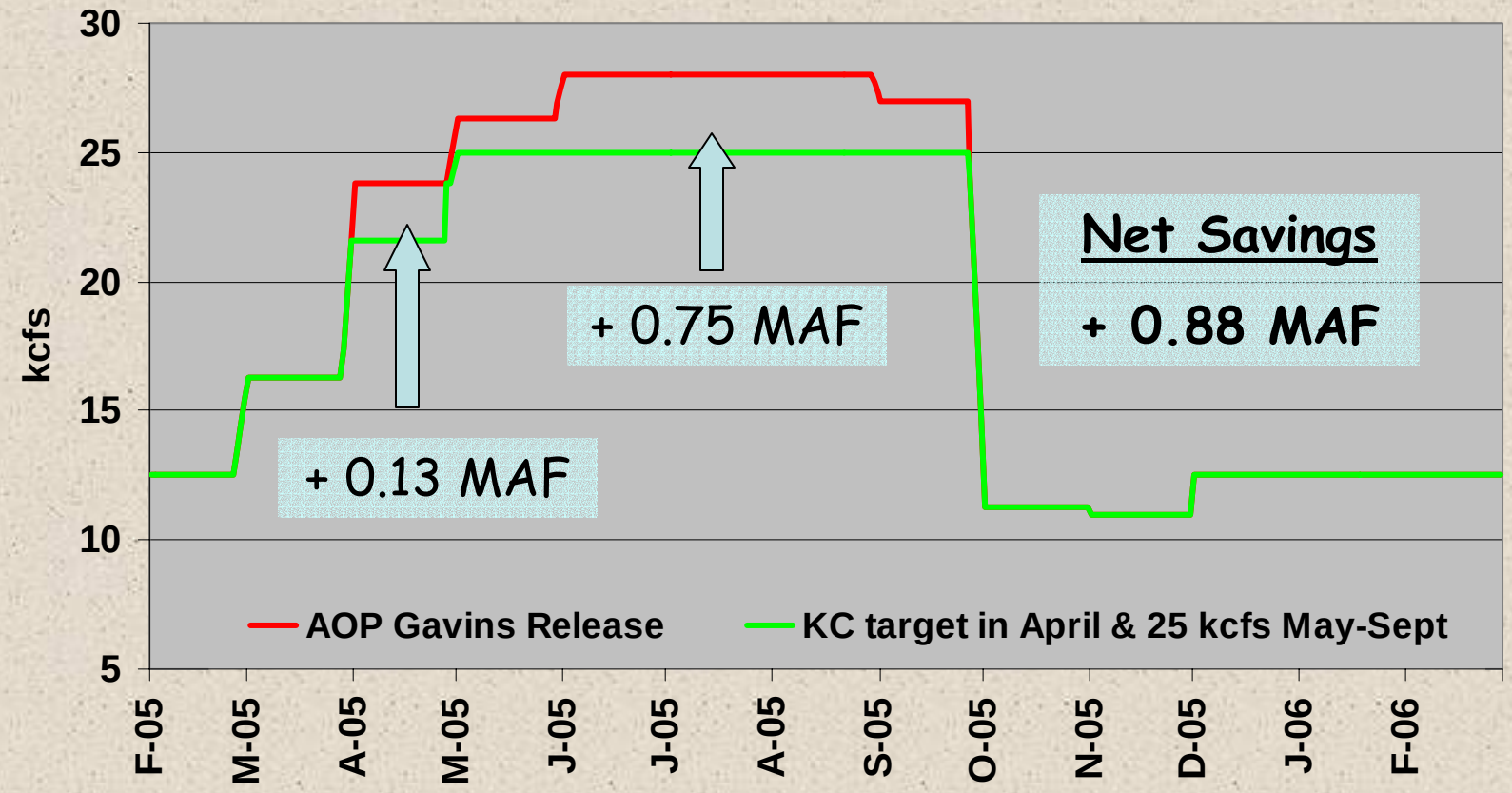
End of the Year System Storage

Conservation Measures

- While the Corps 2005 Annual Operating Plan is consistent with the new Master Manual it is essential that everything possible be done to conserve water.

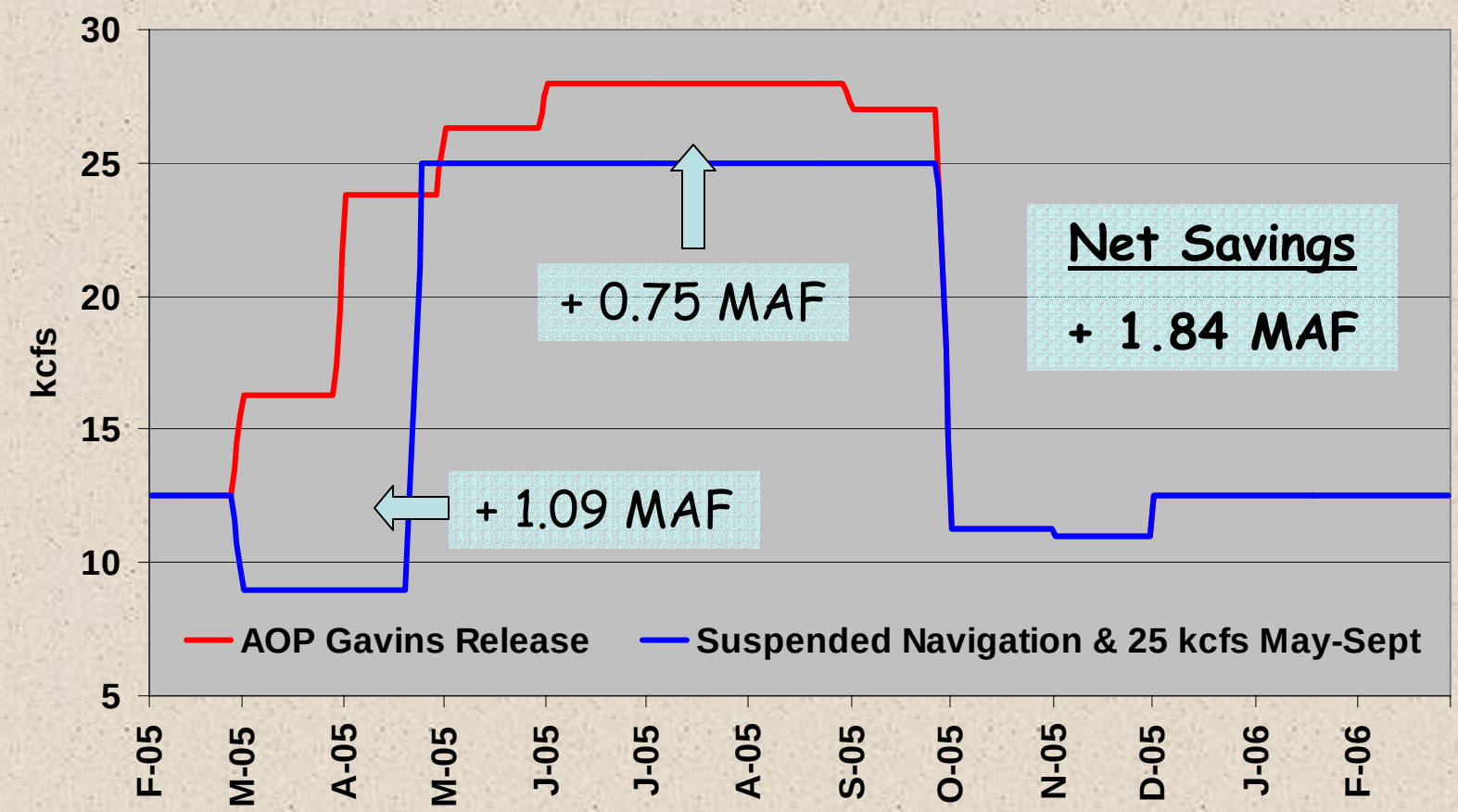
Essential Conservation Measures

- At a minimum navigation support should be limited to Kansas City and down river until May 1, similar to operations in 2004.
- Steady release flows to meet navigation targets in the summer were set in May of 2004 at 30 kcfs (providing a 90 % assurance of uninterrupted service during the summer). Steady release flows should be set at 25 kcfs in early May (providing a 65% assurance of uninterrupted service during the summer).



Conservation Measures Necessitated by Continuation of Severe Drought

- If the snowpack outlook remains poor through March, the navigation season should be suspended until May 1.
- Steady release set at 25 kcfs from May-September.



Balancing the Books

Mar. 1, 2006 storage (34.7 MAF to 28.9 MAF) based on Jan. 1, 2005 projections
To avoid the 31 MAF navigation preclude
Savings needed = 0 - 2.1 MAF

	Water Storage Savings	Percentage of Lower Decile Shortage (2.1 MAF)
Essential Conservation KC target in April 25 kcfs release May-Sept	+ 0.88 MAF	42 %
Continuation of Severe Drought Suspended Navigation April 25 kcfs release May- Sept	+ 1.84 MAF	88 %

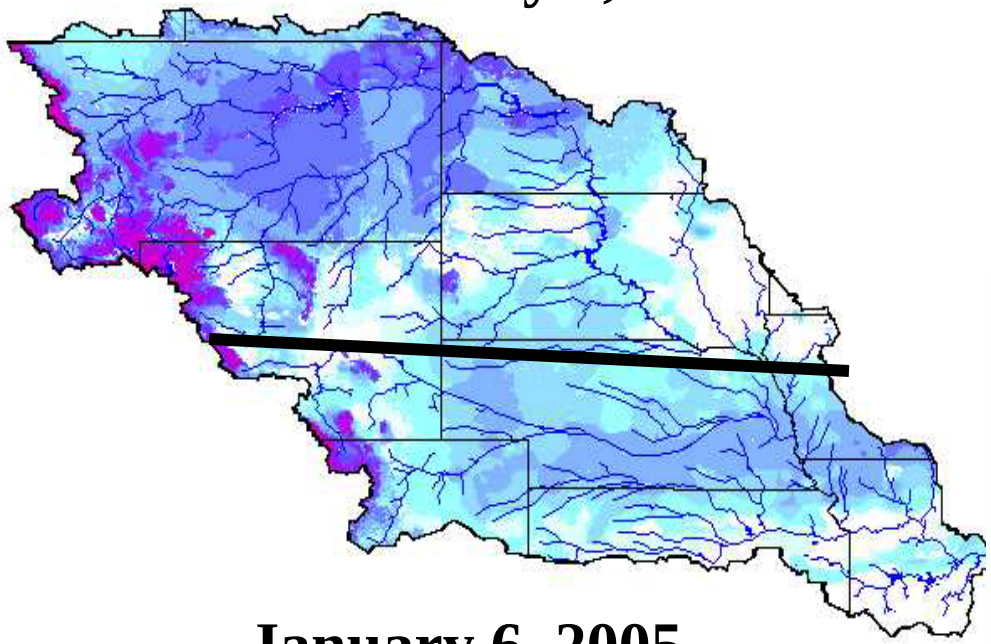
Conclusions

- Drought is a basin-wide concern. All states will benefit from not reaching the navigation preclude level of 31 MAF. We believe the potential exists for building support from other states to implement more stringent conservation measures.

- If we reach the navigation preclude:
  - Flows to support navigation on the lower river will be discontinued.
  - Power generation from coal-fired and nuclear power plants will be reduced significantly.
  - Mainstem power generation will experience further declines.
  - Main street businesses that rely on the sport fishing industry will feel additional impacts.
  - Public drinking water systems face potential loss of water supply.
  - Increased costs of "chasing-the-water" will result in more irrigated acreage being dry land farmed.

- By implementing additional conservation measures in 2005, the basin states will minimize or avoid the effects of reaching the most stringent of conservation measures, the navigation preclude, in 2006.

January 6, 2004



January 6, 2005