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U.S. Army Corps of Engineers

Omaha District

Monthly Drought Report

January 2007

US Army Corps
of Engineers
Omaha District

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CURRENT CONDITIONS

The drought in the mid-west refuses to loosen its grip as evidenced by the current Drought Monitor. Also, the long term outlook continues to look poor for the Missouri River Basin. Several years of normal or above normal precipitation would be necessary to alleviate the hydrologic deficits long term. In the near term, however, recent moisture, has helped to alleviate some short-term drought conditions. This can be seen quite clearly in the Palmer Drought Severity Index later in this report.

Precipitation Departures

Precipitation departures from normal during the last 72 months for the United States are shown in Figure 1. In Montana, accumulated precipitation ranges from near normal to nearly a 15-inch deficit. Wyoming's accumulated precipitation varies widely from near normal to a 20-inch deficit. Nebraska ranges from near normal to a 15-inch deficit. The Dakotas generally range from near normal to a 10-inch surplus. The South Platte River Basin in Colorado still shows precipitation deficits of 5 to 15 inches during a majority of the 72-month period.

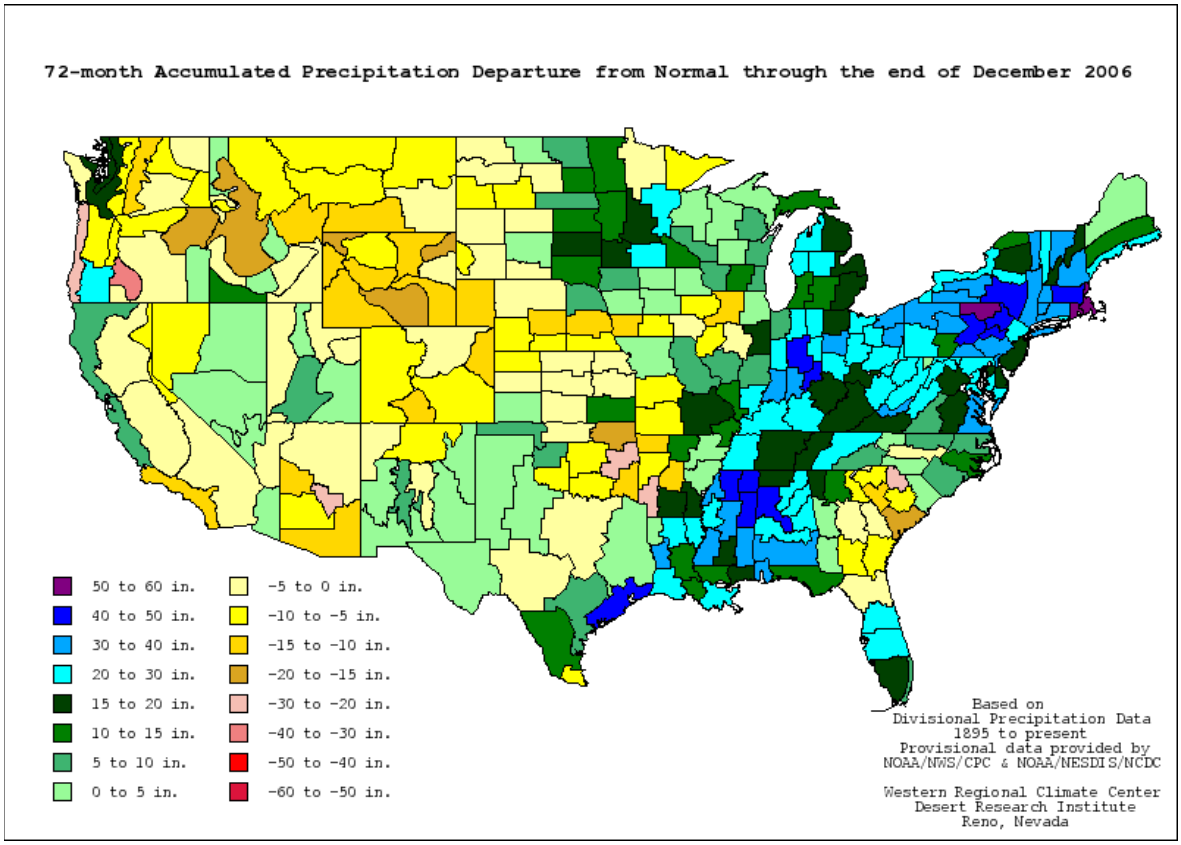


Figure 1 – 72 month Precipitation Departure From Normal
http://www.wrcc.dri.edu/cgi-bin/spiFmap.pl?dep72

The 12-month precipitation accumulation in Figure 2 indicates that precipitation throughout much of the western and northwestern District is from normal to a ten-inch deficit.

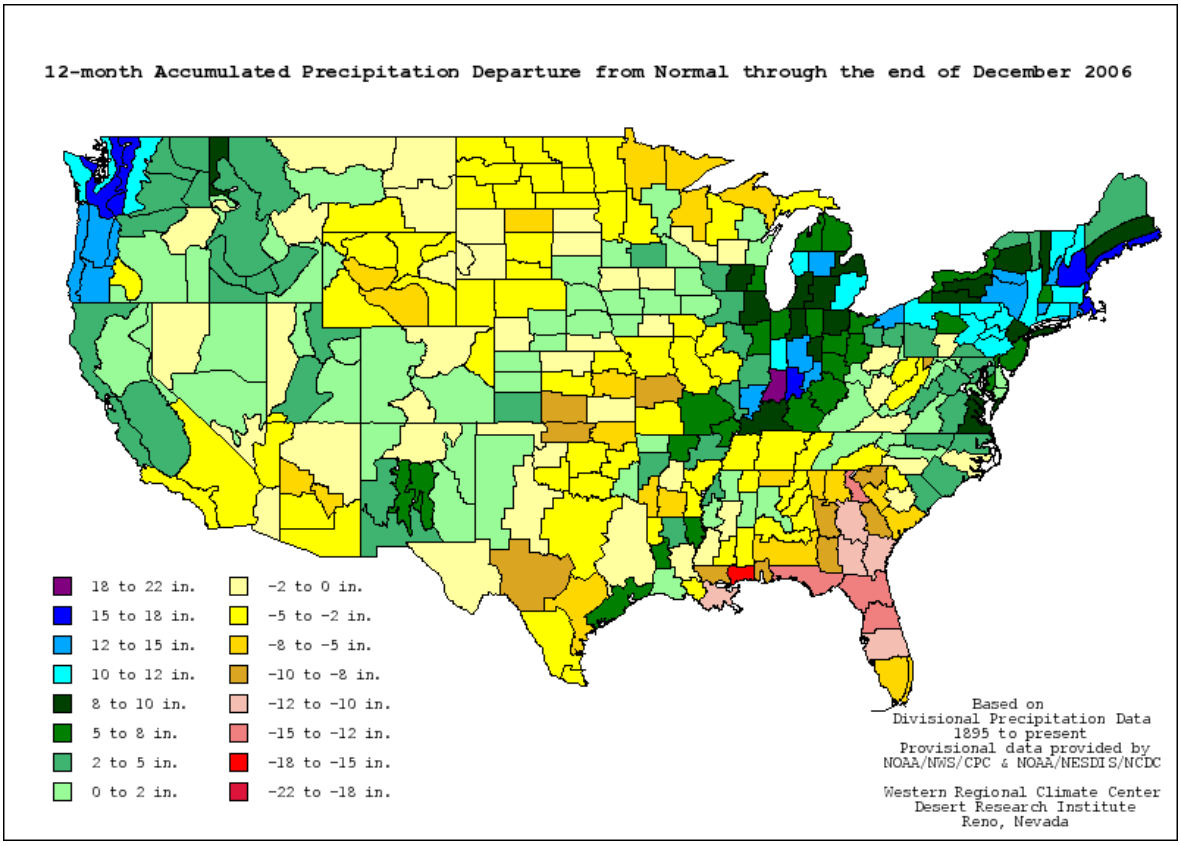


Figure 2 – 12 month Precipitation Departure From Normal
http://www.wrcc.dri.edu/cgi-bin/spiFmap.pl?dep12

The three-month period (Figure 3) shows that much of the basin continues to receive an adequate supply of precipitation for near normal to a slight surplus of moisture over the observation period.

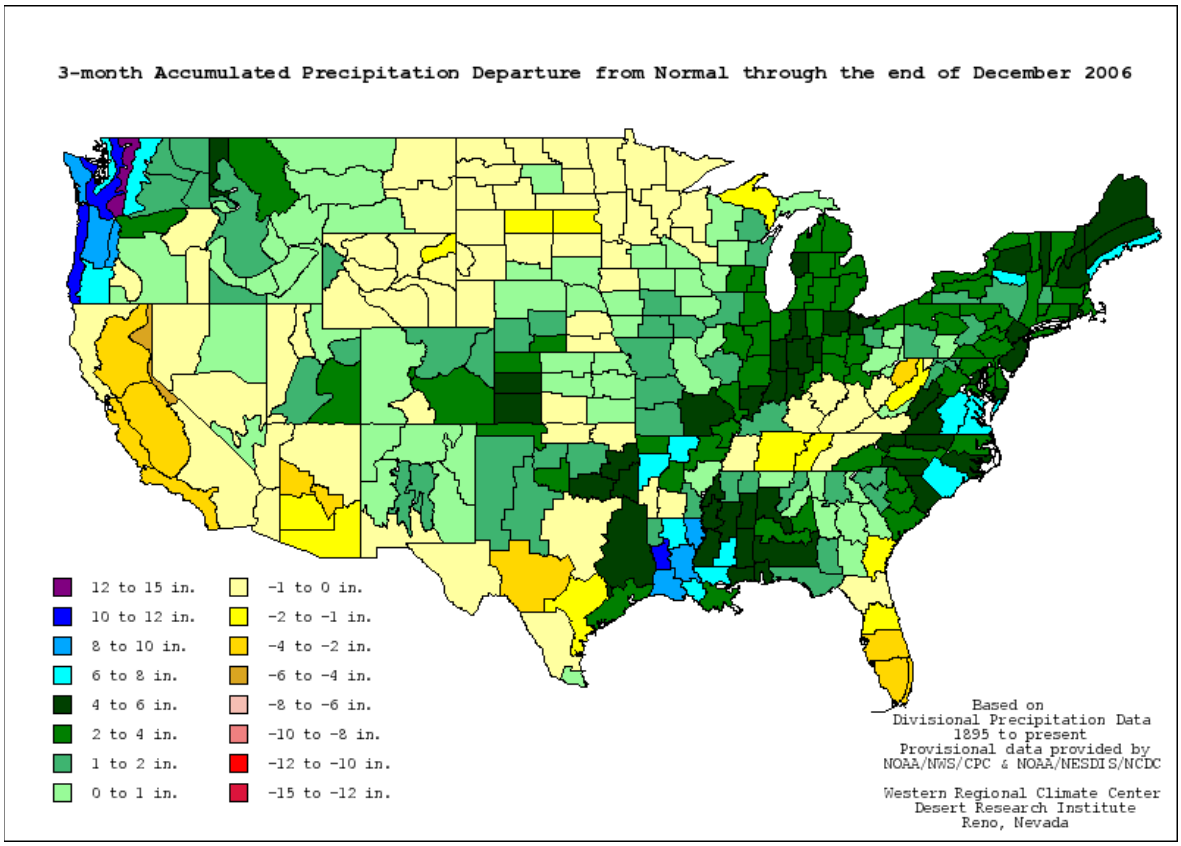


Figure 3 – 3 month Precipitation Departure From Normal
http://www.wrcc.dri.edu/cgi-bin/spiFmap.pl?dep03

For the month of December, the majority of the basin received very near normal precipitation (Figure 4).

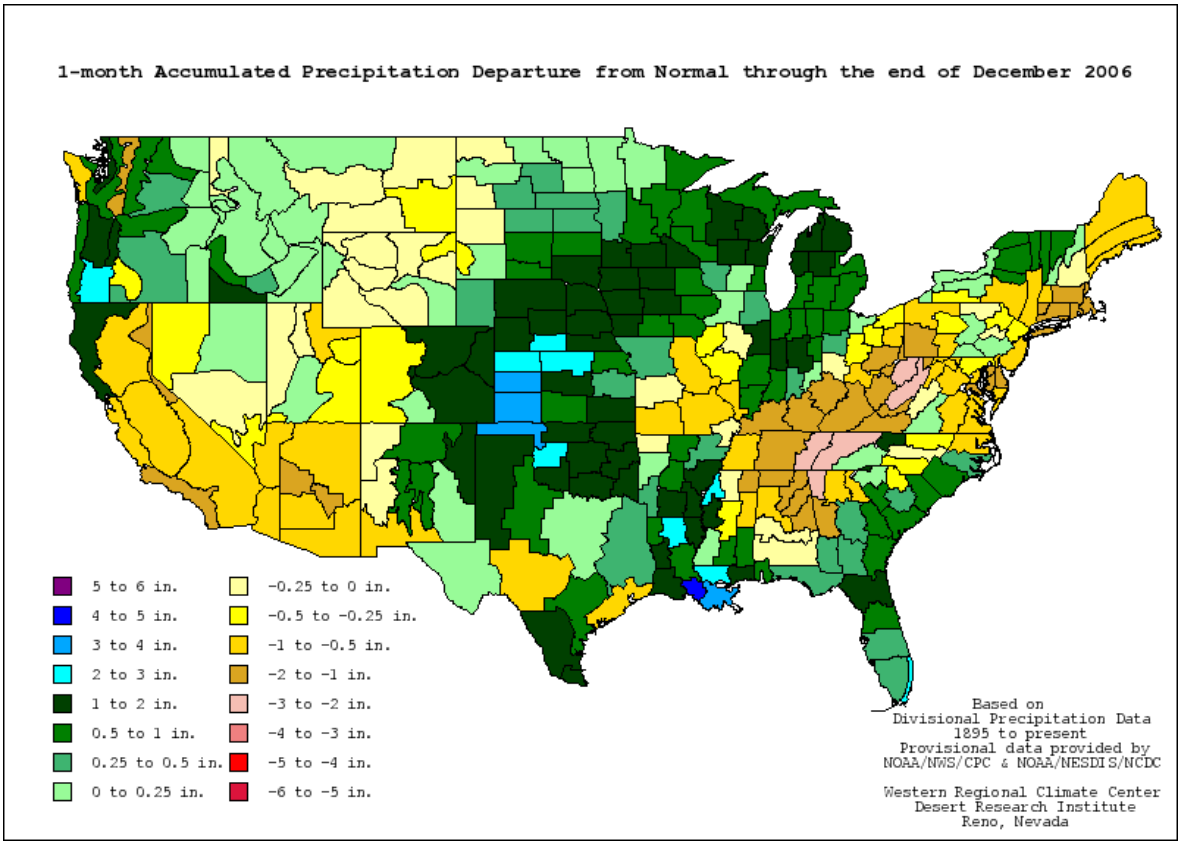


Figure 4 – 1 month Precipitation Departure From Normal
http://www.wrcc.dri.edu/cgi-bin/spiFmap.pl?dep01

Drought Indicators

The Palmer Drought Severity Index and the Drought Monitor are two commonly used drought-indicator products that convey both short-term and long-term drought conditions and impacts. Both the Palmer Index and Drought Monitor depict some regions exhibiting varying degrees of drought in Nebraska, South Dakota, Wyoming, and Montana, which have been suffering from drought since 2000.

Palmer Drought Severity Index

The Palmer Drought Severity Index (PDSI) is a meteorological drought index that monitors the hydrologic water balance including the basic terms such as precipitation, evapotranspiration, soil recharge, runoff, and moisture loss. The purpose of this index is to provide standardized measurements of the moisture balance in a region without taking into account streamflow, lake and reservoir levels, and other hydrologic impacts. PDSI is a multi-month drought index; therefore, it responds well and is more suitable for short-term droughts.

Changes to the PDSI are more immediate in response to heavy precipitation over short periods. The PDSI shown in Figure 5 reflects a great variance in the basin from moderate drought conditions to unusual moist spells.

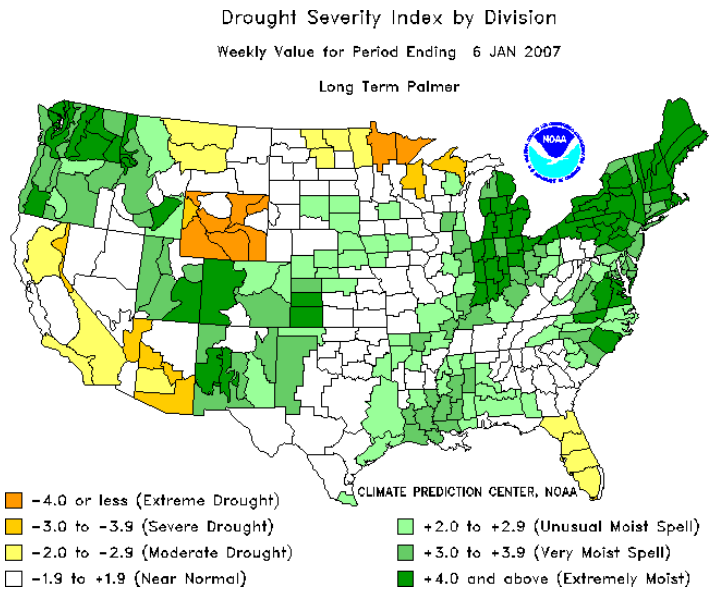


Figure 5 – Long-Term Palmer Drought Indicator Ending 6 JAN 2007
http://www.cpc.ncep.noaa.gov/products/analysis_monitoring/regional_monitoring/palmer.gif

Drought Monitor

The Drought Monitor is a multi-agency comprehensive drought classification scheme updated weekly by the National Drought Mitigation Center. The Drought Monitor combines information from the Palmer Drought Index, the Climate Prediction Center's soil moisture model, USGS weekly streamflow percentiles, the standard precipitation index, the crop moisture index, and during the snow season basin snow water content, basin average precipitation, and the surface water supply index. Since this product considers streamflow conditions and reservoir water supply, and it allows manual adjustment; it is a good depiction of long-term drought impacts to the affected areas. The Drought Monitor uses four levels of drought classification (moderate, severe, extreme, and exceptional), and it notes the type of impact caused by the drought (agricultural and hydrologic).

As is indicative of the figures below, large portions of the basin are still experiencing the effects of the drought.

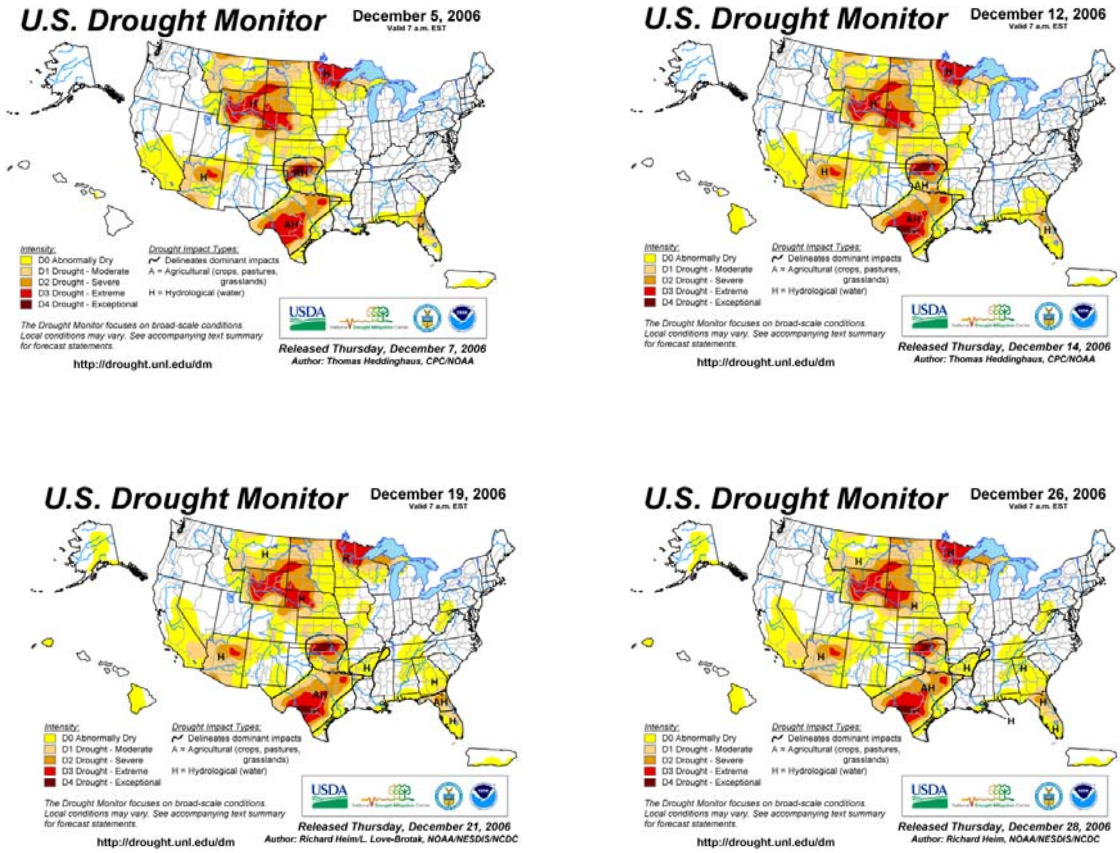


Figure 6 – U.S. Drought Monitor – December 5, 2006 through December 26, 2006
http://www.drought.unl.edu/dm/monitor.html

DROUGHT OUTLOOK

The basin drought outlook uses several expert products that indicate precipitation needs necessary to reduce the Palmer Drought to normal conditions, a one- and three-month climate outlook, and the impacts that future climate predictions could have on the current drought situation. The three-month Drought Outlook (Figure 7) indicates that large portions of the basin will continue to experience a persistent drought.

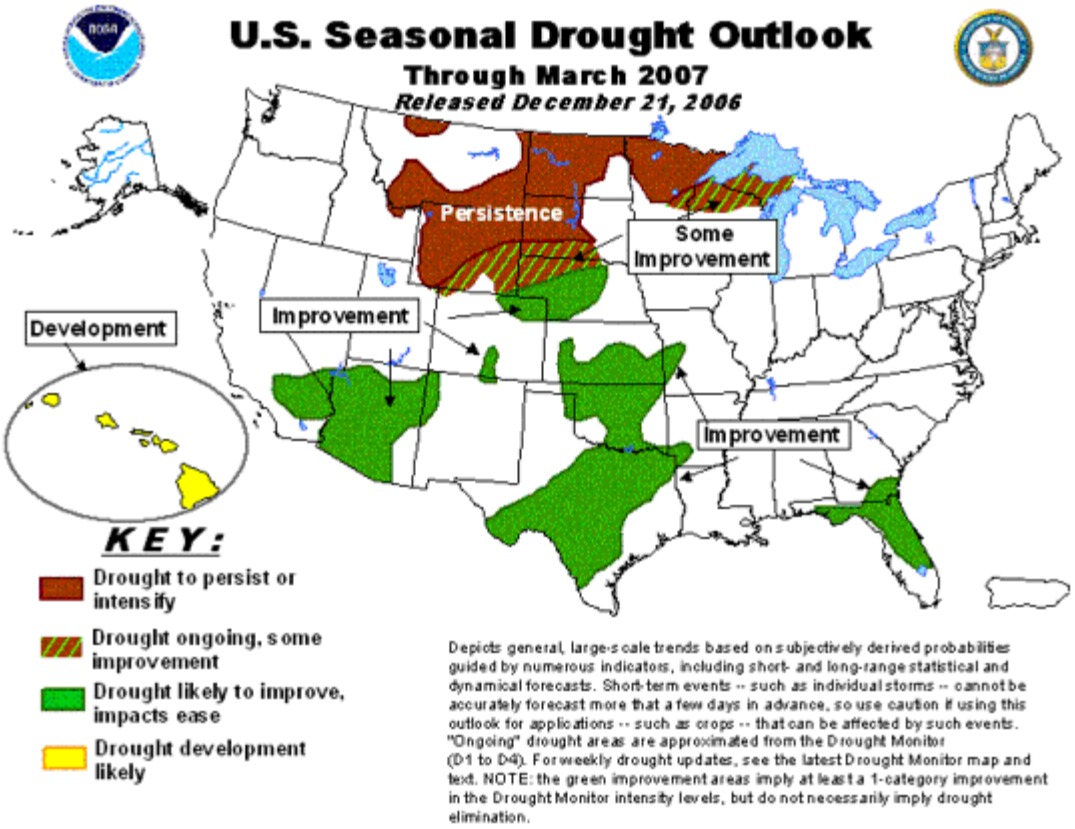


Figure 7 – Three-Month Seasonal Drought Outlook through March 2007
http://www.cpc.ncep.noaa.gov/products/expert_assessment/seasonal_drought.html

Weekly Precipitation Need

Figure 8 is the weekly precipitation needed to reduce the current Palmer Drought Severity Index value to -0.5 or near normal conditions.

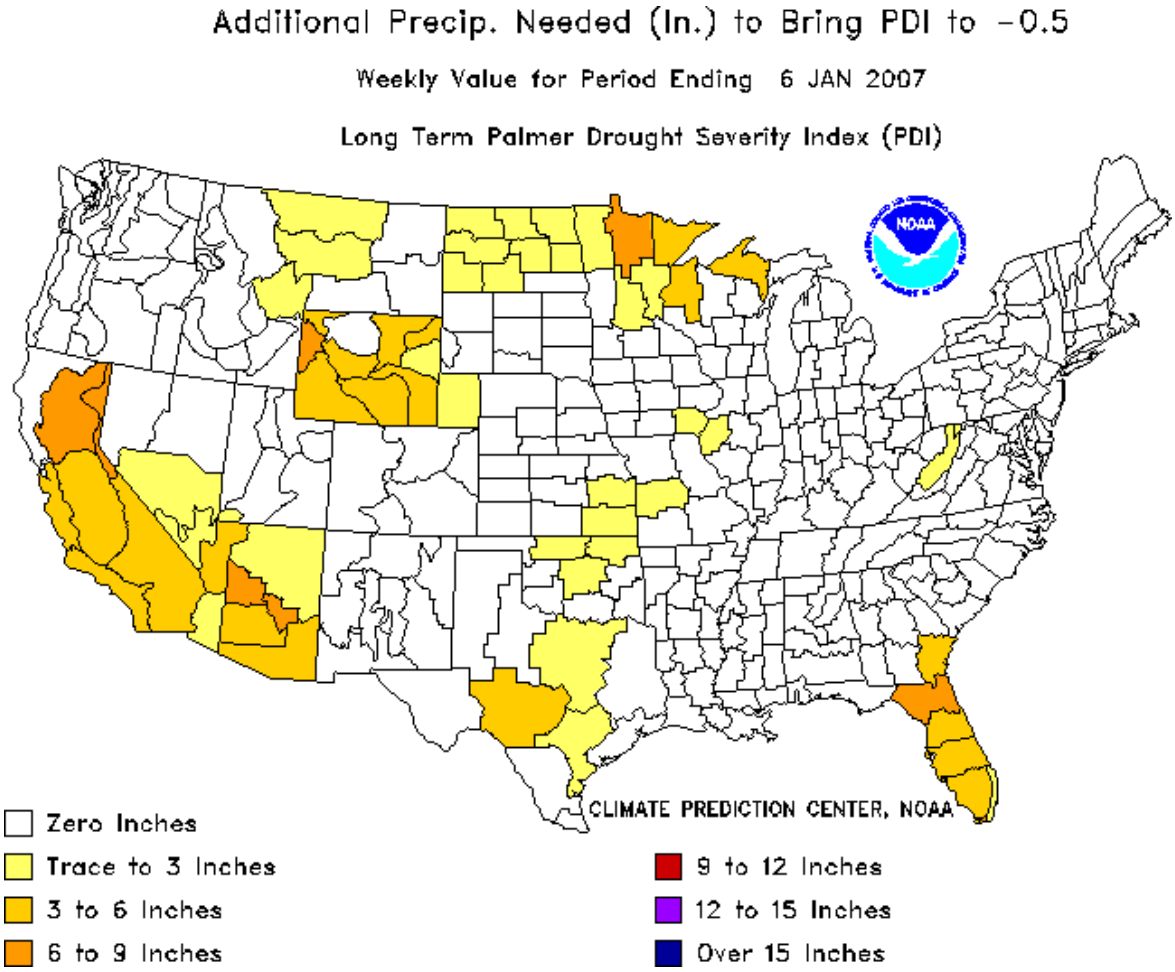


Figure 8 – Weekly Precipitation Need to Bring PDI to -0.5
http://www.cpc.ncep.noaa.gov/products/analysis_monitoring/regional_monitoring/addpcp.gif

The above figure is indicative of the recent moisture that the basin has been receiving. Most of the basin would require only a trace of moisture to reduce the PDI to a near normal condition.

The following Missouri River Region Mountain Snowpack Report for the 2006-2007 winter is taken from the U.S. Army Corps of Engineers, Northwestern Division, Missouri River Basin, Water Management Division.

Missouri River Region Mountain Snowpack Report

2006 - 2007 Mountain Snowpack Report for Missouri River Basin

Summary of Winter 2006-2007. The Missouri River runoff for 2006 was19.0 MAF, 75% of normal. This marked the seventh consecutive year of less than normal runoff in the basin. The continued drought has taxed the System storage leaving upstream reservoir levels very low, much like what occurred in the drought of the mid 1980's and early 1990's. The forecasted runoff for 2007 is 20.0 MAF, 79% of normal. As of January 1, the mountain snowpack above Fort Peck is at 80% of normal and the mountain snowpack between Fort Peck and Garrison is 77% of normal. The mountain snowpack in the North Platte River and South Platte River basins are 87% and 130% of normal, respectively. Normally, 42% of the peak accumulation has occurred by December 1.

The following tabulation is a summary of this year's mountain snowpack accumulations and the CY 2007 runoff forecast for the first of each month. The main stem reservoirs are significantly below their base of the annual flood control zones due to seven consecutive years of drought and the system stands poised to handle significant runoff if that were to occur during 2007.

CY 2007 Mountain Snowpack Accumulations in Percent of Normal Peak

Drainage Basin	Jan	Feb	Mar	Apr	May	Jun	Jul
Above Fort Peck Dam	80%	%	%	%	%	%	%
Fort Peck to Garrison	77%	%	%	%	%	%	%
Percent of Normal Total Acc.	79%	%	%	%	%	%	%
South Platte River	87%	%	%	%	%	%	%
North Platte River	130%	%	%	%.	%	%	%

Forecasted CY 2007 Missouri River Basin Annual Runoff in MAF

Location	Jan	Feb	Mar	Apr	May	Jun	Jul
Above Sioux City, Iowa.	20.0	.	.	.	.	.	.
Percent of Normal 25.2 MAF	79%	%	%	%	%	%	%

SNOTEL Mountain snowpack station data is provided by the National Resource Conservation Service. Normally by April 15, 100% of the peak accumulation has occurred. The January through June 2006 actual runoff above Sioux City was 13.2 MAF, 81% of normal. The 2006 Calendar Year runoff above Sioux City was 19.0 MAF, 75% of normal. The forecasted runoff for 2007 is 20.0 MAF, 79% of normal. As stated earlier, the Missouri River basin endured its sixth consecutive year of drought in 2006. The December 26, 2006 drought monitor map (http://drought.unl.edu/dm/monitor.html)

indicates that most of the Missori River basin in currently in a moderate to severe intensity drought or worse. The western half of Nebraska as well as most of Wyoming are in severe drought intensity conditions.

The table above labeled CY 2007 Mountain Snowpack, gives information in percent of average for the two significant snowpack accumulation reaches of Fort Peck and Fort Peck to Garrison. The snow melts during the May through July timeframe and provides significant main stem inflow which is stored to prevent downstream flooding and later used to meet main stem authorized project purposes. Even knowing the amount of snow at the first of each month for selected mountain snowpack areas results in considerable runoff variability because the weather conditions during the melt period greatly influences the runoff yield. The total percent of normal accumulation are shown for the first of each month through May. For the period of May through July the percentages shown are a percent of the peak accumulation for the year to indicate the remaining snow to melt in the mountains.

Mainstem Reservoir Information

The month on December showed little or no improvement in the system storage of the Missouri River mainstem dams. The reservoir elevations and storage continued their downward trend. In general, the Ft. Peck reservoir is 2.2 feet lower than this time last year; Garrison reservoir is 4.2 feet lower than 2005; and the Oahe reservoir is 2.5 feet lower than 2005. Several intakes on both Lake Sakakawea and Lake Oahe are below their "operational concern" elevations (as reported by the water system's operators). However, no reports of intake failure or lack of a potable water supply have been reported. The intake elevations and conditions will continue to be monitored.

Fort Peck, Montana

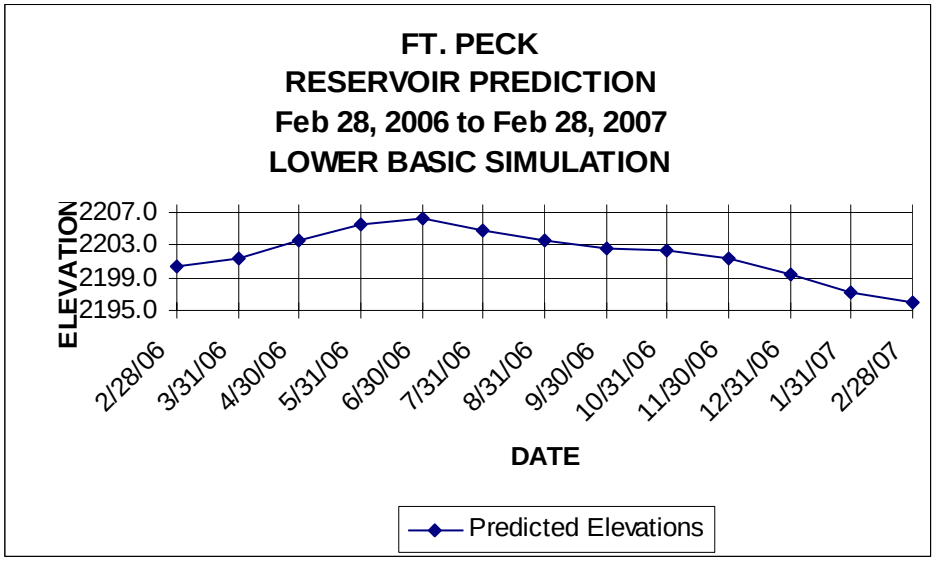
Reservoir Elevation Overview

Lake Elevation 12/31/2005 (ft. msl)	Current Lake Elevation 12/31/2006 (ft. msl)	30-Day Projected Elevation* (01/31/2007) (ft. msl)	60-Day Projected Elevation* (2/28/2007) (ft. msl)
2201.6	2199.4	2197.3	2195.9

Comments:

1. Current reservoir elevation is 34.6-feet below the top of conservation pool (elevation 2234.0 ft. msl).
2. Projections provided are based upon the Lower Basic Simulation prepared by the Reservoir Control Center.
3. Current elevation 2.2-feet lower than 12/31/05 (2201.6) and trending downward. The reservoir is predicted to hit a new record low this winter.

* Normally use 180-day projections; however, since the water year ends Feb. 28, the end of water year projection is used.



Water Intake Overview

Intake	Comments
Hell Creek State Park	No issues. Well completed 22 NOV 2004

Access Overview

1. 15 ramps usable; 3 ramps unusable. No permanent ramps operational.

Boat Ramp	Status	Bottom Elevation	Top Elevation	Managing Agency
Fort Peck Marina	USABLE	2197	2250	COE/Concessionaire
Duck Creek	USABLE	2197	2250	COE/MTFW&P
Flat Lake	USABLE	2197	2250	COE
Rock Creek (North Fork)	USABLE	2197	2250	COE/MTFW&P
Rock Creek Marina	USABLE	2197	2250	Concessionaire
Nelson Creek	UNUSABLE	2220 (Cannot Be Extended)	2250	COE
Hell Creek	USABLE	2197	2250	COE/MTFW&P
Devils Creek	USABLE	2197	2250	COE
Crooked Creek	UNUSABLE	2223 (Cannot Be Extended)	2250	Concessionaire
Fourchette	UNUSABLE	2204 (Cannot Be Extended)	2250	COE
Bone Trail	USABLE	2197	2250	COE
Pines	USABLE	2197	2250	COE
James Kipp	USABLE	Missouri River, Upstream of Dam		BLM
Floodplain	USABLE	Missouri River, Below Dam		COE
Roundhouse Point	USABLE	Missouri River, Below Dam		COE
Nelson Dredge	USABLE	Missouri River, Below Dam		COE
Trout Pond	USABLE	Missouri River, Below Dam		MTFW&P
Rock Creek West	USABLE	Missouri River, Upstream of Dam		USFWS

Noxious Weeds Overview

1. As the reservoir elevation dropped, the noxious weeds spread along the shoreline.
2. Main concern is Saltcedar, which thrives along the shoreline as the reservoir elevation declines.
3. Noxious weed control is being addressed.

Cultural Resources Overview

1. No issues to date.

Garrison, North Dakota

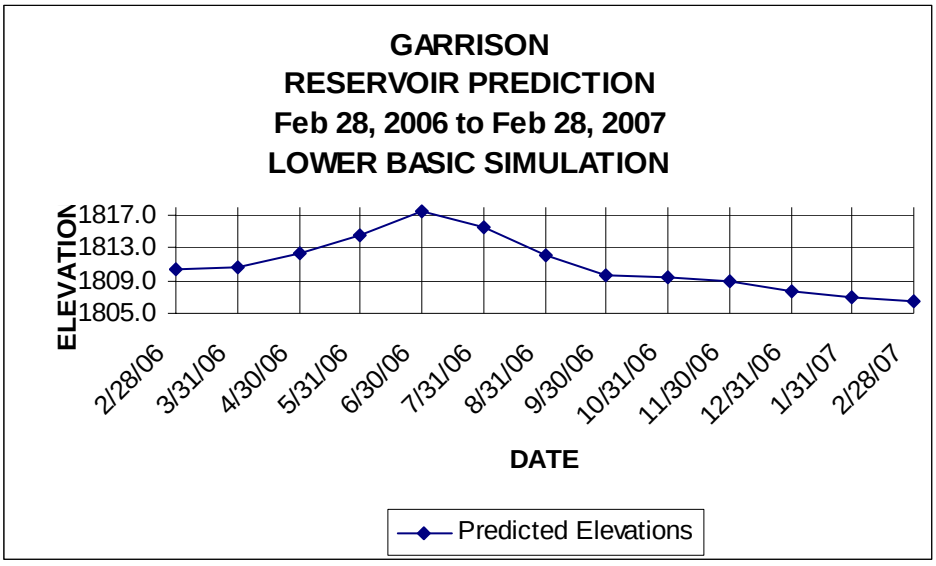
Reservoir Elevation Overview

Lake Elevation 12/31/2005 (ft. msl)	Current Lake Elevation (12/31/2006) (ft. msl)	30-Day Projected Elevation (01/31/2007) (ft. msl)	60-Day Projected Elevation* (2/28/2007) (ft. msl)
1812.0	1807.8	1806.9	1806.5

Comments:

1. Current reservoir elevation is 29.7-feet below the top of conservation pool (elevation 1837.5 ft. msl).
2. Projections provided are based upon the Lower Basic Simulation prepared by the Reservoir Control Center.
3. Current reservoir elevation is 4.2-feet lower than elevation on 12/31/05 (1813.6).

* Normally use 180-day projections; however, since the water year ends Feb. 28, the end of water year projection is used.



Water Intake Overview

Intake	Status	Current Reservoir Elev.	Top of Screen Elev.	Operational Concern Elev.	Shutdown Elev.		Population Supported	Contingency Plan? (Y/N)	Resp. Agency
					Summer	Winter			
Whiteshield	Operational	1807.8	1787	1805	1794	1796	720	N	TAT/BOR

Comments:

1. Top of Screen Elevation taken from survey completed by the Corps in 2005. The intake was extended and lowered 2-feet since the Corps' survey in 2005.

Future Plans:

1. $1.0 million grant was secured from USDA Tribal Set-Aside program to do work on this intake. FBRW (Fort Berthold Rural Water) also intends to shift some of the Four Bears Intake funding to this intake to cover project shortfalls.
2. Project design includes a 950-feet bored pipeline into the lake at elevation 1763. The line will be 24" polyethylene pipe. New SCADA control and pumps are included in the project design. The Title of the project is: "FBRW 2006A; East Segment Intake Replacement".
3. FBRW has the option of discontinuing existing system or keeping the system in operation as a backup.
4. Project bids were opened 19 JUL 2006. The apparent low bidder was Northern Improvement. FBRW is considering a change order to lower the bid cost from $1.607 M to $1.464 M. The change order would remove the riprap work from the project.
5. The project was scheduled to begin in October of 2006 and be completed by July of 2007.

Intake	Status	Current Reservoir Elev.	Top of Screen Elev.	Operational Concern Elev.	Shutdown Elev.		Population Supported	Contingency Plan? (Y/N)	Resp. Agency
					Summer	Winter			
Twin Buttes	Operational	1807.8	1784.4	1805	1788	1790	425	N	TAT/BOR

Comments:

1. Top of Screen Elevation taken from survey completed by the Corps in 2005.
2. Erosion due to low reservoir levels have caused increased sediment in the intake piping. This has increased maintenance cost to remove the sediment and increased the cost of treating the water.

Future Plans:

1. Ft. Berthold Rural Water System has secured funding through the Indian Health Services, the Bureau of Reclamation, and the USDA Emergency Community Water Assistance Grant Program to improve the system in 2006. FBRW also intends to shift some funding from the Four Bears project to cover funding shortfalls.
2. Project design includes an 800-feet bored pipeline into the lake at elevation 1741. The line will be a 24" polyethylene pipe. New SCADA control and pumps are included in the design. The title of the project is: "FBRW 2006 C; South Segment Intake Replacement".
3. FBRW has the option of discontinuing existing system or keeping the system in operation as a backup.
4. Project bids were opened 19 JUL 2006. The apparent low bidder was Northern Improvement. FBRW is considering a change order to lower costs from the bid of $1.701 M to $1.471 M.
5. The contract has been awarded and work was scheduled to begin in October 2006 and be completed in July 2007.

Intake	Status	Current Reservoir Elev.	Top of Screen Elev.	Operational Concern Elev.	Shutdown Elev.		Population Supported	Contingency Plan? (Y/N)	Resp. Agency
					Summer	Winter			
Mandaree	Operational	1807.8	1786	1789.0	1789	1794	780	N	TAT/BOR

Comments:

1. The new intake screen is at elevation 1786.
2. Grant monies for the project were secured from USDA Emergency Community Water Assistance Grant Program and Indian Health Services and work on the intake was completed in 2005.

Intake	Status	Current Reservoir Elev.	Top of Screen Elev.	Operational Concern Elev.	Shutdown Elev.		Population Supported	Contingency Plan? (Y/N)	Resp. Agency
					Summer	Winter			
Four Bears	Operational	1807.8	1789.9	1800.0	1792	1794	900	N	TAT/BOR

Comments:

1. Top of Screen Elevation taken from survey completed by the Corps in 2005.
2. Erosion due to low reservoir levels have caused increased sediment in the intake piping. This has increased maintenance cost to remove the sediment and increased the cost of treating the water.

Future Plans:

1. Ft. Berthold Rural Water System has secured funding through USDA Emergency Community Water Assistance Grant Program to improve the intake in 2006. However, this funding is being diverted to complete work on other FBRW intakes. FBRW intends to find an alternative source of funding or use tribal funds to complete an intake improvement project.
2. The project design includes 1,160-feet of 24-inch polyethylene pipe bored into the reservoir at elevation 1741. The design includes SCADA control and new pumps.
3. FBRW has the option of discontinuing existing system or keeping the system in operation as a backup.
4. Project bids were opened 19 JUL 2006. The low bid was $180,000 over the project estimate. FBRW is negotiating with the low bidder in an attempt to lower the project costs.

Intake	Status	Current Reservoir Elev.	Top of Screen Elev.	Operational Concern Elev.	Shutdown Elev.		Population Supported	Contingency Plan? (Y/N)	Resp. Agency
					Summer	Winter			
Parshall	Operable	1807.8	1803.6*	1806.6	1797.5	1801.5	1000	N	Parshall

Comments:

1. Top of Screen Elevation taken from survey completed by the Corps in 2005.
2. The City had a telescoping riser attached to the intake by 30 July 2005. The riser extended the intake to within 3- to 4-feet of the water's surface.
3. Require at least 3 feet of water over the intake for proper operation.
4. Water quality at current level is good following water treatment.

Future Plans:

1. Discussions have been held between Parshall and New Town regarding future water supply. No formal decisions have been reached. Parshall is a proposed supplier for the Rural Water System.

*Screen is raised or lowered according to reservoir elevations.

Intake	Status	Current Reservoir Elev.	Top of Screen Elev.	Operational Concern Elev.	Shutdown Elev.		Population Supported	Contingency Plan? (Y/N)	Resp. Agency
					Summer	Winter			
Pick City	Operational	1807.8	1795	1800	1798	1800	200		Pick City

Comments:

1. Top of Screen Elevation taken from survey completed by the Corps in 2005.
2. At least 5-feet of water is necessary to operate this intake. If continued usage is planned, the intake will have to be lowered.

Future Plans:

1. Rural water is available to the City, however, they have chosen to continue using their intake until the water no longer meets State Health Standards or work is required on their intake.

Intake	Status	Current Reservoir Elev.	Top of Screen Elev.	Operational Concern Elev.	Shutdown Elev.		Population Supported	Contingency Plan? (Y/N)	Resp. Agency
					Summer	Winter			
Garrison	Operational	1807.8	1787.2	1805	1792	1792	1830	N	Garrison

Comments:

1. Top of Screen Elevation taken from survey completed by the Corps in 2005.
2. A regulatory permit was currently issued for the reinstallation of existing 950-feet of 8” poly pipe and installation of new 250-feet of 8” poly pipe to extend the intake system.

Intake	Status	Current Reservoir Elev.	Top of Screen Elev.	Operational Concern Elev.	Shutdown Elev.		Population Supported	Contingency Plan? (Y/N)	Resp. Agency
					Summer	Winter			
SW Pipeline	Operational	1807.8	1779.0	1782	1776		34,000	N	SW Pipeline

Comments:

1. This system provides water for the City of Dickinson, Antelope Valley Power Plant, Coal Gasification Plant, and the Southwest Water Authority.

Access Overview

1. Ft. Stevenson State Park Marina design is completed. However, no federal funding is available for construction.

Updated 1/5/2007

Reservoir Elevation 11/30/06 – 1807.8

Location	Type	Top Elevation	Bottom Elevation	Comments	Managing Agency	Contact Person	Phone
Beaver Bay (low-water-COE)	poured concrete	1829	1808	**Unusable**	Corps of Engineers	Linda Phelps	654-7411
Beulah Bay	poured concrete	1852.4	1799	**Usable**	Beulah Park Board	Bev Sullivan	870-5852
Camp of the Cross	Slide-in metal sections	1819	1806	**Unusable**	Lutheran Bible Camp	Larry Crowder	337-2246
Charging Eagle Bay (1st low water)	poured concrete	1829.2	1810.6	**Unusable**	Three Affiliated Tribes	Jim Mossett	880-1203
Dakota Waters Resort (low-water)	poured concrete, planks	1853.4	1797	**Usable**	Beulah Park Board	Kelvin Heinsen	873-5800
Deepwater Creek (2nd low water)	concrete planks & metal	1820	1808	**Unusable**	Corps of Engineers	Linda Phelps	654-7411
Deepwater Creek (1st low water)	poured concrete	1838.5	1809	**Unusable**	Corps of Engineers	Linda Phelps	654-7411
Douglas Creek (low water)	poured concrete, planks	1831	1801	**Usable**	Corps of Engineers	Linda Phelps	654-7411
Fort Stevenson State Park (low water)	poured concrete	1821.8	1790	**Usable**	ND Parks & Rec	Dick Messerly	337-5576
Four Bears Park (south low water)	concrete planks	1820.7	1803	**Usable**	Three Affiliated Tribes	Alan Chase	627-4018
Garrison Creek Cabin Site	poured concrete	1857	1802	**Usable**	Garrison Cabin Assc.	Percy Radke	337-2247
Government Bay (low water)	slide-in metal sections	1815	1803	**Usable**	Corps of Engineers	Linda Phelps	654-7411
Government Bay (main ramp)	poured concrete	1857	1810	**Unusable**	Corps of Engineers	Linda Phelps	654-7411
Hazen Bay (2nd low water)	poured concrete	1830.6	1808	**Unusable**	Hazen Park Board	Jeff Gustafson`	748-6948
Indian Hills (2nd low water)	concrete planks	1817.6	1807	**Unusable**	Parks & Rec/Tribes	Kelly Sorge	743-4122
Indian Hills (1st low water)	concrete planks	1826.4	1811.8	**Unusable**	Parks & Rec/Tribes	Kelly Sorge	743-4122
McKenzie Bay (east ramp)	poured concrete	1850.9	1796	**Usable**	McKenzie Marine Club	Rhonda Logan	579-3366

Location	Type	Top Elevation	Bottom Elevation	Comments	Managing Agency	Contact Person	Phone
New Town (proposed ramp)	slide-in metal sections	1819.0	1807.5	**Unusable**	New Town Park Board	Dusty Rhodes	627-3900
Parshall Bay (2nd low-water)	poured concrete	1817.8	1808.5	**Unusable**	Mountrail County Park Board	Clarence Weltz	627-3377
Pouch Point (3rd low-water)	slide-in metal sections	1819	1809	**Unusable**	Three Affiliated Tribes	Paul Danks	627-3627
Pouch Point (2nd low-water)	poured concrete	1834.8	1813	**Unusable**	Three Affiliated Tribes	Paul Danks	627-3627
Reunion Bay (2nd low water)	concrete planks	1826.6	1808	**Unusable**	Corps of Engineers	Linda Phelps	654-7411
Sakakawea State Park (main)	poured concrete	1850	1800	**Usable**	ND Parks & Rec	John Tunge	487-3315
Sanish Bay (Aftem) (low water)	poured concrete	1830.8	1807.4	**Unusable**	Aftem Lake Development	Gerald Aftem	852-2779
Skunk Creek Recreation Area (main)	poured concrete	1840	1806.5	**Unusable**	Three Affiliated Tribes	Ken Danks	290-2841
Sportsmen's Centennial Park	poured concrete	1831.6	1808.5	**Unusable**	McLean County	Les Korgel	462-8541
Steinke Bay	poured concrete	1833.1	1813.4	**Unusable**	North Dakota Game & Fish	Bob Frohlich	328-6346
Van Hook (Gull Island north low-water)	metal bridge deck sections	1817.8	1805	**Marginal**	Mountrail County Park Board	Clarence Weltz	627-3377
Van Hook (west low water ramps)	poured concrete	1821.2	1808	**Unusable**	Mountrail County Park Board	Clarence Weltz	627-3377
White Earth Bay (main)	poured concrete	1850.9	1801	**Usable**	Mountrail County Park Board	Greg Gunderson	755-3277
Wolf Creek Recreation Area (1st low water)	poured concrete	1833.8	1802.5	**Usable**	Corps of Engineers	Linda Phelps	654-7411

Noxious Weeds Overview

1. Project personnel are continuing efforts to combat noxious weeds.
2. $81,000 funding anticipated for FY ’07.

Cultural Resources Overview

1. Project personnel continue to monitor the shoreline for the protection of cultural resources.

Other Areas of Interest/Concern

1. Garrison National Fish Hatchery – Three issues exist and are of concern to the State of North Dakota and the U.S. Fish and Wildlife Service.
    a. Addition of a fifth boiler and necessary power for operation.
    b. Ability to fill 40 rearing ponds.
    c. Adequacy of the existing 20-inch water supply line from the penstocks.
2. Fact sheets for the hatchery issues exist. OP-TM is investigating a design for additional power requirements to the hatchery. An MOU may need to be set up to address future operating needs and requirements.
3. Garrison Cold Water Fishery – The modification to the trashracks of intakes 2 and 3, was completed 22 July 2005. The modifications were kept in place throughout the winter period, as the cost to remove and replace was comparable to lost power generation costs. The plates will be inspected in the spring with an underwater camera to ensure structural adequacy.

Oahe, South Dakota

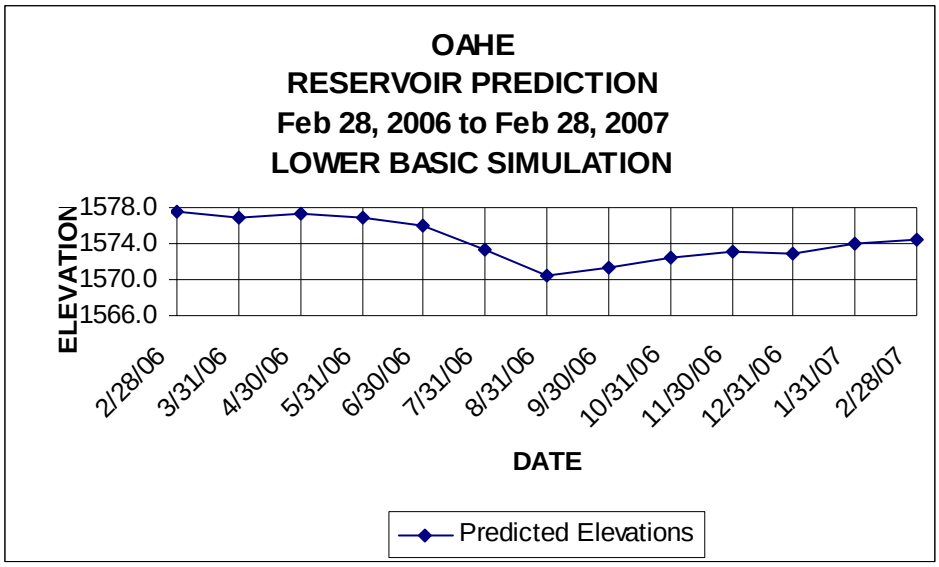
Reservoir Elevation Overview

Lake Elevation 12/31/2005 (ft. msl)	Current Lake Elevation (12/31/2006) (ft. msl)	30-Day Projected Elevation (01/31/2007) (ft. msl)	60-Day Projected Elevation* (2/28/2007) (ft. msl)
1573.5	1572.8	1574.0	1574.5

Comments:

1. Current reservoir elevation is 34.7-feet below the top of conservation pool (elevation 1607.5 ft. msl).
2. Projections provided are based upon the Lower Basic Simulation prepared by the Reservoir Control Center.
3. Current reservoir elevation is 0.7-feet lower than 12/31/05 (1573.5).

* Normally use 180-day projections; however, since the water year ends Feb. 28, the end of water year projection is used.



Water Intake Overview

Intake	Status	Current Reservoir Elev.	Top of Screen Elev.	Operational Concern Elev.	Shutdown Elev.		Population Supported	Contingency Plan? (Y/N)	Resp. Agency
					Summer	Winter			
Ft. Yates	Operational	1572.8	1571.2	1573	1572.2*	1575.2*	3,400	Y	SRST/BOR

Comments:

1. Top of Screen Elevation taken from survey completed by the Corps in 2005.
2. A backup well has been drilled and tested.
3. New well and plumbing is installed at Fort Yates and can be used as a backup water source.

*Intake is in riverine conditions and flow to the intake may be influenced by releases from Garrison reservoir.

Future Plans:

1. The intake at Fort Yates remains in a river condition and may continue to have sedimentation problems as long as Oahe remains below elevation 1580. Sediment levels in the sump are measured weekly and the river channel is monitored.
2. Contingency plans are in place and have been exercised.

Intake	Status	Current Reservoir Elev.	Top of Screen Elev.	Operational Concern Elev.	Shutdown Elev.		Population Supported	Contingency Plan? (Y/N)	Resp. Agency
					Summer	Winter			
Wakpala	Operational	1572.8	1563	1563	1566	1569	>500	N	SRST/BOR

Comments:

1. Top of Screen Elevation taken from survey completed by the Corps in 2005, a new low profile screen was installed lowering the top of the screen elevation to 1563.
2. Contingency plans are being drafted to respond to an intake failure. Initial response to an intake failure at Wakpala would be hauling water from the city of Mobridge to the treatment plant to be distributed using the existing transmission lines.

Intake	Status	Current Reservoir Elev.	Top of Screen Elev.	Operational Concern Elev.	Shutdown Elev.		Population Supported	Contingency Plan? (Y/N)	Resp. Agency
					Summer	Winter			
Mni Wasté	Operational	1572.8	1555.7	1580	1561.9	1560.4	14,000	Y(DRAFT)	CRST

Comments:

1. Top of Screen Elevation taken from survey completed by the Corps in 2005.
2. Construction of a temporary intake approximately 16 miles from the existing intake is underway and is proceeding well. The construction project is a collaborative effort between the Tribe, the State, the Corps and many other entities.

Access Overview

1. The State of South Dakota is responsible for maintaining recreational areas and access to the reservoir in South Dakota. The Oahe Project maintains the access in North Dakota.
2. Ramps on Oahe Project in North Dakota:

AREA	Status
Sibley Park	Usable
Little Heart Bottoms	Usable
Kimball (Desert)	Usable
Graner's Bottoms	Usable
Maclean Bottoms	Usable
Hazelton	Usable
Ft. Rice	Usable
North Beaver Bay	Usable
Walker Bottoms	Usable
Jennerville (Rivery)	Usable
Fort Yates	Unusable
Cattail Bay	Unusable
Langeliers Bay	Unusable
Beaver Creek	Unusable
State Line	Unusable

http://gf.nd.gov/fishing/mo-riv-system-boatramps-status.html.

Noxious Weeds Overview

1. Currently, neither the CRA nor the FY 07 budget has any money for noxious weed control.

Cultural Resources Overview

1. Project personnel continue to monitor the shoreline for the protection of cultural resources. As the reservoir elevation falls, more opportunities are uncovered for looters, which collect artifacts and sell them on the open market.

Mainstem Reservoir Information, Weekly Elevation Comparison

4 Dec 2006	Project Information		Reservoir Elevation			Reservoir Storage		
Project	Multi-Purpose Pool Elev.	Flood Control Pool Elev.	Current Elevation (12/4/06)	Previous Elevation (11/27/06)	Change	Current Storage (MAC-FT) (12/4/06)	Previous Storage (MAC-FT) (11/27/06)	Change (MAC-FT)
Ft. Peck, MT	2160 - 2246	2246 – 2250	2201.0	2201.6	-0.6	9.142	9.239	-0.097
Garrison, ND	1775 – 1850	1850 – 1854	1808.8	1809.2	-0.4	10.643	10.718	-0.075
Oahe, SD	1540 - 1617	1617 – 1620	1572.9	1573.5	-0.6	10298	10.390	-0.092
Big Bend, SD	1415 – 1422	1422 – 1423	1420.6	1420.7	-0.1	1.656	1.663	-0.007
Ft. Randall, SD	1320 – 1365	1365 – 1375	1337.6	1338.2	-0.6	2.299	2.335	-0.036
Gavins Point, SD	1204.5 - 1208	1208 - 1210	1207.3	1207.4	-0.1	0.388	0.393	-0.005

11 Dec 2006	Project Information		Reservoir Elevation			Reservoir Storage		
Project	Multi-Purpose Pool Elev.	Flood Control Pool Elev.	Current Elevation (12/11/06)	Previous Elevation (12/4/06)	Change	Current Storage (MAC-FT) (12/11/06)	Previous Storage (MAC-FT) (12/4/06)	Change (MAC-FT)
Ft. Peck, MT	2160 - 2246	2246 – 2250	2200.5	2201.0	-0.5	9.064	9.142	-0.078
Garrison, ND	1775 – 1850	1850 – 1854	1808.0	1808.8	-0.8	10.482	10.643	-0.161
Oahe, SD	1540 - 1617	1617 – 1620	1573.1	1572.9	0.2	10.306	10298	0.008
Big Bend, SD	1415 – 1422	1422 – 1423	1420.4	1420.6	-0.2	1.647	1.656	-0.009
Ft. Randall, SD	1320 – 1365	1365 – 1375	1337.3	1337.6	-0.3	2.286	2.299	-0.013
Gavins Point, SD	1204.5 - 1208	1208 - 1210	1207.5	1207.3	0.2	0.396	0.388	0.008

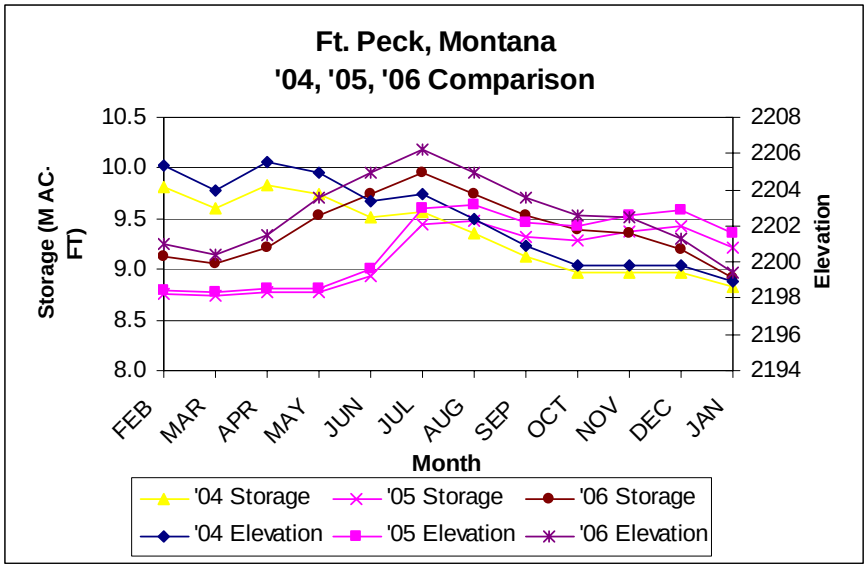
18 Dec 2006	Project Information		Reservoir Elevation			Reservoir Storage		
Project	Multi-Purpose Pool Elev.	Flood Control Pool Elev.	Current Elevation (12/18/06)	Previous Elevation (12/11/06)	Change	Current Storage (MAC-FT) (12/18/06)	Previous Storage (MAC-FT) (12/11/06)	Change (MAC-FT)
Ft. Peck, MT	2160 - 2246	2246 – 2250	2200.2	2200.5	-0.3	9.021	9.064	-0.043
Garrison, ND	1775 – 1850	1850 – 1854	1807.9	1808.0	-0.1	10.454	10.482	-0.028
Oahe, SD	1540 - 1617	1617 – 1620	1573.2	1573.1	0.1	10.329	10.306	0.023
Big Bend, SD	1415 – 1422	1422 – 1423	1420.3	1420.4	-0.1	1.642	1.647	-0.005
Ft. Randall, SD	1320 – 1365	1365 – 1375	1338.4	1337.3	1.1	2.340	2.286	0.054
Gavins Point, SD	1204.5 - 1208	1208 - 1210	1207.7	1207.5	0.2	0.401	0.396	0.005

25 Dec 2006	Project Information		Reservoir Elevation			Reservoir Storage		
Project	Multi-Purpose Pool Elev.	Flood Control Pool Elev.	Current Elevation (12/25/06)	Previous Elevation (12/18/06)	Change	Current Storage (MAC-FT) (12/25/06)	Previous Storage (MAC-FT) (12/18/06)	Change (MAC-FT)
Ft. Peck, MT	2160 - 2246	2246 – 2250	2199.8	2200.2	-0.4	8.961	9.021	-0.060
Garrison, ND	1775 – 1850	1850 – 1854	1807.9	1807.9	0.0	10.460	10.454	0.006
Oahe, SD	1540 - 1617	1617 – 1620	1573.1	1573.2	-0.1	10.310	10.329	-0.019
Big Bend, SD	1415 – 1422	1422 – 1423	1420.7	1420.3	0.4	1.657	1.642	0.015
Ft. Randall, SD	1320 – 1365	1365 – 1375	1341.1	1338.4	2.7	2.506	2.340	0.166
Gavins Point, SD	1204.5 - 1208	1208 - 1210	1208.1	1207.7	0.4	0.412	0.401	0.011

Mainstem Reservoir Storage Comparison – Water Years 2004, 2005, 2006

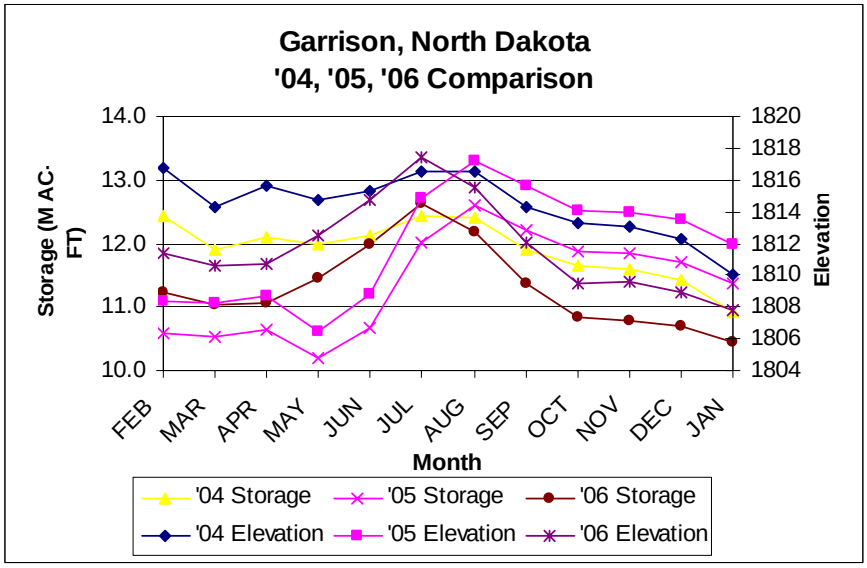
Fort Peck, Montana

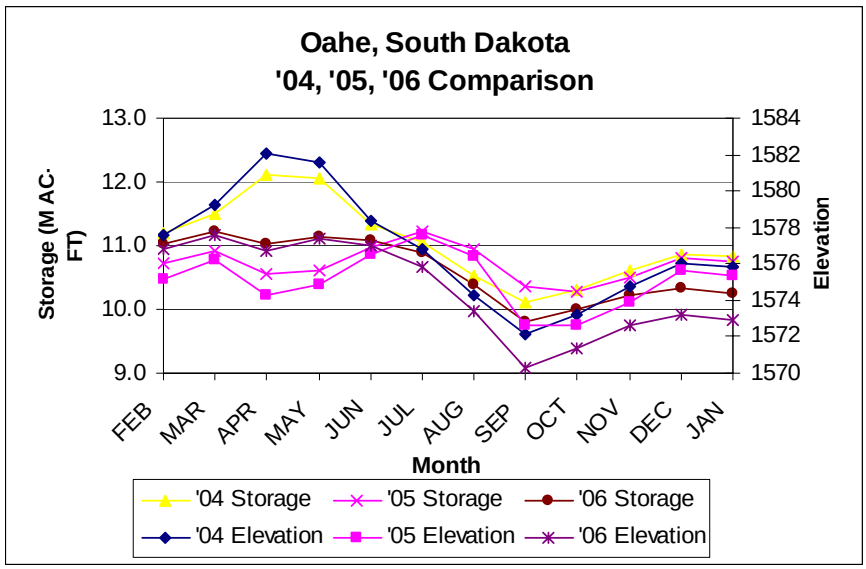
Water Year 2004 (FEB 2004 – JAN 2005)			Water Year 2005 (FEB 2005 – JAN 2006)			Water Year 2006 (FEB 2006 – JAN 2007)		
Date	Elevation	Storage (MAC-Ft.)	Date	Elevation	Storage (MAC-Ft.)	Date	Elevation	Storage (MAC-Ft.)
2/1/2004	2205.3	9.806	2/1/2005	2198.4	8.749	2/1/2006	2201.0	9.134
3/1/2004	2204	9.603	3/1/2005	2198.3	8.732	3/1/2006	2200.4	9.048
4/1/2004	2205.5	9.837	4/1/2005	2198.5	8.773	4/1/2006	2201.5	9.222
5/1/2004	2204.9	9.740	5/1/2005	2198.5	8.773	5/1/2006	2203.6	9.540
6/1/2004	2203.4	9.507	6/1/2005	2199.6	8.935	6/1/2006	2204.9	9.741
7/1/2004	2203.8	9.565	7/1/2005	2203.0	9.448	7/1/2006	2206.2	9.958
8/1/2004	2202.4	9.357	8/1/2005	2203.2	9.472	8/1/2006	2204.9	9.750
9/1/2004	2200.9	9.121	9/1/2005	2202.2	9.325	9/1/2006	2203.6	9.525
10/1/2004	2199.8	8.969	10/1/2005	2202.0	9.286	10/1/2006	2202.6	9.383
11/1/2004	2199.8	8.963	11/1/2005	2202.6	9.371	11/1/2006	2202.5	9.359
12/1/2004	2199.8	8.961	12/1/2005	2202.9	9.432	12/1/2006	2201.3	9.192
1/1/2005	2198.9	8.829	1/1/2006	2201.5	9.222	1/1/2007	2199.4	8.913



Garrison, ND

Water Year 2004 (FEB 2004 – JAN 2005)			Water Year 2005 (FEB 2005 – JAN 2006)			Water Year 2006 (FEB 2006 – JAN 2007)		
Date	Elevation	Storage (MAC-Ft.)	Date	Elevation	Storage (MAC-Ft.)	Date	Elevation	Storage (MAC-Ft.)
2/1/2004	1816.7	12.446	2/1/2005	1808.4	10.574	2/1/2006	1811.4	11.230
3/1/2004	1814.3	11.891	3/1/2005	1808.2	10.537	3/1/2006	1810.6	11.040
4/1/2004	1815.6	12.110	4/1/2005	1808.65	10.632	4/1/2006	1810.7	11.076
5/1/2004	1814.7	11.989	5/1/2005	1806.47	10.189	5/1/2006	1812.5	11.460
6/1/2004	1815.3	12.121	6/1/2005	1808.8	10.665	6/1/2006	1814.7	11.992
7/1/2004	1816.5	12.426	7/1/2005	1814.9	12.026	7/1/2006	1817.4	12.629
8/1/2004	1816.5	12.401	8/1/2005	1817.17	12.591	8/1/2006	1815.5	12.172
9/1/2004	1814.3	11.914	9/1/2005	1815.56	12.216	9/1/2006	1812.1	11.372
10/1/2004	1813.3	11.645	10/1/2005	1814.11	11.861	10/1/2006	1809.5	10.838
11/1/2004	1813.1	11.589	11/1/2005	1814.00	11.837	11/1/2006	1809.6	10.772
12/1/2004	1812.3	11.422	12/1/2005	1813.50	11.707	12/1/2006	1808.9	10.702
1/1/2005	1810	10.936	1/1/2006	1812.0	11.371	1/1/2007	1807.8	10.441



Oahe, SD

Water Year 2004 (FEB 2004 – JAN 2005)			Water Year 2005 (FEB 2005 – JAN 2006)			Water Year 2006 (FEB 2006 – JAN 2007)		
Date	Elevation	Storage (MAC-Ft.)	Date	Elevation	Storage (MAC-Ft.)	Date	Elevation	Storage (MAC-Ft.)
2/1/2004	1577.6	11.204	2/1/2005	1575.2	10.715	2/1/2006	1576.8	11.037
3/1/2004	1579.2	11.504	3/1/2005	1576.2	10.924	3/1/2006	1577.6	11.209
4/1/2004	1582.1	12.110	4/1/2005	1574.29	10.568	4/1/2006	1576.7	11.024
5/1/2004	1581.6	12.056	5/1/2005	1574.82	10.608	5/1/2006	1577.4	11.150
6/1/2004	1578.4	11.338	6/1/2005	1576.47	10.980	6/1/2006	1577.0	11.088
7/1/2004	1576.8	11.045	7/1/2005	1577.6	11.214	7/1/2006	1575.8	10.880
8/1/2004	1574.3	10.540	8/1/2005	1576.38	10.958	8/1/2006	1573.4	10.378
9/1/2004	1572.1	10.112	9/1/2005	1572.64	10.363	9/1/2006	1570.3	9.807
10/1/2004	1573.2	10.316	10/1/2005	1572.63	10.267	10/1/2006	1571.4	9.998
11/1/2004	1574.8	10.608	11/1/2005	1573.90	10.501	11/1/2006	1572.6	10.214
12/1/2004	1576	10.866	12/1/2005	1575.6	10.814	12/1/2006	1573.2	10.339
1/1/2005	1575.8	10.824	1/1/2006	1575.6	10.778	1/1/2007	1572.9	10.263