

Nebraska Resources

Newsletter

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Republican River Basin Forecast

By Jesse Bradley, P.G.

The Nebraska Department of Natural Resources (DNR) released its **Dry-Year Forecast of Water Supply and Depletions in the Republican River Basin**.

Pursuant to Nebraska Revised Statute 46-715(6), in consultation with the affected natural resources districts (NRDs), DNR is required to provide an annual short-term and long-term forecast of the maximum water supply available for use while ensuring compliance with the Republican River Compact. The DNR has determined that the short-term forecast should apply to the coming year, and that the long-term forecast should be for a decade later.



The forecast focuses on estimating the water supply in the basin assuming that dry conditions will exist next year. The forecast serves as a key tool in proactively identifying dry conditions so that Nebraska can ensure compliance with the Republican River Compact.

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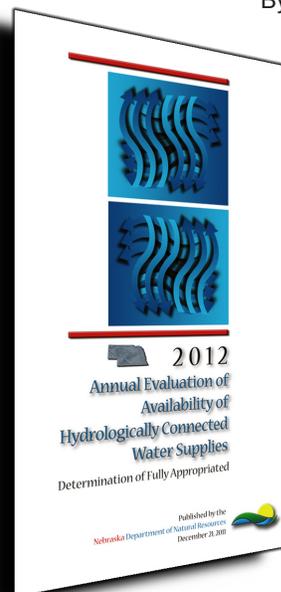
<http://www.dnr.ne.gov>

Editor's Note:

A full color electronic version of this newsletter can be found on the Department's web site along with back issues at <http://www.dnr.ne.gov/dnrnews/newsarchive2.html>.

2012 Annual Evaluation of Hydrologically Connected Water Supplies Completed

By Jesse Bradley, P.G.



The Department of Natural Resources (DNR) has published its *2012 Annual Evaluation of Hydrologically Connected Water Supplies* (available at http://dnr.ne.gov/IWM/AnnualReport_2012/AnnualReport_2012_Final.pdf). This evaluation was completed for all basins which are not currently designated as fully or overappropriated or for which a status change has not occurred in the past four years (lower Platte River Basin and Niobrara River Basin upstream of the Spencer Hydro-power facility). The basins that were evaluated include: 1) the Niobrara River Basin downstream of the Spencer Hydropower facility; 2) the Missouri Tributary Basin; and 3) the Blue River Basins. DNR has reached a preliminary conclusion that no portions of these basins are fully appropriated at the current time.

DNR Employees Receive 2011 EXPO Special Project Team Award

By Shuhai Zheng, Ph.D., P.E., CFM



The Department of Natural Resources (DNR) Coordinated Needs Management Strategy (CNMS) Team was awarded the National Management Association's (NMA) **2011 EXPO Special Project Team Award**. The award was presented December 8, 2011, by Secretary of State John A. Gale on behalf of the Nebraska State Government Chapter of NMA. The purpose of this special award is to foster good government through good management and to recognize an organizational unit or project team whose accomplishments represent the best possible application of good management principles. The objective of DNR's CNMS project was to determine the validity of 257 engineering studies on various streams throughout Nebraska. The validity was assessed by checking 17 elements of

each study to determine if the conditions on the ground were still satisfactorily represented on Flood Insurance Rate Maps (FIRMs). Once checked, the findings were inputted into a geospatial database that was submitted to the Federal Emergency Management Agency (FEMA) to be incorporated into regional and national CNMS databases. The databases also contain over 46,000 miles of Zone A streams that DNR is responsible for reviewing and correcting. In the future, databases will be used to help establish floodplain mapping projects and priorities.

The CNMS project was funded through a FEMA grant with an aggressive six month completion schedule. With strong administrative support, the project team was assembled with ten individuals from three DNR divisions. The project was completed by the end of 2010 and was the first to be completed in FEMA Region VII, which covers Iowa, Kansas, Missouri, and Nebraska. The project was completed on schedule and under the allowed budget. Since the project was completed under budget, DNR with FEMA's consent took the initiative and incorporated an additional 12,000 miles of unmapped Nebraska streams into the database. The CNMS project resulted in the delivery of a comprehensive, high-quality product which exceeded FEMA's initial expectations. Congratulations to the team members in being honored with this award.

Republican River Basin Forecast continued from p. 1

The DNR predicts that Nebraska's supply of Republican River streamflow during 2012 (if it is a dry year) will be approximately 298,680 acre-feet. The DNR is also predicting that Nebraska will be in compliance with the Republican River Compact under all likely weather conditions. Harlan County Lake is expected to provide a full irrigation supply in 2012, thus the two-year compliance standard above Guide Rock will not be in effect.

Due to the absence of a long-term trend in virgin water supply, the lowest water supply in the future is likely to be similar to the lowest available supply in the past. Thus, the water supply and allowable depletions (assuming several dry years) during 2022 is estimated to be approximately 200,000 acre-feet.

More information regarding the Republican River Basin forecast is available by contacting the DNR.

INSIGHT

By Laura Paeglis

Nebraska Resources newsletter 41, introduced the Integrated Network of Scientific Information and GeoHydrologic Tools (INSIGHT) project. This tool will assist Nebraska water managers by providing relevant water supply and demand data helping them make informed water related decisions.

Riverside Technology, Inc. has been selected to develop the interactive web-based tool for the INSIGHT initiative. INSIGHT will include data such as streamflow measurements, groundwater level measurements, meter data, diversion records, and other applicable water information. This tool will help users understand the hydrologic connection between surface and groundwater along with giving results from modeling efforts.

Additional modeling efforts and assessments, when completed, will be input into INSIGHT. The Department of Natural Resources (DNR) has contracted with HDR, Inc. to create a

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2011 STATE OF NEBRASKA EMPLOYEE AND SUPERVISOR/MANAGER OF THE YEAR AWARDS

Since 1985, state government, on behalf of the Governor's Office, has sponsored a recognition program honoring both exceptional state employees and career service employees. The goal of this program is to show appreciation to State employees for their loyalty and professional excellence. Governor Heineman proclaimed the month of October 2011, as State of Nebraska Employee Recognition Month and a ceremony honoring the Employees/Managers of the Year was held in the State Capitol Rotunda on Thursday, October 27, 2011. At that ceremony, Governor Heineman presented awards to the honorees. In addition to that ceremony, several Length of Service ceremonies were held across Nebraska during the month of October honoring employees for their length of service to the State of Nebraska.



Photographs by Robert Thompson DAS

The 2011 **Supervisor/Manager of the Year** for the Nebraska Department of Natural Resources (DNR) is Shuhai Zheng, the Manager of the Department's Floodplain/Dam Safety and Survey Division. Under Shuhai's leadership this past year, the Division, among other activities, conducted an extensive dam safety inspection and emergency action plan improvement program, leveraged federal funding to complete major floodplain mapping and related community assistance, and contributed reliable analysis and leadership during the Missouri River flood of 2011. Shuhai sets the highest of standards and achieves remarkable levels of performance both personally and from the 23 staff members he supervises. Shuhai has a very approachable management style contributing to the effectiveness and production of his Division and staff.



The 2011 **Employee of the Year** for DNR is Josh Lear. Josh coordinates and implements DNR's efforts on the National Hydrography Dataset (NHD), a surface water database with a wide variety of applications. Josh has been an unrelenting force in the production, stewardship, and dissemination of the dataset. Many of Josh's efforts this past year have involved incorporating the use of NHD into the daily operation and functions of DNR. Josh also has the responsibility as Geographic Information System (GIS) Coordinator in representing the Department. Josh's passion for his job, expertise, humor, and friendly manor contributed greatly to his success and achievements this past year.

The skills and performance of both these employees have helped DNR in accomplishing its goals and objectives over the past year. **The Department staff and the State of Nebraska would like to congratulate both of these exceptional people on their awards and thank them for their outstanding service and dedication to Nebraska and its citizens.**



Service Awards 2011	Employee	Years of Service
	David L. Gunderson	10
Jeffrey T Nichols	10	
Christine Southwick	10	
Ronald G. Theis	10	
Robert R. Gower Jr.	15	
Gayle A. Follmer	20	
Joshua W. Lear	20	
Kevin J. Schwartzman	20	
Kent L. Zimmerman	20	
James F. Ostdiek	25	
Krista S. Reed	25	
Steve Gaul	35	
Thomas A. Mitchell	40	
Mike Donovan	45	



Niobrara River Basin Tour

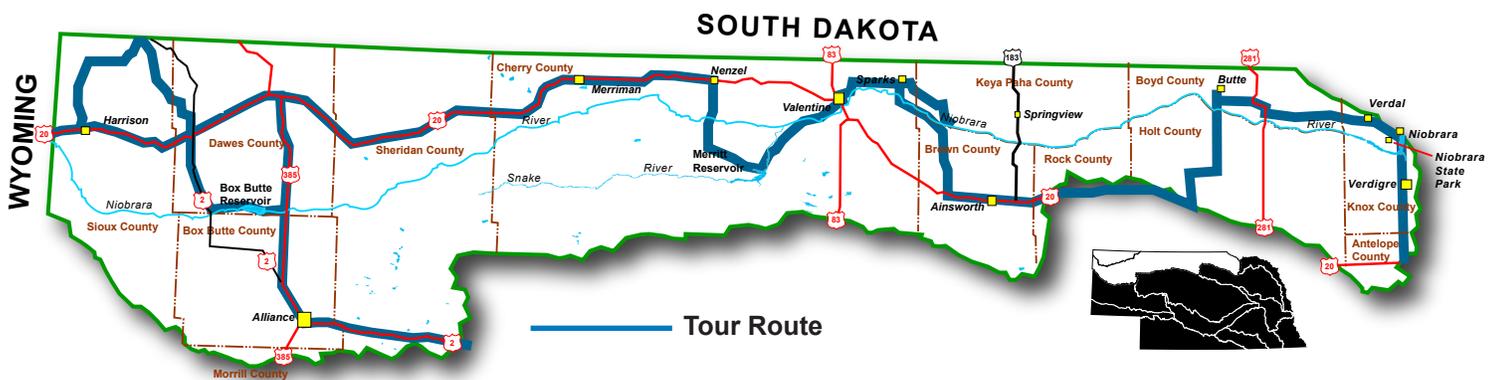
By Brandi Flyr, Ph.D.

This past fall, Department of Natural Resources (DNR) staff toured the Niobrara River Basin. The tour covered the entirety of the Niobrara's 535 river miles beginning at the Nebraska-Wyoming state line, and ending at the confluence of the Niobrara and Missouri rivers. Approximately 20 DNR staff members participated in the tour. The tour gave staff the opportunity to view the variability that exists within the Niobrara River Basin and increased their knowledge about the basin. Stops within the western portion of the basin, included East Ash Creek, Toadstool National Park, and various river bluffs that allowed DNR staff to view some of the water-bearing geologic formations that provide water for many of Nebraska's rivers. Niobrara River Basin structural stops included Box Butte Reservoir, Mirage Flats Diversion Dam, Mirage Flats Irrigation District, Merritt Reservoir, Ainsworth Irrigation District, Spencer Hydropower Facility, and various stream gaging stations.

The week-long tour also included stops at the Upper Niobrara-White Natural Resources District (NRD), Middle Niobrara NRD, Lower Niobrara NRD, Nebraska Public Power District, along with a briefing from representatives from the Crow Butte Uranium Mine. These stops permitted area water managers an opportunity to provide DNR staff with their unique perspectives of the Niobrara River. Local DNR field office staff also visited with the group and offered their expertise and water administration processes within the region.

DNR Director, Brian Dunnigan, stated, "We feel that it is very important for our staff to get a better feel and understanding of the water basins that we work with on a daily basis. Given the context of recent activities within the Niobrara River Basin, we felt that this was an excellent opportunity to expose a number of DNR staff to the basin and its related water management activities." The activities and events preceding the tour included two integrated surface-groundwater models on the upper and lower portions of the basin, a Nebraska Supreme Court decision to reverse the fully appropriated status and subsequent natural resources districts' rule changes, and the Niobrara River Compact meeting. (For a more detailed discussion on the DNR's Niobrara River Basin modeling efforts, please refer to the May 2011 newsletter, and for discussion on the reversal of the fully appropriated status, please refer to the July 2011 newsletter).

The tour also covered portions of the White River and Hat Creek basins in the northwest portion of the state, as it transitions from prairie to badlands. The landscape and geology of these two river basins is considerably different from the remainder of the state, allowing DNR staff the opportunity to realize the importance of these characteristics on water availability. The Niobrara River, White River, and Hat Creek basins illustrate the variety of rivers within Nebraska, and provided an excellent opportunity for DNR staff to increase their understanding of the state's water resources.



The basin tour covered the entirety of the Niobrara's 535 river miles.



Nebraska Soil and Water Conservation Fund Update

The **Nebraska Soil and Water Conservation Fund (NSWCF)** is a state fund established in 1977 to provide financial assistance to Nebraska landowners installing approved soil and water conservation measures. **Since 1977 the State of Nebraska has provided over \$89 million in state cost-share assistance to Nebraska landowners.** The fund is administered at the state level by the **Nebraska Department of Natural Resources (DNR)** and is coordinated by the state's 23 natural resources districts at the local level with technical assistance provided by the Natural Resources Conservation Service. For additional information on the NSWCF, contact the DNR or your local natural resources district.

Nebraska Soil and Water Conservation Program Update

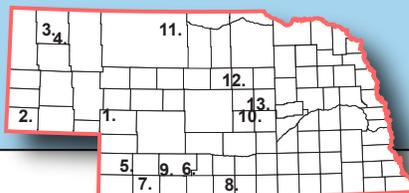
Approved Soil and Water Conservation Practices	2011 Accomplishments	Total Accomplishments 1977-2011
Terraces.....	125 miles	12,408 miles
Terrace Underground Outlets.....	168,186 feet	6,267,226 feet
Water Impoundment Dams.....	1	1,359
Grade Stabilization Structures.....	10	745
Irrigation Tailwater Recovery Pits.....	1	873
Diversions.....	9,522 cubic yards	1,765,826 cu.yds.
Grassed Waterways.....	45 acres	14,218 acres
Water and Sediment Control Basins.....	25	771
Dugouts for Livestock Water.....	1	701
Pasture or Range Seeding.....	940 acres	70,546 acres
Critical Area Plantings-Grass.....	54 acres	1,792 acres
Windbreaks.....	4,508 acres	55,247 acres
Windbreak Renovations.....	21 acres	3,904 acres
Irrigation Return Pipe.....	1,534 feet	560,590 feet
Planned Grazing Systems.....	44,301 acres	3,925,471 acres
Irrigation Water Management.....	25,666 acres	502,822 acres
Repair of Practices.....	3	262
Brush Management.....	84 acres	123 acres
Stream Bank Stabilization.....	0	3
*Irrigation Surge Valves.....	0 meters	632
**Republican Basin GW Meter Program.....	0 meters	1,713 meters
**Republican Basin SW Meter Program.....	0 meters	82 meters
***Republican Basin Water Meter Program.....	0 meters	5,451 meters
****Water Mgt. Area Water Meter Program.....	0	504 meters
Totals	\$2,091,613.00	\$89,443,896.00

* Rescinded as separate practice effective 7/1/94
 ** These practices not used after 7/1/2001
 *** This practice not used after 12/31/05
 **** This practice not used after 3/31/05

January 2012
 Figures are rounded to the full unit

Water Year 2011

This reservoir storage comparison table at the right shows the capacity, maximum storage level reached during **Water Year 2011 (October 1, 2010-September 30, 2011)**, and the carryover at the end of September 2011 for the largest 15 reservoirs serving Nebraskans (13 of the 15 reservoirs are located in Nebraska, please see reservoir location map).



Reservoir Storage Comparison for (October 1, 2010-September 30, 2011)

Reservoir	Capacity <i>Top of Irr. Pool in Acre-feet</i>	Maximum Storage <i>(for Water Year 2011)</i>		Carryover <i>September 30, 2011</i>		
		Acre-feet	% Average	Acre-feet	% Average	
Pathfinder	a	1,016,510	1,015,526	112%	694,959	169%
Glendo	a	184,870	180,060	114%	176,685	138%
1. Lake McConaughy	a	1,948,000	1,740,000	113%	1,548,000	126%
2. Oliver <i>(no irr. water stored)</i>	b	1,680	1,064	47%	768	46%
3. Whitney	a	10,000	10,970	105%	5,455	1125%
4. Box Butte	a	31,060*	24,940	132%	112,70*	232%
5. Enders	a	44,480	18,484	58%	17,435	107%
6. Harry Strunk Lake	a	37,140	37,945	94%	25,279	109%
7. Swanson Lake	a	120,160	80,911	81%	60,787	98%
8. Harlan County Lake	a	342,560	334,120	103%	302,371	124%
9. Hugh Butler Lake	c	37,780	6,751	21%	5,702	23%
10. Sherman	d	69,080	70,230	103%	56,170	122%
11. Merritt	e	74,490	67,600	92%	50,130	104%
12. Calamus	f	127,400	129,400	107%	75,200	104%
13. Davis Creek	g	32,459	28,230	96%	9,810	81%
Reservoir	Capacity	Maximum Storage		Carryover		

Records used for averages
 a 1960-2011, b 1981-2011, c 1962-2011, d 1963-2011, e 1964-2011, f 1985-2011, g 1994-2011
 * The Box Butte Reservoir capacity was modified in 2003 reducing capacity by around 1,900 acre-feet.

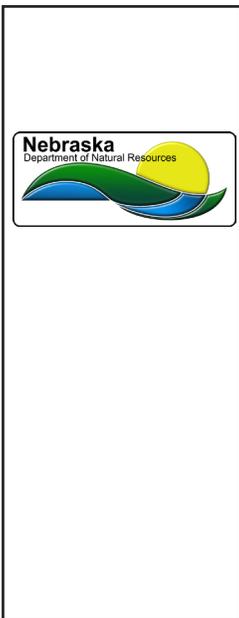
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Dave Heineman, Governor

Nebraska

Department of Natural Resources

Brian P. Dunnigan P.E., Director

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groundwater model for the Blue River Basin that expands upon previously completed work by the basin's natural resources districts. A request for proposal is in progress to select a contractor to assist in the assessment of data with potential model development in the Lower Platte and Missouri Tributary basins.

For more information on INSIGHT, please see **Water Matters** No. 6 on the DNR's website at http://dnr.ne.gov/IWM/WaterMatters/WaterMatters_No6.pdf.

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Nebraska Department of Natural Resources....

....dedicated to the sustainable use and proper management of the State's natural resources.