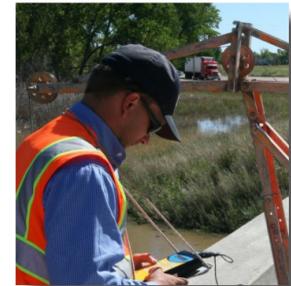


The 2013 South Platte Flooding Continued from page 1

Through the Department's efforts several questions arose that needed answers quickly. **First**, how much water should Nebraskans expect flowing down the South Platte River? **Second**, when will the water reach the stateline and other areas downstream? **Third**, what type of damage can be expected?



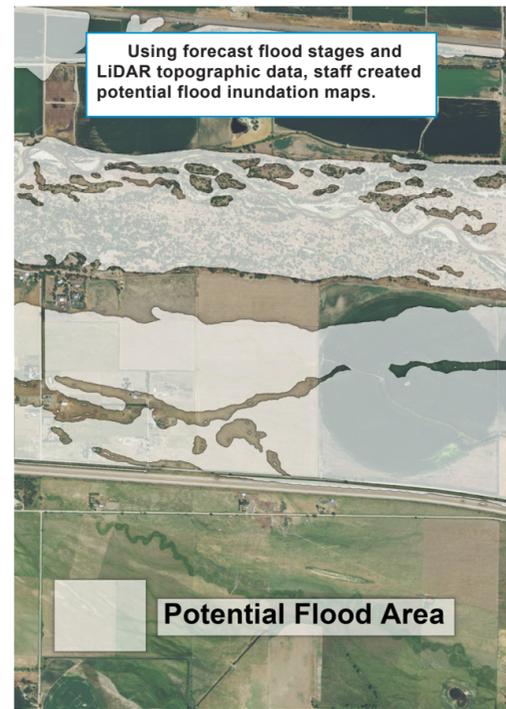
James Sprague of the Bridgeport Field Office measuring streamflow from a bridge overpass on September 24, 2013
Photo Credit Nebraska Department of Natural Resources

The Department's Bridgeport Field Office quickly responded by deploying its streamgaging crews along the South Platte River in both Nebraska and Colorado. The Department worked with the U.S. Geological Survey (USGS) and the State of Colorado to make numerous repeated measurements of the streamflow at many

locations in order to estimate the timing and magnitude of the flood event.

At the same time, the Department's Floodplain Division began the process of forecasting the magnitude of the flood in Nebraska. **Using forecast flood stages and LiDAR topographic data, staff created potential flood inundation maps.** These maps were then provided to the Nebraska Emergency Management Agency (NEMA) and local governments to assist in their flood response activities.

As floodwaters moved downstream through the South Platte and Platte rivers, Department staff continued to take flow measurements to ensure accurate, up-to-date streamgaging data was available. This included providing the latest river stages, flow information and gage rating curves to NOAA's Missouri Basin River Forecast Center in Kansas City to assist their forecast efforts. This also involved monitoring equipment,



repairing gages damaged by flooding, and installing a backup communication system to ensure that data could be transmitted in the event the primary system failed.

While field office staff were measuring flow in Colorado, the Department's Integrated Water Management (IWM) Division was proactively working with natural resources districts and irrigation dis-

Canal	NRD	Total Diverted (acre-feet)
Western Canal	SPNRD & TPNRD	4,564
Paxton-Hershey Canal	TPNRD	1,870
North Platte Canal	TPNRD	3,822
Gothenburg Canal*	CPNRD	2,538
Thirty Mile Canal	CPNRD	3,564
Dawson Co. Canal*	CPNRD	2,529
E65 Lateral & Elwood Reservoir**	TBNRD	15,109
Phelps Canal**	TBNRD	9,787
Total		43,693

* Nebraska Public Power District
** Central Nebraska Public Power & Irrigation District

tricts to implement a project to mitigate immediate hazards from increased flows. The project involved diverting the excess flood flows from the river into adjacent canal systems where the water would seep into the underlying aquifer. IWM staff coordinated with the Department's Permits Division to assist with the implementation of the project.

These diversions reduced the flood flows in the river decreasing the risk of additional flooding downstream and providing beneficial recharge to area aquifers.

Brian Dunnigan, Director of the Department of Natural Resources, said, "Our combined approach of flow measurement, flood inundation mapping, flood water diversions, and close coordination with federal, state, and local agencies during the 2013 flood event is a good example of the best practices to reduce flooding losses while realizing the added benefit of recharging aquifers. This is a wonderful demonstration of what can be achieved when all parties are able to work in

close collaboration toward the same goal."

Nebraska Resources

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301 Centennial Mall South, 4th Floor
P.O. Box 94676
Lincoln, Nebraska 68509-4676

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Special Edition

July 2014

Nebraska Resources page 6



State of Nebraska
Dave Heineman, Governor

Nebraska Department of Natural Resources
Brian P. Dunnigan P.E., Director

The *Nebraska Resources* is a quarterly publication of the Nebraska Department of Natural Resources. We welcome your comments and suggestions.

Nebraska Department of Natural Resources...
...dedicated to the sustainable use and proper management of the State's natural resources.

Flood Safety Tips

- **Stay informed** and keep a battery-operated radio nearby for receiving local news and storm information updates.
- **Safeguard your possessions** and remove them if time permits from areas that are prone to flooding.
- **Develop an emergency plan** including a safety kit and evacuation route to higher ground for you and your family.
- **Have a designated location** for family members to meet if they become separated.
- **Do not attempt to drive, walk or swim in flooded areas. Flood water can be deceiving and very dangerous.**

Agency Numbers to Remember

Agency address:
Nebraska
Department of Natural Resources
301 Centennial Mall South
Fourth Floor
P.O. Box 94676
Lincoln, Nebraska 68509-4676
Agency phone number:
(402) 471-2363
Agency fax number:
(402) 471-2900
Agency homepage address:
dnr.nebraska.gov

Editor's Note:
A full color electronic version of this newsletter can be found on the Department's website along with back issues at dnr.nebraska.gov

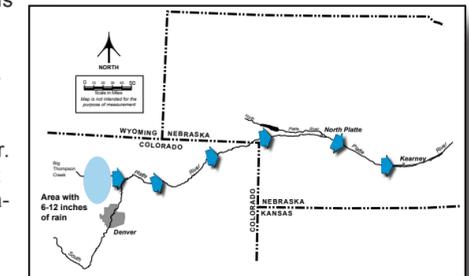
Nebraska Resources Newsletter

Published by the Nebraska Department of Natural Resources
301 Centennial Mall South / P.O. Box 94676 / Lincoln, NE 68509-4676

The 2013 South Platte Flooding

During 2013, the State of Nebraska was experiencing drought conditions of varying extremes that affected nearly all of the state. According to the National Drought Mitigation Center at the University of Nebraska-Lincoln, 93 percent of the state was experiencing moderate drought or greater severities on January 1, 2013. These drought conditions continued through the summer months and into the fall.

Then, in September of 2013, a week-long precipitation event settled in over the northeastern foothills and mountains in Colorado. This area provides runoff to the major streams and rivers in the Boulder and Denver area that form the headwaters of the South Platte River. This significant rainfall event (over 17 inches in some locations), led to unprecedented floodwaters in Colorado as well as anticipation that those waters would inundate significant areas in the South Platte and Platte River Valley in Nebraska as they worked downstream. Based on previous runoff events in the South Platte River, the floodwaters were expected to reach Nebraska in about one week's time.



South Platte River Bridge, Buffalo Bill Road, North Platte, Nebraska Friday, September 20, 2013, at 8:30 a.m.
Photo Credit Twin Platte Natural Resources District



South Platte River Bridge, Buffalo Bill Road, North Platte, Nebraska Saturday, September 21, 2013, at 9:00 a.m.
Photo Credit Twin Platte Natural Resources District

One significant complication of predicting when the waters would arrive and what flooding impacts might be associated with its arrival was that as flood waters moved downstream many stream gages in Colorado were washed away. This led to increased difficulty and uncertainty about what the exact impacts on Nebraskans might be.

The Department of Natural Resources (Department) utilized its technology and staff to determine the impact of the floodwaters before the water reached the state line. Department staff worked diligently with other local, state, and federal agencies to provide the data and information necessary to protect life and property.

Continued on page 5



Big Springs, Nebraska, September 19, 2013, at 10:50 a.m. Photo Credit Nebraska Department of Natural Resources



Western Canal Head Gate, September 18, 2013, at 2:00 p.m. Photo Credit Twin Platte Natural Resources District



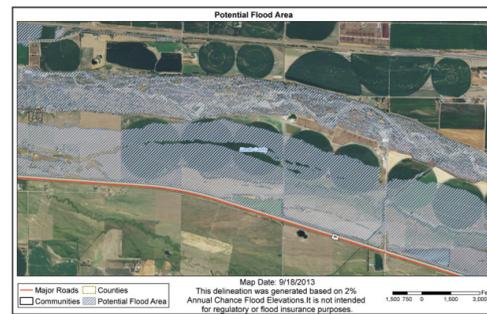
Paxton, Nebraska, September 20, 2013, at 11:57 a.m. Photo Credit Nebraska Department of Natural Resources



Iron Eagle Golf Course, North Platte, Nebraska Saturday, September 21, 2013, at 10:03 a.m. Photo Credit Twin Platte Natural Resources District



South Platte River Bridge, Buffalo Bill Road, North Platte, Nebraska Saturday, September 21, 2013, at 11:00 a.m. Photo Credit Twin Platte Natural Resources District



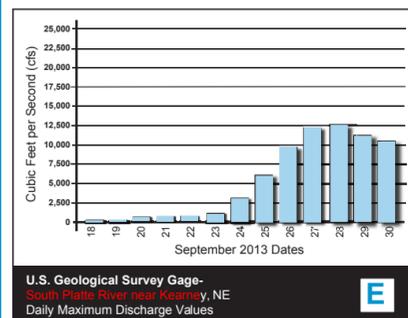
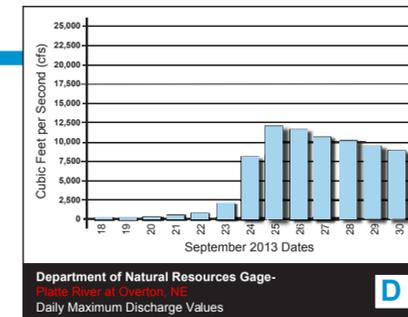
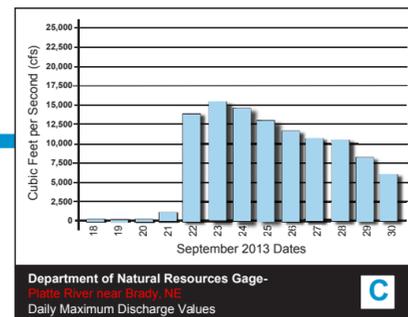
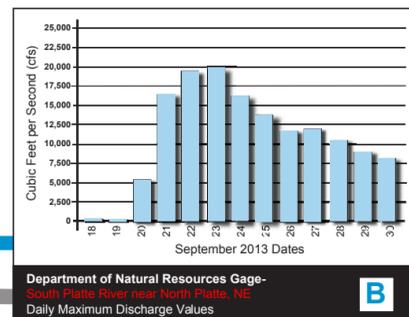
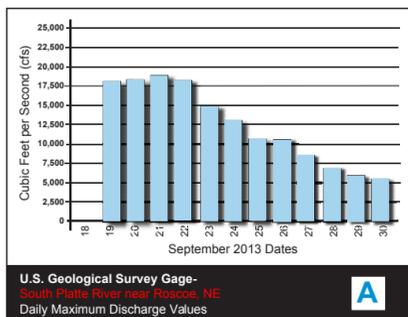
Department's flood inundation map west of North Platte, Nebraska



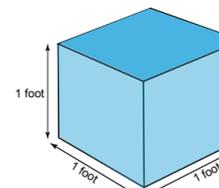
Cozad, Nebraska September 24, 2013, at 11:45 a.m. Photo Credit Nebraska Department of Natural Resources



Western Canal Head Gate, September 18, 2013, at 2:00 p.m. Photo Credit Twin Platte Natural Resources District



Cubic Foot of Water



A **cubic-foot** (cf) of water is approximately 7.48 gallons

Cubic-feet per second (cfs) is the measurement of an amount of water passing a specified location across the entire channel width (cross-section)

An **acre-foot** of water is 325,851 gallons

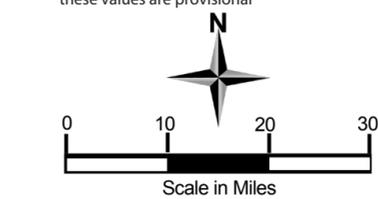
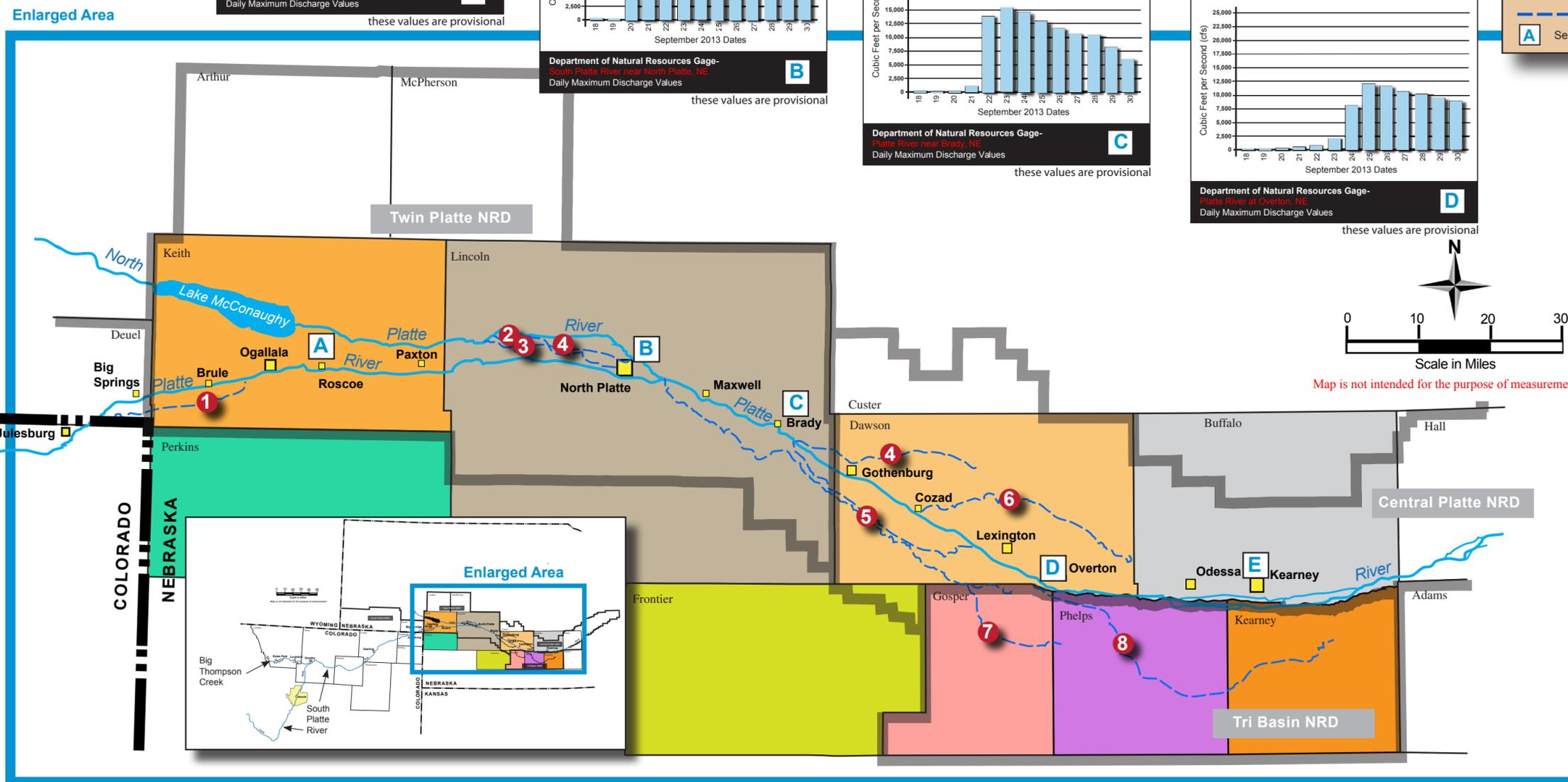
Legend and Data

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		Total 43,693

* Nebraska Public Power District
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Canals utilized for excess flow diversions

1 Selected streamgages (data and approximate location)



Map is not intended for the purpose of measurement

Enlarged Area