

Central Platte NRD

215 Kaufman Ave

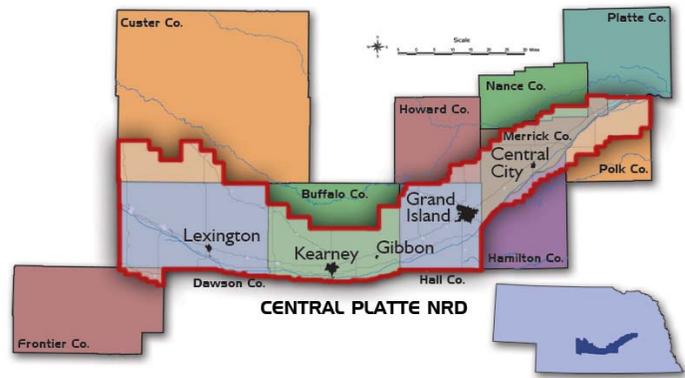
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WATER MANAGEMENT- PAST, PRESENT, FUTURE

Irrigated agriculture provides a large economic base for the Central Platte NRD area, with much of the agriculture depending on groundwater to supplement rainfall. CPNRD has 1,025,466 irrigated acres with 932,826 acres irrigated with groundwater only, 14,590 acres surface water only, and 78,050 acres are co-mingled use. Crops irrigated in the CPNRD include corn, soybeans, sorghum, potatoes, alfalfa, small grains and sunflowers.

- 1977: CPNRD contracted with USGS to develop its first computer model of the hydrogeologic aquifer system within the District. The model has the capability to evaluate effects of various alternative management plans on water levels and on streamflow in the District. In the mid-80's, it was updated by HDR Engineering to assist with groundwater management plans.
- 1987: Groundwater Quality Management Program was implemented to provide a long-term solution for widespread high ground-water nitrate-nitrogen problems. Average N levels have been reduced from 19.24 to 14.24 ppm since the program's inception.
- 1987: CPNRD has been involved in many of the state's water issues due to its location along the Platte River. The NRD, along with several partners, were awarded two grants by the Nebraska Environmental Trust to develop the Cooperative Hydrology Study (COHYST). This state of the art computer model is used for a variety of water issues, including the Platte River Recovery Implementation Program (PRRIP), annual basin determinations by the Department of Natural Resources (NDNR), as well as management plans such as the NRD's Integrated Management Plan and the Basin Integrated Management Plan.
- 2003: CPNRD initiated and implemented a suspension on drilling new wells and expansion of irrigated acres. The suspension was put in place to allow the Board and the DNR to look over the situation between groundwater and surface water to determine if a problem existed and how it would affect future water supplies.
- 2004: Nebraska Legislature adopted LB 962, calling for integrated management of surface and groundwater. The Platte Basin above Elm Creek, NE, was declared over-appropriated and the area from Columbus to Elm Creek was designated as fully appropriated; meaning any additional uses would cause water supply to be out of balance with demand. With those designations, the NRDs and NDNR developed Integrated Management Plans (IMPs) calling for "no new uses" in the basin above Columbus that would negatively impact an existing surface water right or groundwater use. New uses are allowed but any depletion to existing rights and uses must be offset. CPNRD also participated in development of the Basin IMP. The NRD is 19 years ahead of the schedule developed for the IMP on returning water back to the Platte River.
- 2006: Governor Heineman signed the Platte River Recovery Implementation Program (PRRIP), which entered Nebraska into an agreement with the states of Wyoming & Colorado, and the U.S. Dept. of Interior Fish & Wildlife Service. The program calls for no new depletions to the FWS "target flows" and a return to the 1997 level of depletions. The NRD has a big stake in the Program to improve and conserve habitat for three threatened & endangered species on the central Platte (whooping crane, piping plover, least tern) and the endangered pallid sturgeon on the lower Platte. CPNRD board members, management and staff are actively involved in Program Governance and Advisory committees.
- 2007: CPNRD initiated the first Water Bank in Nebraska and approved the first water bank transaction in the district. The Water Banking policy states that for every acre-foot of water impacting the river that can be acquired, there's that much less regulation and cutback that will need to be imposed. The goal is to diminish the chance of having to regulate irrigators by acquiring water rights from willing landowners. COHYST has been useful in determining the amount of water needed to bring the Platte River back to 1997 levels; estimated at 3,400 acre-feet. As of 2014, CPNRD has spent \$4.6 million to purchase water rights to return the over-appropriated area back to a fully appropriated status; resulting in 3,000 acre-feet of water returned to the Platte River.
- 2012: Water conservation agreements entered into: 1) *Platte Basin Water Project Coalition Interlocal Cooperation Agreement*- Agreement allowed utilization of new Water Cash Fund through NET & the Legislature for Platte Basin water management activities and took the place of PBHEP. 2) *J-2 Regulating Reservoir*- Agreement allows flows from CNPPID supply canals to be stored and put into the Platte River when needed to meet FWS target flows; with excess flows used as credit for requirements of the PRRIP. CPNRD will receive 5% of reservoir water; which provides the NRD with up to 2,000 ac-ft of water annually.

- **2014:** Construction was completed on the rehabilitation of Dawson County irrigation canals-its largest effort to return the area above Elm Creek to a fully appropriated condition. The project involves working with irrigation canals for surface water storage of excess flows for release during times of shortage. After irrigation season, partners use the canals to hold diverted off-season excess Platte River flows when available. Water seeps from the canals into groundwater that is hydrologically connected to the river and provides river enhancement credits for the partners. The increased flow levels are required under the 3-state Platte River Recovery Implementation Program (PRRIP) and state law. Grants from Platte Basin Habitat Enhancement & Coalition Project (which involves money from Platte Basin NRDs, the Nebraska Environmental Trust and the state water management fund) paid 60% of the project costs. The NRD and irrigation canal companies were responsible for the remaining 40%.

- **Six Mile Canal** In December 2010, the NRD purchased Six Mile Canal Company in Gothenburg, the first-ever buyout of a surface water irrigation canal in Nebraska. The buy-out allowed farmers to convert to more efficient groundwater irrigation and also increase Platte River flows. The project allows CPNRD to return water to the river to protect endangered species, make irrigation more efficient for farmers, put more land into crop production and improve public safety.

- **Cozad Canal** The NRD partnered with Cozad Ditch Company to manage the canal and to lease surface water as part of its efforts to increase Platte River flows and protect endangered species. The NRD helped fund a complete rehab of the canal to create a more efficient system. The canal has been in place diverting Platte River water since its water right was approved in 1894 with water rights to irrigate over 25,000 acres of land. The massive rehab included: 152 acres of clearing & grubbing (equals 27 miles), 21 miles of grading, 13 new structures, a river return structure; and Spring Creek Wasteway Structure which included excavation of Spring Creek Channel, 22 walkway modifications, and a SCADA automated monitoring system of the Rubicon Gates with 4 flume gates and 7 slip meters. Total cost of the rehab project was \$6.6 million and has the potential to provide 7,000-18,000 ac-ft of water savings annually.

- **Thirty Mile Canal** The partnership between the NRD and Thirty Mile Irrigation District includes a purchase agreement. The NRD purchased ownership in the amount of \$2 million for half interest in the irrigation system; which includes half of the irrigation canal company's water rights and half of the value of buildings and equipment. Thirty Mile project was originally constructed in 1927. Rehab included replacement/installation of 8 bridges, 8 check structures, 9 drop structures, 3 pipe roadway crossings, 2 pipe laterals, 4 miscellaneous structures, 5 flow measurement devices and installation of rip rap. Total cost of the rehab project was \$5 million and has the potential to provide 8,000-13,000 ac-ft of water savings annually.

- **Orchard Alfalfa Canal** The NRD and the Southside Canal Company have a management-lease agreement for the Orchard Alfalfa Canal. CPNRD assists in operations for all of the irrigation district's benefits and is responsible for half of the operations and maintenance costs. Rehab included replacement of 7 county road box culverts; clearing/grubbing 51 acres; grading 60,200 LF; irrigation turnout structure; replacement of 13 canal structures; removal of 3 farm crossings; replacement of diversion structure; slide gate with electric actuators on existing overflow structure; and rip rap overflow structure for high flows. Total cost of the rehab project was \$4.7 million and has the potential to provide 2,500-9,900 ac-ft of water savings annually.

Future Water Sustainability Activities:

The District will continue to strive towards water resources sustainability with the following projects and studies to better understand the groundwater and surface water systems across the area:

- **Platte River Conjunctive Water Management**- Continue participating in this study which creates tools to better manage ground and surface water in the Central Platte Valley by collecting and evaluating data to develop a hydrologic budget. Some components included in the budget are rainfall, pumping, surface water applied, total evapotranspiration, recharge, runoff and acreage. Developing plans to manage the hydrologic budget will result in better utilization of both resources. Management plans are being analyzed, and an implementation of a plan will be started at a future date.
- **Surface Water to Groundwater**- CPNRD and Twin Platte NRD boards of directors offered to assist CNPPID in converting their surface water irrigation to a groundwater irrigation project and recharge program. Currently, 75% of the users in that system already have irrigation wells that are used during drought conditions. The NRDs proposal would allow landowners to rely totally on groundwater and use the surface water for recharge. CNPP&ID's board took the proposal under advisement. An addendum was added to the Study in 2013 using the OPSTUDY model to address concerns identified by CNPPID.
- **Recharge Projects**- The NRD will continue to participate in projects that would provide enhanced flows to the Platte River by returning natural flow irrigation rights and/or diverting and retiming excess flows to the river.
- **Groundwater Management**- Monitor the water table levels through the annual well readings and make adjustments according to the Groundwater Quantity Management Plan; and continue working with producers on best management practices under the Groundwater Quality Management program.
- **Platte River Program**- Continue participation in Platte River Recovery Implementation Program as a downstream water user.
- **UNL/USGS**- Continue working with UNL to measurement crop water ET year-round and measurement of Pharamites ET in the Platte River Channel; and with the USGS to study groundwater recharge at 8 sites across the District.