

# Long Range Implementation Plan

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**For Fiscal Years 2022-2027**



**CENTRAL PLATTE  
NATURAL RESOURCES DISTRICT**

PROTECTING LIVES. PROTECTING PROPERTY. PROTECTING THE FUTURE.



**CENTRAL PLATTE  
NATURAL RESOURCES DISTRICT**

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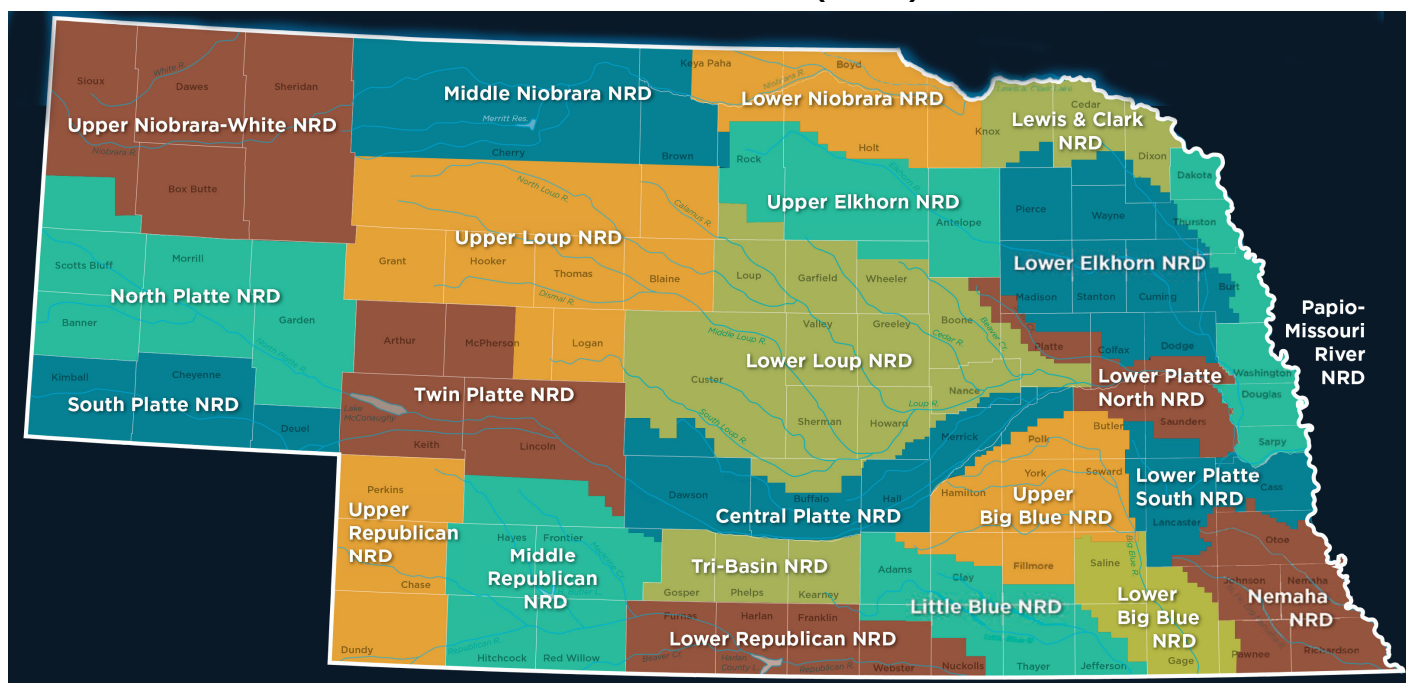
# I. District Authority

This Long Range Implementation Plan is developed by the Central Platte Natural Resources District to meet the requirement to prepare and adopt a long range implementation plan under the Nebraska Natural Resources District Act. It summarizes planned district activities and includes projections of financial, manpower and land right needs of the district for the next five years. For planning purposes, areas of responsibilities are consolidated under the act into the nine categories that are listed below. The Act requires a Comprehensive Master Plan to be updated every ten years, the Master Plan for 2021-2031 was adopted in December 2021. The district is required to prepare and adopt individual project plans as it deems necessary to carry out projects approved by the district. If those project plans involve state regulations or state financing, they must be filed with the appropriate agency in accordance with state law that specifies the powers and authorities to be exercised by NRDs in fulfilling their purposes of developing and executing the plans, facilities, work and programs relating to the topics.

Fertile soils and abundant water come together in the District to provide a productive union that multiplies their values, resulting in the extensive agricultural production upon which the economy of the Central Platte Valley is built. As use of our resources increases with growing population and desire for a quality life, we need to ensure that the use is wise, efficient and non-destructive. Regardless of what we may think or desire, there are limits to our resources. The plan is designed as a flexible guide to outline the orderly development, management, preservation, utilization and conservation in order to best serve the people of the district and the state.

While complying with statutory requirements, this document is also designed to allow the public to understand the needs and goals of the NRD in order to make informed decisions as to the advisability of the projects and programs planned by the district. The District's planning relies to some degree on the input of other agencies, organizations and individuals. Public information meetings are held periodically and comments from hearings held are considered in the planning process. Representatives from outside agencies and from other local governments are included in the board's committee process whenever it is appropriate.

**FIGURE 1. Nebraska's 23 Natural Resources Districts (NRDs)**



**Administration** When Nebraska joined the Union in 1867, natural resources issues were treated as issues of property and often pitted neighbor against neighbor, so the Nebraska Legislature was asked to provide solutions to specific problems. The Legislature usually responded by creating a special-purpose governmental unit that could resolve an issue, but often without sufficient authority or funding to provide effective long-term solutions. By the late 1960s, Nebraska had over 500 special purpose districts including: irrigation, drainage, soil conservation, watershed, rural water, watershed improvement boards, reclamation, sanitary improvement districts and sanitary

drainage districts. In addition, state agencies were empowered to deal with some natural resources issues. The solution was for the state to create a unique system of natural resources districts (local government districts) that could deal with a wide variety of natural resource-related problems and opportunities. In 1972, 24 NRDs (now 23) were established to replace 154 special purpose districts. The designated Mid-Platte East NRD covered portions of the Platte Valley that were being served by four watershed districts and several Soil & Water Conservation Districts in an 11-county area. One of the first acts by the district's board of directors was to change the NRD's name to the Central Platte Natural Resources District. The city of Grand Island was selected as the headquarters.

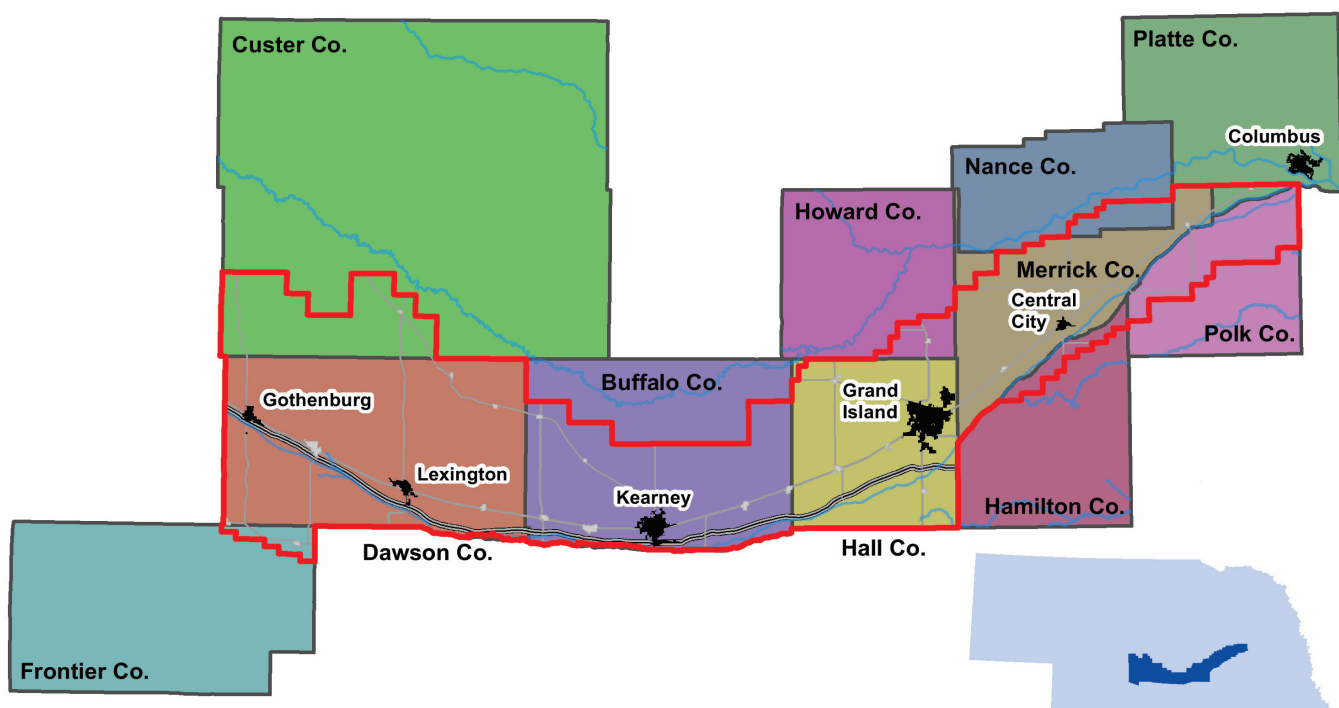
## **FIGURE 2. Central Platte NRD's Consolidated Areas of Responsibilities**

1. Soil conservation and erosion control.
2. Flood prevention, control and channel rectification.
3. Drainage.
4. Groundwater, surface water and water supply.
5. Water quality, pollution control, solid waste disposal and sanitary drainage.
6. Fish and wildlife habitat.
7. Forestry management.
8. Recreation and parks.
9. Range management.

**District Location** Central Platte is one of 23 natural resources districts in Nebraska. It lies in the south central part of Nebraska, straddling the Platte River. There are 2,136,304 acres in the district. CPNRD extends 175 miles from the Lincoln-Dawson county line on the west near Gothenburg, to Hwy 81 on the east near Columbus. In 2001, 38 square miles of Frontier County (originally in CPNRD) were added back to the District after a petition request from landowners and transfer approval from the Secretary of State. !

**Counties** Eleven counties have land included in the district. All of Dawson County and parts of Frontier, Custer, Buffalo, Howard, Hall, Nance, Merrick, Hamilton, Platte, Polk. Bordered by Lower Loup, Lower Platte North, Upper Big Blue, Little Blue, Tri-Basin, Middle Republican and Twin Platte NRDs.

## **FIGURE 3. Counties in Central Platte NRD (red boundary)**



**Population** 2020 Census population data determined the municipal population increased from 111,125 in 2010 to 119,775 in 2020. The rural population fluctuated with 13 of the communities seeing a decrease and 12 seeing slight increases. All three urban communities had increases. Nebraska's population increased from 1,826,341 to 1,961,504.

**First Class:** 3 cities with populations of more than 5,000/less than 100,000: Grand Island, Kearney, Lexington.

**Second Class:** 9 cities with populations of more than 800/less than 5,000: Cairo, Central City, Cozad, Doniphan, Elm Creek, Gibbon, Gothenburg, Wood River, Shelton

**Villages:** 18 villages with populations under 800: Alda, Amherst, Archer, Chapman, Clarks, Duncan, Eddyville, Eustis, Farnam, Hordville, Miller, Oconto, Odessa, Overton, Riverdale, Silver Creek, St. Libory, Sumner

**FIGURE 4. Municipal Populations in the Central Platte NRD (Based on 2020 U.S. Census)**

Grand Island 53,131; Kearney 34,293; Lexington 10,348; Cozad 3,988; Gothenburg 3,478; Central City 2,934; Gibbon 1,878; Wood River 1,172; Shelton 1,034; Elm Creek 979; Doniphan 809; Cairo 822; Alda 647; Overton 607; Duncan 392; Eustis 389; Clarks 344; Silver Creek 320; Chapman 260; Sumner 252; Riverdale 247; St. Libory 241; Amherst 201; Farnum 182; Hordville 131; Oconto 138; Miller 129; Eddyville 97; Odessa 57; Archer 45

**RURAL POPULATION: 25,080**

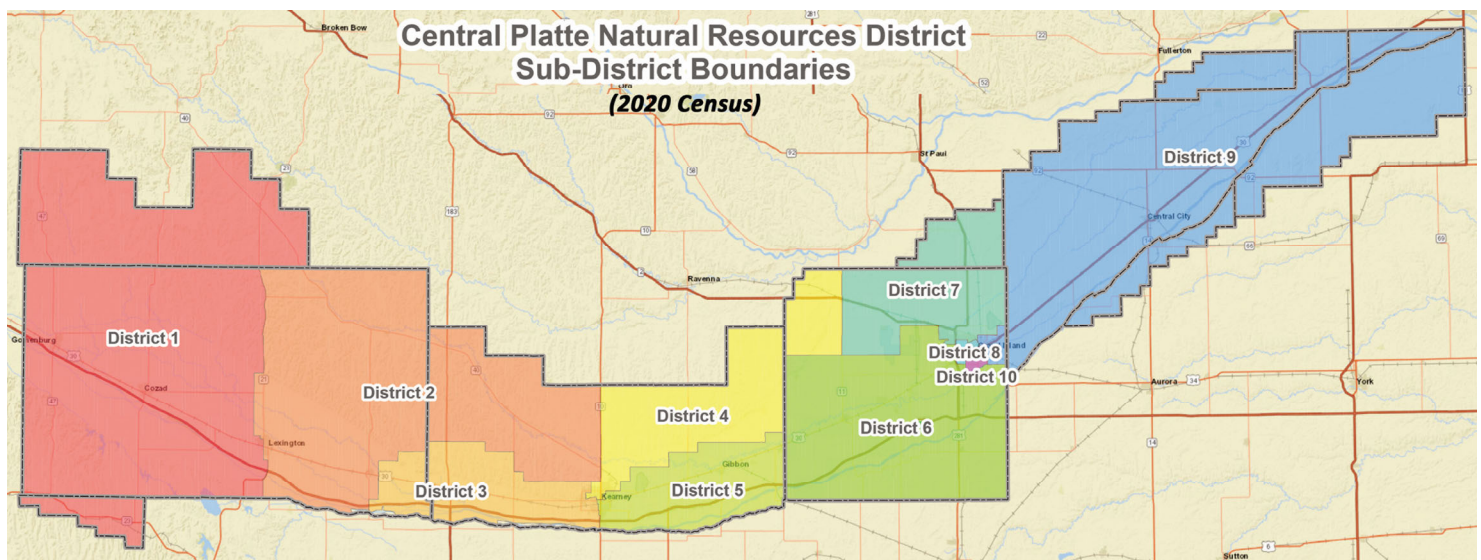
**URBAN POPULATION: 119,775**

**DISTRICT TOTAL: 144,855**

**Board of Directors** The Board of Directors is elected to protect and preserve the wide scope of natural resources within the district. CPNRD has 21 directors each serving a four-year term. Two directors serve in each of the 10 sub-districts and one director serves as the at-large member. Directors in the same subdistrict are elected in alternate election years. Directors serve on two of the following committees: Water Quality, Water Utilization, Eastern Projects, Western Projects, Programs and Variance/Appeals. In 2022, the Subdistrict Committee met to discuss composition of the Board of Directors. The committee concluded the 21-member size board is adequate in providing direction for the budget and the various projects and programs throughout the District.

Modifications were made to voting subdistricts in 2021 to meet the requirement that each subdistrict is substantially equal in population; which averages 14,486. CPNRD's directors remained in their previous subdistrict.

**FIGURE 5. CPNRD Sub-District Boundaries (as of 2021)**





## FIGURE 6. Board of Directors

The board of directors is elected to protect and preserve a wide scope of natural resources within the district. There are 21 members, each serving a four-year term. CPNRD's board consists of one at-large member and two directors in each Subdistrict - who are elected in alternate election years.

### SUBDISTRICT BOARD MEMBERS CHAIR/DELEGATE POSITIONS

At-Large Keith Ostermeier, Grand Island (Treasurer)

- |  |   |
|--|---|
| 1. Jay Richeson, Gothenburg<br>Brian Keiser, Gothenburg            | 6. Jerry Milner, Grand Island<br>Mick Reynolds, Wood River (Chairman) |
| 2. Dwayne Margritz, Lexington<br>Tom Downey, Lexington             | 7. Jerry Wiese, Grand Island (Vice-Chairman)<br>Ed Stoltenberg, Cairo |
| 3. Marvion Reichert, Elm Creek (Secretary)<br>Steve Sheen, Kearney | 8. LeRoy Arends, Grand Island<br>Alicia Haussler, Grand Island        |
| 4. Lon Bohn, Gibbon<br>Ryan Kegley, Kearney                        | 9. Ed Kyes, Central City<br>Doug Reeves, Archer                       |
| 5. Deb VanMatre, Gibbon<br>Jim Bendfeldt, Kearney                  | 10. Chuck Maser, Grand Island<br>Barry Obermiller, Grand Island       |

### Building Committee

In September 2020, the Board approved a bid of \$2,950 from Barber Appraisal of Phillips, NE to appraise the Central Platte NRD buildings and shops. In 2021: the committee met in May to discuss course of future action to build an education center and/or office at the Upper Prairie/Silver/Moores Creek Flood Risk Reduction Project site. In June, the board reviewed costs and design of a potential new building complex and voted to pursue an educational component through existing \$1.7 million available from funds received through the Nebraska Natural Resources Conservation Development Fund. The request was approved by the Commission in October 2021. With those funds and the projected sale of the NRD's current facility, CPNRD is able to consider construction costs to future fiscal year budgets without increasing tax requirements for building purposes.

In February 2022, Phases 2 and 3 of JEO's architectural project proposal were approved, not to exceed \$225,000. Phase 2 includes the schematic design to further develop the site plan, floor plan and overall building design. Zoning and code requirements will be reviewed along with a site survey and geotechnical soils testing. At the conclusion of this phase, the set of schematic design drawings will include a developed site plan layout, dimensioned floor plan(s), building elevations, building cross-sections, along with an updated opinion of construction cost. Phase 3 will enlist the services of multiple engineers who specialize in the design of the structural, mechanical and electrical engineering systems.

The agreement to move forward with the next two phases of the Schematic Design and Design Development was approved in the amount of \$189,000 and is currently in progress.



**Land Use**

CPNRD's land use includes cropland, pastureland, rangeland, some woodland and other minor cover, urban/residential development, streams and other water, and transportation. The majority of the irrigation in the NRD uses groundwater, which, in the western part of the District comes from the Ogallala Aquifer and in the eastern part of the District comes from Pleistocene (Wisconsin) sands and gravel. Groundwater is also the major source of drinking water in the District.

**Topography**

The broad Platte River valley has lowlands, loess hills, dissected plains and sandhills. In the western part, the upland tablelands merge into the rolling loess hills, which in turn drop into the flat lowlands of the valley. These lowlands, in some areas, consist of several flat terraces with relatively steep slopes between the terraces. The dissected plains and loess hills have a very well developed drainage pattern that discharges onto poorly drained flat valley lands. The valley is broad through the central portion and the drainage pattern becomes less well developed toward the eastern end of the district.

The Platte River is an important feature of the district. It's also the largest river in the state, traversing the entire length of the state from west to east and serving as a major tributary to the Missouri River. With origins in Colorado, the Platte is formed by two branches, the North and South Platte, converging near the city of North Platte. While there are some minor tributaries in the NRD that flow into the Platte, the major tributaries of the Loup and Elkhorn rivers, join the Platte east of the District. The Platte River is too shallow for navigation and is used primarily for irrigation, recreation, generation of hydroelectric power and as habitat for wildlife.

**River System**

The river system within the NRD includes 205 miles of the Platte River, 49.9 miles of the North Channel and 173 miles of the Wood River.

**Congressional District**

The entire district is located within the Third Congressional District.

**Court Districts**

4 county court judicial districts and four district court judicial districts serve portions of CPNRD.

**Nebraska Legislative Districts**

In September 2021, the Nebraska State Legislature approved a new state legislative map. The following changes are a result of the updated map and will take effect for 2022 legislative elections.

Districts 22, 24, 34, 35, 37, 41, 43, 44

**Department of Roads**

Parts of the NRD lie within 4 of the 8 Field Districts: 3, 4, 6, 7

**Public Service Commission**

Parts of the NRD lie within 3 of the state's 5 Districts: 3, 4, 5

**Nebraska Game & Parks Commission**

Parts of the NRD are within 4 of the state's 7 Districts: 3, 4, 5, 6

**Agriculture**

Largest industry within the NRD, as well as the entire state. Major crops grown include corn, soybeans, alfalfa and wild hay. Livestock raising is prominent featuring cattle, hog and turkey operations along with some chickens, dairy and sheep. Livestock feeding operations are scattered throughout the District. Many of the NRD's industries are related to agriculture, which is important in generating income for the state's (and NRDs) largest economic sectors: service, government and manufacturing. Tourism also plays a role in the NRD's economy.

**Education**

Education is an important aspect for the population of the NRD including two community college areas, three educational service units (ESU 7, 9, 10). Branches of the Universities and Central Community Colleges exist at Kearney and Grand Island, with off-campus centers in many communities within the NRD.

**FIGURE 7. Staff**

The general manager is responsible for hiring and management of NRD employees. Ron Bishop, general manager of the watershed district, became the first general manager. Lyndon Vogt was hired as the second CPNRD general manager in June 2013 when Bishop retired. Vogt was previously manager of the Upper Niobrara White NRD in Chadron and Lower Niobrara in Butte.

Temporary employees are hired for tree planting and other activities as needed. Since 2020, the Central Platte NRD, Rain Water Basin Joint Venture, and USDA NRCS have partnered to share the cost of employing joint employee positions including a communications specialist, easement specialists and a prescribed fire planning specialist. The partnership has provided additional opportunities to meet long-term and short-term communications goals, private lands objectives, and habitat improvement for waterfowl and wildlife.

**Precision Conservation Specialist (2021)**

In 2021, an agreement with the Illinois Corn Growers Association was approved to add a Precision Conservation Specialist to the NRD staff for the Precision Conservation Management Program (PCM). The specialist is housed at CPNRD's office near Cozad at the Thirty Mile Irrigation District. The specialist works with Frito Lay growers for their Gothenburg facility to assist cooperators with conservation practices and nutrient management by evaluating their current practices on impact to the environment and family farmer profitability. PCM is funded by the USDA NRCS Regional Conservation Partnership Program.

General Manager: Lyndon Vogt  
 Assistant Manager: Jesse Mintken  
 Administrative Assistant: Kelly Cole  
 Communications Assistant: Brody Vorderstrasse  
 Cozad Ditch Manager: Michael Schmeackle  
 Cozad Ditch Rider: Jake Laird  
 Easement Habitat Specialist: Krystal Bialas  
 GIS Coordinator: Angela Warner  
 GIS Image Analyst: Luke Zakrzewski  
 Hydrologist: Brandi Flyr  
 Information/Education Specialist: Marcia Lee  
 Precision Conservation Specialist: Darren Cudabeck  
 Prescribed Fire Planning Specialist: Nelson Winkel  
 Projects Assistant: Tom Backer  
 Range Management Specialist: David Carr

Resources Conservationist: Bill Hiatt  
 Resources Conservationist: Shane Max  
 Secretary/CPNRD: Deb Jarzynka  
 Secretary/NRCS-Central City: Sara Umstead  
 Secretary/NRCS-Grand Island: Jackie Luebbe  
 Secretary/NRCS-Lexington: Samantha Keith  
 Secretary/NRCS-Kearney: Shelly Lippincott  
 Secretary/Thirty Mile Irrigation District: Marci Ostergard  
 Thirty Mile Irrigation District Manager: Jim Harris  
 Thirty Mile Irrigation District Technician: Mike Ostergard  
 UNL/CPNRD Demo Project Coordinator: Dean Krull  
 Water Quality Specialist: Tricia Dudley  
 Water Resources Specialist: Dan Clement  
 Water Resources Technician: Courtney Widup



## **NRD Projects by Authorities**

Central Platte NRD's Board of Directors prioritized the 12 responsibilities set by the Nebraska Legislature to meet the District's needs. Several are managed as combined responsibilities:

### **1. Erosion prevention and control.**

#### **PROJECTS**

Nebraska Buffer Strip Program  
Cover Crop Research and Demonstration Projects  
Ogallala Aquifer and Platte River Recovery  
Precision Conservation Management Program  
Wetland Easements

### **2. Soil conservation.**

Central Platte Demonstration Projects  
Cost-Share Programs  
Ogallala Aquifer Initiative  
Resilient Futures for Nebraska Soils Grant

### **3. Prevention of damages from flood water and sediment.**

#### **PROJECTS**

Warm Slough/Trouble Creek Flood Control Project  
Clear Creek Watershed  
Platte County Project  
Buffalo Creek Watershed-Structures  
Dams Inventory and Rehabilitation  
Platte Valley Industrial Park  
Lower Wood River Watershed  
Lake Helen – Gothenburg  
Kirkpatrick Memorial Park Lake

### **4. Flood prevention and control.**

Prairie Silver Flood Control Project  
Kearney Northeast Flood Control Project  
Wood River Flood Control Project  
Upper Prairie/Silver/Moores Flood Reduction  
Elm Creek/Turkey Creek Watershed  
Spring and Buffalo Creek Watershed  
Elm and Turkey Creek Watershed  
Grand Island Dewatering Study  
Ice Jams on the Platte River

### **5. Drainage improvement and channel rectification.**

#### **PROJECTS**

Administer Irrigation Runoff Rules and Regulations  
Cairo Downtown Improvement Project  
Odessa Area Flood Control Project  
Kearney West Clearing Project  
Amick Acres Improvement Area  
Moores Creek Flood Control Project

Lepin Ditch Flood Control Project  
City of Gibbon Drainage Project  
Doniphan Drainage Project  
Dry Creek Clearing Project  
Wood River Watershed

### **6. Water supply for any beneficial uses.**

#### **PROJECTS**

Groundwater Quantity Management Plan  
Suspension on Well Drilling  
Irrigation Well Registration  
Cooperative Hydrology Study  
Water Banking Program  
30-Year Acreage Reserve Program  
Airborne Electromagnetic Survey  
ArcGIS Solutions Platform  
GeoCloud Database  
Light Detection and Ranging  
Rehabilitation of Surface Water Canals – Cozad Canal , Thirty Mile Canal, Orchard Alfalfa Canal  
Nebraska Water and Energy Flux Measurement, Modeling and Research Network  
Basin-Wide Plan for Joint Water Resources Management of Over-Appropriated Portion of the Platte River

Groundwater Level Monitoring  
Certification of Irrigated Acres  
Integrated Management Plan  
Transfer of Irrigated Acres  
Buyout of Six Mile Canal  
Groundwater Exchange Program  
Central Nebraska Irrigation Project  
Evapotranspiration Map  
Groundwater Evaluation Toolkit  
Magnetic Resonance Sounding

## **NRD Projects by Authorities *(continued)***

### **7. Development, management, utilization and conservation of groundwater and surface water.**

### **8. Pollution control.      9. Solid waste disposal/sanitary damage.**

#### **PROJECTS**

Groundwater Quality Management Plan	Vadose Zone Study
Online Reporting Form	Central Platte Demonstration Projects
Crop Irrigation and Demand Network	Cover Crops
Project SENSE	Testing Agriculture Performance Solutions
Decommissioned Well Program	Irrigation Run-Off and Erosion Plan Update
Nebraska Buffer Strips – Administration of Funds	Chemigation Program

### **10. Development and management of fish and wildlife habitat.**

#### **PROJECTS**

Platte River Recovery Implementation Program – First and Second Increments	
Nebraska Habitat Conservation Coalition	Platte Basin Habitat Enhancement Project
Platte Valley Phragmites Control Project	Instream Flow Rights

### **11. Development and management of recreational and park facilities.**

#### **PROJECTS**

Kearney Area Trail System	Wood River Flood Control Project Trail
B-1 Reservoir	Central City/Marquette Trail
Johnson Lake Trail	Crane Meadows Stabilization
Great Platte River Road Archway Stabilization	Alda Crane Viewing Site
Richard Plautz Crane Viewing Site	Urban Conservation Program

### **12. Forestry and range management.**

#### **PROJECTS**

Nebraska Conservation Tree Program	Tree and Weed Barrier Cost-Share Program
Nebraska Forest Restoration Partnership	Urban Forestry Program
Planned Grazing	Prescribed Fire Program
Grazing Deferment Program	Prescribed Fire Training Program
Native Prairie Outreach Project	

## II. Flood Control/Drainage

**GOAL:** To control floodwaters and/or to provide open floodways that will keep floodwater damages to an acceptable minimum.

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Land within the NRD is unusual in the fact that most tributaries of the Platte River run almost parallel to the Platte itself. Consequently, tributaries span many miles of the flat terrace or bottom lands adjacent to the Platte before emptying into the river. In the central and western ends of the District, most tributaries originate in uplands where flood control structure sites are plentiful, but then drop off into the flat terrace or bottom lands and meander for many miles before reaching the Platte River. Many of the NRD's other streams, such as Silver Creek, Warm Slough, and the North Branch, originate in the flat terraces or bottom lands.

### PROJECTS COMPLETED

- 1. Snagging & Clearing** Discontinued in 2015 with the exception of projects already in progress.
- 2. Warm Slough/Trouble Creek Flood Control Project** Due to a history of flood damage to agricultural and urban property within Central City, a project was developed to reduce flooding caused by storm runoff into the Warm Slough, Dry Run and Trouble creeks. Construction near Grand Island took care of storm runoff from the city, channel clearing, and renovation from Grand Island to Central City. Partial funding was provided through the Nebraska Natural Resources Development Fund. Cosponsors: CPNRD, Merrick, Hall counties, and cities of Grand Island, Central City. Construction was completed in 1993 and maintenance responsibilities were turned over to Merrick County and Central City. In 2002, CPNRD did snagging/clearing of the Lower Warm Slough from Grand Island to Central City for \$110,000. \$23,000 in additional funds were used to remove dirt due to close proximity of wetlands in the area. From June 1-8, 2008, Central City received over 6" of rainfall that exceeded a 100-year event. The project has improved drainage of the entire watershed.
- 3. Prairie-Silver Flood Control Project** Flooding was studied by the NRD in central Hall County, just west of Grand Island. CPNRD determined that the problem was caused by two short stretches of Prairie Creek and Silver Creek that produced channel overflow after large storm events. Channels were cleaned out and training levees were constructed to prevent overflow in 1986. Construction and land leveling in the area disturbed natural drainage flows along the Prairie/Silver Creek, northwest of Grand Island. In 2000, a uniform drain was installed and culverts added for a two-mile stretch. Cost was \$22,000; CPNRD's cost was \$17,500.
- 4. Clear Creek Watershed** Clear Creek watershed in Polk County encompasses 75,700 acres with a long history of flooding. Starting in 1978, 15 flood control structures were constructed in Clear Creek Watershed over several years. Funds from the Natural Resources Development Fund were received on five of the large structures. Polk County provided funds to construct additional smaller structures including road structures.
- 5. Lepin Ditch Flood Control Project** In 1993, landowners petitioned CPNRD to solve excess storm runoff overloading the "old north channel" of the Platte River in southwest Hall County. A study by Nebraska Department of Roads (NDOR) and CPNRD determined that when I-80 was constructed an attempt was made to redirect runoff from the Lepin Ditch to another crossing site under the Interstate. This joint project placed a culvert near the natural channel to allow runoff to flow under the Interstate. Total cost: \$700,000. Partners: CPNRD, NDOR and Hall County. Easements were obtained from area landowners for construction/maintenance of the ditch. Hall Co. provided site preparation and ditch excavation in 1995 and provides maintenance. CPNRD's cost was \$120,000; NDOR paid for the culvert.
- 6. Cairo Downtown Improvement Project** In 2007, CPNRD approved \$50,000 to construct a 48" drainage outlet to divert excess water along the Hwy 11 corridor. The previous drainage system couldn't handle a one-year rain fall event, which caused overflow ponds and flooding in low areas. The community of Cairo contributed \$2M.
- 7. City of Gibbon** The City of Gibbon filed a formal request for help with a drainage project. The proposed project includes relocating the existing sluice gate, improvements on hydraulic conditions at the outfall, and installing an automated sluice gate system. Total cost estimated at \$150,000 and was added to the Hazardous Mitigation Plan to be considered for Federal funding. In 2008, \$50,000 was provided to the City for improvements to the storm water system, the project was completed in 2010. In 2015, Olsson Associates

reviewed what has been accomplished towards drainage issues and additional needs in order to resolve remaining issues. CPNRD has facilitated meetings with the City of Gibbon and Buffalo County to address remaining drainage problems.

- 8. Odessa Area Flood Control Project** Miller & Associates of Kearney started the final design of the Odessa Area FCP in 2008 and completed it in 2010 with a cost of \$15,000. The Project is located east and south of the project boundaries include the Odessa Rd to the west, 24<sup>th</sup> Rd to the North, and Sartoria Rd to the east. The two-mile project improved existing roadside and field drainage ditches, culvert replacements, & supplement existing culverts.
- 9. Doniphan Drainage** The Village of Doniphan requested \$4,000 to pump standing water from a detention cell located in the city park and into the curb and gutter system. The project was completed in the fall of 2015.
- 10. Clarks Floodplain** Silver Creek is the major source of flooding in the area. Participation was approved in the Clarks Floodplain mapping study up to \$5,000; which is 50% of the expected cost of the study and needed to meet FEMA requirements. The study and funding was added to the 2014 budget.
- 11. Lake Helen** In 2013/2014, \$75,000 was provided towards restoration of Lake Helen in Gothenburg for water quality conditions. The lake was drained to excavate 171,773 cu/yds of sediment, stabilize 3,391 LF of shoreline, develop underwater shoals, install a circulation system, dam repair, installation of a pier & boat ramp. Sediment/nutrient loading from outside the lake was addressed by treating the lake with aluminum sulfate to precipitate phosphorus, installing a deeper well to access lower phosphorus water, and stocking recreational fish. Total cost of the water quality and habitat project was \$1.8M. Project was completed in 2016. In 2019, \$10,000 was approved through the NRD's Urban Conservation Program for additional bank stabilization.

## **PROJECTS UNDER MAINTENANCE**

- 1. Kearney Northeast Flood Control Project** In 1990, the City of Kearney, Buffalo County and CPNRD initiated a project due to the expansion to the northeast of the city of Kearney that resulted in increased flooding on an unnamed tributary of the Wood River from storm runoff. Aerial photography and survey work needed for topographic mapping of the affected area was completed in 1991. NRCS conducted a feasibility study to determine what options were available. In 1995, Miller & Associates developed a plan for the watershed including channel improvements, drop structures, road crossings and a detention cell. A drop structure was constructed in 1996 (\$240,000) to stop serious erosion at the point where water had been entering the Wood River. The County built a road structure as part of its bridge replacement program. **Phase I:** Existing channel was widened at the drop structure, meandered westerly and south to a point near 56th Street on Eaton Road. **Phase III:** (Completed before Phase II) Properties were purchased in 2000 for construction of detention cells and channel improvements. Detention cells are located 1/2 mile north of "N" Ave and 56<sup>th</sup> Street in Kearney. Construction included 300,000 yds of excavation with a 50 AF of storage for a 100-year storm and 50 AF storage for a 25-year storm on the other cell. In 2003, a contract change completed channel improvements south of the detention cells and erosion control. 800,000 cu/yds of soil were excavated to create the channel with storage capacity of 200-300 AF. **Phase II:** Channel improvements from Phase I channel, south to 39<sup>th</sup> Street and westward to Antelope Road. Phase II/III from 56th St. to Avenue N was completed in 2006. Total cost: \$3.4 million.
- 2. Kearney West Clearing Project** In 1999, landowners west of Kearney requested a clearing project to assist with flooding problems along Turkey Creek, also known as the Platte River North Channel. About 2.5 miles were cleared. In 2000 & 2001, snagging & clearing was redone. In 2002, the North Channel of the Platte River/ Turkey Creek had eroded to within 5' of a local sandpit. The Corps of Engineers provided an Emergency 404 permit to the NRD to stabilize the bank. City of Kearney: \$1,850 (25%), CPNRD: \$13,500.
- 3. Dry Creek Clearing Project** In 1997, debris from a wind storm/tornado fell into Dry Creek channel northeast of Cairo, prompting a request from landowners for a clearing project. Cost of the project completed in 1998 was \$11,500. Area landowners petitioned CPNRD to complete about 21,000' of additional clearing; completed 1999-2000 for \$42,000. In 2012, a three-mile channel improvement was completed to the west of the Central Nebraska Airport and a culvert added under Gunbarrel Road. CPNRD is responsible for maintenance.

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- 4. Amick Acres Project** Amick Acres Project Improvement Area is located in south central Hall County, just to the west of Doniphan. The project diverts flood and drainage water away from Amick Acres residential subdivision by utilizing part of a county road ditch for approximately one mile of channel. The initial of the project was \$25,000; most of which was assessed to the benefiting landowners.
- 5. Platte County Project** Platte County Project is an improvement area located just southwest of Duncan. The project provides drainage improvement and minor flood control benefits to 1,300 ac. of irrigated cropland in southwest Platte County. Maintenance as needed at estimated cost of \$500-\$1,000 annually. Actual costs are assessed to benefiting landowners.
- 6. Wood River Watershed** In 1972, snagging and clearing was completed from the mouth of the stream to Gibbon. In 2002, one mile was cleared at a cost of \$20,000. Annual maintenance for Wood River Clearing Project is \$10,000. Additional spot clearing is completed as needed.
- 7. Moores Creek Flood Control Project** In the 1980s, CPNRD, Grand Island, Merrick & Hall counties, and others recognized the need for flood control on Moores Creek. In 1984, Nebraska Natural Resources Commission agreed to 65% cost-share for a three-phase construction plan for the Moores Creek FCP. **Phase I:** In 1990, channel improvements from the mouth near Archer upstream to Hall-Merrick county line. **Phase II:** Three detention/retention and wildlife habitat enhancement cells on the channel from the Hall-Merrick county line upstream to Grand Island. **Phase III:** Waterways & bridges were constructed to enable storm runoff from Capital Heights northwest of Grand Island, to drain into the improved Moores Creek channel. Project was completed in 1995.
- 8. Wood River Flood Control Project** The Wood River has 173 miles of channel meandering through the Platte River Valley with numerous flood control structure sites in its upper reaches. During the June 1967 flood on the Wood River, most of the rain fell east of Kearney where there were few flood control structures. 10" of rain fell over nine days from June 7-15, with 3.2" falling on June 13 with extensive damage in Grand Island. The Corps of Engineers conducted reconnaissance studies and found highly feasible floodway projects using different routes. Following public hearings in 1989, the Corps began a study to determine the actual feasibility of a route to carry excess water from the Wood River & Warm Slough into the Platte River. Appropriation/construction to start authorizations were obtained from Congress in 1996.

The Corps' revision of plans and increased project costs required new Congressional reauthorization in 1999, allowing construction to begin in March 2000. In 2002, the contract was increased by \$1M due to miscalculations regarding the amount of topsoil needed (180,000 yards of soil added) with co-sponsors paying \$95,000 of the increase. 500 acres were involved in land acquisition for the project just two miles west of Hwy 281 to Hwy 34 bridge; and a reappraisal of Hall County's RV Park resulted in compensation for damages to Hall County Board. The board proceeded with the remaining 11 tracks of land needed for the project.

In 2005, a total of 7.21" of rain fell between May 11-12, more than any one-day of rainfall during the 1967 Flood. The 300'-wide channel provided flood protection for 1,500 homes/businesses. On June 1-8, the project was tested again with 6" of rain. Benefits include flood control for Grand Island, rural Hall/ Merrick counties and groundwater quality improvement. Close to 7,000 acres of land were taken out of the flood zones when FEMA revised its floodplain maps in 2004, removing the need for flood insurance in southern Grand Island.

Landowners had been paying \$317,000 to protect \$56M worth of property prior to the revision. Full Federal funding enabled construction to be completed on schedule. CPNRD borrowed \$1.1M for construction over three years. CPNRD was reimbursed by the State of Nebraska through a cost-share grant and local sponsors. The entire project was completed and dedicated in May 2004. Total cost \$15M as follows: \$7,148,000-Corps



*Wood River Flood Reduction Channel*



of Engineers, \$4M–NeDNR, \$1.4M–CPNRD, \$1.2M–Grand Island, \$352,000–Hall County and \$200,000–Merrick County. CPNRD is responsible for maintenance, with costs split between cosponsors. In 2015, JEO was hired for \$25,000 to complete design work for the Project’s System Wide Improvement Framework. \$20,000 for maintenance/repairs is required by the Corps of Engineers. Scouring of the channel was fixed from spring 2019–summer of 2020.

**9. Prairie Creek Clearing Project** While Prairie-Silver Creek FCP had a local effect, it didn’t solve all of flooding problems on Prairie Creek, nor evolve into a feasible project to solve flooding problems on the stream. Damages could be reduced by keeping the channel clear. Snagging/clearing projects involving removal of timber, trash, and debris from the stream channel in an area of 35’ on either side of the center of the channel were completed from the mouth of Prairie Creek in Merrick County to the Hall-Buffer county line. Annual maintenance is \$10,500.

**10. Buffalo Creek Watershed-Structures** Feasibility planning for flood control was completed in Buffalo Creek Watershed in Custer, Dawson and Buffalo counties. CPNRD received cost-share funds from Natural Resources Development Fund to construct seven flood control structures.

**B-1:** Largest of the structures, was completed in 1983. Construction included a supply canal, 1.6 miles of power line relocation, and 1/2 mile county road improvement. The project was expanded to include recreation and groundwater recharge. A chimney drain system was installed in 1985 to repair cracks in the structure. In 1987, the reservoir was opened for fishing. In 1995, a petition from landowners requested that CPNRD discontinue filling the reservoir due to concerns that the reservoir contributed to high water tables. Hydrological studies showed that it made no significant contribution and that groundwater declines had not materialized due to continued strong annual rainfall amounts; however, the request to stop filling the reservoir was granted in January 1996. In 2010, CPNRD started filling the reservoir every other year and is required to fill it once every five years to keep the water right. In 2013, started filling the reservoir every year to get it back to its original concept. CPNRD has a diversion right of 4,218 AF of water/year from NPPD to fill reservoir. In 2018, JEO Engineering was hired for \$148,588 to study options to account for groundwater recharge and their effect on stream flows from the B-1 Reservoir.

**F-7:** In 1990 cracks were repaired for \$11,500. Two sites in Buffalo Creek Watershed near Lexington were not feasible and planning efforts for the watershed were discontinued. Operation and maintenance continues for all structures in the watershed including dam safety checks.

**11. Silver Creek Watershed** Located in Merrick County, this watershed encompasses approximately 90,000 acres. In 1979, a channel improvement project was completed in four parts to provide flood relief in the watershed.  
**Phase 1A:** Lower 4.1 miles of Silver Creek **1B:** 1 mile of Silver Creek and 15 miles of Clarks drain  
**Phase 2:** Upstream on Silver Creek for 6 miles **Phase 3:** Next 10 miles upstream  
**Phase 4:** Completed in 1987 due to wet weather in 1985–1986. The 11-mile stretch upstream from Hwy 14 north of Central City to Silver Creek’s headwaters (west of Chapman) was extended in 2000 due to additional flooding. Maintenance costs: \$20,000 annually.

**5. GI Dewatering Study** The NRD began participating in the Grand Island Dewatering System Study in September 2000. The Study identified a practical groundwater dewatering system to remove groundwater from residential basements and minimize impacts on the project area. The study also assessed potential transmission and discharge location options, financing options, potential impacts on water quality and quantity, and subsidence issues; using both low and high capacity vertical wells. The NRD delivered public opinion surveys to the northwest and southeast project areas prior to the initiation of the Study, with the majority of responses returned as “very interested” in the Study. The Study areas fall within the “Valleys” topographic region, characterized by low relief along streams that are underlain by alluvial clay, silt, sand and gravel. The general direction of groundwater flow is east to northeast generally paralleling the Platte River.

Evapotranspiration (ET) losses are relatively high due to a shallow water table; saturated thickness of Quaternary deposits in/around Grand Island range between 80–200’. Depth to water table ranges from 5–20’ below ground level. In 2012, Olsson Associates presented a study to improve and expand the project

implemented in 1998. The original study involved 29 dewatering wells compared to 33 in the 2012 study. Three dewatering areas and areas of contamination were taken into account with wells proposed to be outside of those plumes. OA reported that the Grand Island City Council was initially receptive to the updates; however, there has been no further progress.

- 12. Kirkpatrick Memorial Park Lake** In 2016, \$25,000 was approved for lake improvements at Kirkpatrick Park Lake in Lexington. Improvements included 4,000 cu/yds. of dredging, 2,500' of bank improvements including tree removal, and a 700' sea wall to the four-acre lake. The project will improve water quality, aquatic habitat, public access, and provide an area for educational events. Construction was completed in the fall of 2017.
- 13. Ice Jams** In 2011, an agreement on how to deal with ice jams in the Middle Platte River, was formed with a continual escrow account for \$50,000. The agreement stated that if an ice jam were to begin, CPNRD would be the first entity to start the process of calling FEMA & NEMA. Partners: Tri-Basin NRD, Buffalo, Hamilton, Merrick, Phelps, and Kearney counties- participated for \$37,000 for an emergency fund. In 2016, the Platte River Ice Jam Removal Agreement was dissolved. Partners now focus on emergency preparedness in the event of an ice jam related to flooding and safety education. All funds were returned.
- 14. Upper Prairie/Silver/Moores Flood Control Project** Flood waters along Hwy 2 resulting in large quantities of water flowing east into developed areas of northwest/west Grand Island. A detailed hydrology analysis and 100-year floodplain in upper parts of the Dry, Prairie, Silver and Moores Creek watershed showed that a 100-year flood would inundate 23,000 acres south of Hwy 2, producing crop damages of \$3M/10-year flood \$1.6M. The project protects northwestern Grand Island from Prairie and Silver Creek flooding south of Hwy 2 and east of Hwy 281; reduces future flood damages to crops, properties, and infrastructures; and eliminates an estimated \$130M in damages during a 100-year event. Construction included: 3 floodwater retarding sites in upland areas of Prairie Creek watershed southwest of Cairo; 1 upland detention site in Dry Creek watershed; a series of detention sites in lowland areas along upper Prairie Creek; 3 excavated off-channel detention sites in Silver Creek Watershed; low-level berm to prevent basin overflows from Silver Creek into Moores Creek and clearing to improve capacity. Upland and lowland flood control structures were developed with roadways to act as dams, berms built to keep creeks within their banks, and water detention cells built on 500 acres at the former Cornhusker Army Ammunition Plant.



*Upper Prairie/Silver/Moores Creek Detention Cell*

On May 11, 2005, Grand Island sustained \$3-5M in flooding damages and Hall County sustained \$12-15M. The Project included acquisition of 1,800 acres for easements; excavation of 3,500 AF of off-channel storage in lowland areas, construction of 6 upland floodwater detention dams/outlet works, and installation or replacement of roadway culverts under Hwy 2 and county roads. 500 acres of irrigated cropland were acquired for detention cells.

Construction began in 2006 and was phased over ten years, starting with the off-channel lowland sites in Silver Creek. In 2015, JEO was hired for \$118,650 to submit a Conditional Letter of Map Revision (CLOMR) to FEMA providing an assessment of the flood risk reductions due to flood control measures. In 2016, 7.25 acres of irrigated land was condemned at Engleman and Airport roads following unsuccessful negotiation attempts. The property is central to the existing levy and to a new levy.

Phase I, the north detention cell on Airport Road, was completed in 2016. Equipment included 4 scrapers that held 20 cu/yds, two excavators, four dump trucks held 30 cu/yds, bulldozer and road grader. 71,500 cu/yds was excavated to form the north cell. The southern portion of Phase I included 815,000 cu/yds, located at Capital and Schauppsville roads. Seeding and mulching for erosion control will take place as needed. Hooker Brothers constructed the Phase II detention cell for \$2.2M; \$1.18M below estimate. One million cu/yds of dirt were excavated. Construction on 4 upstream dams and detention cells were completed in 2017. Levee construction at the intersection of Airport/Engleman roads was completed in 2018. In 2019, real-time monitoring and data

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logging equipment was installed in the amount of \$30,000 throughout the project. Water level sensors, cameras and rain gauge sensors were placed at strategic locations. The next phase of the system approved in 2021 separates upcoming monitoring efforts from the current project. Data from the monitoring equipment will be processed, models calibrated and maps generated for various flood scenarios. The new system measures real-world conditions and variability that will support the NRD's flood risk awareness and preparedness efforts. Additional equipment (boxes, staff gauges, cameras, etc.) may be installed through the project area. Maps and figures in the Operation & Maintenance manuals will be revised and highlight/informational material will be updated for the [floodsafe-cpnrd.org](https://floodsafe-cpnrd.org) website.

**New Flood Maps** In 2020, FEMA released the new flood maps (<https://tinyurl.com/UpperPSMLOMR>). The Letter of Map Revision (LOMR) was released in September 2020 with seven revised map panels in northwest Grand Island and in Hall County north and west of Grand Island. The LOMR reduces the floodplain and ultimately requirements for flood insurance for 600 property owners and new areas to be developed.

**Flood Repairs** In July 2020, 300 tons of riprap was installed at the Silver Creek drop structure located near the bridge on Schauppsville Road. JEO constructed a new drop structure to protect the streambed of Silver Creek upstream of the detention cell to replace the concrete structure that failed during the March 2019 flood. The drop structure consists of a sheet pile weir with grouted riprap plunge pool. The streambank was regraded and protected with riprap along 1,000 LF. Cost-share was received through the NRCS Emergency Watershed Protection Program. In 2020, Blessing LLC of Kearney was hired to construct an earthen berm and crushed concrete access road around portions of the detention cell in the amount of \$138,575. Improvements include 850 cubic yards of dirt work and 2,600 tons of crushed concrete base and white limestone. The drop structure was completed in June 2021.

**Project Costs:** \$14,817,862 Water Sustainability Funds through Nebraska Natural Resources Commission(52.5%); \$6,200,570 CPNRD (46.25%); \$6,200,570 City of Grand Island (46.25%); \$670,332 Hall County (5%); \$335,166; Merrick County (2.5%)

**Easements** CPNRD controls property through various legal means, documents and ownership. The main purpose is for flood protection structures and projects such as dams, levees and detention cells. CPNRD owns about 1,800 acres and holds permanent easements on another 2,772 acres throughout the District. On property that CPNRD owns, land is managed to promote wildlife habitat and/or outdoor recreation. Types of legal documents that we hold include: warranty deeds, quitclaim deed, storage and flowage easements, flood protection levee easements, construction easements and structure easements. In April 2022, an easement with Summit Carbon Solutions was approved to construct a pipeline across NRD property in Merrick County for the Midwest Carbon Express Project. CPNRD received \$17,277 for the easement that encompasses 2.625 acres.

PROJECT NAME	COUNTY	PERMANENT	ACREAGE*
Box Elder 5-A	Buffalo	3	125
Gibbon Crane Deck	Buffalo	1	5
Kearney Northeast	Buffalo	15	127
PCUL 1-PCUL2-PC4	Buffalo	36	627
B1-B1A-B3-C5-F1-F3-F5-F7	Dawson	48	995
Alda Crane Deck	Hall	1	7
CHAAP Ditches	Hall	2	98
DCUL 6	Hall	3	81
PSM Detention-Levee-PCUL 4 (Dibbern)	Hall	12	1141
Wood River FCP**	Hall	88	757
Bankson	Hamilton	3	23
Warm Slough	Merrick	13	72
Clear Creek 1 & 6	Polk	9	131
Buchta-Burritt-Carlson-Coover-Dittmer-Erickson-Swedenburg	Polk	11	85
Jones Creek 1, 1-1, 1-A	Polk	15	191
Korger-Micek-Monson-Oquist-Wyman-Boden	Polk	12	107
	<b>Total</b>	<b>272</b>	<b>4572</b>

**PROJECTS UNDER CONSTRUCTION/PLANNING**

1. **Hazard Mitigation Plan** In 2008, FEMA awarded CPNRD a grant to develop a multi-jurisdictional All-Hazard Mitigation Plan; enabling communities to take action and reduce threats from natural disasters. Public input from officials and landowners were a key component of the process. Regional meetings were held to obtain input in the initial stages. Potential hazards affecting the area, individual communities identified, critical facilities located, and potential mitigation actions/projects were listed. Projects considered are flood and drainage system improvements, backup generators for critical facilities, alert sirens, weather radios, tornado shelters/safe rooms, tree inventory, and programs to reduce electrical outages. Kirkham Michael Engineering developed the plan that became active in 2012. In 2015, JEO Consulting was hired to update the Plan for \$120,000 (update required every 5 years). To be eligible for emergency funds, each county, community and schools are required to participate in the process. CPNRD sponsored the initial plan in 2010 and the 2017 update. In May 2022, the updated FEMA version of the Hazard Mitigation Plan was approved.
2. **Dams Inventory** In 2016, JEO Consulting was hired for \$39,500 to conduct an inventory of dams that are one acre or larger within the District. The NRD has 40 dams that are nearing their 50-year lifespan. The remaining fee of \$25,000 was requested through the Hazard Mitigation Plan. In 2019, a JEO contract was approved at \$140,680 for a conceptual design of dams for multiple beneficial uses; evaluating up to 150 existing and potential dam and other structure sites. The project determines the localized water balance, recharge potential, storage capacity, design/construction considerations, and conceptual cost for dam improvement or new construction. CPNRD received grant funding from the Water Sustainability Fund in the amount of \$56,270.00 with the balance being funded by CPNRD in the amount of \$84,410. In 2021, the Board approved \$13,600 for JEO to complete design improvements, dam safety permits and finalize plans. The following dam updates will initiate a long-term plan to replace, update or remove the aging structures:
  - Box Elder 5A in Buffalo County: channel improvements downstream, dredging around the drawdown, riprap along the dam face. During rehabilitation, Kokes Construction said crushed rock surfacing was not needed for the access road. Kokes also removed existing drawdown plate and valve, install 18" slide gate in riser, bringing the cost of the project to 136,555.00. The project was completed in April 2022.
  - Clear Creek 5 in Polk County: complete replacement of the drawdown with structural elements, riprap along the dam face, repair of slough in auxiliary spillway, leveling of a low portion of the top of dam. In May 2022, Kokes Construction of Ord was awarded the bid for this project near Duncan in the amount of \$76,970. Project completion is scheduled for April 2023.
  - Jones 1A in Polk County: replace riser and spillway pipe. In May 2022, Kokes Construction was also awarded the bid for dam rehabilitation near Osceola in the amount of \$145,593. Project completion is scheduled for April 2023.
3. **Elm Creek/Turkey Creek Watershed** A feasibility study for \$125,000 was submitted to the Nebraska Resources Development Fund to request cost-share for the projected \$35M project. In 2006, a community meeting was held on the Elm Creek Watershed Flood Control Study. 130 landowners attended. The plan included a 975-acre flood control and re-regulating reservoir to be located northwest of Elm Creek, and two dry flood control structures on Turkey Creek. The reservoir would've provided flood reduction and recreation benefits. Cost estimate was \$22.8M. Olsson Associates did a geotechnical investigation/seepage analysis by drilling 30 test borings at the reservoir site/adjacent lands to determine if leaching would raise water tables to a level that would create problems for cropland or basements. In 2012, the board reviewed the project due to a potential new funding source from the Nebraska Water Cash Fund. CPNRD worked with Olsson Associates (OA), NPPD, State of Nebraska, and PRRIP on options to move forward with a project estimated at 6,800-12,000 AF depending upon future agreements. In 2013, \$631,465 that was originally designated for the proposed Elm Creek Re-Regulating Reservoir was transferred to CNPPID's new J-2 Reregulating Reservoir project; cutting the Elm Creek project from the budget.
4. **Platte Valley Industrial Park** In 2019, the board approved a request from the City of Grand Island and Grand Island Area Economic Development Corporation to allow water to be diverted into the south side channel of the Wood River Flood Reduction Project. The request was made to determine a plan to alleviate drainage issues at the Platte Valley Industrial Park between South Locust Street and Hwy 281. In 2021, Olsson was

selected to design a drainage ditch from Wildwood Drive to Locust Street at a cost up to \$87,500. The project consisted of grading existing county road ditches from Blaine Street to Schimmer Drive, easements, and installation of a 36" storm sewer pipe that will drain into the south channel of the Wood River Flood Control Project. CPNRD managed construction and acquisition of all right-of-way and/or easements within city limits. The \$650,000 project cost was shared by the partners: CPNRD, Grand Island Economic Development Corporation and the City of Grand Island. In April 2022, Hall County's portion was changed from in-kind contributions to utilizing funds in the amount of \$289,517.54 from the American Recovery Plan Act. CPNRD's cost is estimated at \$180,000 and will be funded in two budget years.

## **5. Flood Planning Grants**

In 2020, CPNRD was selected to receive three Watershed and Flood Prevention Operations Program (WFPO) grants from NRCS to identify what is needed to address flooding within the following watersheds. The two-year grants pay 100% of costs to complete an Environmental Assessment (EA) for each watershed. Project updates:

**Spring and Buffalo Creek Watershed (\$625,000):** HDR Engineering was hired to develop the Environmental Assessment for Dawson County. The Plan study area is approximately 266,870 acres, primarily agricultural, grass/pasture and row crops. The city of Lexington is located within the study area, and the communities of Cozad and Overton are immediately adjacent. An online public scoping meeting was held in 2020. Milestone meetings with NRCS/USACE are being held and the project is in the data collection phase. A possible split plan may be needed to accommodate the Village of Overton. Additional public open houses/updates and milestone meetings will be scheduled.

**Lower Wood River Watershed (\$725,000):** JEO and EA Consultants were hired to develop the EA for portions of Buffalo, Hall and Merrick counties. A virtual public meeting was held in 2020. Milestone meetings have been held with NRCS/USACE. Alternatives development, evaluation of potential projects, and stakeholder updates have taken place. In May 2022, JEO reported two alternatives. Alternative 1: a diversion west of Gibbon to move flood water four miles to the Platte River and protect an estimated 15,000 agricultural acres and the cities of Gibbon, Shelton and Wood River during high flood events. Estimated cost is \$80-\$100 million. Alternative 2: levee system outlining Gibbon and Wood River to protect homes and town infrastructure. This option does not provide much protection for agricultural lands. Estimated cost is \$40-\$60 million. Both alternatives would have construction costs over \$25 million, requiring Congressional approval. A letter was sent to NRCS requesting the project be changed from an Environmental Assessment to a full Environmental Impact Statement and additional funds and time be allocated to the project.

**Elm and Turkey Creek Watershed (\$742,500):** JEO was hired to develop the EA for Dawson and Buffalo counties. The Project covers more than 106,000 acres of drainage including the entire Elm Creek Watershed to its confluence with Buffalo Creek south of the Village of Elm Creek and the entire Turkey Creek Watershed flowing north of the Village of Elm Creek, past Odessa, and through the City of Kearney. Milestone meetings with NRCS/USACE are being held with the project in the data collection phase.

In April 2022, the project was at 60% design completion. JEO reported there is an economically feasible option that would benefit the Elm Creek portion of the watershed; however, the Turkey Creek portion has potential alternatives such as tripling the size of the current diversion west of Odessa and constructing a new diversion channel west of Kearney. In July 2022, the draft plan (90% design completion) was sent to NRCS for approval. Once the Environmental Assessment is approved, CPNRD will decide if it's in the public's best interest to work with NRCS and funding agencies to move into design and construction phases.

## **LAND RIGHTS**

At this time, the Central Platte NRD has no land right needs. This may change in the future to address areas within the District that are at risk of flooding during a weather event or disaster. Sufficient information is not available at this time to determine financial needs.



**Flood Control Objectives**

1. To establish management practices on cropland and grassland that would keep a minimum 2,000 pounds per acre of vegetative cover on, or above, the ground surface at all times.
2. To design floodwater retarding storage in all structures that have a suitable site.
3. To have a minimum of 75% land treatment established, or in the process of being established, before starting construction of a floodwater retarding structure.
4. All land shaping will consider its effect upon reducing flood damage, including upstream and downstream.
5. To preserve open floodways adjacent to streams and channels adequate to carry a 100-year-frequency storm with a rise in water elevation of one foot, or less, above the existing conditions.
6. Secure public awareness/acceptance of the need for and application of needed measures to reduce floodwater damage.
7. To carry out floodwater control practices at a satisfactory rate.

### III. Soil Conservation and Erosion Control

**GOAL:** To use each acre within its capability and to treat each acre according to its needs as set forth in the technical guidelines adopted by the District.

**FIGURE 8. Central Platte NRD Cost-Share Programs (2022)**

PRACTICE	CPNRD FUNDS SPENT
Trees & Weed Barrier	\$39,386.14
Center Pivots	\$159,705.14
Streambank Stabilization	\$4,841.25
Well Decommissioning	\$18,841.78
Urban Conservation	\$26,102.15
Burn Preparation	\$2,925.75
Cover Crop	\$324.10
Soil Moisture Sensors	0
Grazing Deferment	0
Flow Meters	\$4,785.02
Prescribed Fire	\$0

PROGRAM	CPNRD FUNDS
Corners For Wildlife	\$5,606.50
Buffer Strip	\$28,512.53
WILD Nebraska	-0-
NSWCP	\$86,541.31

**Total Cost Share  
Distributed Since 1972:  
\$13,178,257.57**

Financial assistance is provided by CPNRD to private landowners through cost-share for installation of soil and water conservation practices. Established soil conservation practices for controlling the sediment movement and reduce the impact associated with runoff from agricultural areas. Cost-share is provided in the following percentages:

**60% Cost-share** Well Abandonment

**50% Cost-share** Streambank Stabilization, Windbreaks and Weed Barrier, Flow Meters, Urban Forestry, Prescribed Burn Program, Cover Crops, Burn Preparation

**75% Cost-share** Phragmites Control

The Nebraska Soil and Water Conservation Fund was created in 1977 to provide financial assistance to private landowners for installation of soil and water conservation practices. The Natural Resources Commission determines eligible practices, establishes operating procedures and allocates funds annually among the 23 NRDs. The USDA NRCS provides technical assistance needed in planning and installing the conservation measures. NRDs administer the program at the local level.

#### 50% Cost Share

- \* terrace systems, terrace underground outlets, water impoundment dams, grade stabilization structures
- \* diversions, grassed waterways, water and sediment control basins, dugouts for livestock water
- \* pasture planting/range seeding, critical area planting, planned grazing systems
- \* windbreaks/renovation, drip systems, weed barrier, brush management, streambank stabilization
- \* repair of practices, irrigation tailwater recovery pits, underground return pipe from reuse pits
- \* Irrigation Management:: flow meters, goose necks, drop pipes/conversion nozzles, rainfall auto-shutoff valves, buried pipeline to convert gravity systems to pivots, subsurface drip irrigation, soil moisture sensors, data readers

**NRCS Annual Funding** 2021 funding resulted in another good year for conservation in the CPNRD, having received 62 contracts totaling \$2,956,623 and conservation practices contracted on 27,456.2 acres. The availability of these funds are credited to the 2018 Farm Bill and the use of programs such as EQIP, RCPP, and CSP.

#### EQIP contracts approved in 2021

- Water Conservation: \$1,205,426; 30 contracts (4,707.6 acres)
- Soil Health: \$111,021; 7 contracts (2,000.6 acres)
- Conservation Activity Plans: \$2,976; 3 contracts (2,141.8 acres)
- Grazing Lands: \$216,331; 6 contracts (1,931.1 acres)
- Animal Feeding Operation: \$0; 0 contracts (0 acres)

**Technical Service** NRCS provides technical assistance to landowners to help solve conservation problems while carrying out the NRD's programs. The NRD assists with this effort by providing personnel to NRCS to assist with their activities and to help administer the NRD's programs.

**GRANTS/PARTNERSHIPS****Ogallala Aquifer and Platte River Recovery Initiative & Extension**

This program provides cost-share assistance for farmers to convert irrigated land to non-irrigated on a permanent or temporary basis, apply efficient irrigation techniques, install conservation practices. Extensions were approved in 2019, 2020 and 2022.

**GOALS** Address surface and groundwater quality and quantity concerns to reduce impacts to the Platte River and local groundwater supply and address stream flows to meet endangered species habitat goals through May 2021.

**INITIATIVE PARTNERS** CPNRD, NeDNR, NARD

**FUNDING** CPNRD producers received \$3,243,254 through 2011.

In 2022, a renewal grant was signed continuing this agreement for another 5 years, the new agreement will provide another \$2,079,000 for the same conservation practices.

**EXTENSION PARTNERS** Central Platte NRD, Twin Platte NRD, Natural Resources Conservation Service

**EXTENSION FUNDING** CPNRD producers received \$1.7 million since 2015

**Precision Conservation Management Program (PCM)**

In May 2021, directors approved with the Illinois Corn Growers Association to add a Precision Conservation Specialist to the CPNRD staff. The individual will start employment in late August.

**GOAL** Help farmers understand and manage risks associated with adopting new conservation practices to make sound financial decisions. PCM is looking to expand their reach into Nebraska with Frito Lay (PepsiCo) growers in the western area of the District. Applied economics, water quality outcomes and carbon sequestration values are generated for producers.

**PARTNERS** Central Platte NRD, Illinois Corn Growers Association. PCM has 30 contributing partners, including NRCS, NASA Harvest, National Fish and Wildlife Foundation, Ecosystem Services Market Consortium, Soil Health Partnership, Field to Market® and The Nature Conservancy.

**FUNDING** \$400,000 RCPP grant for staff cost to be reimbursed by partners.

**Nebraska Soil Carbon Project**

The Nature Conservancy received a \$4.4 million *Resilient Futures for Nebraska Soils* grant to enroll 100 producers to install soil health practices on 100,000 acres of farmland over 5 years starting in May 2021.

**GOAL** Provide farmers in the Central Platte and Upper Big Blue NRDs with technical and financial assistance to adopt cover crops, no-till and diverse crop rotations that store carbon in the soil. The stored carbon is utilized by private companies to help reach their goals around sustainability.

**PARTNERS** CPNRD, UBBNRD, Natural Resources Conservation Service, The Nature Conservancy, Ecosystem Services Market Consortium, Cargill, Target and McDonald's.

**FUNDING** Partners contributed \$4.4M|RCPP grant \$4.4M totaling \$8.8 million. Depending on the practices implemented, producers will earn up to \$45/acre each year. Applications funded in 2021:

Field Office	Applications	\$ Requested
Kearney	9	\$116,725.00
Lexington	2	\$11,894.00
Central City	4	\$93,628.00
Grand Island	1	\$1,334.00
Central Platte NRD Apps	16	\$223,581.00
Aurora	2	\$100,728.00
Seward	6	\$1,161,102.00
York	2	\$141,775.94
Geneva	4	\$126,500.26
Clay Center	1	\$32,487.00
Osceola	1	\$17,334.00
Hastings	1	\$3,169.00
David City	1	\$4,226.00
Upper Big Blue NRD Apps	18	\$1,587,322.20
<b>TOTAL</b>	<b>34</b>	<b>\$1,810,903.20</b>

### Watershed & Flood Prevention Operations (WFPO) Cooperative Agreements

NRCS will pay 100% of the cost of these three new watershed plans, up to the approved funding amount. The three plans include Lower Wood River Watershed Improvement Project in Buffalo, Hall, and Merrick Counties; Spring and Buffalo Creek Watershed Improvement Project in Dawson County; Elm and Turkey Creek Watershed in Buffalo and Dawson Counties.

**GOAL:** Create a NEW Watershed Work Plan-Environmental Assessment (Plan-EA) for these three Watersheds. This USDANRCS assistance will be a big help to the Central Platte NRD in flood prevention and in planning for our future and protecting our customers lives and property.

**PARTNERS:** Central Platte NRD, USDA-Natural Resources Conservation Service (NRCS).

**FUNDING:** In total, funding available to the Central Platte NRD over the next few years for these new watershed agreements is \$2,092,500. See additional details on the WFPO projects on page 18.

### Conservation and U.S. Agriculture

Non-federal agricultural and forest lands cover 70% of the lower 48 states or 1.4 billion acres. These lands produce strong agricultural and forest sectors, supply habitat for wildlife, filter groundwater supplies, regulate surface water flows, sequester carbon and provide open space and scenic vistas. Farming/ranching may or may not have negative environmental consequences including water and air pollution, soil erosion and loss of wildlife habitat.

### Conservation Programs Today

USDA programs address conservation/environmental concerns in four ways:

- 1) Educational and technical assistance
- 2) Financial incentive payments through conservation on working farm
- 3) Ranch and forest lands through - EQIP, CSP, RCPP etc. and conversion to conservation use to achieve specific environmental benefits - ACEP, GRP
- 4) Protection of agricultural lands from conversion to other uses - FRPP for conservation compliance, regulatory requirements through Clean Air/Clean Water/Endangered Species - CNMPs, HFR and conservation technical assistance.

### Key Issues:

- Excess nutrients in rivers/streams
- Hypoxia in Gulf of Mexico - Chesapeake Bay
- Water availability
- Declines in soil condition
- Invasive species
- Endangerment of native species
- Rising greenhouse gases
- Renewable energy
- Demands on agriculture

### Soil Conservation/Erosion Objectives

1. To establish adequate permanent cover on all Class VI & all Class VII land.
2. To establish approved cultural management practices, vegetative practices or structural measures, as needed on all lands to prevent wind and water erosion.
3. To safeguard the land for the continued production of food and fiber.
4. To establish erosion control measures, as needed on all industrial development sites, residential development sites, or road construction sites and other non-agricultural development sites.
5. To apply irrigation water management techniques to all of the irrigated land in order to properly conserve and efficiently utilize soil, water, fertility and energy.
6. To develop proper range and pasture use and management plans or programs in order to properly conserve and efficiently utilize those range and pasture areas.
7. To re-establish vegetative cover on those range and pasture sites classified as "poor" condition.

## IV. Water Quality

**GOAL:** To protect and enhance the quality of surface and groundwater within the District.

### QUALITY MANAGEMENT PROGRAM

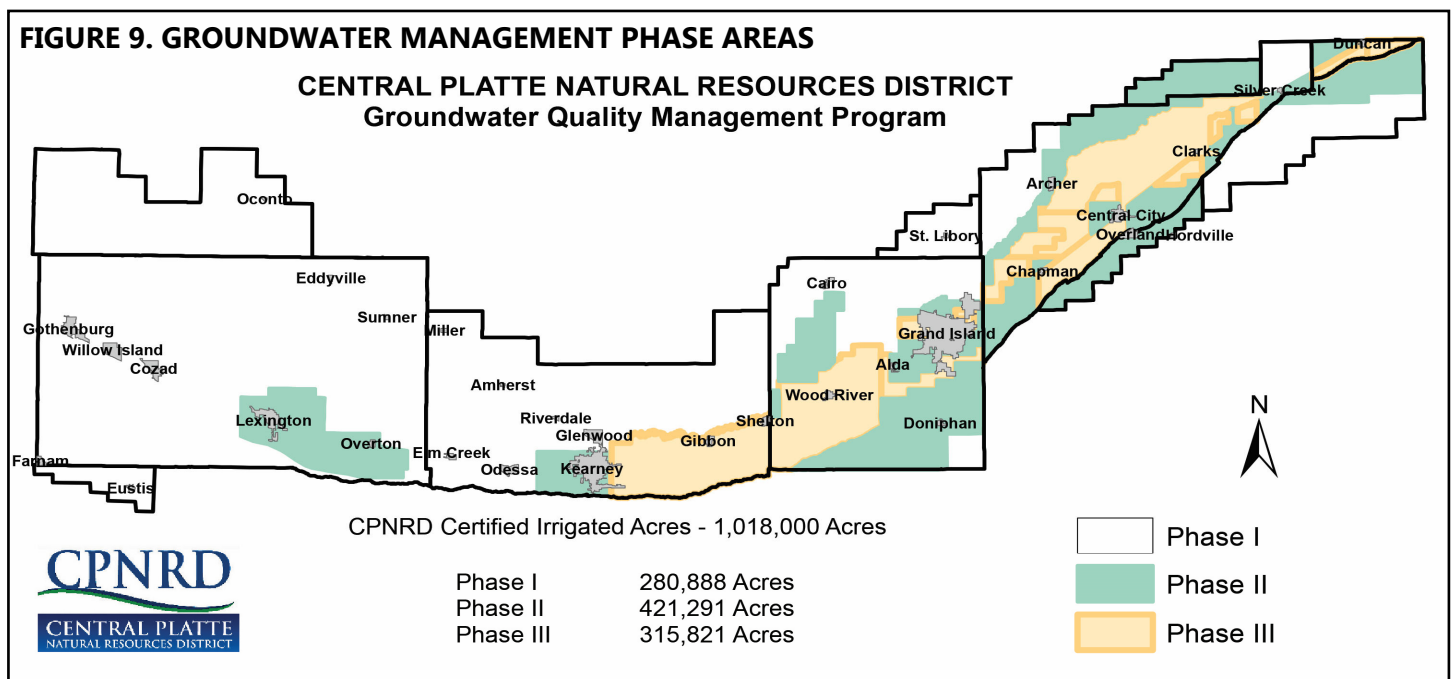
The main source of groundwater pollution in the District is nitrate-nitrogen in amounts greater than the maximum contaminant level of 10 ppm (parts per million) allowed by the state and federal government. High nitrates are a problem in varying degrees throughout the District. Concentrations of sulfate, high iron and magnesium levels, along with high total dissolved solids in many areas, have potential for considerable problems in municipal supplies, particularly in areas where large quantities of water are used for industrial purposes. CPNRD will continue to work with producers, ag business operators, and the public to further reduce high nitrates in the groundwater.

CPNRD's Nitrogen Management Program was adopted in response to increasing high concentrations of large areas of nitrate-nitrogen in the groundwater and vadose zones (areas between root zone/ top of water table). High groundwater nitrates in some areas of the valley were first identified in 1961. Excessively high nitrates can lead to methemoglobinemia, known as "blue baby syndrome" and are also a potential hazard to livestock. Commercial nitrogen fertilizer is the primary cause for high nitrates in groundwater in the Central Platte Valley. Public hearings and numerous meetings with farmers, crop consultants and fertilizer industry representatives were conducted to determine how best to implement solutions. As a result, CPNRD adopted necessary rules, regulations, boundaries, and controls for the first quality management program to be included in the Groundwater Management Plan that became effective in August 1987.

When the Program started, Nitrate levels had increased 0.5 ppm per year to 19.24 ppm. Nitrate levels have been lowered through long-term management efforts by the NRD & landowners implementing efficient practices. The plan uses a phased approach, with lesser restrictions in areas not high in nitrates and additional regulations applied to areas with higher nitrate concentrations in the groundwater. Because the phases are by area, individual wells in a Phase Area may be higher or lower than the designated range of nitrate concentrations. Other factors, including proximity to a municipal water supply and vadose zone nitrates are also used in determining the Phase Areas.

**See Figure 9. CPNRD Quality Management Rules and Regulations on Page 24 for Phase requirements.**

In 2016, parts of southern Hall and northern Hamilton counties, south of the Platte River, were transferred from a Phase I to a Phase II Groundwater Management Area due to increasing nitrate levels. In 2017, changes combined and updated the Rules and Regulations for all of the District's groundwater management programs into the *Groundwater Management Plan Rules & Regulations-General Provisions & Procedures for Enforcement*. Two major changes included cease and desist enforcement procedures and removal of the 2-in-10 irrigation rule.





**FIGURE 10. Irrigation Rules and Regulations**

<p style="text-align: center;"><b>Central Platte Natural Resources District</b>  <b>Rules and Regulations</b>  <b>Commodity crop growers must adhere to the following regulations</b>                      Phase I - between 0 &amp; 7.5 ppm; Phase II - between 7.6 &amp; 15 ppm; Phase III - 15.1 ppm or higher                      Phase IV - Areas where nitrate levels are not declining at an acceptable rate                      Because NRDs do not have the authority to regulate surface water, surface water irrigators                      are not required to take water samples or monitor water applications</p>				
	Phase I	Phase II	Phase III	Phase IV
1. Fall applications of N fertilizer <b>on sandy soils</b> are prohibited.	X	X	X	X
2. Fall N applications <b>on heavy soils</b> are prohibited until after November 1.		X	X	X
3. Application of commercial nitrogen fertilizer is prohibited on all soils until after March 1st.		X	X	X
4. <b>Farm operators</b> using nitrogen fertilizer <b>must be certified</b> . Certification good for 4 years.		X	X	X
5. (a) Spring application of commercial nitrogen fertilizer will <b>require</b> a split application [pre-plant/pre-emergent, or pre-emergent/post-emergent] with no more than 50% applied as pre-emergent. If more than 50% is applied as pre-emergent, the operator is required to furnish certification from the dealer that an inhibitor was used at the recommended rate. <b>Or, (b)</b> Up to 80 pounds total of pre-plant and pre-emergent nitrogen can be applied as pre-emergent without an inhibitor.			X	X
6. <b>All crops must be reported</b> (including corn, sorghum, potatoes, beans, alfalfa, small grains and any other commodity crop), on District approved report forms. <b>Reports will be due each crop year by March 31st and include</b> the legal description of well(s) irrigating the crop, acres of each crop and the crop planted. Crops other than corn, sorghum and potatoes <u>do not</u> have to take soil and water tests.		X	X	X
7. <b>In addition to the above, the report for corn, sorghum, and potatoes</b> must list the following for the <b>upcoming crop year</b> : expected yields, water and soil test results, credits for past legume crop and manure or sludge, and the UNL's recommended nitrogen application rate. The report will also include the following for the <b>previous crop year</b> : actual yields, fertilizer applied as pre-emergent or sidedress, and irrigation water applied. <b>Laboratory reports for soil, water and manure analysis, and an inhibitor receipt if used, must be submitted with the annual report.</b>		X	X	X
8. An annual <b>deep soils analysis</b> for residual nitrogen (NO <sub>3</sub> -N) on each field or 80 acre tract growing corn, sorghum or potatoes, whichever is smaller, with the analysis to be conducted by a laboratory participating in the University of Nebraska Soil Testing Program. A composite sample tested must consist of a mixture from no less than one three-foot probe every five acres. <b>The report from the lab must be attached to the annual report.</b>		X	X	X
9. A <b>groundwater analysis</b> for nitrogen (NO <sub>3</sub> -N) content on each field growing corn, grain sorghum or potatoes must be made <b>annually</b> . <b>The report from the lab must be attached to the annual report.</b>		X	X	X
10. If <b>manure or sludge</b> is used, a <b>credit</b> for the nitrogen in the manure or sludge must be <b>used in the calculation</b> for the nitrogen recommendation. A laboratory analysis must be conducted for each source of manure or sludge and attached to the report form.		X	X	X
11. A <b>credit for previous year's crop</b> if the previous year was in beans, alfalfa, etc., must be used in the calculation for the nitrogen recommendation on corn and sorghum.		X	X	X
12. The <b>expected yield</b> to be <b>set by the District</b> (last 5 year average of regulated crop + 5%)				X
13. <b>Nitrogen applications</b> must not exceed District Recommendations with a copy of a fertilizer receipt attached to the annual report.				X
14. NRD Staff work with individuals on best management practices				X
15. Operators must <b>monitor groundwater applications</b> to allow for the better management of fertilizer applications and control leaching of nitrates.		X	X	X
16. Phase II, III and IV areas can be established in the future based on N levels in <b>Vadose Zone</b> or based upon <b>nitrate levels not declining</b> at an acceptable rate as determined by the Board of Directors.		X	X	X

**Additional Testing**

In 2016, an agreement with UNL was approved for \$80,000 to revisit 27 vadose zone core sites originally collected in the 1990s, and to determine where additional cores may best characterize nitrate storage and estimated transport rates to the water table. Core samples were collected for vadose zone nitrate including areas previously sampled. The 2017 report showed locations of the first eight core samples collected with comparison of nitrate profiles to previous time periods and estimation of nitrate transport rates at each location. The 27 sites collected between 1990-1996 were digitized and used to compare profiles to determine how fast nitrate is moving and whether changing land use management has resulted in reduced loading of nitrate in the vadose zone. All of the sites are used for agriculture production. Eight of the sample results indicate lower Nitrogen fertilizer applied, reduced irrigation water, and changing land use practices at the surface may be lowering the nitrate concentrations in the vadose zone. Periodic reports are provided by UNL.

**Online Reporting Form**

In 2015, GIS Workshop developed a new online system for \$64,500 to allow producers to fill out their annual Groundwater Management forms online. Using their User ID, producers may log in throughout the year to record their water and soil test results and their actual yields prior to submitting the form. Producers benefit by having all past information in one location. The system significantly reduces administrative time for staff to manually enter the 6,000-7,000 forms submitted each year. Meetings were held across the District with producers to demonstrate how to use the new online form. The site was updated in 2018 to improve usability for staff and producers, and to provide a better format to inform producers on recommended N applications.

**Violations**

Violation notices were sent out to 53 operators by certified mail for not submitting the required reports for the 2021 crop year in the Phase II and III areas of the Water Quality Management Program. As of July 2022, nine producers remained out of compliance and were turned over to legal counsel for violating the cease and desist order. A Polk County landowner had three offenses for irrigating non-certified irrigated acres and sent an additional Cease and Desist Order in July. The landowner has violated a prior Cease and Desist Order and a court order to cease irrigation until getting into compliance with CPNRD's Rules and Regulations. That individual has a second court hearing in August for the unresolved violations.

**PROJECTS AND RESEARCH****Central Platte Demonstration Projects**

The Nitrogen and Irrigation Management Demonstration Project, implemented in 1984, is one of the longest-existing demonstration projects in Nebraska and possibly the nation. Other state and national projects have been modeled from this educational project. The Project was initiated following the Hall County Water Quality Special Project to show that new practices that impede nitrogen fertilizer from leaching into the aquifer are successful. Farmers with varying soils and conditions are recruited to work with UNL and CPNRD to use best management practices to demonstrate that nitrates can be managed efficiently and effectively while maintaining crop yields. The Platte Valley Project included areas where nitrate-N concentrations were in excess of 40 ppm; due to a combination of coarse-textured soil, shallow groundwater, intense irrigation and over-application of fertilizer.

Over 400 demonstration sites have been located on producers' cornfields where randomized levels of Nitrogen were applied in increments of 50 pounds above and 50 pounds below the calculated recommendation based on the UNL algorithm. These plots provided over 290 field days/meetings. Research on field length, producer applied/producer harvested plots, were instrumental in the adoption of practices by producers. A producer survey conducted in 1997 showed that 54% tested irrigation water for nitrates, 34% used a nitrification inhibitor, and 70% attended a tour or meeting on best management practices to protect water quality.

The project emphasis changed over the years as new technology become available to the ag sector. CPNRD's cost-share programs are modified to accommodate new techniques and equipment to help with better management practices. Initially, emphasis was given to reducing fertilizer input by counting contribution from residual sources; however, the leaching problem has two components: fertilizer and water. Reducing water applied produces less leaching than just reduction of fertilizer inputs. Monitoring water usage is mandatory in Phases II/III, since research

indicated that most farmers didn't know the amount of water used during irrigation. Newest technologies used include ET gages, watermark sensors to schedule irrigation, soil moisture capacitance probes, polymer material, slow and controlled release Nitrogen products, and cover crops in seed corn. Extension and demonstration efforts in areas of irrigation management have also been a part of the project. Field days and articles educate producers on results of the demonstrations and on best management practices.

### **Crop Irrigation & Demand Network**

Started in 2013, this program receives data collected by telemetry to provide a vast amount of real-time data by monitoring different types of irrigation systems. CPNRD is able to view water usage and soil moisture from fields where producers installed telemetry equipment. Participants may check their GPM used, inches applied per day and throughout the season, and soil moisture readings. The amount of water pumped and precipitation are measured to provide data to develop irrigation efficiencies by equipment type, soil water holding capacities and crop type. The program was initiated by CPNRD in 2013 with \$60,000 budgeted for the project and expanded by a \$750,000 NeDNR grant in 2014. There are 77 sites across the District: 11 sites in 2013, 30 sites in 2014; and 36 sites in 2015. The project's goal was There are currently 52 pivots, 18 gravity and seven sites. Water pumped, system pressure, and rainfall are monitored at all locations, with soil moisture monitored at 30 locations. Partners include CPNRD, NeDNR, Nebraska Extension, Seim Ag Technology and McCrometer.

### **Cover Crops**

Producers are working with UNL Extension/CPNRD to research effects of cover crops on soil health. Field days are held annually to show crop mixes planted on different dates and to compare aboveground biomass with below ground; as well as best mixes for grazing. Research includes whether compaction and infiltration are impacted, how biological activity and organic matter are affected, which mixes provide the highest quality forage for grazing, and how much crop usable nitrogen can be expected. Partners include UNL, NRCS, CPNRD, Arrow Seed, Green Cover Seed and O'Hanlon Seed Inc.

### **Cover Crop Impact Study**

In 2017, CPNRD/LLNRD hired EA Engineering in the amount of \$320,000 for a four-year study to determine impacts on groundwater due to cover crop management. The Lower Loup Basin and Central Platte River Basin have diverse soil type and cropping practices that affect both water quantity and quality. The study is researching the general influence of cover crops on soil moisture, groundwater recharge and Nitrogen movement in the soil between the South Loup and Wood rivers with groundwater declines. It includes both irrigated and dryland cropped fields and spans multiple years. Landowner ID, mobilization and installation of equipment was completed 2017. In May 2019, an additional MOU was approved with LLNRD for a three-year study in Sub-Area 9 to determine the amount of water required to grow cover crops.

In July 2021, EA Engineering presented a progress report comparing irrigated and dryland cropped fields, targeting northern Buffalo County where the Lower Loup and Central Platte NRDs have experienced localized groundwater declines. The study has shown that there is minimal seasonal impact of groundwater availability on the fields that implement cover crops compared to non-cover crop fields. Nitrate sampling to compare groundwater contamination on cover crop and non-cover crop fields will continue through June of 2023.

CPNRD has installed 116 active monitoring wells since 1993 that are used for both the Water Quality and Water Quantity programs. In 2021 and 2022, Downey Drilling was selected to construct 12 dedicated monitoring wells in Buffalo and southern Hall counties in the amount of \$37,749.50; and 9 wells in Hall and Howard counties in the amount of \$21,212.96. CPNRD staff measures 450-500 wells throughout the District each spring and fall to monitor groundwater levels as part of the Groundwater Management Program. The new wells will replace irrigation wells that are no longer accessible to measure and may be used to monitor nitrate in the groundwater. CPNRD has dedicated monitoring in all of the counties in the District with the exception of Hamilton County.

### **Monitoring Wells for Water Quality**

In June 2021, results from the three-year study conducted by UNL documented 27 deep vadose zone cores monitored in the 1990s and analyzed them to characterize nitrate, ammonia, and moisture content under different land use; as well as estimate stored nitrate-N and nitrate transport rates. The 660 wells sampled showed a 10%

reduction of vadose zone nitrate in the groundwater since the 1990s; however, there was a significant amount of nitrate-N ranging up to 8,800 lbs. of nitrate-N per acre. Nitrate transport rates ranged from 0.9 to 2.5 ft/year.

Phase 2 areas measured higher than average groundwater nitrate-N. Both gravity and center pivot irrigated cropland were studied to compare changes in nitrate storage under 24 sites. Overall averages show vadose zone nitrate about 30% higher under gravity irrigated land. The study also found several cores with over 2,000 pounds per acre nitrate-N and significant concentrations of ammonia at depth in many locations. Further investigation of Phase 2 areas and locations with vadose nitrate >2,000 pounds/acre was recommended.

### **Project SENSE**

UNL's Project SENSE (Sensors for Efficient Nitrogen Use & Stewardship of the Environment) pilot program promotes in-season nitrogen fertilization for corn to improve efficiency of N fertilizer applications with canopy sensors. Other participants: Upper Big Blue, Lower Platte South, Lower Platte North, Lower Loup NRDs, NRCS, and Nebraska Corn Board. Results show the use of crop canopy sensors for in-season Nitrogen applications from 2015-2017 resulted in an average profit increase of \$13.21/acre. Nitrogen rates were 20% less than comparable grower practices with an average yield reduction of 2.6 bu/ac (1% less than grower yield.)

### **Testing Agriculture Performance Solutions (TAPS)**

CPNRD began funding the TAPS program in the amount of \$1,000 annually since 2018. TAP's teams work together to find solutions through innovation, entrepreneurialism, technology, improved techniques and cutting-edge methodologies for farms to maintain profitability, sustainability, and productivity. Dean Krull, UNL/CPNRD demo project coordinator, is participating in the 2020 farm management competition.

### **Imagery-Based Fertigation**

Sentinel Fertigation CEO, provided results of imagery-based fertigation trials through N-Time™ FMS, a sensor-based management system that provides data-driven fertigation recommendations to improve profit while using nitrogen fertilizer efficiently. The study also showed that 96% of farmers increased efficiency with 43 pounds/acre of average nitrogen savings with N-Time recommendations. The producers in the trial increased their profitability by \$27.91/acre average versus typical management.

### **UNMC Health and Water Quality Research**

The University of Nebraska Medical Center's (UNMC) health and water quality research results show that Nebraska has one of the highest rates of pediatric brain cancer in the nation. UNMC and other states have found a correlation between nitrogen fertilizers, animal and human waste. The greatest exposure has been found in agricultural areas and private wells. Numerous scientific studies have shown that the high concentration of nitrate in drinking water has been linked to Methemoglobinemia, colorectal cancer, thyroid disease and neural tube defects (birth defects of spine, brain and spinal cord).

Other cancers have also been linked to high concentrations of nitrates including kidney cancer, bladder cancer, Non-Hodgkin Lymphoma, Alzheimer's, Diabetes and Parkinson's Disease. Non-Hodgkin Lymphoma had a three-fold increase in risk with nitrate and atrazine in the Nebraska study. The most vulnerable populations are infants less than six months old who appear to be particularly sensitive to the effects of nitrite on hemoglobin, pregnant women and her fetus, and people with oxygen transport or delivery conditions like anemia, cardiovascular disease, lung disease, sepsis and presence of other structural hemoglobin variants; and people with nitrate in their well water.

## **WATER QUALITY PROGRAMS**

### **Decommissioned Well Program**

The potential danger and damage abandoned wells may cause to groundwater supply is a concern. CPNRD informs landowners to locate, fill & seal wells, cisterns, cesspools, and similar cavities on their property. The most dramatic danger caused by improper well abandonment is a hole into which children, animals, or equipment might fall. A more likely danger, though, is the creation of a path through which contamination of the groundwater might occur. Abandoned wells that have not been properly filled and sealed can act as a direct conduit for pollutants to the

water supply beneath the earth's surface. State law requires abandoned wells be properly sealed. NRDs, the State of Nebraska and NRCS provide well owners with financial and technical assistance to get the job done right through well decommissioning programs. Cost-share is available for old irrigation wells (60%), up to \$500 on wells that pump 50 gpm or less, \$750 for wells pumping over 50 gpm, and for hand-dug wells up to a \$1,500. In 2013, CPNRD stopped providing cost-share for replacement wells. Licensed water well contractors/licensed pump installation contractors are required to abandon the well and verify that the water well was decommissioned in accordance with state law, standards, rules and regulations.

### **Irrigation Run-Off/Erosion**

Rules and regulations designed to control groundwater irrigation runoff have been in effect since 1977 to follow the Erosion & Sediment Control Act. Updates in 2017 included: sheet and rill erosion added, ephemeral gully erosion, soils updates, and changed governing authority. The plan allows NRDs to petition the District Court for a Cease and Desist Order and removed 90% cost-share previously required for NRDs to provide for erosion control practices. NRCS's new requirements for control of ephemeral gully (concentrated flow) erosion were added. If erosion is found on a producer's property, the producer is required to develop a plan to use conservation practices to help treat this type of erosion, by December 31, 2019, for conservation compliance and to remain eligible for USDA program benefits. Those practices include no-till, cover crops, terraces and waterways.

### **Buffer Strips**

In 1998, the Nebraska Buffer Strip Program was established to use filter strips to reduce the amount of chemicals that run off farm fields into the streams around the state. Cost-share is available to replace cropland with grass buffer strips along banks of perennial/intermittent streams or permanent bodies of water. CPNRD administers cost-share funds for the Buffer Strip Program provided by the Nebraska Department of Agriculture.

### **Chemigation Program**

Irrigators that chemigate must comply with Nebraska's Chemigation Act and Regulations adopted by the Nebraska Department of Environment and Energy and Central Platte NRD. All operators applying chemicals through a closed irrigation system must have the correct safety equipment, be properly trained and certified, and obtain a permit from the NRD before legally being allowed to chemigate. Certification is issued for four years after which renewals are required. In 2014, NRDs were given the authority to set fees for new, special, renewal and emergency permits.

### **Chemigation Fees**

Application fee-\$60 Special permits-\$60 Annual renewal- \$20 Emergency permit- \$500

Emergency permits must be approved within two working days and can't be issued on weekends/holidays. Permit holders and certified applicators are required to sign all applications. If staff is required to make a second trip to complete a chemigation inspection, a \$50 fee is charged to the permit holder/applicator. The fee is increased to \$100 on the third trip.

**FIGURE 11. 2021 Chemigation Report**

<b>Applications</b>	<b>New</b>	<b>Renewal</b>	<b>Emergency</b>	<b>Total</b>	<b>Inspections</b>
<b>Approved</b>	172	2,126	0	2,298	871
<b>Fees</b>	\$10,320	\$42,520	\$0	\$52,840	

### **Water Quality Objectives**

1. Reduce groundwater nitrate levels in areas that exceed 10 parts per million (ppm), the amount allowed by the state and federal governments.
2. Maintain groundwater nitrate levels at or below permitted levels in areas that are less than 10 ppm.
3. Monitor groundwater quality for other contaminants with nitrates.
4. Develop necessary groundwater quality management program(s) if other non-point source contaminants show signs of approaching or exceeding maximum safe levels.



## IV. Water Quantity

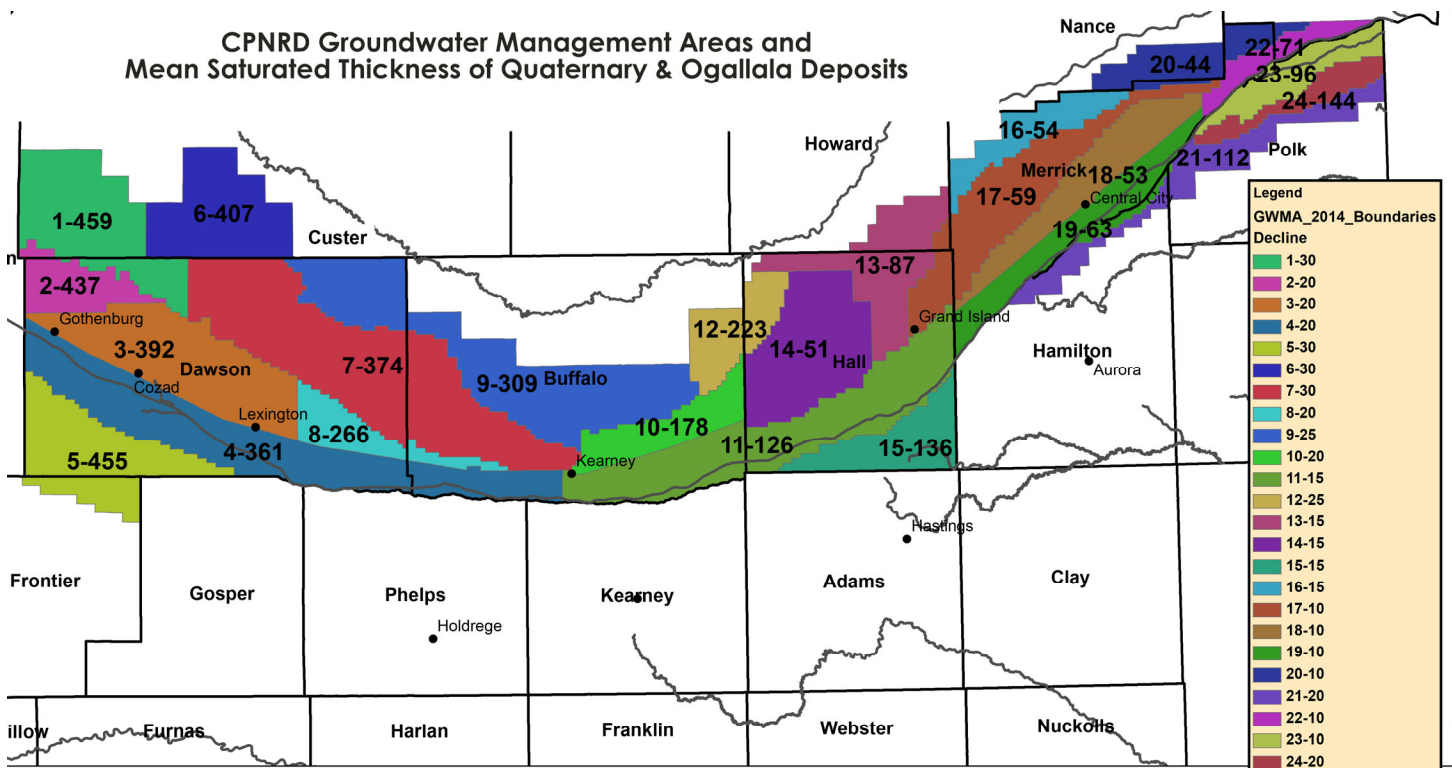
**GOAL:** To assure an adequate supply of water for feasible and beneficial uses, through the proper management, conservation, development and utilization of the District's water resources.

Being in the Platte River Watershed, the District's primary surface water feature is the Platte River, however, the majority of farmers rely on groundwater for their irrigation needs since groundwater is abundantly available across the District. Water supply is under continuous monitoring and a groundwater supply management plan to address potential shortages and has been in effect since 1987. Groundwater aquifer declines have been documented where irrigation use is the heaviest. Groundwater is the District's chief source of drinking water and primary economic resource, since we depend on it for irrigation; which, in turn, enables us to have a strong economy rooted in agriculture. Water tables declined in the late 1970s and early 1980s. Rainfall increased in the mid-1980s-1990s, which caused water tables to rise, but the historic record suggests complete groundwater recovery from the dry periods during the wet periods does not always occur in all areas. Careful management of the resource is necessary. Aquifer thickness varies from 25 to 300+ feet across the district, so a drop of one foot has a more significant impact on some parts of the District than others.

Groundwater depths and thicknesses were charted and used to help establish 24 groundwater supply management areas. Besides the aquifer conditions, the soils and topographic characteristics are similar in each management area. The 1982 groundwater levels were established as the standard for the management plan since rainfall and recharge were above average several years since 1982. The maximum acceptable decline for each of the management areas was calculated, establishing a margin of safety in each area.

It was determined that as an area's average groundwater level declined through that margin of safety, controls should be mandated to slow the decline. In 1987, the board established the Groundwater Management Plan with a phased program to implement controls when needed. The maximum acceptable decline ranges from 10' in the eastern end of the District to 30' in portions of the western end of the district. If the water table falls to 50% of that maximum decline (5'-15'), Phase II would go into effect for any area or areas affected, triggering mandatory reductions in irrigated acres and establishing spacing limits for new irrigation wells. Further declines to 70%, 90% and 100% of the maximum acceptable decline trigger Phase III, IV and V controls respectively, mandating additional cutbacks in irrigated acreage and increased spacing limits for new wells. With the differences in aquifer depth and conditions, it is conceivable that some areas could be in higher phases while other areas may always be in Phase I.

**FIGURE 12. MEAN SATURATED THICKNESS MAP**



### Groundwater Management Plan Rewrite

In July 2019, Olsson was selected to rewrite the NRD's Groundwater Management Plan (GMP) for \$102,000. In December 2021, an amended contract was approved in the amount of \$13,000 for additional work. The proposed updates were reviewed in June/July 2022 by the Water Utilization and Water Quality committees. Changes included new data acquired including hydrogeologic, climate and socio-economic data of the groundwater resources. Plan triggers, data sets and maps, and 2022 COHYST prediction 50-year simulations were added. The water quality section of the plan was not changed. Proposed updates:

- Allow subdistricts 7 and 9 to be subdivided based on level of development and hydrology.
- New phase triggers to reflect percentages of maximum acceptable declines.
- Add management regulations to require meters and allocation to address groundwater decline instead of reducing irrigated acres and well spacing.

NeDNR and NDEE will review the updated Plan. Public information meetings will be scheduled in November 2022. Following the reviews, a public hearing will be held and the Board will consider adoption of the Plan.

### Groundwater Levels

Between 450-500 wells are measured each spring and fall to monitor groundwater levels as part of the Groundwater Quantity Management Program in conjunction with Conservation & Survey Division, UNL and USGS. Measurements are taken throughout the District to monitor groundwater levels. The 1982 groundwater levels were established as the benchmark year to compare groundwater level changes as part of the Groundwater Management Plan implemented in 1987.

CPNRD established 24 subdistricts to monitor groundwater level changes. The change in level is an average, based on the wells measured in each subdistrict and used to compare mean saturated thickness for Quaternary and Ogallala deposits. Average saturation zone ranges from 459' in Custer County to 44' in Nance County. Groundwater levels vary over time based on precipitation amounts and irrigation use. Level changes have been minimal in most areas in spite of an additional 250,000 acres of groundwater irrigation being developed between 1982-2004, the year the NRD and NeDNR placed a freeze on new irrigated acres and new wells.

### Spring 1982 – Spring 2022

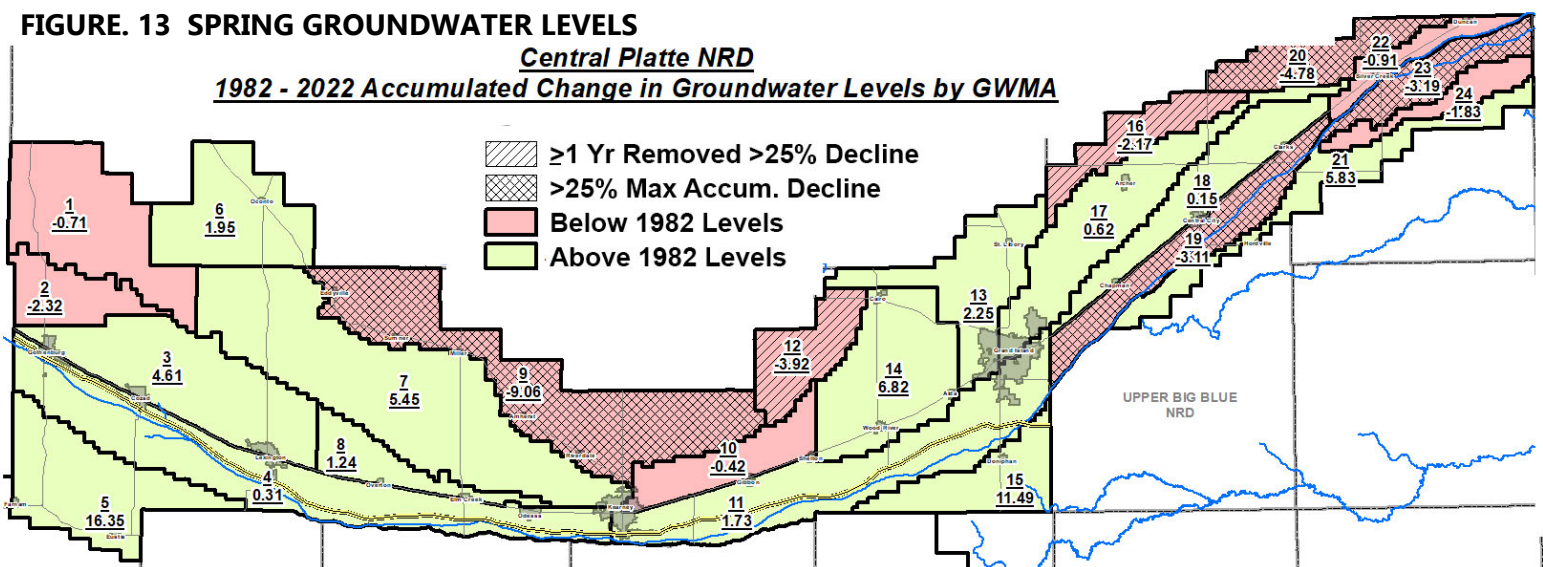
The spring 2022 static groundwater levels compared to the 1982 levels show that 13 of the GWMA's are above the 1982 levels with increases ranging from 0.15 to 16.35 feet; 11 were below the 1982 level. Declines by GWMA:

- GWMA 19: down 3.11 feet and GWMA 23 is down 3.19 feet, both triggering below 25% decline
- GWMA 12: down 3.92 feet but has increased above 25% decline for 3 years
- GWMA 16: down 2.17 feet but has increased above 25% decline for 4 years
- GWMA 2: down 2.32 feet but has increased for 5 years. It is now open for transfers and supplemental wells.
- GWMA 9: down 9.06 feet. This area has the largest continuous declines.
- GWMA 20: down 4.78 feet

**FIGURE. 13 SPRING GROUNDWATER LEVELS**

#### Central Platte NRD

#### 1982 - 2022 Accumulated Change in Groundwater Levels by GWMA



### Monitoring Wells

CPNRD has installed 116 active monitoring wells since 1993 that are used for both the Water Quality and Water Quantity programs. In 2021 and 2022, Downey Drilling was selected to construct 12 dedicated monitoring wells in Buffalo and southern Hall counties in the amount of \$37,749.50; and 9 wells in Hall and Howard counties in the amount of \$21,212.96. CPNRD staff measures 450-500 wells throughout the District each spring and fall to monitor groundwater levels as part of the Groundwater Management Program. The new wells will replace irrigation wells that are no longer accessible to measure and may be used to monitor nitrate in the groundwater. CPNRD has dedicated monitoring in all of the counties in the District with the exception of Hamilton County.

In June 2021, results from the three-year study conducted by UNL documented 27 deep vadose zone cores monitored in the 1990s and analyzed them to characterize nitrate, ammonia, and moisture content under different land use; as well as estimate stored nitrate-N and nitrate transport rates. The 660 wells sampled showed a 10% reduction of vadose zone nitrate in the groundwater since the 1990s; however, there was a significant amount of nitrate-N ranging up to 8,800 lbs. of nitrate-N per acre. Nitrate transport rates ranged from 0.9 to 2.5 ft/year.

Phase 2 areas measured higher than average groundwater nitrate-N. Both gravity and center pivot irrigated cropland were studied to compare changes in nitrate storage under 24 sites. Overall averages show vadose zone nitrate about 30% higher under gravity irrigated land. The study also found several cores with over 2,000 pounds per acre nitrate-N and significant concentrations of ammonia at depth in many locations. Further investigation of Phase 2 areas and locations with vadose nitrate >2,000 pounds/acre was recommended.

### Sub-Area 9

In March 2019, two Water Program Updates were held in Amherst and Kearney to address groundwater decline concerns in Sub-Area 9 (Buffalo/northern Dawson counties) where groundwater levels are down an average of 12.39' since 1982. Groundwater levels have continually declined since 2001. Open discussion sessions provided landowners and producers the opportunity to visit about their concerns and to give thoughts on management of the aquifer. The NRD would prefer that landowners reach the goal to stabilize groundwater decline in the area on their own; if groundwater levels continue to drop over the next few years, regulations would need to be implemented. The 300 landowners who have certified acres in the decline area were personally invited as well as the public.

## IRRIGATION MANAGEMENT

### Suspension on Drilling New Wells & Expansion of Irrigated Acres

In 2006, CPNRD was placed in a suspension area when the Board adopted the *Rules and Regulations For Closing the Management Area to the Issuance of New Well Permits, Preventing the Expansion of Irrigated Acres and Increased or Expanded Uses of Groundwater for Other Beneficial Purposes*. The rules were necessary after the Nebraska Department of Natural Resources (NeDNR) designated the entire District as fully appropriated. The Plan has been amended several times and is now titled *Rules and Regulations for Groundwater Use in Fully and Over Appropriated Areas*. The rules and regulations were combined to form the *Nebraska Groundwater Management and Protection Act: General Provisions and Procedures for Enforcement*.

The board imposed a temporary suspension of drilling new wells within parts of the District in November 2003. The suspension allowed CPNRD and NeDNR to look over the conflicts between groundwater and surface water to determine if a problem exists. A study of CPNRD's surface and groundwater supplies was developed. In 2004, NeDNR indicated that the Platte River Basin was fully appropriated and over-appropriated upstream of Elm Creek. Changes were made so that existing surface and/or groundwater users would not be faced with less water supply. Wells not subject to the suspension included: wells pumping less than 50 gpm, replacement wells, dewatering wells pumping less than 90 days, and test hole wells. Variances were granted if determined that construction of a new well was necessary to alleviate an emergency situation involving provision of water for human consumption or upon other good cause shown. Public hearings were held throughout the district in 2003 to discuss the temporary suspension. Of the 450 in attendance, 237 responded to opinion surveys handed out at the hearings with 166 of those who responded were very opposed.

Three situations influenced the passing of the suspension. The first was the drought cycle that Nebraska was in, which exemplified the need to assess the water budget. Two other influences were the introduction of LB962

following a recommendation by the Water Policy Task Force; and unknown future requirements of the Platte River Recovery Implementation Program. Nebraska was required to offset any new depletions after July 1997 as part of the Program. If the State doesn't pick up their obligation, the NRDs or water users would be required to offset depletions from post-1997 wells by giving up part of their irrigated acres.

### QUANTITY MANAGEMENT PLANS

#### Water Policy & Funding Task Forces

In 2002, LB1003 established the Water Policy Task Force to address management and use of Nebraska's surface water and groundwater. Two CPNRD representatives were appointed: Ron Bishop, to represent the NRDs; and Dick Mercer, to represent the Middle Platte Basin. The Task Force presented its report to Governor Johanns in 2003, recommending that basic components of existing surface and groundwater law be left in place; but that Nebraska adopt a stronger, more proactive approach to the integrated management of surface water and hydrologically connected groundwater. Key goals were to address potential problems between groundwater and surface water users before conflicts arise and to manage the water resources of the State to sustain a balance between hydrologically connected water uses and supplies. The Legislature adopted LB962 allowing the state and the 23 NRDs to be proactive in anticipating and/or preventing conflicts between groundwater and surface water users. In 2004, NeDNR declared all or portions of 9 NRDs "fully appropriated." The Platte River Basin, above the Kearney Canal Diversion, North Platte River Basin, and South Platte River Basin were designated as over-appropriated.

In 2004, conclusions reached by the Governor's Water Policy Task Force led to the passage of LB962 and set the stage for a water management policy based on sustainability. LB517 created the Water Funding Task Force that included 16 members of the Nebraska Natural Resources Commission, 11 citizens appointed by Gov. Heineman, six state senators, and director of the NeDNR. CPNRD board members Dick Mercer and Mick Reynolds served as Task Force members.

Nebraska must also comply with the Republican River Compact, a 1943 agreement with Colorado and Kansas over water use in the river's basin. The agreement allocates 49% of the Republican River's water to Nebraska, 40% to Kansas and 11% to Colorado. Kansas long-accused Nebraska of violating the compact by allowing farmers to divert more than their legal share of the river's water for private use. The State of Kansas sued Nebraska asking for up to 300,000 acres permanently retired from irrigation and up to \$80M in damages for water use in 2006. In 2013, Special Master William J. Kayatta recommended Nebraska pay \$5.5M in damages without a massive shutdown as Kansas had requested; a victory worth more than \$100M annually to Nebraska's economy.

In 2013, the Force recommendations to the Legislature for a strategic, long-term funding plan for Nebraska's water projects. The Legislature and Governor Heineman approved funding to establish a permanent, stable funding source to ensure that Nebraska's water resources are managed effectively and efficiently. The Bill included creating a two-step application process for water projects, allocating an annual fund of \$50 million, and expanded the Commission to oversee the allocation of funds. Members spent five months conducting education sessions/tours and holding public meetings across the state where members gathered input and learned of water issues/funding challenges facing water users in Nebraska. Information gathered helped the group prioritize goals that led to five recommendations:

- Ensure that water projects funded through the Water Sustainability Fund demonstrate ability to contribute to the goals of water sustainability for the state by protecting the ability of future generations to meet their needs through various methods. These include increasing aquifer recharge, reducing aquifer depletion, increasing stream flow and remediating threats to drinking water.
- Contribute to multiple water supply management goals, such as flood control, agricultural use, municipal and industrial uses, recreational benefits, wildlife habitat, conservation and preservation of water resources.
- Provide increased water productivity and enhancing water quality.
- Use the most cost-effective solutions available.
- Comply with compacts, decrees, and other state contracts and agreements.

#### Fully and Over Appropriated Designations

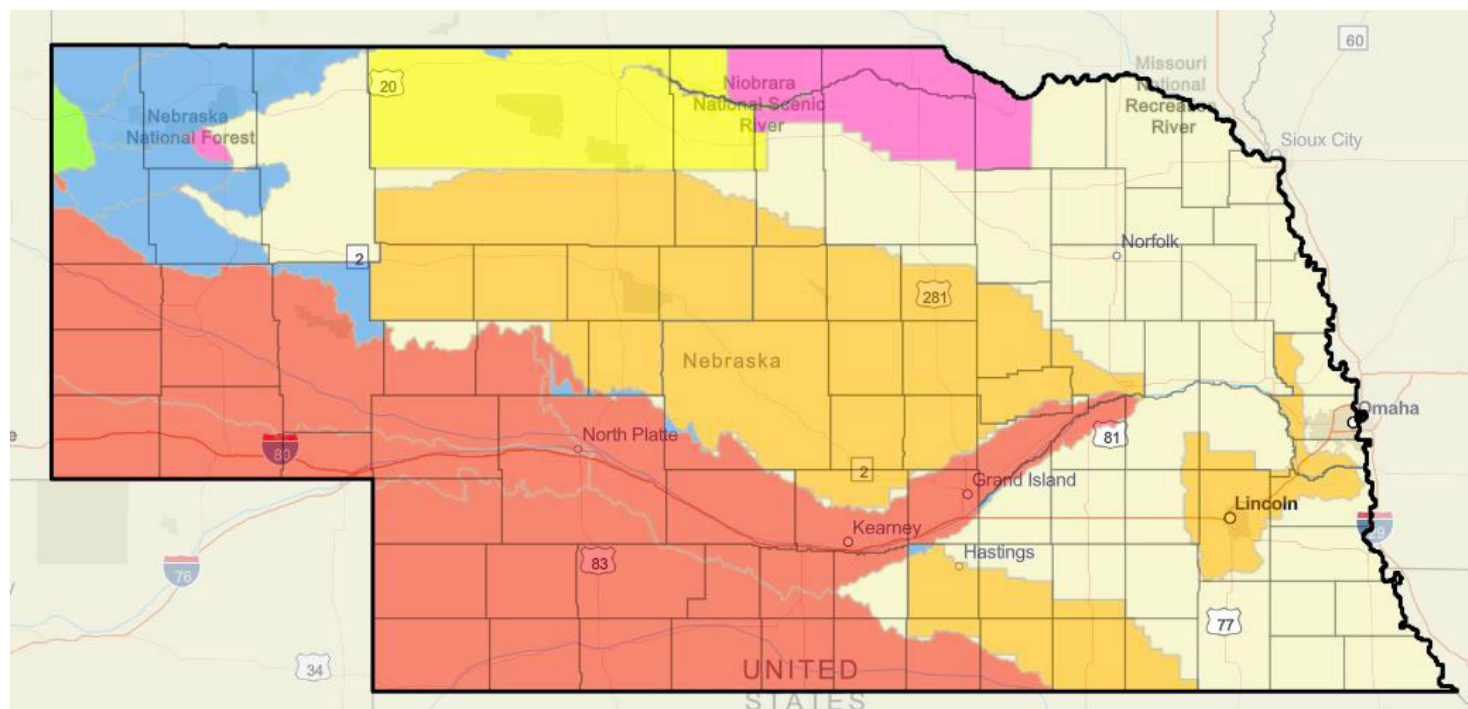
A basin is determined to be fully appropriated if further development were to occur, the balance between water use and water supplies could not be sustained. An over-appropriated basin is one where the extent of development is not sustainable over the long-term, or that the already permitted uses are in excess of what can be supported by the water supply. As result of the designations, NeDNR placed the following stays on new uses of surface and ground-



## WATER QUANTITY

water: immediate stay on any new natural-flow, storage, or storage-use appropriations in the whole of the OA basins, and a stay on new water well construction permits in all areas within which surface water and groundwater are hydrologically connected. Stays are imposed on construction of new water wells unless such construction commenced prior to the effective date of the stay or a valid construction permit for a water well had been previously obtained from an NRD; and on use of an existing water well to increase the number of acres historically irrigated. Stays were placed on increases through use of an existing surface water right of the number of acres historically irrigated.

**FIGURE 14. STATEWIDE IRRIGATION RESTRICTIONS**



### Legend

#### Restrictions of Surface Water Appropriations

##### Restrictions on Surface Water Appropriations

Niobrara Scenic River Designation



Upper Niobrara Compact Restrictions



Fully Appropriated or Overappropriated Stays



Moratoriums



IMP Control - Surface Water Acres Allowed



IMP Control



Temporary Stays



All additional stays became effective September 2004 and remains in effect until NeDNR determines that the affected basins are not OA or the stays expire pursuant to the provisions of LB962. In 2014, the Water Sustainability Fund (WSF) and the Nebraska Natural Resources Commission were restructured to emphasize water sustainability. LB1098 required the WSF be used to contribute to water supply management goals, fund municipal sewer infrastructure projects, increase water productivity, enhance water quality and comply with interstate compacts or other agreements. Funds were distributed equitably throughout the state with no more than 10% dedicated annually to sewer infrastructure projects.

Three Commission members were appointed by the governor and 13 elected to represent river basins across the state. LB1098 added 11 members appointed by the governor to represent: agribusiness; agriculture; groundwater irrigators, irrigation districts, manufacturing, metropolitan utilities districts, municipal water users, outdoor recreation users, public power districts, range livestock owners, surface water irrigators and wildlife conservation. The bill required basins operating under an IMP to develop a basinwide plan for any areas with hydrologically connected water supplies. The Legislature's Appropriations Committee conducts a biennial analysis of the WSF.

#### Integrated Management Plans - Basin-Wide Plan

CPNRD participated in the development of the basin-wide plan for the Platte Basin. In 2010, the NeDNR held an annual review of the basin IMPs. The revised basin IMP became effective in 2012 to set objectives to incrementally reduce the difference between current and fully appropriated levels of development within the basin. Although goals

are being met, the original plan required the same parties to develop a second increment within 10 years after the adoption of the first increment basin-wide plan. From 2013-2019, Twin Platte and Tri-Basin NRDs purchased up to 1,500/2,000 AF of water annually from CPNRD to provide flows back to the Platte River from the Dawson County canals. Remaining flows were sold to the Platte River Recovery Implementation Program.

In July 2019, CPNRD approved the second increment *Basin-Wide Plan for Joint Integrated Water Resources Management of OA Portions of the Platte River Basin*, developed by the Platte Basin NRDs (North Platte, South Platte, Central Platte, Twin Platte, Tri-Basin, and NeDNR. The geographic area of the Plan is the extent of the Nebraska portion of the Platte River surface water basin beginning at the Nebraska-Wyoming State line and ending at the Kearney Canal Diversion, at Elm Creek. The Plan includes: 1) introduction; 2) planning process; 3) activities of the first increment; 4) goals, objectives, and action items; 5) monitoring. The plan does not include controls. Information sessions/public hearings were held on both the IMP and Basin-Wide plans on July 15, 2019, with testimony submitted by CNPPID and NPPD. After reviewing the testimony provided, CPNRD and NeDNR concluded that amendments to the proposed plans were not necessary. Both plans were effective on September 11, 2019.

### **Integrated Management Plan - Central Platte NRD/Nebraska Department of Natural Resources**

In 2006, NeDNR started making annual determinations of basins not previously designated as fully appropriated (FA) or over-appropriated (OA) to see if they had become fully appropriated. CPNRD was designated as OA from Elm Creek west and the rest of the District was designated as FA. NRD directors, staff and NeDNR worked with stakeholders to develop an Integrated Management Plan.

CPNRD and the NeDNR began working on the individual Integrated Management Plan (IMP) in 2005 by meeting with Stakeholders to educate them on requirements set by NeDNR and the issues to be considered in developing the Plan; including surface and groundwater interests such as irrigators, city utilities, power districts, economic development and banking representatives. The draft plan was finished in 2006 and was originally to be in place within 3-5 years, however, an extension was approved to complete the Plan in 2009 to allow NRDs to wait for the Basin-Wide plans to be completed. In May 2009, the IMP was approved and the NRD's Rules & Regulations were revised to correlate with the requirements in the IMP.

In July 2019, the second increment IMP was approved by the CPNRD board with the existing groundwater controls: 1) groundwater moratorium 2) certification of groundwater uses 3) groundwater variances 4) groundwater transfers and 5) municipal and industrial accounting. NeDNR will continue the existing surface water controls: (1) maintaining the moratorium on new surface water appropriations and on expanded surface water uses (2) transfers of appropriations are subject to statutory criteria and NeDNR rules (3) continuation of surface water administration and monitoring of use of surface water (4) no additional requirements of surface water appropriators to use additional conservation measures (5) no other reasonable restrictions on surface water use.

### **Drought Mitigation**

In February 2018, JEO Consulting Group was hired to develop a Drought Management Plan. The objectives are to identify District vulnerabilities, create a methodology for monitoring drought conditions, and identify processes to respond to and manage the impacts of future drought events. This project will assist CPNRD in water resources management and lead to a more sustainable and stable water supply for all users across the district. The NRD received a Water Sustainability Fund grant from the Nebraska Natural Resources Commission to develop the plan. A Drought Tournament was held in July 2019 for the drought mitigation planning. The NRD is currently working on the Extreme Event Reporter (GIS-based tools).

### **Certification of Irrigated Acres**

All irrigated acres are certified, including variances and water bank transactions. In 2006, CPNRD began certifying irrigated acres by mailing out packets to landowners in Custer, Dawson and Frontier counties. Landowners were provided aerial maps and the number of acres that CPNRD had on record as irrigated taken from infrared imagery. If a landowner disagreed with the number of acres provided, they were required to show proof of their claims by obtaining records from their local FSA office including an aerial photo and a printout of irrigated land. NRD staff took appointments on location. Most changes made were less than 10 acres while 1/3 of the fields determined as irrigated needed no changes at all. The deadline to certify irrigated acres was set for December 31, 2014.

At the end of 2021, the NRD had a total of 1,029,230 irrigated acres of which 937,488 acres are groundwater only; 14,562 acres are surface water only and 77,180 acres are co-mingled use. The overall irrigated acres base increased 12,641 acres from 2010 to 2021.

**Changes to Rules & Regulations**

In 2017, the two major changes were cease and desist enforcement procedures and removal of the 2 in 10 irrigation rule. In October 2018, the 180-day temporary stay implemented to update the Rules and Regulations for the fully and over-appropriated areas was lifted. During the stay, the acre transfer tool was updated and the new depletion numbers were implemented. Effective November 1, 2018: new language was added regarding wells and a timeline for staff to receive transfer applications was established for September 1 - March 1. The number of years transfers are not allowed within a GWMA where declines are more than the 25% allowable level was increased from two years to five years.

**Transfers of Irrigated Acres**

Landowners may request a change in the location of certified irrigated acres (transfer) provided that the same amount of water that would be depleted from the river over a 50-year period from consumptive use of ground water withdrawals are retired from use (offset); and the offset occurs at the same time, rate, and location as the depletion identified by the COHYST model. The location of the offset is considered the same as the depletion if the offset is west of the depletion, no more than 1 mile east of north/south line drawn along eastern edge of area causing the new depletion, or within the same basin of influence. Offsets must be at least 1 acre and excess water would accrue to the benefit of streamflow. For calendar year 2021, CPNRD allowed 119 transfers. The certified acre total to new irrigated lands was 934 acres; which required offsets of 872 acres. 366 groundwater acres were retired. Each transfer resulted in no net increase in stream depletions when computed using the CIR offset calculator developed from COHYST.

**Transfer Website**

In 2007, CPNRD launched the first irrigation certification website in the state, developed by GIS Workshop. It allows public access to documents showing landowners number of irrigated acres, infrared imagery taken by CPNRD, and registered wells. Users may search for specific parcels of land by using the clickable map interface or by searching the site by landowner/tenant name, legal description or field ID number. The site allows landowners to view and print aerial photos of land development and improvements since 2003. The website was overhauled again in 2011 and 2015 to add new search options, access drawing tools to create proposed transfer maps, and access to print maps. The public and staff sites are linked and updated simultaneously. Website address: [cpnrd.gisworkshop.com](http://cpnrd.gisworkshop.com).

**Irrigation Violations**

In 2022, 50 landowners or producers irrigated land that wasn't certified or approved for irrigation through transfers. A Polk County landowner has three offenses for irrigating non-certified irrigated acres and will be sent Cease and Desist Order on the latest violation. The landowner has violated a prior Cease and Desist Order and a court order to cease irrigation until getting into compliance with CPNRD's Rules and Regulations. That individual has a second court hearing in August for the unresolved violations.

**Interbasin Transfer Application A-19594**

In July 2018, the board filed a formal objection to NeDNR concerning an interbasin transfer application submitted by CNPPID to divert water from the Platte River to the Republican River. In 2020, NeDNR dismissed the interbasin transfer request. NeDNR found that CNPPID cannot be a valid applicant or an appropriator under the application because neither CNPPID nor any of its customers will be making beneficial use of the water for compact compliance purposes in the Republican River Basin. The application was refiled in November 2020.

**Irrigation Well Registration**

Staff verifies and corrects well registrations within the NRD. Under Neb Rev Stat. §46-254, 263, & 266; wells that aren't properly registered are "illegal wells" and considered a Class 4 criminal misdemeanor violation. The penalty is a \$100-\$500 fine/conviction. Another consequence is a court order to discontinue pumping. Often wells are part of property inventory when ownership changes hands and it becomes the new property owner's responsibility to verify the registration. NeDNR charges \$110 to register each well. There is no charge from the CPNRD or the state to correct locations or change ownership information.

In 2021, the Nebraska Department of Environment and Energy recently launched the Nebraska Groundwater Quality Clearinghouse website with over 1.6 million sample results from 33,000 irrigation well locations taken by the NRDs. Key features of the map are well locations, nitrate measurements, along with 281 minerals and chemicals whose well compositions were analyzed. The map also showcases aquifer locations, topographic regions and bedrock geology. Farmers can check the composition of existing groundwater for chemical content to see how much fertilizer they will need and gauge which locations have land suitable for raising livestock. Website: [clearinghouse.nebraska.gov](http://clearinghouse.nebraska.gov)



### Water Well Permits

Permits are required before water wells are drilled. In 1986, state law began requiring NRDs to have a permit program for new wells drilled or existing wells modified in management areas. CPNRD started issuing permits in 1988, assuring landowners and the NRD that spacing requirements for management areas are maintained. New irrigation wells cannot be drilled within 600' of an existing irrigation well not owned or controlled by the applicant, or placed within 1,000' of an industrial or municipal well, and neither can be drilled within 1,000' of any registered irrigation well. CPNRD's plan calls for a 900' spacing if groundwater declines trigger a Phase II designation in a given management area; 1,200' spacing in Phase III; 1,500' spacing in Phase IV; and 1,800' spacing in Phase V. NRDs have the authority to provide a permit and define what a replacement well is. CPNRD requires a permit to drill replacement wells, an additional requirement to well registration State requirements. Replacement wells must be registered the same as other water wells except that the timing may be different. Permit fee is \$50 and expires one year from the date of approval. In 2020, there were 55 well permits issued: 11 Buffalo, 1 Custer, 11 Dawson, 0 Frontier, 14 Hall, 1 Hamilton, 3 Howard, 7 Merrick, 2 Nance, 1 Platte, 4 Polk.

### PROJECTS AND RESEARCH

#### Cooperative Hydrology Study (COHYST)

In 1997, Nebraska Governor Ben Nelson and governors of Wyoming and Colorado signed the Platte River Recovery Implementation Program (PRRIP) with the U.S. Department of Interior. Questions arose about potential impacts on activities along the Platte and it was apparent that data wasn't available to use. The Cooperative Hydrology Study (COHYST) was developed with funding from NET, CPNRD, state/local agencies, water and environmental organizations. NET awarded \$500,000 the first year and \$450,000 the second/third years. COHYST improves understanding of the hydrological and geological conditions in the Basin and provides scientifically supportable databases, analyses, and detailed computer groundwater models to more accurately identify and quantify the relationship between the Platte River and adjacent groundwater resources. It provides information to develop a "new depletions" plan for flows in the central stretch of the Platte River, and assists Nebraska in analyzing proposed activities for the PRRIP. COHYST also provides the Platte Basin NRDs appropriate management data as a basis to develop policy and procedures related to groundwater and surface water.

The groundwater models were completed in 2004 and peer reviewed by Eagle Resources, North Carolina. A team of senior hydrologists designed the database as it was developed. The databases quantify existing groundwater use, river and aquifer data in the Platte River Basin to provide better understanding of the groundwater flow system, inter-relationships between groundwater and surface water, geology and other characteristics of the aquifer.

The models represent real-world features including rivers, streams, groundwater aquifers, groundwater pumping, or canals as a set of mathematical equations; which reproduce observed water levels and stream flows and are tools to predict how changes to or "stresses" on the groundwater system may impact flows in the Platte River. Stresses are additions and subtractions of water from the groundwater system, including pumping from wells, evapotranspiration by vegetation, aquifer storage/recovery, flow to drains, recharge from precipitation, deep percolation from irrigation, enhanced recharge due to certain land uses, recharge from canal/lateral leakage, and recharge from lakes and reservoirs. The models predict how water supply or proposed conservation projects affect groundwater levels and river flows. Changes in stream flow are estimated as a result of new irrigated acres between 1997-2005 for reaches of the Platte River above Elm Creek using a 50-year average.

**FIGURE 15. COHYST Reaches by NRD**

NRD	New GW irrigated acres 1997-2005	Average Stream Flow Change (AF)
North Platte	15,300	8,000
South Platte	16,700	700
Twin Platte	53,500	7,700
Central Platte	74,500	3,400
Tri-Basin	33,200	5,000

Estimates are used in the Basin Plan as targets for stream flow depletions needed to be offset to get back to 1997 level of development. Phase I work completed a overall water budget for the new COHYST area. Phase II developed water budget analysis tools to manage ground and surface water resources in the Platte Basin. Phase III developed sub-regional models for focused water management areas. Sponsors: CNPPID; CPNRD, TPNRD, TBNRD; NGPC, NPPD. In 2012, the Sponsors Group updated land use acres from 2006-2010 with Riverside from Colorado. Basic acreage data sets were updated to look at future depletions. The new

data sets were extensive including 27 land types and uses; and previous land use sets put together in the 1950s. In 2013, Model calibration was completed on Watershed Model (CROPSIM), Surface Water Model (STELLA) and Groundwater Model (MODFLOW) were integrated to

simulate the hydrologic cycle. The simulation compares water budget fluxes to data-driven calibration targets. The models are used for percentage depletion maps, conjunctive water management and to determine real effects of operating the irrigation canals. In 2014, the Integrated Model results for the watershed, surface water and groundwater models were within 8% difference for calculated gage flows versus historic gage flows. Minor changes made:

**Watershed Model:** soil information and weather data from climate stations were added.

**Surface Water:** seepage return from Sutherland Reservoir, seepage from Lake McConaughy, addition of runoff and irrigation demands; storage/natural flow and environmental storage account.

**Groundwater:** match evapotranspiration cells to expected locations, adjusted elevations, routed seepage to new discharge point, use groundwater model outputs for Lake McConaughy seepage.

2016 Work Plan: completed Graphical User Interface (GUI), final model improvements, recalibrating and project oversight. Watershed model reconstructed to use actual monthly data from pumping and recharge records added. Surface water model (STELLA) mimics actual farming practices including diversions, return flows and water releases. Groundwater model modified representation of evapotranspiration. Integrated model calibrated through a three-step process using results from the watershed model and available measured data to construct stand alone versions of the groundwater and surface water models; adjusted models to match historical flows and water levels; and modified the watershed model to address problems identified in both models.

2017 Work Plan: CPNRD's water quality database was used to replicate 2002 dry river conditions. The Conservation Study developed for the Platte Basin IMP to input no-till and other conservation activities compared conditions back to the 1950s was utilized. Olsson reported that the Hydrogeologic Evaluation and Subregional Groundwater Modeling results showed excess flows from the Dawson County canals were returned to the Platte River more quickly than anticipated. The subregional model covers 3% of the COHYST area allowing for a more detailed and complex evaluation of how water moves through the river and aquifer system. Several subregional models are being conducted in Nebraska.

In May 2018, a 180-day temporary stay on new wells and new irrigated acres allowed staff to update the acre-transfer tool by implementing the new depletion numbers determined by COHYST for the Quantity Management Program.

During the spring of 2020, CPNRD partnered with NRCS to complete a survey of tillage practices and crop types. NRD staff visually inspected and recorded data for approximately 500 fields in multiple counties. Tillage practices were identified based upon criteria set by the NRCS. Tillage and crop type data is necessary to update various input parameters in the COHYST watershed model.

### Hydrology Projects

COHYST, Canal excess flow diversions and surface water transfers, UNL ET study to measure crop ET and develop Kc values, UNL satellite ET, POAC technical studies, Hydrogeology frame work study, Geo-Cloud with CSD, Conjunctive Water Management Study, Canal recharge ponds analysis, Platte River Recovery Implementation Program, Airborne Electromagnetic (AEM) survey, USGS gaging stations and observation wells, Unsaturated zone recharge study with USGS and SFSU, UNL weather stations, and Pumped database collection.

### Conjunctive Water Management Study

The Platte River Conjunctive Water Management Study is an ongoing project studying surface and groundwater management options for the Dawson County canals with the goal of ensuring that supplies in the Platte Basin are optimized and managed efficiently with maximum benefits in a manner consistent with State and local policies. Studies and analysis for irrigation canal projects are conducted with COHYST modeling tool components: rainfall, pumping, surface water applied, total ET, recharge, runoff and acreage.

CPNRD provides technical assistance in evaluation of conjunctive management scenarios for portions of Dawson and Buffalo counties in the central Platte Valley. A conjunctive water resource management plan is being developed to optimize availability of water to groundwater and surface water users who are within both the boundaries of the NRD and the area within which NPPD delivers natural flow and storage water for surface water irrigation systems. The NeDNR, CPNRD and NPPD have met with the consultants to review the management scenarios results.

## WATER QUANTITY PROGRAMS

### Water Banking Program

CPNRD's Water Banking Policy was approved in 2007 defining the process of how a water bank works. Through the water banking program, the NRD acquires water rights from landowners. For every acre-foot (AF) of water that impacts the river that the NRD can acquire, there's that much less regulation and cutback CPNRD would have to impose. In January 2007, the board approved the first water bank transaction in the district by approving a variance request and the deposit of 2.4 AF per year into the water bank (donated by Jim Bendfeldt). In 2022, an agreement was approved to add a municipal component to the water bank for managed development of new uses of water for municipal and industrial uses by the cities within the District. CPNRD will administer the water bank transactions that utilize a system for crediting retired ground and surface water uses to be deposited in the water bank, and may be later withdrawn (debited) for new water uses by the cities. Effective 2025, municipalities are required to offset their new uses, this agreement allows them to be proactive in finding water for economic growth when needed.

In 2012, the board increased the rate to pay for water rights up to \$8,000/AF of depletion to the river. Water rights purchased are deposited into the NRD's Water Bank. The COHYST model has been useful in determining the AF of depletions CPNRD needs to reduce to bring the Platte River back to 1997 levels. After reaching the 1997 level, the OA area west of Elm Creek will need additional water added to the Platte in order to bring it back to a FA status. The current best estimate of post-1997 depletions to the Platte River due to changes in groundwater irrigated acres within the entire District between 1997-2005 based on the 2008 COHYST Report on stream depletion:

YEAR	DEPLETION VOLUME (AF)	YEAR	DEPLETION VOLUME (AF)
2019	14,000	2025	14,600
2020	14,100	2026	14,700
2021	14,200	2027	14,800
2022	14,300	2028	14,900
2023	14,400	2029	15,000
2024	14,500		

### Over-Appropriated Area Retirements

In 2015, the NRD acquired one perpetual conservation easement on water rights in Dawson County with estimated accretion to the Platte River from groundwater retirements using the latest COHYST offset calculator at 61.46 AF. By the close of 2021, the CPNRD Water Bank had a balance of 2,122 acre-feet of groundwater rights available for offset in the district and 2,665 ac-feet of surface water rights available for offset in the over-appropriated area.

### Excess Flows

Excess Platte River flows were diverted by Cozad Canal, Thirty Mile Canal, and South Side Irrigation canals in 2011, 2013, 2014, 2015, 2016, 2017, 2018, 2019. Total diverted by the three canals was 89,590 AF and the computed recharge was 40,512 AF. In 2020, 2,950 AF (net diversion) of water was diverted for recharge through the canals.

### Rehabilitation of Surface Water Canals

The NRD partnered with four canal companies in Dawson County with agreements to buy one canal and rehabilitate three canals. As a Platte Basin Habitat Enhancement/Coalition Program project, grants from NeDNR (40%) and the Nebraska Environmental Trust (20%) paid 60% of project costs. CPNRD shared the remaining 40% of project costs with the canal companies. The main benefits include: groundwater recharge to enhance surface water and ground water supplies, protect water quality and help CPNRD move closer to a FA status. The rehabilitations also provide enhanced flows to the Platte River by diverting and retiming excess flows to the river; returning natural flow irrigation rights to the river; and help meet requirements of the PRRIP agreement and LB962 to return the Platte River to its 1997 level of use.

**Six Mile Canal** In 2010, CPNRD purchased Six Mile Canal Company in Gothenburg, the first-ever buyout of a surface water irrigation canal in Nebraska. The agreement provided funding for farmers to convert to ground-water irrigation, increase Platte River flows to protect endangered species, put more land into production, and

improve public safety. COHYST data shows that the closure of the ditch and elimination of direct river diversions resulted in an annual savings of 130 AF of water to the river even with the same acres irrigated with groundwater. The water rights were deposited in CPNRD's Water Bank to use for the IMP schedule to bring the OA area back to a fully appropriated status sooner. Six Mile Canal had been in operation diverting Platte River water since 1894, withdrawing an average of 2,377 AF of water annually.

**Cozad Canal** Cozad Canal began diverting Platte River water in 1894 with water rights to irrigate over 25,000 acres of land between Gothenburg and Lexington. In 2012, CPNRD partnered with Cozad Ditch Co. to manage the canal and to lease surface water. Construction began in 2013. The massive rehabilitation was completed in three phases (2 years): 152 acres (27 miles) cleared; 21 miles graded; 13 new structures and 4 farm crossings, 6 check structures, an underdrain structure, a siphon and a county road wing wall replacement. The Spring Creek Wasteway Structure included: excavation of Spring Creek Channel (1,415 LF), 22 walkway modifications and extensions, and a SCADA automated monitoring system of Rubicon Gates with 4 flume gates and 7 slip meters. Total project cost was \$6.6 million. Cozad Canal has the potential to provide 6,700 AF of water savings annually. To date, this partnership has resulted in diversions of excess flow totaling 4,365 AF in 2011; 4,170 AF in 2015; 3,393 in 2016; and 436 AF in 2017. The groundwater return back to the Platte River is computed to be 1,300 AF for 2011-2018.

**Thirty Mile Irrigation District** Thirty Mile Canal was constructed in 1927 and dedicated in July 1928 with water rights for 15,000 acres. In 2012, CPNRD partnered with Thirty Mile Canal Co. for \$1.9M for half of the company's water rights, and half value of buildings and equipment. Construction included: replaced/installed 8 bridges, 8 check structures, 9 drop structures, 3 pipe roadway crossings, 2 pipe laterals, 4 miscellaneous structures, 5 flow measurement devices and structures, and installed rip rap. In 2013, the canal became Thirty Mile Irrigation District and is a political sub-division of the State of Nebraska. In 2014, an interlocal agreement created the CPNRD-TMID Stream Flow Enhancement Alliance. The agreement outlines maintenance and delivery of surface water for both irrigation and groundwater recharge. Total project cost was \$5 million. Thirty Mile ID provides up to 6,000 AF of water savings annually. To date, this partnership has resulted in diversions of excess flow totaling 35,000 AF; resulting in groundwater return of 6,000 AF back to the Platte River for 2011-2018. Construction of the NRD field office and a storage shop at the TMID was completed in 2021. CPNRD's resources conservationist and precision conservation specialist have offices in the new building. Office address: 75887 Road 414, Cozad NE 69130

**Orchard Alfalfa Canal** Orchard Alfalfa Canal's water right was approved in 1898 with water rights to irrigate 4,326 acres of land. CPNRD and Southside Irrigation Company signed a management-lease agreement in 2012 and the construction began in 2013. CPNRD assists in operations, pays half of operations and maintenance costs and receives half of the revenues. **Phase I:** replaced seven county road box culverts

**Phase II:** cleared 51 acres; 60,200 LF of grading; irrigation turnout structure; replaced 13 canal structures; removed 3 farm crossings

**Phase III:** diversion structure was replaced; installed slide gate with electric actuators on existing overflow structure; rip rap overflow structure for high flows. Total project cost \$4.7 million. A tour and rededication ceremony was held in August 2015. The canal provides up to 1,500 AF of water savings annually. To date, this partnership has resulted in diversions of excess flow totaling 15,000 AF; and 2,600 AF in groundwater return back to the Platte River for 2011-2018.

The canals will continue to be used for surface water irrigation delivery; as well as for retiming Platte River flows to enhance target flows for endangered species. The retiming of Platte River flows will be accomplished by diverting flows excess to target flows to recharge the groundwater system or by transferring surface water irrigation rights to in stream use, which will be diverted from the canal back to the river. Water rights for diverting excess flow for recharge were granted to the canal systems by NeDNR and temporary transfer permits for returning surface water to the river for in stream use have been approved.

### 30-Year Acreage Reserve Program

In January 2021, a section was added to CPNRD's Ground Water Management Program Rules and Regulations titled *Section B-Rule 8: 30-Year Acreage Reserve Program-Participation Eligibility and Rules*. The 30-Year Acreage Reserve Program will provide a long-term solution in protecting surface water rights. Irrigation districts will sign up for the conservation program and surface water users will have the option to opt-in or opt-out of the program annually. A public hearing was held with minor amendments entered into record at the hearing. The Program was developed to

ensure that supplies in the Platte Basin are optimized and managed efficiently with maximum benefits and to meet water management obligations for the Basin-Wide Plan for Joint Integrated Water Resources Management of Over-Appropriated Portions of the Platte River Basin, CPNRD's Integrated Management Plan, and Nebraska's New Depletion Plan for the Platte River Recovery Implementation Program. The Program took effect on March 4, 2021.

**Surface Water Exchange Pilot Program**

In September 2018, NeDNR approved the transfer of 14,251 AF of water to the Environmental Account. The transfer is part of CPNRD's pilot surface water exchange agreement with the CNPPID. During the 2018 irrigation season, the NRD agreed not to deliver surface water to 25,491 acres from Cozad, Thirty Mile and Orchard Alfalfa canals in exchange for CNPPID crediting the Environmental Account with the resulting additional storage water in Lake McConaughy. In August 2019, the recharge agreement changed the way CPNRD is paid for groundwater recharge via seepage through the canals in the non-irrigation season. The total amount diverted is measured by the NRD using automated measuring and recording gates and adjusted; by subtracting any deliveries or releases made and recorded by the irrigation district. The non-irrigation season begins when the canals stop releasing water for irrigation and end when the canals begin releasing water for irrigation as determined by CPNRD. In 2021, the unused storage water transferred to the Environmental Account totaled 14,208 AF.

In June 2021, two surface water exchange agreements for the 2021 irrigation season were signed by CNPPID, PRRIP and CPNRD and forwarded to the Nebraska Community Foundation for signatures, to develop a multi-year agreement instead of an annual agreement for the water from the three surface water irrigation districts the NRD partners with. The water allows the NRD to meet IMP goals and sell the portion we do not need for compliance to the PRRIP to assist them in meeting their water goals. The agreement allows the NRD to store the water in Lake McConaughy as controllable water that is added to the Environmental Account for PRRIP use.

**Groundwater Exchange Program**

In 2016, CPNRD launched a Groundwater Exchange (GE) pilot program. The concept of the GE was established to allow producers to buy or sell water on a temporary leasing basis for the upcoming irrigation season. Certified groundwater use on irrigated acres such as pivot corners, irregularly-shaped fields or full sections were sold. Buyers purchased water to improve or add to their currently certified groundwater use or to increase streamflow. The GE was the first to allow temporary leasing of groundwater. CPNRD's Rules and Regulations regarding transfers of groundwater irrigated acres were built into the computer program. For purposes of the GE, a 'water right' is the certified groundwater use on irrigated acres. Bids were based on consumptive use and streamflow depletion to the Platte River. Pre-approved buyers and sellers went online from March 21-25 to place asking price to temporarily lease water or place bids to buy water for the 2016 growing season. Staff verified water rights to be sold or bought and provided buyers and sellers an ID number to be used during the bidding process.

The first transactions were approved on April 1, 2016. Sellers placed 30 locations online for leasing, with 6 buyers placing bids: 3 for irrigation and 3 for streamflow rights. The GE matched the three irrigation bids with sellers in the eastern area of the District. In June 2016, the board approved a \$105,000 contract with National Economic Research Associates (NERA) and the NeDNR to design/manage a second Exchange that included the Loup Basin influence. NeDNR and CPNRD shared 50% of the cost. The second year had 25 sellers and 5 buyers submitting bids. Half of the sellers received bids that matched with a buyer. Bids made for transactions along the Platte River west of Elm Creek ranged from \$8.14 to \$94.21/AF; while bids east of Elm Creek ranged from \$30.12 to \$99.88/AF. Bids within the Loup Basin influence of the District ranged from \$48.84 to \$121.07/AF.

**CNPPID Conjunctive Management Offer**

A joint Middle Platte Basin Water Resources subcommittee developed a surface water model and public opinion survey to understand the public's attitude and perceptions about water usage in Nebraska. In 2011, Central Platte and Twin Platte NRDs hired a consultant to conduct a survey from Lake McConaughy to Chapman with the overall goal to provide water to all water users. In 2012, a special joint board meeting was held with both NRD boards who voted unanimously to approve an offer to Central Nebraska Public Power and Irrigation District (CNPPID) to assist them financially at converting their surface water irrigation project to a groundwater irrigation project and recharge program. Since 75% of users in CNPPID's system had irrigation wells used during drought conditions, the proposal would've allowed landowners to rely totally on groundwater and use surface water for recharge. CNPPID's board took the proposal under advisement. In 2013, findings of the pre-feasibility study were presented at NARD's annual conference. The additional modeling analysis used the OPSTUDY to address concerns identified by CNPPID and

showed the project would provide beneficial flows for water management. It also addressed how groundwater recharge protects water supplies/water quality by increasing hydroelectric power generation on NPPD/CNPPID systems in central Nebraska and that CNPPID would see recreational benefits for Lake McConaughy and other lakes in the system. The next step is to work with CNPPID to address an in-depth study of the concept and continue working towards solutions for all water users in Nebraska.

### **Schroeder Property Purchase for Groundwater Recharge**

In March 2018, the NRD purchased 157.4 acres of groundwater irrigated land located 6 miles southeast of Cozad along Hwy 21 and 1/2 mile south of the Platte River for \$915,000. The purchase gives several options to earn Platte River credits by providing recharge through the retirement of irrigated acres, transferring water from the South Side Irrigation District canal, and directly discharging flows into the river from an adjacent property. In August 2019, JEO Consulting was selected to evaluate management alternatives for the property in the amount of \$109,620. Management options to maximize the hydrologic benefits for the property were presented to the Water Utilization Committee in 2022. The Board approved notifying the current renter that the property will be leased as dryland to retire the irrigated acres and gain credit for 107 acre-feet (AF) of water back to the Platte River starting in 2023. The Water Utilization Committee will review and determine which of the management options presented will best meet requirements of the Integrated Management Plan, the Basin-Wide Plan for Integrated Water Resources Management for over-appropriated areas in the Platte River Basin, and Nebraska's New Depletions Plan.

### **Central Nebraska Irrigation Project**

In 2018, the NRD began collaborating with the Central Nebraska Irrigation Project to provide producers the opportunity to implement water conservation equipment including the Arable Mark field-level weather and crop monitoring device, pivot telemetry and flow meters. In 2020, ten additional producers enrolled to utilize the three primary components for a total of 50 enrolled. Of those 50 producers, 21 opted to incorporate soil-moisture capacitance probes into their operation. 2020 was the last growing season budgeted for the project. Partners: The Nature Conservancy, Nestlé-Purina and Cargill.

## **DATA COLLECTION**

### **Airborne Electromagnetic (AEM) Survey (2018)**

AquaGeo Frameworks conducted the AEM survey providing CPNRD with improved water table and geological data to determine where: additional wells may be drilled, vadose zone/recharge monitoring are needed and water table boundaries. AEMs are conducted by helicopter and cover large areas quickly with minimal impacts to local activities and the environment. 3-D maps produced by integrating airborne geophysics with other information provide tools for locating local features of the aquifer system important to water managers. Maps are combined with water table elevation maps to provide geometry of the aquifer including locations of most saturated thickness, heterogeneity of aquifer materials, recharge zones, lithologic barriers to groundwater flow and connections to the surface water system. AquaGeo did three flights per day at 100-150' above ground. Data was collected every 100' compared to test-holes that provide data every six miles. Maps indicate where preferential flow paths may exist to understand base flow to streams and interpret water quality samples in relation to the various stresses in the system. Data is used to site wells on focused-recharge areas, facility construction and areas of interest for impact to the aquifer and predictive analysis of management scenarios for groundwater models. Total project cost was \$966,000.

### **ArcGIS**

CPNRD staff uses ArcGIS Solutions Platform to collect, analyze, and manage data collected in the field. Progress maps are used for nitrate sampling, chemigation, and static water levels.

### **Evapotranspiration Map**

An agreement with UNL was extended for \$64,127 and \$20,000 to fund a graduate student. The evapotranspiration research uses Mapping ET with high resolution and internalized calibration (METRIC) algorithms and Earth Engine ET Flux (EEFlux). The project quantified ET by processing Landsat 7/8 images for 2015 and combined them with all processed years for usable products for planning, managing, and regulating groundwater resources in CPNRD.

### **GeoCloud Database**

The project collects airborne geomagnetic imagery with the intention to correlate that data with sub-surface geology and hydrogeology. The project was initiated as a joint effort from 2016-2020 with Lewis and Clark, Lower Elkhorn, Lower Platte North, Lower Platte South, Nemaha, Papio-Missouri River, Lower Loup, Upper Elkhorn and

Twin Platte NRDs; USGS, Aqua Geo Frameworks, and University of Nebraska's Conservation and Survey Division. The project received \$247,437.60 from the Nebraska Natural Resources Commission. CPNRD approved to extend the agreement and continue participating through 2027 in the amount of \$12,000.

### **Groundwater Evaluation Toolkit (GET)**

In 2017, Olsson was hired to develop a Groundwater Evaluation Toolkit (GET) for 'real-time' tracking of water recharged to the aquifer in the amount of \$98,500, the Platte River Recovery Implementation Program funded half of the cost. The model tracks flows on a cell-by-cell basis to provide specific monthly accounting of water returned back to the Platte River. GET enabled staff to run scenarios to track water flows back to the river and provides access to the subregional models for Thirty Mile, Southside and Cozad canals.

### **LiDAR**

CPNRD participated in Light Detection and Ranging (LiDAR) for district-wide coverage of topographic elevation developed from aerial radar detection. Data was collected November 2012 to March 2013, with results available for use in August 2013. Other partners to collect statewide data: Lower Platte North, Twin Platte, Lower Loup, North Platte and Middle Niobrara NRDs; NeDNR, NDEQ and NRCS. CPNRD's cost was \$40,000 for Custer County.

### **Magnetic Resonance Sounding**

The NET supported a three-year project using a Magnetic Resonance Sounding (MRS) to gather information on groundwater without drilling holes. MRS is a quick, non-invasive surface geophysical technique that directly measures groundwater and is used in place of test holes and aquifer pump tests that are sparse, time-consuming and expensive. Data collection and study findings are published in a Scientific Investigation Report by the USGS Water Service Center in Lincoln. Use of MRS parameters improves the accuracy of groundwater models and enable water resource managers to make more informed decisions.

### **NEBFLUX**

In 2017, an agreement was extended with UNL for the Nebraska Water & Energy Flux Measurement, Modeling and Research Network (NEBFLUX). The Project uses advanced techniques to measure actual ET rates with surface energy fluxes, microclimatic variables, plant physiological parameters, soil water content, surface characteristics and interactions for various vegetation surfaces in the District. CPNRD began funding the project in 2007 to seek scientific-based research for water management programs. The data is used for the Groundwater Management Program which is based on crop water use and consumptive use. The project was extended through June 2020.

### **Nitrogen Use Efficiency (2022)**

In 2022, CPNRD staff released a first view of the Nitrogen Use Efficiency (NUE) Dashboard being developed to enable producers to compare UNL's recommended nitrogen rate with the actual nitrogen applied on each of their fields. The NUE<sub>T</sub> Dashboard shows all available nitrogen sources to calculate total nitrogen use efficiency and calculates the cost of application on each field vs the recommended rate. NUE<sub>T</sub> aims to bring awareness and education in high nitrate management areas.

### **Water Quantity Objectives**

1. Establish irrigation management practices and techniques on the irrigated lands in order to properly conserve and efficiently utilize water.
2. Discourage development of water-using projects (irrigation) on any lands on which such development is not within the capabilities of the land.
3. Help secure any water supply project that is shown to be feasible, beneficial and desirable.
4. Develop plans and programs that will strive for a balance between water use and water availability.
5. Develop plans and programs that will strive for a balance between rights of all individuals utilizing the groundwater aquifer.
6. Work toward balancing the needs of wildlife with needs of people in utilization of the water resources in the District.
7. Balance needs of endangered and other species on the Platte River and its tributaries with needs and rights of human users.



## VI. Fish and Wildlife Habitat

**GOAL:** The conservation and enhancement of fish and wildlife resources for the benefit of the people.

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Residents of the District and people from across the state enjoy the fish, wildlife and other natural resources within the District. The Platte River and its adjacent wet meadows, forests, grasslands, and croplands provide habitat for millions of migratory birds. Each spring, roughly 80% of the continent's sandhill cranes use the central Platte and lower North Platte Rivers as they traverse from wintering areas to their nesting habitats. Waterfowl make extensive use of area habitats, particularly during spring migration; and diverse assemblages of songbirds make significant use of riparian forests and grasslands. Resident upland game birds and big game provide area hunters with many sporting opportunities. Mammal, fish, reptile and amphibian species are also abundant in the District.

Prior to settlement, vegetation across the District consisted of tallgrass prairies and wet meadows in lowlands, and on the Platte River terrace and mixed grass prairies on the uplands with fingers of riparian forest. Today the area is a matrix of grassland remnants, cropland and expanded riparian forest. Human activity has significantly modified the native vegetation and wildlife habitat. While some of these effects have had positive results on wildlife resources, others have been detrimental. The District has several federally listed endangered and threatened species including the whooping crane, least tern, piping plover, American burying beetle and the western prairie fringed orchid. Areas that have been designated as critical habitat by the USFWS for the whooping crane exists in the District. Previously listed species have shown signs of recovery, for example, the bald eagle and peregrine falcon have been removed from the federal listing. A series of instream flow water rights on portions of the Platte River have been obtained by the NRD to protect minimum flows for fish and wildlife resources. Wet meadows along the Platte River are an important habitat resource to a diversity of wildlife including migratory birds. Working with the Nebraska Public Power District, Central Nebraska Public Power & Irrigation District and Nebraska Game & Parks Commission, the NRD has completed a demonstration project to enhance and maintain wet meadows along the Platte. With a grant from the Nebraska Environmental Trust, the project has developed alternative methods to manage for these valuable habitats.

Farmers and ranchers are encouraged to establish native wildlife habitat, carefully plan conversion of rangeland or other native vegetation types to agriculture, and to return land with marginal or poor production capabilities to habitat. Surface water, natural wetlands and wet meadows should be maintained and enhancements considered in the planning for District projects. Cost-share is provided for practical application of effective habitat; which reflects Central Platte NRD's commitment to protecting wildlife resources.

### **Platte River Recovery Implementation Program**

The Platte River Recovery Implementation Program (PRRIP) was developed by the federal government along with the basin states of Nebraska, Colorado, and Wyoming and signed in 2006. Local, state, and federal government agencies worked with groups from throughout the basin to build a framework for a long-term Program to satisfy Endangered Species Act (ESA) requirements for water users in the basin. The first PRRIP increment included the ongoing development of water projects planned to improve flows in the central Platte by an average of 130,000-150,000 AF annually. CPNRD has a big stake in the Program's goal to improve and conserve habitat for three threatened and endangered species on the central Platte, the whooping crane, piping plover and least tern; and the endangered pallid sturgeon on the lower Platte.

Research and monitoring on the Platte showed the FWS's target flows to be ineffective in accomplishing the set objectives. The states and federal governments face challenges to protect the species using the Platte River and their habitats while providing certainty for water users who face ESA requirements. CPNRD board and staff are actively involved in the Governance Committee (GC), Land Advisory and Water Advisory committees. The Land Advisory Committee includes a member/alternate from CPNRD, member/alternate from Tri-Basin NRD and a joint member/alternate.

The USFWS plays a major role in enforcing the ESA with legislation for federal funding passed by Congress in 2008. In 2013, the Governance Committee (GC) and CNPPID (Central) independently agreed to develop J2 Regulating Reservoirs for \$13M for five years. In 2015, CNPPID and its engineering contractor, RJH Consultants, Inc provided the GC with a progress report on the Project which detailed significant increases in cost from the original estimate

of \$63-\$170M, not including land acquisition so alternatives were evaluated. Central Platte, Twin Platte and Tri-Basin NRDs each purchased a percentage of the Nebraska share. CPNRD purchased 20% of the State's share (2,040 AF annually) for \$1.5M. In 2016, the GC stopped the project to explore other water projects involving groundwater recharge, smaller scale storage projects, water acquisition and transfer opportunities. The first Increment of the Program expired in 2019. While first-increment milestones were exceeded for land and adaptive management components, water goals were more expensive to achieve. Initial discussions included prioritizing resolution of channel choke point issues, habitat acquisitions and opportunities to support pallid sturgeon use of the lower Platte River. An Amendment to the Water Use Lease Agreement with CPNRD modified the price paid for surface water diverted for recharge at \$43/AF, raised payment for transferred surface water \$43-\$150/AF, and reduced the increase in annual costs 7% to 3% to bring the value of water CPNRD sells to the Program to levels with those paid to other contributors. The original Agreement was signed in 2013 with amended values effective on January 1, 2017.

### **Second Increment**

The basin states governors, house representatives and senators supported the second increment. On December 21, 2019, President Trump signed two spending packages that included the PRRIP Extension Act to extend the Program until December 2032. The Program's long-term objective for land is to acquire land interests, restore where appropriate, and maintain and manage approximately 29,000 acres of suitable habitat along the central Platte River between Lexington and Chapman. In March 2020, the GC discussed the Upper Platte Basin Robust Review results and Second Increment planning. Nebraska is in full compliance with its New Depletions Plan and is achieving Milestone 9 of the extension document. Future Robust Reviews are planned for 2023 and 2027. Water service agreements with CPNRD, NPPD and CNPPID were approved in similar term/payment rates for recharge water.

In October 2021, Headwaters Corporation reported on the PRRIP's collaborative efforts to achieve the water objective of 130,000-150,000 acre-feet a year and land objective of 10,000 acres of habitat. Headwaters Corp manages the annual Program budget of over \$19 million and serves as the public face of all Program activities. PRRIP continues to work on its focus areas of land, water, science, and administration. The PRRIP is in the process of purchasing roughly 14,000 acres of land within the 3.5 mile reach along the Platte River to help reach their land acquisition goals. The land strategy has shifted from buying and restoring habitat to a land management strategy. A framework to spend \$1.5 million over the next five years for Pallid Sturgeon research on the Lower Platte was also developed with continued focus on science efforts for the piping plover and whooping cranes habitat along the Platte River.

### **STATE/BASIN COALITIONS**

#### **Nebraska Habitat Conservation Coalition (NHCC)**

The U.S. Fish & Wildlife Service (FWS) proposed designation of critical habitat for the Great Plains piping plover population in 2001 in Nebraska, North Dakota, South Dakota, Minnesota & Montana. Critical habitat was formally designated by the FWS in 2002. The Coalition, comprised of 23 members/8 partners, was formed in response to the federal designation of critical habitat for the piping plover in Nebraska. The critical habitat designation gave the FWS an instrument to evaluate activity that could impact the Platte River or its flow, which puts groundwater pumping at a greater risk of being construed as a "take." Section 9 of the ESA makes it unlawful to adversely modify critical habitat, or for a person to "take" a listed species, which has been defined to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect or attempt to engage in any such conduct.

In 2003, the NHCC filed a lawsuit in Federal District Court in Nebraska stating that the FWS used inadequate science in their designation of critical habitat, the designation provided questionable benefits to the species, that there were legal inadequacies in the designation process, and the FWS failed to assess the economic impact of the designation. The NHCC won its case in District Court in 2005, requiring the FWS to redo economic analysis and critical habitat designation in Nebraska. NHCC plans to stay closely involved in the redesignation of critical habitat as ordered by the District Court. In 2019, FWS announced a proposal to down list the American Burying Beetle from endangered to threatened; and the Interior Least Tern from the ESA due to recovery.

*Federally threatened/endangered species within CPNRD:* American burying beetle, whooping crane, Eskimo curlew, piping plover, interior least tern, western prairie fringed orchid, Rufa red knot, and Northern long-eared bat. A new

rule was proposed by the FWS in 2014 regarding critical habitat designated in association with the ESA. Of concern was that proposed rulemakings would significantly change the agencies approach to critical habitat designation and lead to over-regulation. The NHCC Executive Committee and Legal Advisory Committee submitted comments in opposition of the proposed rule.

### **NHCC Timeline of Activities**

- 1985 - Piping Plover (PIPL) listed as Threatened under ESA
- 1996 - USFWS petitioned by the Defenders of Wildlife to designate PIPL critical habitat
- 2001 - USFWS proposes critical habitat for the Northern Great Plains (NGP) population of PIPL: NHCC formed
- 2002 - Critical habitat formally designated in 5 states (NE, ND, SD, MN, MT) PIPL critical habitat in Nebraska includes 454,400 acres (excluding the Missouri River), 440 miles of Nebraska rivers (including portions of the lower Niobrara, Loup, and central and lower Platte Rivers), plus 120 miles of the Missouri River.
- 2005 - NHCC motion before U.S. District Court of Nebraska for Summary Judgement; U.S. District Court issues Order vacating designation of PIPL critical habitat in Nebraska and orders FWS to redesignate critical habitat.
- 2006 - FWS appeal Court Order/NHCC files cross-appeal; U.S. 8th Circuit Court of Appeals issues order of dismissal
- 2014 - NHCC files comments on USFWS proposed policy and regulatory changes to critical habitat designations
- 2016 - NHCC files comments of USFWS Draft Revised Recovery Plan for the NGP PIPL

### **Platte Basin Habitat Enhancement Project**

CPNRD and co-sponsors (North Platte, South Platte, Tri-Basin, Twin Platte NRDs, NeDNR, and NGPC) received a Nebraska Environmental Trust (NET) grant for the Platte Basin Habitat Enhancement Project for \$3 million. Remaining funds included \$6 million from the NRDs and \$6 million from the NeDNR for a total of \$15 million. The projects and activities funded by the PBHEP resulted in enhanced Platte River stream flows, reduced consumptive uses of water, recharged groundwater, and supported wildlife. Projects included Cozad Canal and Thirty-Mile Canal Rehabilitation conjunctive management projects, acquisition of dozens of conservation easements retiring irrigated acres across the Platte River basin, the Nebraska Cooperative Republican Platte Enhancement Project, North Dry Creek Augmentation Project, the Re-Use Pit Recharge Demonstration Project, and Groundwater Recharge Demonstration projects. The Platte Basin Habitat Enhancement Project concluded its activities in late 2014.

### **Platte Basin Water Project Coalition**

In June 2012, the board approved an Interlocal Cooperation Agreement with NDNR and the following NRDs: South Platte, Twin Platte, North Platte, Tri-Basin and CPNRD. The agreement allows utilization of the new Water Cash Fund through the Nebraska Environmental Trust and the Legislature for Platte Basin water management activities. It will take the place of the Platte Basin Habitat Enhancement Project.

### **Phragmites Control**

CPNRD began participating in the Platte Valley Phragmites Project in 2009; budgeting \$621,000 from 2009-2020. The project includes 700 landowners who participate in herbicide spraying by helicopter and/or manual spraying of property along the Platte River from Kingsley Dam east to Columbus in the Platte and Central Valley Weed Management Areas (WMAs). In May 2018, The Nature Conservancy reported on the WMA's joint effort, which consists of 16 counties in south central Nebraska along the Platte River, including 315 miles of river channels and 11,000 acres within the main channels. Since the project began, nearly 26,000 acres have been treated for invasive Phragmites within CPNRD. Phragmites were reduced 86% and purple loosestrife reduced 70% through continued maintenance. In addition to applying herbicide, disking/shredding are used for biomass removal and have proven effective with minimal reinfestation. Flow conveyance has improved and wildlife habitat has increased. Sponsors include the Nebraska Environmental Trust, Platte River Recovery Implementation Program, Nebraska Department of Agriculture, Twin Platte NRD, Tri-Basin NRD, Nebraska Public Power District and Central Nebraska Public Power and Irrigation District. In August 2020, CPNRD agreed to invest \$500,000 over three years in an endowment to fund the annual cost of maintaining water conveyance in the Platte River. Since 2009, the PVWMA has treated approximately 26,000 acres of invasive plant species within flowing channels of the Platte River in Dawson, Buffalo, Hall, Merrick, Hamilton and Polk counties within the NRD.

**Instream Flow Rights**

Central Platte NRD holds instream flow water rights on the Platte River to protect and enhance wildlife; with the original flow water rights having a priority date of July 25, 1990. The NRD complied with the required 15-year review in 2009 and was granted instream flow rights until the next review in 2024. A series of instream flow water rights on portions of the Platte River to protect minimum flows in the river for fish and wildlife purposes was approved on July 2, 1992, by NDWR (now NeDNR). Flows specified by the instream flow water rights are a factor in providing bird habitat on the Platte, as well as habitat for food sources consumed by those birds. The rights have no effect on levels in upstream storage reservoirs such as Lake McConaughy nor do they take water away from existing irrigators. Other water rights already existing on the river are senior to the rights; but flows specified by the instream flow water rights must be met before any future project could take water from the Platte. CPNRD's application came after extensive study by the NRD in response to concerns about low flows, especially during the dry summer periods which are dangerous to the fish and wildlife that depend on the river.

The study indicated that the instream flow water rights wouldn't solve the existing low flow problems, but could be effective in preventing some additional low flow periods by assuring that minimum flows are met before future projects could withdraw water from the Platte. CPNRD held a public hearing in March 1989 on proposed instream flow rates, timing, segments and uses for a proposed water right. While considerable testimony applauded CPNRD for seeking the instream flow water right, there was a division of opinion about the flow rates, dates and river segments proposed. CPNRD met with interested parties to arrive at the series of flow regimes on which the application is based. NGPC rejected the NRD's offer to join in making its application to the NeDNR. Because of insufficient detailed data available to make a determination of water and habitat needs for selection and nesting by the least tern and piping plover and stopover by ducks and geese, CPNRD did not make its applications for water rights.

On July 25, 1990, six applications for Platte River instream flow water rights to benefit wildlife were filed. Together, the applications sought to protect flows varying from 500-1,500 cfs at specified time periods in certain reaches of the river, extending from near Lexington to near Columbus. The applications were filed to benefit sandhill cranes, bald eagles and three species designated as threatened or endangered: least terns, piping plovers and whooping cranes. The NeDNR conducted a hearing on the six applications from July 1-September 25, 1991. Eighteen parties filed as objectors including: State of Wyoming, several environmental organizations, power and irrigation interests and several NRDs. The Audubon Society and Sierra Club changed their status to proponents during the hearing, two objectors withdrew and four parties were dismissed before the conclusion of the hearing. NeDNR issued a ruling on July 2, 1992, that three of the water right applications be granted outright and a fourth be modified from the NRD's request. Two of the applications with flows for the bald eagle were denied.

**APPLICATIONS GRANTED**

- (1) Flow of 500 cfs from January 1-June 23 and from August 23 - December 31 from the mouth of the J-2 return, southeast of Lexington to Columbus, to maintain fish and macroinvertebrates as food sources for terns and plovers. Also a flow of 600 cfs from June 24 to August 22 for the same purpose.
- (2) Flow of 1,300 cfs from April 1-14 to maintain staging and roosting stopover habitat for whooping cranes and sandhill cranes for the reach of the river from the J-2 mouth to Grand Island. Increased to 1,500 cfs for April 15-May 3 and from October 12-November 10.
- (3) Flow of 1,100 cfs from Grand Island to Chapman during the period of April 1-14 to maintain staging & roosting habitat for sandhill cranes.

**15-Year Review**

In accordance with Nebraska statutes, these CPNRD instream flow water rights were up for a 15-year review in 2009. On October 5, 2009, the NDNR ordered that the CPNRD Platte River instream flow water rights continue to be used beneficially for the purposes for which they were granted, are in the public interest, and should continue in effect with no modifications.

### **Nebraska Game & Parks Commission Appropriation**

The NGPC submitted 5 applications on November 30, 1993 seeking instream flow water rights for particular time periods with corresponding flow quantities for specified reaches of the river and for specified fish and wildlife. Some of the applications sought flow quantities during times and at locations that coincided with the instream flow water rights granted to CPNRD. One of the applications was approved and the two others modified for maintenance of fish communities. Another application to maintain whooping crane roost habitat was modified, and the application for flows to maintain wet meadows along the river was denied. Under Nebraska law, surface water rights are given priority on a seniority basis. Thus, flows granted for the NGPC are junior to and in addition to the NRD's instream flow water rights. The river must have flows that exceed the total of all senior water rights before a junior water right can be obtained by a potential developer. Objectors to the NGPC application formed the Nebraska Water Conservation Cooperative to provide opposition jointly in order to save time and money. Fifty-one local governmental subdivisions and water users organizations joined the Cooperative.

In 1996, NGPC reduced its flow requests for several applications, but the Cooperative continued its opposition. NDWR opened a hearing on the applications on September 25, 1996; which concluded on April 8, 1997. After the hearing, retroactive changes in state law applying to instream flow water rights were adopted by the Nebraska Legislature and both parties were allowed to submit briefs and additional exhibits in reaction to the newly amended statutes. NDWR examined the briefs, transcribed testimony (nearly 7,700 pages in length), 200-plus exhibits part of the hearing record, and issued the Order on June 26, 1998. NDWR denied the application for a water right to maintain flows to manipulate the water table underlying nearby wet meadows, saying NGPC failed to show a river-aquifer linkage; and he agreed with the opponents' claim that, as a matter of law, an instream flow for wet meadows is not permitted by state statute.

### **NGPC Applications to Maintain Fish Communities**

**1st Application:** Instream flow for 1,000 cfs on a year-round basis for the reach of the river between Johnson Power Plant near Lexington and Loup Power Canal return near Columbus. The reach of the water right was shortened to stretch between the Kearney Canal diversion dam near Elm Creek and the Loup Power Canal return; and provided for the appropriation to be in effect only in June, July and August. Because CPNRD already has a water right for 600 cfs, NeDWR provided for varying rates between 200-500 cfs during the three-month period. In the NRD's water right, a maintenance flow of 500 cfs is protected to benefit the fish community from the J-2 return near Lexington to the Loup Power return from January 1-June 23. CPNRD's water rights protect a rate of 600 cfs from June 24- August 22, then returns the rate to 500 cfs from August 23-December 31. Varying flows are protected in different reaches of the Platte with 500-600 cfs protected above the Kearney Canal diversion dam. 1,000 cfs is protected between the dam and Columbus from June 1-July 31; and 800-900 cfs, depending on the measuring station from August 1-31.

**2nd Application:** Between the Loup Power Canal return and confluence of Platte and Elkhorn rivers near Waterloo, appropriation is 1,800 cfs on a year-round basis.

**3rd Application:** NGPC sought a water right for 3,700 cfs on a year-round basis between the confluence of the Platte/Elkhorn rivers and confluence of Platte/Missouri rivers near Plattsmouth. NeDNR approved a maximum rate of 3,100 cfs in January; 3,700 cfs in February- July and October-December; 3,500 cfs in August and 3,200 cfs in September.

### **Maintain Whooping Crane Roost Habitat Application:**

The water right sought for 2,400 cfs from April 1-May 10 and for 2,000 cfs from October 1-November 10, on the stretch of the Platte from the J-2 return to Grand Island, was shortened to the portion of the river affected to the stretch between the Kearney Canal diversion dam and Hwy 281 bridge south of Grand Island. The Order provides a flow of 50 cfs for April 1-14, increasing it to 1,350 cfs from May 4-10. Fall rate is a shorter stretch of 1,350 cfs for only October 1-11.

### **Land Rights**

At this time, CPNRD has no land right needs. This may change in the future to address acquisition of conservation easements to meet CPNRD/NeDNR's Integrated Management Plan requirements to offset post-1997 depletions. Sufficient information is not available at this time to determine financial needs.

**Fish and Wildlife Objectives**

1. Maintain wetlands for wildlife habitat.
2. Supplement existing fish and wildlife habitat areas that are sufficient in both size and number to provide reasonable public hunting and fishing opportunities for the people of the District.
3. Consider potential damage to or potential for enhancement of, fish & wildlife habitat in the evaluation of District projects.
4. Provide, as available and appropriate, assistance to private landowners and state and federal agencies in the management of fish and wildlife habitat programs.

## VII. Forestry Management

**GOAL:** To develop and manage trees/shrubs for the production of raw material for wood products; to reduce wind velocities; to conserve moisture; and to reduce wind erosion for the comfort of the people, livestock and wildlife; and for environmental recreation and aesthetic benefits.

Other than isolated trees or wooded areas along rivers and streams, most of the and now encompassed by the NRD was void of woodlands when this region was first settled. One of the primary reasons was the semiarid climate of the region. Prairie fires, which periodically swept across the area, also contributed to a general lack of trees. Since European settlement of the area, trees have become more abundant. Farmers and ranchers have made a concerted effort to establish trees for farmstead, feedlot and field windbreaks, livestock shelterbelts and wildlife planting.

Forest resources are valued higher for environmental benefits than for commercial purposes; which include wildlife habitat, conservation, watershed protection, energy efficiency, recreation uses and scenic values. In more recent years, drought, tree disease, damage from winds, development, and other factors have been challenging for trees in the cities and towns of the NRD. In 2020, the Emerald Ash Borer was found within the District in Kearney in an Ash tree located near Pioneer Park. Trees located within 15 miles of Kearney should be treated with insecticide. More information is available at: [nfs.unl.edu/nebraska-eab](http://nfs.unl.edu/nebraska-eab).

### Conservation Tree Program

The Conservation Tree Program is a complete tree planting service started in 1972 to purchase, distribute and plant conservation seedlings from the state forest in Halsey, NE. Staff selects the seedlings to be purchased from Halsey annually, alternative sources of tree stock are added to meet customer needs and diversity. In 2012, small-acre packages were designed for Eastern Nebraska, Western Nebraska, Flowering and Wildlife by Bessey Nursery for landowners who don't want to plant 25 of the same type of seedling. The small-acre packages have 50 seedlings including 5 species with 10 of each specie.

CPNRD has been offering fabric mulch weed barrier to protect seedling trees from competing with weeds for sunlight and moisture. Landowners are encouraged to prepare planting sites before planting seedlings and to properly maintain them after planting. A 10% early ordering incentive is offered for trees, weed barrier and the planting service.

### Urban Forestry Program

The NRD's Urban Forestry Program provides monetary incentive for community groups to plant and maintain more trees in parks, on school lands and on other public property. \$5,000 is budgeted annually for the program.

### Additional Cost-Share Funds

Two programs provide forestry cost-share in addition to CPNRD and NSWCP's 50% funding for trees, weed barrier and tree services with orders of 200+ trees. In 2021, CPNRD began receiving funds from the Nebraska Forest Restoration Partnership, funded through the Regional Conservation Partnership Program (RCPP) to provide 75% cost-share for trees and/or windbreak renovation on orders of 200+ trees.

The other program is a partnership with Executive Travel for the NRDs to plant one million trees over the next five years through the ETGreen campaign, starting with 50,000 trees in 2022. ETGreen was launched in 2021 and is designed to help Executive Travel's customers offset their carbon footprint generated by airline travel. CPNRD utilizes the funding to provide cost-share to more landowners.

### Gift of Trees Partnership

In honor of the 50<sup>th</sup> anniversary of Nebraska's NRDs and the 150<sup>th</sup> anniversary of Arbor Day, Nebraska City Tourism & Commerce initiated a partnership to plant a tree in each county in Nebraska calling it "The Gift of Trees."

**FIGURE 16.**  
**Tree and Weed Barrier Sales**

YEAR	TREES	WEED BARRIER (in miles)
2022	40,866	13.14
2021	30,825	6.46
2020	20,475	2.03
2019	29,775	7.84
2018	41,225	8.42
2017	35,350	9.94
2016	45,796	11.77
2015	46,575	14.07
2014	54,175	17.38
2013	37,716	18.86
2012	48,025	14.91
2011	54,275	28.25
<b>TOTAL</b>	<b>3,852,159</b> Since 1973	<b>613</b> Since 1991



CPNRD will plant 8' trees at the following locations on October 21, 2022. At each tree planting, representatives from the Nebraska City Tourism, Grimm Gardens, and Central Platte NRD will present a history of Arbor Day, the benefits of planting trees, tree maintenance tips and the importance of the NRD system and its history. The public is invited to attend these plantings. NCTC is gifting a Matador Maple to be planted at the NRD office, CPNRD is providing:

- Dawson County: Sterling Linden at Lexington City Hall
- Buffalo County: Bur Oak at Cottonmill Park in Kearney
- Hall County: Matador Maples at Stolley Park and the CPNRD Office in Grand Island
- Merrick County: Bur Oak at Merrick County Courthouse in Central City

### **Forestry Management Objectives**

1. Reinforcement of under-stocked windbreaks and tree lots through interplanting with high value species.
2. Woodland improvement by thinning to achieve proper spacing.
3. To develop more optimum growing conditions through livestock exclusion.
4. To provide adequate wind and snow protection for farmsteads, feedlots, roads and fields through windbreak planting.
5. To provide benefits to wildlife, aesthetics, recreation and forestry management.

## VIII. Range Management

**GOAL:** To have rangelands in the District in a “high good” or “low excellent” condition.

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Rangeland makes up approximately 36.5% of the NRD’s land area. Most of the rangeland is unsuitable for using as cropland due to sandy soils or uneven terrain. Sandy land areas were often plowed when the area was first settled, but it was soon discovered that the land was unproductive when it lost its grass cover. If steep slopes are not kept under a permanent grass cover, the runoff potential from rains and snows is increased. Large amounts of sediment may be carried by the runoff which results in deep ravines and gullies being cut into the slopes. Rangeland can become unproductive if it’s not properly managed and overgrazing can cause severe damage by its effects on individual plants and the effects on the plant communities.

Rangeland concerns include the influx of Eastern Red Cedar trees and the encroachment of weeds that diminish the natural water supply for desirable vegetation in the western and central parts of the District. Land that isn’t suitable for growing crops, usually as a result of sandy soils or steep slopes, will benefit from being managed as grass to prevent erosion. If these lands are not kept under permanent cover, they can become an area of blowouts, sand dunes or gullies. Land on steep slopes is especially susceptible to water erosion. Of the rangeland needing improvement, a majority could be treated by using better management techniques to eliminate overgrazing. Planned grazing, prescribed burns, and pasture rotation are encouraged. Cost-share to encourage these better management practices are available through CPNRD programs and NRCS’s Nebraska Soil and Water Conservation Program (NSWCP).

### **Planned Grazing**

Eliminating overgrazing on damaged land may restore vegetation over time. Reseeding or interseeding may also be necessary after which grazing must be deferred for 1 to 3 years before grasses are established enough to be grazed lightly again. The NSWCP provides cost-share for a variety of grazing land/rangeland management practices. Components such as pipeline, tanks, wells and cross-fence are used to complete a planned grazing system to distribute grazing more evenly over the pasture. With management of intensive grazing, pastures may be grazed for longer seasons. Dugouts are funded to provide storage for runoff water that can provide a supplemental source of water and livestock windbreaks can provide protection from winter weather and protection for calving.

### **Prescribed Fire Program**

CPNRD conducts and assists with prescribed burns in conjunction with federal, state and local agencies. Chemical control is being replaced by mechanical removal of trees and shrubs; and is most successful in areas where the number of undesirable woody plants is small. A prescribed burn is often recommended to remove unwanted trees and shrubs. Landowners are also encouraged to eliminate undesirable vegetation and other noxious weeds. CPNRD’s fire crew, along with Central Platte Rangeland Alliance, have conducted 287 burns totaling 49,180 acres since 2005.

When prescribed fire is used along with appropriate grazing practices, the result is increased economic output and wildlife benefit. CPNRD implemented the Program in 2004 with a cost-share program to help landowners treat their rangelands with the implementation of burns. The purpose of a prescribed burn is to control the undesirable vegetation, to prepare sites for harvesting, planting or seeding, to control plant disease, to reduce wildfire hazards, to improve wildlife habitat, to improve plant production quantity and/or quality, to remove slash and debris, to enhance seed and seedling production, to facilitate distribution of grazing and browsing animals, and to restore and maintain ecological sites.

### **Prairie Silver Moores (PSM) Fire**

The afternoon of March 14, 2022, a grass fire burned approximately 50 acres of the north spoil pile and the wooded area to the south of the detention cells at the Upper Prairie Silver Moores Flood Reduction Project in northwest Grand Island. NRD staff burned the detention cell in November 2021, so the fire was much easier to contain. Fire units from Alda, Cairo, Boelus and Dannebrog were on site.

### **Prescribed Fire Cost-Share Programs**

CPNRD’s program reimburses landowners at a rate of 50% of actual costs incurred while implementing a prescribed fire by a contractor and up to a maximum of \$2,500/cooperator/lifetime. If the CPNRD burn crew does the burn,

cost-share is not used because of the lower cost. Landowner cost is \$10 per acre for the first 40 acres, \$5/acre for anything over 40 acres. CPNRD's set minimum charge is \$300 per burn. Landowners have applied for burns on up to 6,000 acres. Scholl Fire & Fuels has been contracted to implement burns for the last four years to increase the number of burns implemented each spring. The 2022 budget includes \$41,000 for grazing deferment and \$50,000 for burn preparation.

### **Grazing Deferment Cost-Share Program**

The Grazing Deferment cost-share program was initiated in 2013 to provide an incentive for landowners to defer grazing in a pasture for one growing season so that a prescribed burn can be successfully applied in the following year to reduce invasive Eastern Red Cedar. The cost-share was increased in July 2021 from \$15 per acre to \$30 per acre with a maximum of \$30,000 per landowner.

In 2015, the NRD was awarded a three-year grant from the Nebraska Environmental Trust to reduce invasive Eastern Red Cedar trees and improve rangeland. The focus was in Dawson County; however, other pastures within the District were included in the project as well. Two cost-share programs were developed to administer the funding. The Grassland Conservation Program was initiated to pay participants to prepare fire breaks and clear cedar trees in preparation for a prescribed burn; and the Grazing Deferment Program provided \$15/ac to defer grazing on a pasture for one year to allow a prescribed burn to be successfully applied the following year.

The fire contractor cut an estimated 299,585 cedar trees to implement the landscape-style burn. The crew worked on landowner burns from Dawson to Merrick counties, preparing 257,978 lineal feet for firebreak and mechanically cutting 3,691 acres of cedars. The project improved habitat and preserved native grass species including the tall-grass prairie in Dawson, Lincoln, and Custer counties. As part of the grant funding, CPNRD staff also visited six high schools and conducted a demonstration burn at Gothenburg High School to discuss the benefits of prescribed fire. Grant funding included \$775,735 from Nebraska Environmental Trust and \$2.2M in matching funds from the Natural Resources Conservation Service, Nebraska Game and Parks Commission, and the Nebraska Forest Service.

#### Grant Accomplishment Overview:

- \* 3-year Burn Goal: 12,000 acres
- \* Burn Total: 20,661 acres plus 2,555 acres burned by CPNRD.
- \* Total firebreak prepared: 257,978 lineal feet
- \* Total Mechanical Cedar reduction: 3,690.6 acres
- \* 300,000 cedar trees removed from landscape
- \* Funded 6 new sprayers, a water trailer, UTV/40 gallon fire unit
- \* The sprayers add 2,390 gallons of water capacity to the fireline

### **Training Program**

CPNRD hosts training events and outreach for landowners, other NRDs, agencies, firefighters and fire marshals. By providing training and assistance, CPNRD is helping to prevent costly accidents while enhancing grasslands for economic return and habitat. Within the District, there are many fields in poor condition needing a burn, and the NRD helps to facilitate that project safely and professionally. Staff has conducted 40 training events training over 600 students. Other successes: managed \$1.5 million prescribed fire grant projects, assisted with the formation of Landowner Prescribed Burn Associations, assisted Fire Learning Network to train firefighters from around the world, and created inroads in Nebraska for liability insurance coverage for prescribed burning.

### **Native Prairie Outreach Project**

Since 2008, CPNRD has been coordinating the Native Prairie Outreach Project at Husker Harvest days, distributing native prairie seed packets and education materials to approximately 1,500 people annually. Nearly 800 packets of seed totaling 11 acres worth of restored prairie are handed out annually totaling (10) 55 gallon garbage cans. Information on native plants and patch-burn grazing systems is also provided. Partnering NRDs provide contributions to purchase high diversity seed mix from the Prairie Plains Resource Institute. The mix contains hand-harvested forbs, and tall grass species.

#### **Range Management Objectives**

1. To establish adequate permanent cover on all Class VII land, with minor exceptions in accordance with Central Platte NRD's Rules and Regulations.
2. To establish approved cultural management practices, vegetative practices or structural improvements.

## IX. Outdoor Recreation

**GOAL:** Incorporate park and/or recreation features into other District programs and assist organizations, groups, and government agencies in developing facilities to meet park and/or recreation needs.

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Possibilities for developing outdoor recreation resources in the District are limited only by the willingness of the people to support a program. Development of parks & recreation facilities is an expensive endeavor and the pace of development is highly dependent upon the public value and priorities for the tax dollars that are needed. Water harnessed under flood control projects and other multipurpose reservoirs can and does serve recreation needs.

### TRAILS

#### **Kearney Area Trail System - 2005**

CPNRD approved funds to support a 13-mile trail system for the Kearney Area Trail System. The initial 2009 construction timeframe was delayed due to a fire that burned a bridge over the Platte River. CPNRD used original funds agreed upon to provide assistance to rebuild the bridge. In 2014, a new bridge was built, the 1.7 mile trail was paved and repairs were made to the main channel bridge.

COST: CPNRD funded \$60,000 in 2007 for Phase IV and \$50,000 in 2008 for Phase V.

PARTNERS: Nebraska Department of Roads, Kearney Recreation Department, NGPC, CPNRD

#### **Wood River Flood Control Project Trail**

A hike and bike trail was established by the city of Grand Island on the Wood River Flood Control Project's levee system, providing an additional two miles to Grand Island's trail system. The western portion of the trail is complete with future plans extending the length of the entire project. PARTNERS: City of Grand Island, CPNRD

#### **Central City/Marquette Trail - 2016**

In 2006, a request for the NRD to enter into a Joint Action Agency to develop a plan for a Central City/Marquette Hike and Bike Trail was brought to the board. In 2011, the Nebraska Trails Foundation agreed to ownership of the trail and it has since repaired a bridge south of Central City and opened the trail. In 2016, CPNRD provided \$5,000 in funding to the Platte PEER Group to complete the final mile of the trail. COST: \$5,000

#### **Johnson Lake Trail - 2018**

From 2018-2020, CPNRD funded seeding and reseeding 10,000 square feet of the new Johnson Lake Trail. The area starts at the gazebo and extends south to Pelican Bay Drive. COST: \$600

### PROJECTS

#### **B-1 Reservoir - 1983**

B-1 is the largest of seven flood control structures in Buffalo Creek Watershed. Construction included a supply canal, 1.6 miles of power line relocation and 1/2 mile of county road improvements. In addition to flood control, the project was expanded to include recreation and groundwater recharge. Recreation includes seasonal primitive fishing, kayaking and wildlife viewing.

#### **Crane Viewing Sites - 1994**

In 1993, a task force of various governmental and private agency representatives was brought together by CPNRD to develop ideas in response to concern about safety for local residents, farmers and crane watchers in the Central Platte valley, especially during early morning and late afternoon hours on local roads. The Task Force developed a comprehensive plan known as the Central Platte Historic, Scenic and Trails Project to be completed in phases. Approval was granted in 1994 by the Nebraska Department of Transportation under the federal Intermodal Surface Transportation Efficiency Act (ISTEA) for Phase I of the comprehensive plan developed by the task force. According to the grant application, the multi-year project promoted awareness of the historic importance of the Central Platte Valley as a transportation corridor dating from the early 1800s. The corridor was used by explorers such as Stephen H. Long and John Charles Fremont and by fur traders who passed back and forth on and along the Platte River. In the period from the 1840s-1860s, the Platte River Valley was a virtual "superhighway" as the major transcontinental route of the covered wagon migration; it became known as "The Great Platte River Road."

Three roadside turnout areas between Doniphan and Shelton on the road along the south side of the Platte were developed in Phase I. A portion of the cost was paid under the ISTEA and the remaining cost was contributed by the

NRD and participating counties-Hall and Buffalo. The Audubon Society provided land for a roadside turnout near Shelton. The viewing decks provide a safe and bird-friendly way to view cranes and waterfowl. Because safety was the original purpose of the task force, a top priority for Phase I was given to getting people off of the county roads and bridges during the crane viewing season.

**Alda Crane Viewing Site** Alda Crane Viewing Site is two miles south of the I-80 Exit 305 with three additional roadside turnouts located south and east of the Alda interchange on Platte River Drive, at the intersection of Elm Island Road and Lowell Road. The site was designated as a "green site" by the Groundwater Foundation in 2010. Kiosks at the viewing decks were updated in the spring of 2015 and the fall of 2021. In July 2022, a contract for \$58,290 with JEO Consulting was approved to develop a final design, and permitting and construction services for boardwalk improvement features, parking lot paving/expansion, trail replacement details, and fishing access for site. COST: \$315,000 estimate; CPNRD's share \$16,000 Grants received:

**Recreational Trails Program (RTP)** \$250,000 from the RTP administered by the Nebraska Game and Parks Commission, CPNRD is required to contribute a 20% matching share.

**Nebraska Environmental Trust** \$75,000 from NET to be used exclusively for repairs on the streambank near the viewing decks.

**Richard Plautz Crane Viewing Site** is located 1.5 miles south of I-80 Exit 285 near Gibbon. The site has two elevated wooden viewing decks, 1,650' trail and parking lot. In 2016, the Audubon at Lillian Rowe Sanctuary was created a new viewing pull-out just south of the south channel on the west side of 43rd Road near Gibbon for a better crane viewing location, and to remedy safety issues by providing more parking space to reduce the number of cars parking on rural roads. In 2020, the NRD received two grants to assist with rehabilitation of the Plautz Crane Viewing Site. Morten Construction, LLC from Kearney, NE was selected to construct the concrete trail, parking lot, streambank stabilization and riprap placement. The project was completed in 2021. COST: \$315,000; CPNRD's share \$16,000 Grants received:

**Recreational Trails Program (RTP)** \$259,500 from the RTP administered by the Nebraska Game and Parks Commission, CPNRD is required to contribute a 20% matching share.

**Nebraska Environmental Trust** \$50,000 from NET to be used exclusively for repairs on the streambank near the viewing decks.

#### **Crane Meadows Stabilization - 2001**

Funding was provided to Crane Meadows Nature Center for bank stabilization erosion control for 200 feet of bank stabilization; 10,000 square feet of wetland restoration and reseeding; and erosion control of an island. COST: \$2,600

#### **Great Platte River Archway Stabilization - 2002**

Funding provided to Great Platte River Road Archway Monument for a streambank stabilization project west of the Archway in Kearney. The North Channel of the Platte River and Turkey Creek eroded to within five feet of a local sandpit. The Corps of Engineers surveyed the erosion and provided an Emergency 404 permit to CPNRD. COST: \$13,500, City of Kearney provided 25% of the cost.

#### **Urban Conservation Program - 2017**

CPNRD has two cost-share programs to assist cities, villages and counties with establishment and/or improvement of public recreational areas and trails, lake dredging, and acquisition of land or land rights for recreational purposes. The Programs Committee is revising the conservation ranking priorities.

**Recreation Area Development Program** Designed to assist sponsors with the acquisition of land, or land rights, and to establish, develop and improve public recreational areas, including lake dredging. The cost-share rate is 50% of eligible project costs up to a maximum of \$40,000.

**Trails Assistance Program** Designed to cost-share with sponsors on trails projects that have received approval for funding under the Transportation Enhancement Program administered by the Nebraska Department of Roads or the Nebraska Game and Parks Commission. The cost-share rate is 50% of the local share of the costs of the project with a program maximum of \$40,000. Applications submitted under the Trails Assistance Program.

**Urban Conservation Projects approved:**

- 2018** City of Grand Island - \$30,000 picnic shelters at Sterling Park  
City of Kearney - \$17,965 Whitewater Park
- 2019** City of Gothenburg - \$10,000 bank stabilization at Lake Helen
- 2020** No applications
- 2021 No applications
- 2022** City of Lexington - \$30,000 Lexington Patriot Park and Pond  
Village of Cairo - \$20,000 North Ball Field

**Outdoor Recreation Objectives**

1. To incorporate, wherever feasible and desirable, park and/or recreation features into other District programs.
2. To assist, as time and funds permit, other organizations, individuals, groups and government agencies in developing facilities to meet park and/or recreation needs of the District.

# X. Pollution Control and Solid Waste Disposal

**GOAL:** To protect and enhance the quality of land, air, surface water and groundwater within the District.

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Pollution control, solid waste disposal and sanitary drainage have been addressed by CPNRD, although federal and state governments have taken most of the responsibility for all of these. Additionally, municipalities and county government are mandated by state law to share the responsibility. The biggest role for NRDs appears to be in the area of non-point source groundwater pollution, although the NRDs have responsibilities for all forms of pollution.

## **Air Quality**

Air quality across the District is excellent. Complaints are sometimes received by the District, but they are generally handled by local health departments, the NDEQ or the U.S. Environmental Protection Agency. Some common complaints develop when farmers cause smoke by burning residue in their fields or involve odors from feedlots. These conditions are generally of short duration and are settled on a local basis. Industrial air pollution is limited in its extent since there are no metropolitan-size industrial cities in the District, and most plants make an effort to comply with industry and government regulations that prevent major problems. During certain times of the year, when the combination of dry weather, strong winds and open fields are all present, the air quality is poor due to blowing dust. Tree planting is encouraged by the NRD to reduce this problem.

## **Land Quality**

Improper disposal of solid waste, petroleum products, chemicals and other waste products may cause land pollution and contribute also to water quality concerns. CPNRD will continue to play a minor role in the area of solid waste management, providing technical information/expertise for disposal studies and working within a multi-government framework to meet regional needs. In 1992, the Nebraska Legislature adopted LB 1257 to address solid waste disposal problems.

The law, known as the Integrated Solid Waste Management Act, requires municipalities and counties to provide for solid waste management services. Many communities already had sites for disposal of solid wastes, however, most dumps and landfills did not meet the Act's regulatory requirements and needed to be improved or relocated in order to meet those standards. The NRD will continue to monitor the quality of natural resources and will initiate or update current programs as necessary.

CPNRD has provided funding to the Grand Island Area Clean Community System for educational programs and cleanup events and to the City of Kearney's Household Hazardous Waste Program.

### **Pollution Control and Solid Waste Disposal Objectives**

1. To establish irrigation water management techniques on all irrigated land to properly conserve and efficiently utilize soil, water and fertility.
2. To protect and preserve the quality of ground and surface waters that presently meet acceptable standards as adopted by the U.S. Public Health Service & Nebraska Department of Environment and Energy.
3. To improve the quality of groundwater and surface water not presently meeting the standard to such a level as to at least meet water quality criteria contained in the standards.
4. To establish adequate permanent cover on all Class VI & VII lands and re-establish cover on those range and pasture sites classified in "poor" condition in order to reduce erosion and sedimentation in surface waters.
5. To establish approved cultural management practices, vegetative practices and structural measures, as needed, on all land to prevent wind and water erosion, in order to reduce erosion and sedimentation in surface waters.
6. To establish erosion control measures as needed, on all industrial development sites, residential development sites, road construction sites & other non-agricultural sites; in order to reduce erosion and sedimentation in surface waters.



# XI. Information and Education

**GOAL:** That the public will develop a connection with natural resources conservation and management through accurate knowledge and understanding of the District's objectives.

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The Nebraska Legislature gave NRDs a regulatory role which requires keeping the public informed about programs and requirements. The Board depends on the public to be informed to ensure that constituents' priorities are addressed and to provide factual information on natural resources issues.

## INFORMATION PROGRAMS

The public is informed about groundwater utilization, groundwater quality including high nitrate areas in the District, flood control, soil health, forestry, native prairies, grasslands, invasive plant species, wildlife habitat, endangered species, pollinator habitat, rules and regulations, management plans and research studies.

### Publications

In 2014, CPNRD began inserting the *In Perspective Newsletter* in the District's 12 local newspapers and continued mailing 1,300 copies and emailing 230 to landowners who have requested or are live out-of-state. Previously, the newsletter was mailed only to landowners in Phase II/III GWMA's and other agencies reaching 6,500 households. Brochures are available for all NRD programs. Displays providing information about NRD programs are provided in the NRD lobby and at local conferences, agricultural trade shows, etc.

### Identity

In 2008, NARD adopted the *Protecting Lives, Protecting Property, Protecting the Future* slogan used by the NRDs in public outreach efforts. In 2015, CPNRD provided \$3,710 towards an hour-long video- *Keeping Nebraska Local: A Unique Approach to Resource Management*, produced by NETV featuring Nebraska's NRDs. CPNRD director Mick Reynolds narrated the Program. In 2016, CPNRD designed a new logo. In 2017, Red Thread developed a branding video for CPNRD that is used for outreach and educational events. In 2019, Mayhew Signs was hired to design and install an 8-foot double-sided aluminum outdoor sign with the NRD's logo and slogan in the amount of \$13,716.

### Social Media

In 2015, the NRD's website at [cpnrd.org](http://cpnrd.org) was overhauled and social media efforts were expanded by utilizing Facebook and Twitter. An Instagram account was added in 2020. Social media followers have increased due to scheduled posts and advertising. In 2021, Provident Promotions of Hastings was selected to rebuild the website in the amount of \$9,000 with a \$35 monthly fee to host the site. The new site launched on March 1, 2021.

### Media Relations

Press releases to local radio stations, television, magazines and social media posts are used to provide timely information to the media. CPNRD also participates in radio talk shows with KRVN and KRGH radio stations. Advertising is purchased for radio, television and web prerolls on the District's programs and events. In 2020, the NRD began advertising on Telemundo television to inform the Spanish-speaking population about the NRD.

### Outreach/Events

CPNRD participates in community projects and events including: Husker Harvest Days, NARD's Foundation and Wellness programs, Nebraska State Fair, Summer Orientation About Rivers, Earth Day events, community and civic meetings, and other opportunities as they arise. CPNRD hosts an annual Water Programs Update to inform the public on the NRD's water programs and projects. The conference location is rotated throughout the District. Producers who attend the Update are not required to take the Water Quality Program's Nitrogen Management test. In July 2022, CPNRD hosted an Open House to celebrate Nebraska Natural Resources District's 50<sup>th</sup> anniversary. Grand Island Mayor Roger Steele presented a proclamation declaring July 11-15 "NRD Week". 175 people were in attendance including four current/previous senators. CPNRD also participated in NARD's year-long 50th anniversary campaign.

### Conservation Awards

Nominations are submitted for the NARD and/or Master Conservationist Awards annually. In 2013, Great Western Bank approached CPNRD to partner in recognizing landowners who use best conservation practices. Awards were given for cropland, grassland and community efforts. The board discontinued the awards in 2017 when Great Western Bank decided not to continue sponsoring the awards ceremony.

## **EDUCATION PROGRAMS**

CPNRD provides several avenues of natural resources education for educators and students. The *Natural Resources Link Newsletter* is sent to all schools within the District to promote NRD activities available through the Project Wild, Project Wet, Project Learning Tree, and Aquatic Wild curriculums. The NRD's information/education specialist is certified in these curriculums and provides activities and presentations to classrooms as requested each month. In 2019, \$5,000 was budgeted to increase presentations and materials for K-12 classrooms in the District.

### **Nebraska Children's Groundwater Festival**

The NRD began coordinating the Nebraska Children's Groundwater Festival in 2004 for 4th-5th grade students at the Central Community College/College Park in Grand Island as requested by the Groundwater Foundation. CPNRD is the main sponsor, providing \$10,000 annually with donations from businesses and individuals allow schools to attend at no cost. Between 800 -1,000 students attend annually and 300 presenters and volunteers help with the event. In 2019, CPNRD received the Grand Island Izaak Walton League of America award and the national IWLA Roll Call award for outstanding contributions to the conservation of our nation's natural resources through the Nebraska Children's Groundwater Festival. In 2019, the committee decided to invite only 5<sup>th</sup>-grade students to align with Nebraska State Standards. In 2020, the Festival was canceled due to COVID-19 restrictions. The 2021 Festival was held virtually from April 1 - June 1. Participation included 44 teachers from 30 schools totaling 1,250 students. Over 30,000 students have attended the festival in-person.

### **Arbor Day**

In 1992, CPNRD began providing seedlings to area schools to celebrate Arbor Day. The NRD orders up to 1,000 seedlings from Halsey to deliver to area schools for Arbor Day. Presentations are provided when requested.

### **Outdoor Classroom Program**

The NRD began funding outdoor classrooms for schools, outdoor learning areas for communities, and mini-school grants in 2001. Schools that have received funding are Grand Island Northwest; Lexington District #22; Wood River Elementary; Centura Public Schools; Horizon Middle School, Northeast Elementary, and Glenwood Elementary in Kearney; Doniphan-Trumbull Elementary, Cozad Community Schools, Grand Island Senior High, Kearney High School. The NRD has provided funding for 22 outdoor learning areas since 2001. In 2021, the application was changed to state that the outdoor classroom site must be located on public property.

### **Outdoor Learning Area**

CPNRD staff are members of the Grand Island Groundwater Guardian (GWG) Team. From 2011-2012, the GWGs received over \$47,500 in grant monies to implement an Outdoor Learning Area (OLA) to promote rain gardens, native prairie, a bioswale, and Buffalo grass on the Nebraska State Fairgrounds. The groundbreaking ceremony was held in 2011 and an unveiling of the first phase of the project was held on August 31, 2012. CPNRD is instrumental in providing updates and maintenance to the site. In 2018, a life-size Bald Eagle's nest, wildlife track stepping stones and tree displays were added. The Buffalo Grass was also reseeded. In 2019, tree rings and leaf/seed examples were added to the tree display. A pollinator path was added to the native prairie area and fencing was purchased to reduce damage from rabbits. In 2021, the gazebo was refinished by Izaak Walton League, plants were transported from the City of Grand Island's welcome sign, the sprinkler system was updated and new signs were installed. The Outdoor Learning Area is open year-round to the public.

### **College Scholarships**

In 2007, the NRD began providing scholarships for high school students to further natural resources education, funding 10 students at \$1,000 per year. In 2014, the program name was changed to CPNRD-Ron Bishop Memorial College Scholarship to honor former manager, Ron Bishop. In 2018-2019, the Program was changed to provide five \$1,000 scholarships to junior and senior college students pursuing natural resources degrees.

### **High School Contests**

**Land and Range Judging Contests** Central Platte NRD co-hosts the South Central Land Evaluation contest and the Area 4 Range Judging contest with the Natural Resources Conservation Service. CPNRD's staff is responsible for school registration, scoring, coordination and training volunteers, assisting in field activities, meals and award distribution. NRCS finds and prepares site locations and conducts field activities. UNL Extension also partners by providing staff from the county offices.

**NCF-Envirothon** The central region Envirothon is co-hosted with Lower Loup NRD and the state Envirothon location is rotated each year. In 2021, the international NCF-Envirothon was hosted virtually by Nebraska's NRDs with 41 teams competing from the United States, Canada and China. The NARD Foundation provided cash prizes to the top ten placing teams with New York winning the top prize of \$15,000. Prior to 2021, Nebraska last hosted the national contest in 1996.

### Platte Basin Timelapse

In June 2016, the board approved a funding request in the amount of \$2,000 towards the *Timelapse: Monitoring Change Over Time* project. The NARD board approved partnering with Michael Forsberg and the NET to create STEM curricula, meeting Nebraska standards for schools. Materials will be developed in consultation with teachers and curriculum designers, with input from agricultural subject matter experts and the Nebraska Department of Education. Platte Basin Timelapse staff presented stage shows to showcase this project at 2017 Nebraska Children's Groundwater Festival in 2017.

### Wellness Program

In 2010, the NRD began offering wellness activities for staff members including fitness/nutrition challenges, quizzes, and health tips. NARD initiated an effort with all NRDs to start wellness programs since data shows that employee health management initiatives bring value to employees and performance in a multitude of ways. In 2013, the CPNRD Wellness Committee was developed. A Worksite Wellness Employee Interest Survey determined employees interests in health-related and team-building activities.

The committee continues to educate the board and staff about many types of health-related topics, holds lunch and learns, and promote participation by offering health-themed challenges. The committee offers volunteer health screenings and CPR/AED/First Aid trainings and informs staff about blood donation opportunities, health-related events and other opportunities in the community.

### Information and Education Objectives

1. Establish and implement information and education programs for the general public about NRD's duties, responsibilities and objectives.
2. Establish and implement information and education programs for those people with direct interests in the District, specific projects and programs.
3. Work with the news media in order to improve the understanding of the general public about the District and its projects and programs.
4. Assist in developing curricula for use in educating elementary, secondary and post-secondary students about natural resources, conservation and environmental issues.
5. Assist in training teachers and leaders of educational organizations to maximize the use of the curricula that have been developed.
6. Promote communications program designed to enhance the knowledge and understanding of the District's directors and staff about the priorities and expectations of the citizens of the District.

## STAFF TIME REQUIREMENTS

Summary of Projected Needs-Annual Work Hours Required (2022-2027)														
Staff	Admin	O&M	Planning	Range Mgmt	Info/Ed	GW/SW Water Supply	Water Quality Pollution Waste	Flood Reduction	Drainage	Soil Conserv Erosion	Forestry Mgmt	Fish Wildlife Habitat	Rec/Parks	Total
General Manager Lyndon Vogt	1,000	40	200	10	40	800	180	40	40	40	20	20	20	2,450
Assistant Manager Jesse Mintken	480	320	160		50	240	160	450	250	80		100	160	2,450
Admin Assistant Kelly Cole	1,800		20					50	5	5	160	40		2,080
Cozad Ditch Manager Mike Schmeeckle			100			1,900			80					2,080
Cozad Ditch Rider Jake Laird			80			2,000								2,080
Easement Habitat Spec. Krystal Bialas	400		1,600		80									2,080
Communications Assistant Brody Vorderstrasse				80	2,000									2,080
GIS Coordinator Angela Warner	60		40		60	1,680	240							2,080
GIS Image Analyst Luke Zakrzewski	40		40		40	1,680	220		60					2,080
Hydrologist Brandi Flyr	120		160		40	1,600	40	40				80		2,080
Info/Education Specialist Marcia Lee	200		280		1,600									2,080
Precision Conservation Darren Cudabeck	580		1,500											2,080
Prescribed Burn Planner Nelson Winkel	100	100	1,500	260	40						80			2,080
Projects Assistant Tom Backer	200	500	100			200	560				650		50	2,260
Range Mgmt Specialist David Carr	240	200	400	760	200		460							2,260
Resources Conservationist Bill Hiatt	40	660	80	400	200		300	180			120	80	80	2,140
Resources Conservationist Shane Max	40	40	40		15	1,325	240	200	120	120				2,140
Secretary-CPNRD Deb Jarzynka	1,800	20			15	110	25	20	20	20	25	15	10	2,080
Secretaries (4) NRCS Field Offices					20	100	100			7,800	200	100	0	8,320
Thirty Mile Secretary Marci Ostergard						380								380
Thirty Mile Manager Jim Harris			200			1,800			80					2,080
Thirty Mile Technician Mike Ostergard						2,080								2,080
Water Quality Specialist Tricia Dudley	200					300	1,280	100	100			100		2,080
Water Resources Specialist Dan Clement	60	80			80	800	960			100				2,080
Water Resources Tech Courtney Widup	80		100		300	1,250	350							2,080
<b>Total</b>	<b>7,440</b>	<b>1,960</b>	<b>6,600</b>	<b>1,510</b>	<b>4,780</b>	<b>18,245</b>	<b>5,115</b>	<b>1,080</b>	<b>755</b>	<b>8,165</b>	<b>1,255</b>	<b>535</b>	<b>320</b>	<b>57,760</b>

# Fiscal Budgets

Below are the FY 2022 and 2023 Fiscal Budgets that were adopted by the Central Platte NRD Board of Directors, in accordance with state statutes.

The money that the NRD receives from local property taxes provides funding for flood control, water quality and water quantity programs, soil health, tree planting, wildlife restoration areas and many other natural resources benefits. The NRD strives to conserve and preserve natural resources for the residents of central Nebraska.

<b>GENERAL &amp; SINKING FUNDS</b>	<b>FISCAL 2023</b>	<b>FISCAL 2022</b>
Cash, Investments & Co. Treasurer	\$14,306,019.55	\$12,771,569.30
Revenue	\$9,746,894.43	\$7,829,190.93
Total Balances on Hand & Revenue	\$24,052,913.98	20,600,760.23
General Fund Requirements	\$27,329,482.32	23,195,755.51
County Treasurer Commission	\$43,519.43	39,441.81
Sinking Fund Requirements	\$1,075,374.36	1,349,185.60
Total Requirements-Both Funds	\$28,448,376.11	24,584,382.92
<b>Property Tax Required</b>		
General Fund	\$4,395,462.13	3,983,622.69
Sinking Fund	-0-	-0-
Total Both Funds	\$4,395,462.13	3,983,622.69
<p>The District's 2023 total valuation received from the 11 county assessors is \$18,752,221,861.  The overall valuation increase compared to last year is estimated at approximately 4.4832%.  The property tax asking for Fiscal 2023 required an increase of \$411,839.44 from last year.</p>		

Fiscal 2022/2023 Levy	General Fund	0.023440	Both Funds
	Sinking Fund	0.00000	0.023440
Fiscal 2021/2022 Levy	General Fund	0.022196	Both Funds
	Sinking Fund	0.00000	0.022196



## **Central Platte Natural Resources District**

**Main Office:** 215 Kaufman Ave Grand Island NE 68803-4915

(308) 385-6282 Fax: (308) 385-6285 [www.cpnrd.org](http://www.cpnrd.org)

**Cozad Office at Thirty Mile Irrigation District:** 75887 Road 414 Cozad NE 69130

(308) 380-8943 Fax: (308) 385-6285

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## **USDA Natural Resources Conservation Service (NRCS) Field Offices**

**Grand Island** 703 S Webb Road Grand Island NE 68803 (308) 395-8586

**Central City** 1708 31<sup>st</sup> St. Ste. 2 Central City NE 68826 (308) 946-3035

**Kearney** 4009 6<sup>th</sup> Ave Ste. 4 Kearney NE 68845 (308) 237-3118

**Lexington** 721 E Pacific Ste. 2 Lexington NE 68850 (308) 324-6314

**Osceola** PO Box 547 Osceola NE 68651 (402) 747-2461

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## **Nebraska Association of Resources Districts**

**Lincoln** 8100 S 15<sup>th</sup> Street Ste B Lincoln NE 68512 (402) 471-7670

The 2022-2027 Long Range Implementation Plan was approved by the  
Central Platte NRD Board of Directors on September 22, 2022.