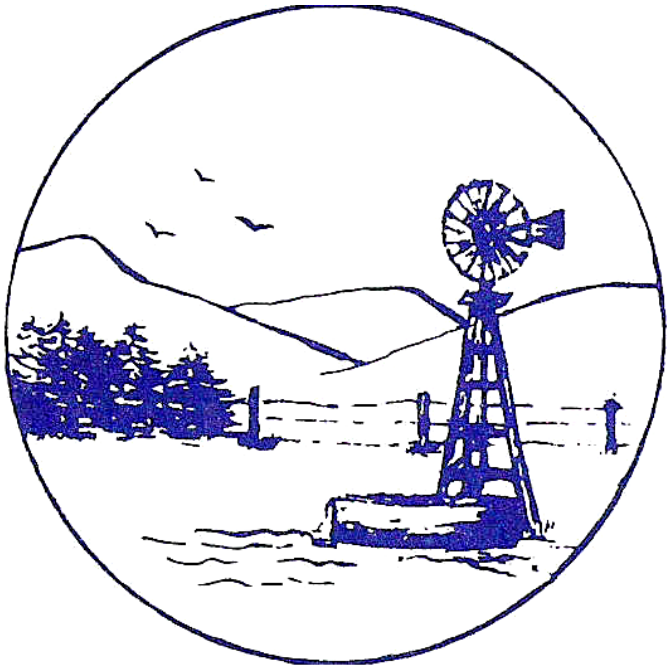
Upper Loup Natural Resources District

Master Plan

2012



Upper Loup Natural Resources District

39252 Hwy. 2

Thedford, NE 69166

308-645-2250

Website: www.upperloupnrd.org

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I. Introduction

Each of the State's Natural Resources Districts is required to update their Master Plan every ten years. This update process offers an opportunity to look back over the last ten years and reflect upon how well the District addressed the goals, objectives, and recommendations of the last Master Plan. It also offers an opportunity to once again take stock of where the District currently is, consider if it is addressing the needs of a changing District, and to project where the District should be in the next ten years. It is also a critical time to re-evaluate the goals of Natural Resources Districts and what they might look like in the next ten years.

The Master Plan is intended to provide an overall framework for the management of the District's natural resources.

Natural Resources District Authorities

In July of 1972, over 150 special purpose districts, each dealing with a variety of different and in some cases overlapping responsibilities, were merged together to form 24 Natural Resources Districts. On January 5, 1989, a union of the Papio Natural Resources and the Middle Missouri Tribs Natural Resources District reduced the number to 23.

Under Nebraska State Law, the Natural Resources Districts have been given specific authority and powers as described in Chapter 2-3229 of the Statutes. The NRDs were given statutory responsibilities to develop and execute plans, facilities, works, and programs relating to:

1. Erosion prevention and control
2. Prevention of damages from flood water and sediment
3. Flood prevention and control
4. Soil conservation
5. Water supply for any beneficial uses
6. Development, management, utilization, and conservation of groundwater and Surface water
7. Pollution Control
8. Solid waste disposal and sanitary drainage
9. Drainage improvement and channel rectification
10. Development and management of fish and wildlife habitat
11. Development and management of recreational and park facilities
12. Forest and range management.

II. Upper Loup Natural Resources District

The Upper Loup Natural Resources District, part of the Loup River Basin, is located in the north central part of the state and all except the southeast corner lies in the Nebraska Sandhills. It is comprised of 6,690 square miles, which includes all of Blaine, Grant, Hooker, Logan and Thomas Counties, and parts of Brown, Cherry and McPherson Counties. The distance from east to west is 120 miles, and from north to south is 78 miles and contains 4,275,000 acres.

The five main streams flowing through the District are the North Loup, Middle Loup, South Loup, Calamus and Dismal Rivers, along with these important tributaries: Goose Creek, Calf Creek, Big Creek, Wild Horse Creek and Rifle Creek.

Villages within the District are Ashby, Brewster, Brownlee, Dunning, Elsmere, Gandy, Halsey, Hyannis, Mullen, Purdum, Seneca, Stapleton, Thedford and Whitman. The population is approximately 4,301 of which 66% is rural and 34% is urban.

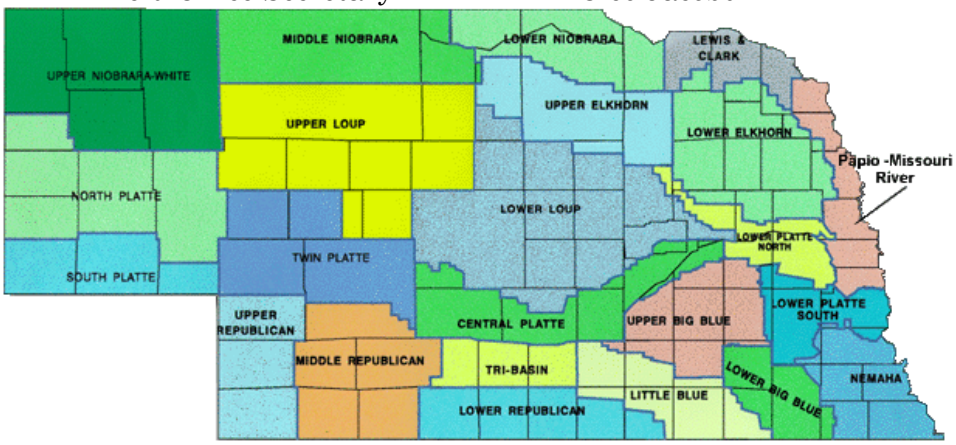
The Upper Loup NRD became operational on July 1, 1972 by the act of the Nebraska Legislature. This new political subdivision of the state accepted all assets, liabilities and obligations of the special purpose districts that were merged to form this NRD. The District is governed by an elected Board of Directors. There are eleven members on the board, two of whom are elected from each of the five sub districts and one director-at-large.

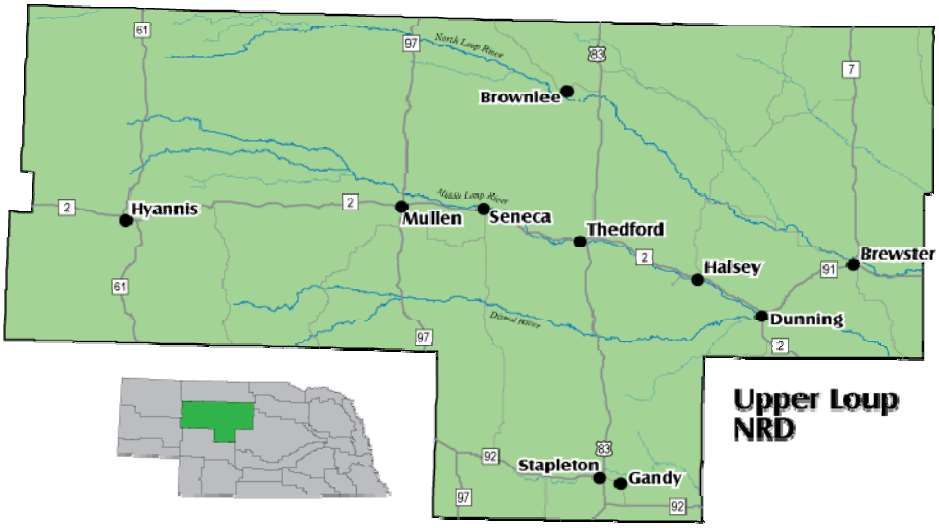
Current Board Member	Sub District	County	Population
Chris Vinton	1	Grant & part of Cherry	801
Eric Storer	1		
Judy Ridenour	2	Hooker & part of Cherry	878
Wynn Wiens	2		
Gary Schaeffer	3	Thomas & part of Cherry	1010
Chris Higgins	3		
Byron Cox	4	Blaine & part of Brown	652
Gordon Simonson	4		
Darwin Frey	5	Logan & part of McPherson	960
Tom Johnson	5		
Patrick Wright	At large		

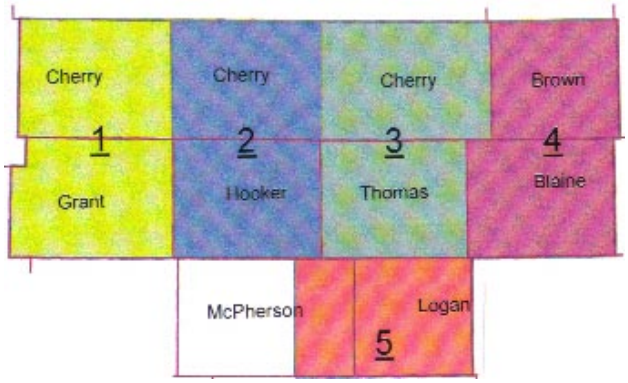
The District operates on a daily basis with both full and part-time employees. The staff is maintained to implement the District's various programs and projects.

Anna Baum	General Manager	Full Time
Leslie Harvey	Administrative Secretary	Full Time
Resources Technician	Kyle Yrkoski	Full Time
Resources Technician	Evan Suhr	Full Time
Resources Technician	Jack Brummet	Part Time
Information & Education	Denise Vinton	Part Time

Field Office Secretary Cleo Jacobs Full Time







II. Inventory of Resources

A. Geology

A brief description of the geologic history of the Sand Hills region including a discussion of the dunes is given in the first and second editions of An Atlas of the Sand Hills, 1989 and 1990 published by the Conservation and Survey Division (pg. 29-56). A thick sequence of continental deposits i.e. those sediments deposited by wind and water overlie Cretaceous shales of marine sea origin. The total thickness of the younger Tertiary sediments (about 2 million to 37 million years in age) is as much as 2,000 feet in the southwest part of Cherry County. The Brule and the Chadron formations of the White River Group are the oldest of the Tertiary units. They underlie the entire NRD and generally thin from west to east. Their maximum thickness of around 1,250 feet is in southwest Cherry County. These sediments are quite fine-textured and their top generally coincides with the base of the groundwater reservoir.

Underlying the dunes are discontinuous deposits of Quaternary and Pliocene sands and gravels and the sands, clays, sandstones, gravels and clay of the Ogallala Formation of Miocene Age. Although the Ogallala Formation consists mostly of fine to medium sands, the formation is thick and constitutes a major part of the High Plains Aquifer. The Ogallala ranges up to 800 feet in thickness and is thickest beneath the western part of the NRD, where it averages more than 600 feet.

Another aquifer, the Arikaree Group, occurs in places above the White River Group as paleovalley fills. The rock unit is older than the Ogallala and the occurrence of rocks of this age (about 19 to 28 million years) is as yet poorly defined. One of the paleovalleys, up to 25 miles wide and filled with more than 200 feet of fine to medium sand, has been identified in central Hooker County.

Widespread sand movement probably has not occurred in the last several centuries; however, some modification of the dunes is known to have taken place during the drought years of the 1930's. Overgrazing was a contributing factor. The Sand Hills region now is considered to be one of the largest areas of stabilized dunes in the world.

B. Topography

Throughout the Sandhills region, wind and a previous erosion cycle have controlled the nature of the land surface. The topography of most of the District is dominated by large and small sand dunes, mostly stabilized by native grass cover. The ranges of hills, with alternating pockets or valleys between them, normally run parallel in an irregular northwest-southeast direction. The valleys are continuous for great distances only where they contain stream courses and are not interrupted by dunes. As a rule, the southerly (leeward) sides of the hills are much steeper than the northerly (windward) sides. In some areas, the dunes rise on all sides instead of forming elongated ridges. The result of this type of hill distribution is an abrupt, rolling surface of considerable relief. Sometimes small oval or round depressions alternate with round or conical

dunes. The tops of the higher hills are on a level, but from a few hills of uncommon height one can see for miles across the dunes. In places, there are blowouts, or areas where the surface is bare and loose sands are blown about by the wind.

Wet meadows, lakes, ponds and marshes occupy parts of the valleys. Some of these lakes are fed by seeps and springs. The water table is near the surface in many places, so the water levels of the lakes and ponds fluctuate seasonally.

The Calamus, Dismal and Loup Rivers, along with numerous creeks and tributaries, have their origins in the District. Most of the rivers and streams are not swift so their channels deepen slowly. The major streams in the area have a remarkably even flow of water; the volume varies little during the year.

C. Soils

The area is characterized by the Valentine and Valentine-Dunday soil associations. Valentine soils are by far the most widespread and make up much of the grassland. These sand deposits range from a few inches to many feet in thickness. The mineralogy of the sand is mostly quartzitic. The sandy soils are pale in color with very little organic matter. Soils with a good dense cover of grass generally have a darker and thicker surface soil than those having a sparse cover of grass. The soils are suited mainly for grass which is the principal resource of the area ranches. These droughty soils are susceptible to wind erosion. Water erosion is generally slight, because the infiltration rate of the soils is high and little water is lost to runoff and evaporation. Loup soils have developed in poorly drained areas. They contain more silt and clay than the Valentine soils. Soils in the sub-irrigated meadows tend to have darker top soils because of the large amount of vegetation on the sites. They are well suited for hay, an important crop in this vast cattle-raising country. Hay yields are high, especially in meadows seeded with a mixture of timothy and clover.

Soil profiles in the region are less developed than most other soils in Nebraska, because they generally lack clay-enriched subsoils. The various soil association areas are:

1. The Coly-Uly-Holdrege Association soils are the "hard lands" of southern Logan County. They are well to excessively drained silty soils on uplands. They occur on gentle to steep slopes. Although they occupy only a small portion of the NRD area, these soils are the most intensively irrigated in the district.
2. The Valentine-Elsmere-Tryon Association is the second largest soils association in the district occurring mostly in Grant, western and northern parts of Cherry, and in parts of Brown Counties. The Valentine soils occur on the uplands and the Elsmere and Tryon soils occur in association with the Valentine on nearly level alluvium and eolian sands in valleys. They are poorly to somewhat poorly drained. Irrigation from wells is quite sparse in the areas occupied by these soils.

3. The Hersh-Valentine Association occurs in and around the area of the "hard land" soils in Logan County, a small adjacent area in McPherson County, and in another small area in southeast Blaine County. The Hersh soils in association with the Valentine are deep, well to excessively drained loamy soils on nearly level to steep slopes formed in eolian materials on uplands. A relatively large percent of these soils are irrigated.
4. The Els-Valentine-Ipage Association occurs in parts of four townships northeast of Brewster in Blaine County and a small area in extreme southeast Brown County. The Els and Ipage soils are somewhat poorly to moderately well drained sandy soils formed in eolian sands and alluvium in valleys. They occupy nearly level to very gentle slopes. Some irrigation wells have been developed in parts of the area occupied by this association.
5. The Hobbs-Hord Association occurs on bottomland and terraces of the South Loup River in southeastern Logan County. They are well-drained silty soils formed on alluvium and loess.
6. The Hord-Cozad-Boel Association occurs on terraces and bottomland along the Middle Loup River near the Blaine-Custer County line. They are formed mostly on well drained silty alluvium bottomland and terraces.
7. The Almeria-Bolent-Calamus Association occurs in the valleys of the Calamus, North Loup, Middle Loup and South Loup Rivers. They are sandy soils formed on alluvium and range from very poorly drained to moderately well drained. Clusters of irrigation wells have been concentrated in some areas to irrigate these soils.

D. Climate

The climate of the District is distinctly continental and extremely variable. Rapid weather changes occur from day to day. The humidity generally is low and semiarid in the western part of the District. Average annual precipitation is 14 inches in the west to 17 inches in the eastern part; however; precipitation is highly variable and seldom average. Rainfall is greatest in the months April through September and dry periods lasting several weeks are common in midsummer. Droughts are common and last from a few weeks to several years.

Winter precipitation (Oct.-March) is usually snow. Snow is often accompanied by strong northerly winds. Severe blizzards are infrequent, but when they occur they cause problems for the ranchers. Loss of livestock, drifting roads and difficulty feeding cattle are the results. Prevailing winds blow from the northwest in Oct.-March and from a southerly direction the rest of the year. Summer winds help hinder insect activity and therefore afford some degree of protection from such pests to cattle. The wind also serves as a source of power for the many windmills that dot the range and pump fresh water for the cattle.

The growing season or frost free days range from 145 days in the east to 120 days in the west. This is due in part to the higher elevation in the west. Temperatures sometimes range from -30 degrees to 110 degrees.

E. Land Use

The District is primarily rangeland and is widely known as a source of feeder cattle. The soils used for grazing are generally not suitable for cultivation but will produce good crops of grass year after year. The rangeland also provides habitat for many kinds of wildlife.

Many of the Sandhills valleys and the poorly drained parts are used as hay land. The high water table is beneficial to production of meadow grass. Small areas of lower ground with better soils are irrigated and planted to cultivated crops.

Land Use	Acres	Percentage of Total District Acres
Cropland	84,547	1.8%
Irrigated Cropland	67,540	1.5%
Pasture/Rangeland	4,044,329	94%
National Forrest	78,639	2%
Gudmundson Lab	12,810	.3%
Rivers and Lakes	38,975	.91%
Commercial (golf courses, gravel operations)	700	.016%
Urban / Other; including waste	15,000	.35%
Total	4,275,000	

F. Water

The Ogallala Group underlies the entire District. An estimated 670,000 acre feet of readily obtainable groundwater is stored in the sands and gravels of formations in the Loup River Basin. This amount is more than 36 percent of the estimated volume of available groundwater in the state. This large underground water reservoir stabilizes stream flows, provides water to numerous lakes and sub irrigated meadows and serves as a source of irrigation to supplement and stabilize forage supplies for the regions livestock industry.

The abundance of water, groundwater, streams and lakes in the District is closely related to geology of the area and the mantle of dune sand over most of the area. The relatively low amount of precipitation belies the water abundance. The factors that contribute to the large supply of water are: high infiltration rates of precipitation on the sandy soils; very little surface runoff due to generally very poorly integrated surface drainage; groundwater support of lakes, wetlands, and streams; and the thickness of relatively coarse aggregate sediments constituting a large groundwater reservoir.

Precipitation falling on the land surface is the source of water supply. That amount varies seasonally and annually as described previously. Total amount of annual precipitation in average, dry and wet years is estimated to be as follows: Dry (12 inches) 4,275,000 acre feet; Average (19 inches) 6,750,000 acre feet; Wet (24 inches) 8,550,000 acre feet.

The water has very little taste or odor, is low in total dissolved solids and alkalinity and thus is of high quality for many uses. Water is easily obtainable from wells and is usually reached at depths of 40-150 feet. Depth of irrigation wells is generally 200-400 feet. Water quality is generally good, with the average nitrate level in domestic wells across the district remaining around 1.97 ppm and 1.92 ppm in irrigation wells, both well below the federal safety standards of 10 ppm.

Surface water within the District includes the five rivers and tributaries mentioned earlier. District streams have few tributaries, flow at a remarkably steady rate, and almost never flood despite their generally low banks. Their water is relatively low in dissolved solids. Stream flows are steady because groundwater seepage into the streams varies relatively little from year to year. This groundwater seepage has little variation in temperature so the streams are less likely to freeze during winter and are less variable in temperature during other seasons. The rivers and streams are used for the growth and propagation of fish and wildlife, livestock watering, irrigation, fishing, recreation and esthetic values. No communities in the District use surface water for municipal supply.

Many lakes, ponds and marshes occupy parts of the valleys. Some of the lakes are fed by seeps and springs and most originate as groundwater. The lakes are of various size and shape. They are generally shallow, averaging 3-6 feet deep, but there are a few deeper holes in some lakes. Precipitation has a large effect on lake size as well as evaporation, so lakes vary in number and size from year to year. In general, the water in District lakes tends to be alkaline. Lake and marsh water is used primarily for fish, wildlife and livestock water with some recreation on the larger lakes.

G. Vegetation

The District is a transition zone where eastern tall-grass prairie and western short-grass prairie meet and intermingle. Areas within the District vary tremendously, ranging from permanent wetlands to arid areas with almost desert-like conditions. The variability of topography and availability of soil moisture, together with the geographic location, all combine to produce a wide variety of vegetation not normally found growing together.

The large areas of stabilized sand dunes provide some of the most dependable grazing in Nebraska. Predominant grass species here are little bluestem, sand bluestem, prairie June grass, prairie sand reed, switch-grass and Indian grass. Other dune-top plants are stiff sunflower, purple prairie clover, small soap weed (yucca), sand cherry, cacti, leadplant and many varieties of wild flowers. In the interdunal valleys are grasses and other plants with shallow root systems, such as wheatgrass, needle-and-thread grass, and the gramas.

Undoubtedly, some plant species have increased as a result of livestock grazing, while others have decreased, but there is no evidence that livestock grazing has caused any species to disappear. The most prominent grasses of the hay meadows are

wheatgrass, big bluestem, northern reed grass, Canada wild rye, switch grass, prairie cord grass, timothy, land clovers and the introduced red-top.

The wet meadows are dominated by reed canary grass, various bulrushes and forbs. Plants of the marshes are common reed grass, reed canary, prairie cord grass, cattails, bulrushes, spike rushes, sedges, wild rice, swamp milkweed, and various smartweeds. Some of the ponds and lakes are dense with submersed aquatic plants such as widgeon grass, pondweeds, coontail, milfoil, aquatic buttercups, waterweed, watercress, naiad, star duckweed, waterlily, cowlily, watermeal, arrowheads and water plantain.

Although most of the District is unforested, trees and shrubs are an important part of the ecological makeup of the area. The majority of the timber occurs along the lakes, rivers and tributaries. Shelterbelts are used around farm and ranch buildings and on livestock feeding grounds. These plantings add beauty to the farmsteads, furnish cover for wildlife and protect homes and livestock from the wind. Trees that have been found to do well in the sandy soils for this purpose include cottonwood, hackberry, honey locust, and most conifers such as the cedar, juniper and pines.

H. Wildlife

The extraordinary variety of habitats from dune top to interdunal wetland and riverbank provides habitats for many different species of fish, birds, mammals, amphibians and reptiles.

Some of the most common fish found in the District lakes and rivers are trout, yellow perch, black crappie, walleye, bluegill, bullhead, bass, northern pike, carp, channel catfish, minnows, dace and sucker.

Birds, both game and nongame species are numerous in the District. Game birds are wild turkey, ring-necked pheasant, sharp-tailed grouse, prairie chicken, bobwhite quail, mourning dove, ducks and geese. Other larger birds are the white pelican, herons, egrets, loons, grebes, coots, eagles, owls, hawks, terns, cranes and long-billed curlew. Many smaller birds either reside here or migrate through. Among these are the meadowlark, sparrow, robin, woodpeckers, swallows, blue jay, magpie, crow, chickadee, wrens, bluebird, blackbirds, starling, oriole, hummingbird, thrushes, finches, flycatcher, junco, cuckoo, grosbeak, sand pipers, bobwhite, rails, warblers and killdeer.

Big game mammals within the District are white-tail and mule deer and pronghorn antelope. Mammals trapped for their pelts are coyote, mink, racoon, beaver and muskrat. Numerous other small mammals are badger, cottontail rabbit, jackrabbit, ground squirrels, prairie dog, tree squirrels, porcupine, skunk, opossum, bats, pocket gopher, kangaroo rat, moles, voles, mice and weasel.

Amphibians present are the tiger salamander, toads and frogs. Reptiles found near lakes, marshes, ponds and roadside ditches are several species of turtles. The open

sandy areas are the habitat of several common lizards. Several kinds of snakes are widespread across the District with the prairie rattlesnake being the most notorious.

The wildlife resources of the District are important for the recreational, hunting and fishing opportunities they provide. Many species of wildlife are also beneficial in the control of rodents and undesirable insects.

I. Cooperating Agencies

The District cooperates regularly with a variety of state, federal and local agencies to accomplish its mission. The following agencies are important partners of the District.

1. Federal
    a. USDA Natural Resources Conservation Service
    b. USDA Farm Services Agency
    c. US Army Corps of Engineers
    d. US Environmental Protection Agency
    e. US Fish and Wildlife Service
    f. National Park Service
    g. US Geological Survey
    h. Federal Emergency Management Agency
    i. Federal Highway Commission
2. State
    a. Nebraska Department of Natural Resources
    b. Nebraska Department of Environmental Quality
    c. Nebraska Game and Parks Commission
    d. Nebraska Department of Health and Human Services
    e. Nebraska Department of Roads
    f. Nebraska Emergency Management Agency
    g. Board of Educational Lands and Funds
    h. Nebraska Department of Economic Development
    i. University of Nebraska – Lincoln Cooperative Extension
3. Local
    a. Counties, Cities and Villages Governing Bodies
    b. Custer Public Power District
4. Cooperating Associations
    a. Nebraska Association of Resources Districts
    b. Nebraska Water Resources Association
    c. Nebraska Rural Water Association
    d. Nebraska Groundwater Federation
    e. National Association of Conservation Districts

III. Vision, Mission, Goals and Objectives

The vision for the Upper Loup NRD is to "work cooperatively with district residents to promote good stewardship of land and water resources."

Upper Loup NRD's mission is to "manage, conserve and protect the District's land and water resources." This mission will be accomplished by protecting the quality and quantity of surface water and groundwater, reducing soil erosion and flooding, promoting agricultural best management practices, forestry and wildlife habitat preservation. These tasks can only be accomplished by working cooperatively with local residents and agencies of local, state and federal government.

The Upper Loup Natural Resources District will strive to fulfill its vision and mission over the duration of this plan. The district has developed a series of goals and objectives associated with the various purposes of the NRD as measures of progress made toward achieving the vision and accomplishing the mission of the NRD.

Area	Goal	Objectives
A. Soil Conservation & Erosion Control	Reduce soil erosion to acceptable limits	1. Administer the Nebraska Erosion and Sediment Acceptable limits 2. Approve conservation plans for private lands 3. Administer cost-share assistance programs 4. Assist with the implementation of Best Management Practices 5. Provide educational programs to both youth and adults to promote soil conservation and erosion control
B. Prevention of Damages from Flood Water and Sediment / Flood Prevention and Control	Reduce flood and sediment threat and damage	1. Update flood plain maps periodically with land use and other changes 2. Educate public about flood threats and response plans 3. Assist district villages and counties in flood prevention planning and flood control projects
C. Surface and Groundwater Supply and Management	Monitor, maintain and improve the quality and quantity of surface and groundwater	1. Promote beneficial and efficient use of all water resources 2. Annually monitor, inventory and evaluate the quality and quantity of surface and groundwater on a continuing basis across the district 3. Cooperate with state and federal agencies in maintaining ground water quality and quantity databases 4. Cooperate with all political subdivisions, state and federal agencies on water resources research 5. Approve conservation plans for private lands 6. Administer cost-share assistance programs 7. Assist with the implementation of Best Management Practices 8. Provide educational programs 9. Administer its Groundwater Management Plan and Groundwater Management Area Rules and Regulations in order to conserve groundwater supplies and preserve groundwater quality within the district

Area	Goal	Objectives
D. Pollution Control and Waste Disposal	Prevent pollution and promote lawful and safe disposal of waste	1. Administer its Groundwater Management Plan and Groundwater Management Area rules and regulations in order to preserve surface water and groundwater quality within the district 2. Assist local political sub-divisions in implementing wellhead protection areas 3. Administer the Nebraska Chemigation Act rules and regulations 4. Provide education, technical and cost share assistance to implement Best Management Practices to reduce potential pollution 5. Assist district villages, counties, civic organizations, businesses, and individuals with solid waste reduction planning and recycling
E. Drainage Improvement and Channel Rectification	Assist with development of drainage systems that reduces damage from storm water and groundwater seepage	1. Encourage landowners to maintain natural drainage of their property to prevent flooding of adjacent property 2. Assist with the implementation of Best Management Practices 3. Work closely with counties and road superintendents to improve drainage along county roads
F. Recreation, Fish and Wildlife Management	Preserve, develop and manage fish and wildlife habitat and assist district communities with the development of recreational facilities for public use	1. Cooperate with the Nebraska Game and Parks Commission in implementing the WILD Nebraska Program 2. Consider incorporating fish and wildlife habitat protection and enhancement in district projects where feasible 3. Cooperate with private groups or organizations and individuals to improve fish and wildlife habitat 4. Cooperate with district villages, counties, political sub-divisions, civic organizations, and businesses that are developing outdoor recreational facilities for the public
G. Forestry and Range Management	Improve and maintain rangelands and woodlands	1. Provide trees and a tree planting service 2. Administer forestry cost share assistance programs 3. Promote and provide cost share assistance programs for planned grazing systems and proper range management practices for livestock grazing operations 4. Furnish grass drills and gopher machines for use by district residents 5. Provide educational programs for youth and adults

IV. Current Programs and Projects

A. Groundwater

Groundwater Management Plan - This plan contains an inventory of existing data on groundwater resources, goals for groundwater quality and quantity, triggers for regulatory actions, describes groundwater monitoring and programs, and provides guidance for groundwater management for the next few years. The Department of Natural Resources approved it on January 4, 1994.

Ground Water Management Area Rules & Regulations - First adopted in 2007 and revised in 2009, and 2011. The latest revision, due to be adopted in 2013, includes rules and regulations related to the LB 483 legislation.

Groundwater Monitoring - This program consists of the following components:

- Take static water level measurements in observation wells across the district each spring and fall. Presently 110 wells are measured each year.
- Collect water samples from both irrigation and domestic wells in each sub-district on a cyclic schedule. Approximately 100+ wells are tested each year for water quality analysis.
- Continue to take monthly static water levels from eight continuous recorder wells.
- Require the certification of all irrigated acres within the district.
- Measurement of groundwater use by irrigators, industrial and commercial users as well as the five municipal water users in the district.
- Monitor two stream gages one located on the North Loup River at Brewster and the other located on the South Loup River by Arnold.
- Administer a chemigation inspection and permit program as directed by the Nebraska Chemigation Act of 1986.
- Offer several cost share practices such as soil testing, drip well cost share, the Water Well Decommissioning program and many of the Nebraska Soil and Water Conservation Practices (NSWCP). Examples include: constructing water impoundment dams, constructing diversions, constructing grassed waterways, constructing water and sediment control basins, stream bank stabilization and various irrigation water management practices.

B. Forestry

One of the most popular and visible programs for the Upper Loup Natural Resources District is the tree-planting program. Approximately 30-40,000 trees are sold or distributed to landowners, schools, and community groups each spring. Around 30 miles of plastic mulch is installed which aids in moisture conservation and weed control. More than 1.2 million trees have been distributed in the District since 1972 and 571 miles of fabric laid. Tree plantings are established for erosion control, windbreaks, wildlife habitat, woodlot or aesthetic purposes.

The District has a couple of cost share tree programs. One, being the yard enhancement program that offers cost share to homeowners living in District for assistance in planting landscape trees. Others are trees for newborns and the memorial cost share programs. The District also participates in the NSWCP cost share for the establishment of windbreaks.

C. Soil and Range

The District offers a variety of cost share assistance for soil and range conservation practices through NSWCP such as planned grazing systems, grass seeding, and critical area planting. The District also provides cost share for deep soil testing and fall spraying of leafy spurge (a perennial weed in our area that can reduce rangeland cattle carrying capacity by 50 to 75 percent).

Two no-till drills are available for customers to rent. No-till implementations have shown to have positive impacts on soil health, water quality, and net farm income.

Because unwanted gophers are a big problem the District sells poison bait and has bait applicators available to rent.

D. Wildlife

Nebraska WILD Program – The Nebraska Game and Parks Commission and the District collaborate to create and improve wildlife habitat on private lands.

Corners for Wildlife Program – Pheasants Forever and the District collaborate to help establish wildlife habitat on center pivot corners. The objective of the program is to establish high quality wildlife habitat for upland wildlife and grassland songbirds.

Tree and Shrub Planting Program – The District works with individual landowners to plant trees and shrubs for windbreaks, shelterbelts, and or wildlife habit.

E. Solid Waste - Recycling

The District works with local villages, schools, counties, businesses and individuals in the collection and transportation to end market of aluminum, tin, #1 and #2 plastics, paper and cardboard.

F. Information and Education

The District has a wealth of resources available to educators and community groups in our district. Our lending library includes books, activity guides, videos, games, a ground water flow model, interactive PowerPoint presentations, and other materials that provide informative and factual information to compliment natural resource studies. The district will work with schools or community groups in the establishment of outdoor classrooms as materials and funds are available.

The District also makes available many items to the general public as well as program topics, presentations, public information meetings, award programs, training programs and many publications. Staff members may be available for group presentations.

The District publishes and distributes its newsletter, The Upper Loup Scoop, district wide quarterly. News items are also released periodically to the media including press releases distributed after most board meetings. The Upper Loup NRD has also created an internet web site located at www.upperloupnrd.org.

The District offers several scholarships, co-sponsors camps, assists with youth judging contests, provides various safety training courses as well as provides various conservation awards. Some examples include: Range Camp Scholarships, Adventure Camp about the Environment (ACE) Scholarships, Ranch Practicum Scholarships, ACE Camp, Land and Range Judging Contests, Nebraska Envirothon, Nebraska Children's Groundwater Festival, Hunter Safety, Bow Safety, Boater Safety, Outstanding Tree Planter Award, and Outstanding Grassland Award.