

DISTRICT PROFILE

LOWER LOUP NATURAL RESOURCES DISTRICT

**Lower Loup Natural Resources District
Hazard Mitigation Plan 2022**

Local Planning Team

Table LLNRD.1: Lower Loup NRD Local Planning Team

Name	Title	Jurisdiction
RUSSELL CALLAN	General Manager	Lower Loup NRD
TYLR NAPRSTEK	Assistant General Manager	Lower Loup NRD
LARRY SCHULTZ	Information/Education Coordinator	Lower Loup NRD

Location and Geography

The Lower Loup NRD is located in central Nebraska and covers 5,070,720 acres in all or parts of the following counties: Boone, Buffalo, Butler, Custer, Garfield, Greeley, Hall, Howard, Loup, Merrick, Nance, Platte, Rock, Sheridan, Valley, and Wheeler. The district encompasses 514 miles of rivers, including the drainage systems of the lower reaches of the North, Middle, and South Loup River systems. The following figure is a map of the Lower Loup NRDs jurisdiction area.

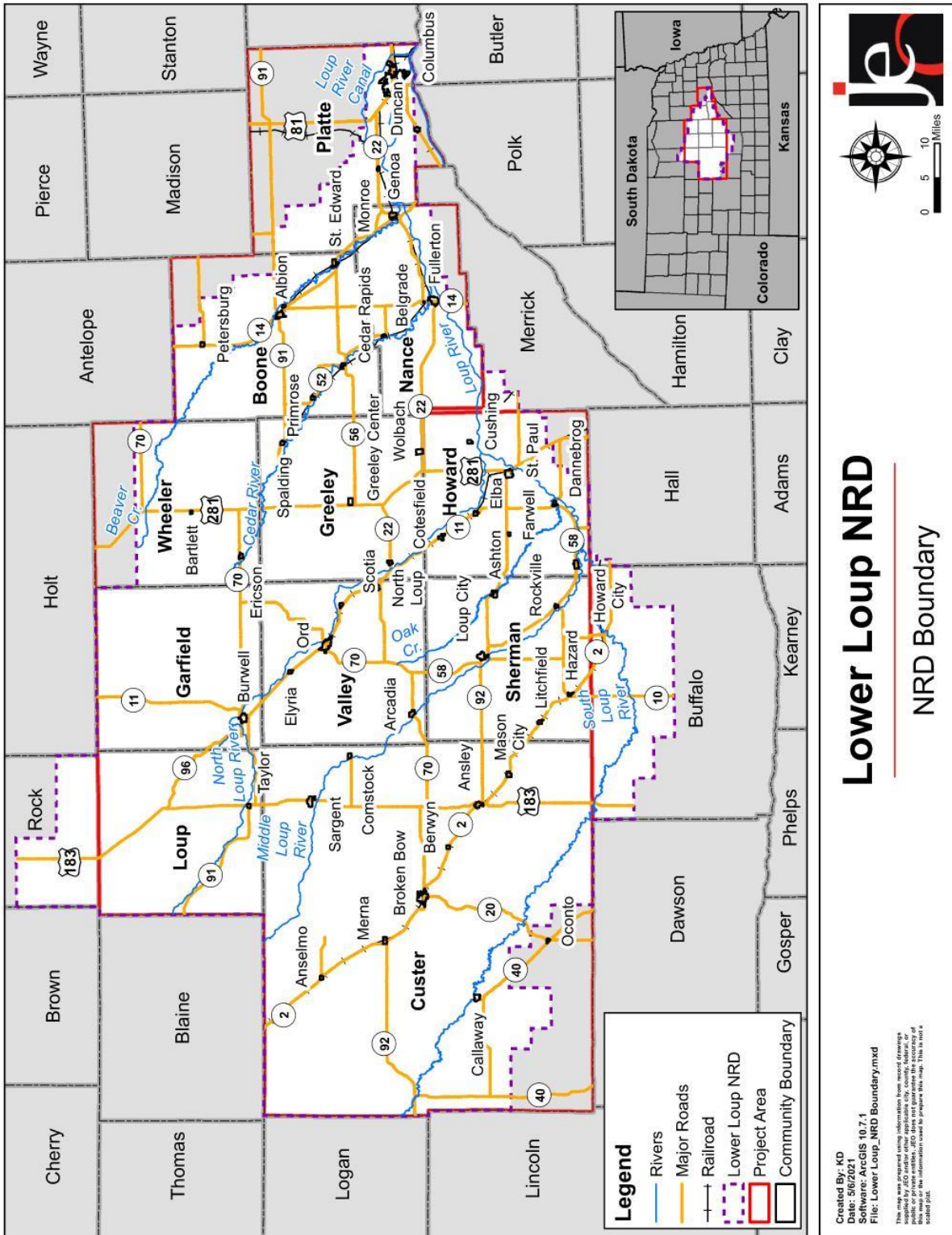
Demographics

It is estimated that the Lower Loup NRD serves a population of approximately 72,000 over 11 counties. However, the NRD does not collect information on age, or other demographics of their population, nor does the U.S. Census Bureau recognize the NRD. As a result, there is no additional population data for the NRD boundary. For information regarding population data, please refer to the specific jurisdiction community profiles or to *Section Three: Community Profile*.

Table LLNRD.2: Lower Loup NRD Estimated Population

County	2010 Population	2019 Population	Percent Change
Boone County	5,553	5,279	-5.0%
Custer County	11,001	10,826	-1.6%
Garfield County	2,081	2,001	-3.8%
Greeley County	2,542	2,382	-6.3%
Howard County	6,302	6,417	1.8%
Loup County	635	605	-4.7%
Nance County	3,755	3,544	-5.6%
Platte County	32,237	33,174	2.9%
Sherman County	3,152	3,033	-3.8%
Valley County	4,260	4,206	-1.3%
Wheeler County	818	783	-4.3%
Total	72,336	72,250	-

Figure LLNRD.1: Lower Loup NRD Jurisdictional Boundary



Governance

The Lower Loup NRD is governed locally by a 21- member Board of Directors. The Directors are elected for four-year terms on a non-partisan basis. The Board is entrusted with a broad range of responsibilities to protect and enhance Nebraska’s many natural resources. The NRD serves both incorporated and unincorporated areas within their jurisdiction and have the capability to financially and administratively assist villages, cities, and counties with mitigation actions, most commonly flood control and drainage improvements.

Capabilities

The capability assessment consisted of a review of existing policies, regulations, plans, and programs with hazard mitigation capabilities. The following paragraphs and table summarize the NRD’s overall capability to implement mitigation projects.

The NRD has the authority to levy taxes to fund projects and programs that fulfill its statutory obligations. In addition, the NRD seeks out partnerships and alternative funding opportunities (e.g., grants) to accomplish NRD goals and implement mitigation strategies. The NRD also regularly engages in public education and information programs related to hazard mitigation in the area, and routinely works with other counties, cities, and villages within their jurisdictional boundaries.

Table LLNRD.7: Overall Capability

Overall Capability	2017 Plan	Limited/Moderate/High
Financial Resources Needed to Implement Mitigation Projects	High	High
Staff/Expertise to Implement Projects	High	High
Community Support to Implement Projects	High	High
Time to Devote to Hazard Mitigation	High	High

Plan Integration

The Lower Loup NRD has several planning documents that discuss or relate to hazard mitigation. Each applicable planning mechanism is listed below along with a short description of how it is integrated with the hazard mitigation plan. Participating jurisdictions will seek out and evaluate any opportunities to integrate the results of the current hazard mitigation plan into other planning mechanisms and updates.

Integrated Management Plan

LLNRD’s Voluntary Integrated Management Plan (IMP) was updated and adopted in 2016 and identifies strategies to manage groundwater and surface water as a single, integrated resource. The IMP provides goals, objectives, and action items that aim to sustain a balance between water uses and water supplies for the near and long term. The goals of the plan included:

- Promote and support a water supply and use inventory based on the best available data and analysis

- Implement this water management plan to maintain an efficient and economical balance between current and future water supplies and demands
- Develop and implement water use policies and practices that prioritize and contribute to the protection of existing surface and groundwater uses while allowing for future water development
- Continue public education programs that encourage water conservation methods

Rules and Regulations

LLNRD has a set of Groundwater Management Area Rules and Regulations that provides a framework to manage groundwater quantity and quality in the district. Such regulations cover acceptable well installation, irrigation runoff water limitations, flow meters, and accepted variances. Additionally there are Erosion and Sediment Control regulations which the NRD implements to “provide an orderly method for implementing the Erosion and Sediment Control Act...as amended to provide for the conservation and preservation of the land, water, and other resources of the District.”

Master Plan

The LLNRD Master Plan 2012-2022 outlines a number of actions that aim to accomplish the following goals:

1. Water quality and pollution control
2. Development and management of groundwater and surface water for beneficial uses
3. Resource awareness
4. Prevent damage from flood water
5. Forestry management
6. Erosion prevention, control and sediment reduction
7. Range management
8. Drainage improvement and channel rectification
9. Development and management of fish and wildlife habitat
10. Development and management of recreational and park facilities
11. Solid waste disposal

Long Range Implementation Plan

The LLNRD’s 2020 Long Range Implementation Plan identifies goals which align with some hazard mitigation actions. The plan also outlines which categories the NRD has allocated available budget for. A breakdown snapshot of the goals and fiscal year budget is shown below.

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Goal Number	Description	FY2021	FY2022	FY2023	FY2024	FY2025	Total
1	Resource Awareness	\$119,600.00	\$121,430.00	\$123,351.50	\$125,369.08	\$127,487.53	\$617,238.10
2	Flood Protection	\$4,225,000.00	\$1,755,000.00	\$1,770,750.00	\$1,787,287.50	\$1,804,651.88	\$11,342,689.38
3	Water Quantity	\$3,768,300.00	\$1,025,425.00	\$1,074,696.25	\$1,126,431.06	\$1,180,752.62	\$8,175,604.93
4	Trees	\$126,484.00	\$161,808.20	\$131,808.20	\$137,398.61	\$143,268.54	\$700,767.55
5	Water Quality	\$606,000.00	\$636,300.00	\$668,115.00	\$701,520.75	\$736,596.79	\$3,348,532.54
6	Soil Erosion	\$511,854.57	\$537,447.30	\$564,319.66	\$592,535.65	\$622,162.43	\$2,828,319.61
7	Range	\$479,100.00	\$503,055.00	\$528,207.75	\$554,618.14	\$582,349.04	\$2,647,329.93
8	Drainage Improvement	\$232,000.00	\$122,000.00	\$122,200.00	\$122,200.00	\$122,200.00	\$720,600.00
9	Fish and Wildlife	\$55,000.00	\$60,000.00	\$60,000.00	\$70,000.00	\$75,000.00	\$320,000.00
10	Habitat / Recreation	\$467,000.00	\$477,000.00	\$366,000.00	\$378,000.00	\$390,000.00	\$2,078,000.00
11	Recycling	\$86,000.00	\$86,000.00	\$86,000.00	\$86,000.00	\$86,000.00	\$430,000.00
	Total	\$10,676,338.57	\$5,485,465.50	\$5,495,448.36	\$5,681,360.78	\$5,870,468.82	\$33,209,082.03

South Loup River Watershed Plan

The South Loup River Watershed Plan was developed to guide actions for the protection and restoration of water resources within the watershed. The full plan is available online here: <https://www.llnrd.org/assets/site/SL%20Watershed%20WMP.pdf>.

The goals and objectives (image below) of the plan align with some hazard mitigation principles including effective resource management and community engagement/education opportunities will be pursued. Suggested alternative and innovative management practices which may be eligible for HMA assistance may include: information and education activities; wellhead protection planning; flood storage structures/strategies; and/or other water quality improvement projects.

Vision	The South Loup River Watershed will be locally managed to restore and/or maintain the quality, diverse uses, and ecosystem services of the streams, lakes, wetlands, groundwater, and other water resources within the Watershed for current and future generations using voluntary, economical, and environmentally friendly methods.	
Goal 1	The ecological condition of the South Loup River watershed will be enhanced through a comprehensive and collaborative program that efficiently and effectively implements actions to restore and protect natural resources from degradation and impairment.	
Objectives	1.1	<i>Natural resources management actions will be based on sound data and effective directing of resources.</i>
	1.2	<i>Strong working partnerships and collaboration among appropriate local, state and federal agencies and non-governmental organizations will be established and maintained regarding management of natural resources.</i>
	1.3	<i>Comprehensive and systematic strategies will be employed to restore and protect natural resources.</i>
	1.4	<i>The status, effectiveness and accomplishments of projects and activities directed toward management of natural resources will be continually assessed and periodically reported to the public, stakeholders, and agencies.</i>
Goal 2	Resource managers, public officials, community leaders, and private citizens will be informed about the effects of human activities on water quality and change their behavior in order support actions to restore and protect water resources from impairment by nonpoint source pollution.	
Objectiv	2.1	<i>Deficiencies in knowledge needed to improve decision making regarding management of natural resources will be identified and investigated.</i>
	2.2	<i>Tools to effectively transfer knowledge and facilitate actions regarding management of natural resources will be developed, improved and maintained.</i>
Goal 3	The water, land, and biological resources in the South Loup River watershed will be healthy, productive and sustainable.	
Objectives	3.1	<i>Water resources will meet or exceed levels of quality necessary to serve the needs of the citizens in the South Loup watershed.</i>
	3.2	<i>Surface and groundwater resources will be managed to maintain a balance between current and future water supplies and demands</i>
	3.3	<i>The land and stream resources in the South Loup watershed will be stable and productive.</i>
	3.4	<i>The South Loup corridor will support a healthy and productive natural community of flora and fauna.</i>

Grants and Funding

The Lower Loup NRD has multiple funding sources available with the creation of NRDs taxing authority of 4.5 cents granted to the District in 1969, the 1 cent levy granted for water programs in 2004, the occupation tax granted in 2007, the ability to assess fees through improvement project areas, the ability to charge fees for certain activities, and furnish match money to apply for

grant funding. This allows the District the ability to obtain financing by sources other than just tax dollars. The District's budget, property tax request, and resulting levies are set and approved by the Board of Directors. The Lower Loup NRD utilizes a combination of local tax revenues and grant funding to fund projects. Projects with higher costs can be budgeted for over multiple years. The funding sources available are stable and fluctuate only slightly from year to year.

The NRD must budget for all projects it undertakes. The current budget includes funding for water quality and quantity projects, including the Columbus Area Groundwater Recharge Project, the Mud Creek Watershed and Flood Prevention Operations (WFPO) Program, the Mira Creek WFPO and Mira Creek/North Loup Drainage, Sargent Flood Resiliency/Drainage project, Ord/Dane Creek Flood Project, the Broken Bow levee, and Mud Creek Watershed & Flood Prevention WFPO, and the Horseshoe Dike repair.

Future Development Trends

In 2012, the Nebraska Legislature transferred ownership of Pibel Lake to the Lower Loup NRD. Since then, the recreation area has received some needed maintenance and facility upgrades including a picnic shelter, walking bridge, and sediment control structure. In the next five years, the Lower Loup NRD will continue to make improvements to recreational areas such as Pibel Lake and Davis Creek, as well as explore options for water retention and flood control structures.

Community Lifelines

Transportation

The NRD's major transportation corridors include US Highways 81, 183, and 281, which run north to south. The main railroads which run through the NRD are owned and operated by BNSF which runs northwest-southeast from Hazard to Anselmo, and NCRC which runs northwest-southwest from St. Libory and ending at Ord. Transportation information is important to hazard mitigation plans because it suggests possible evacuation corridors in the community, as well as areas more at risk to transportation incidents.

Hazardous Materials – Chemical Storage Fixed Sites

Chemical storage sites and transportation corridors are located throughout the NRD. Complete lists of chemical storage sites in each jurisdiction and descriptions of chemical transportation corridors may be found in their respective community profiles.

Critical Facilities

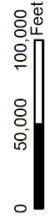
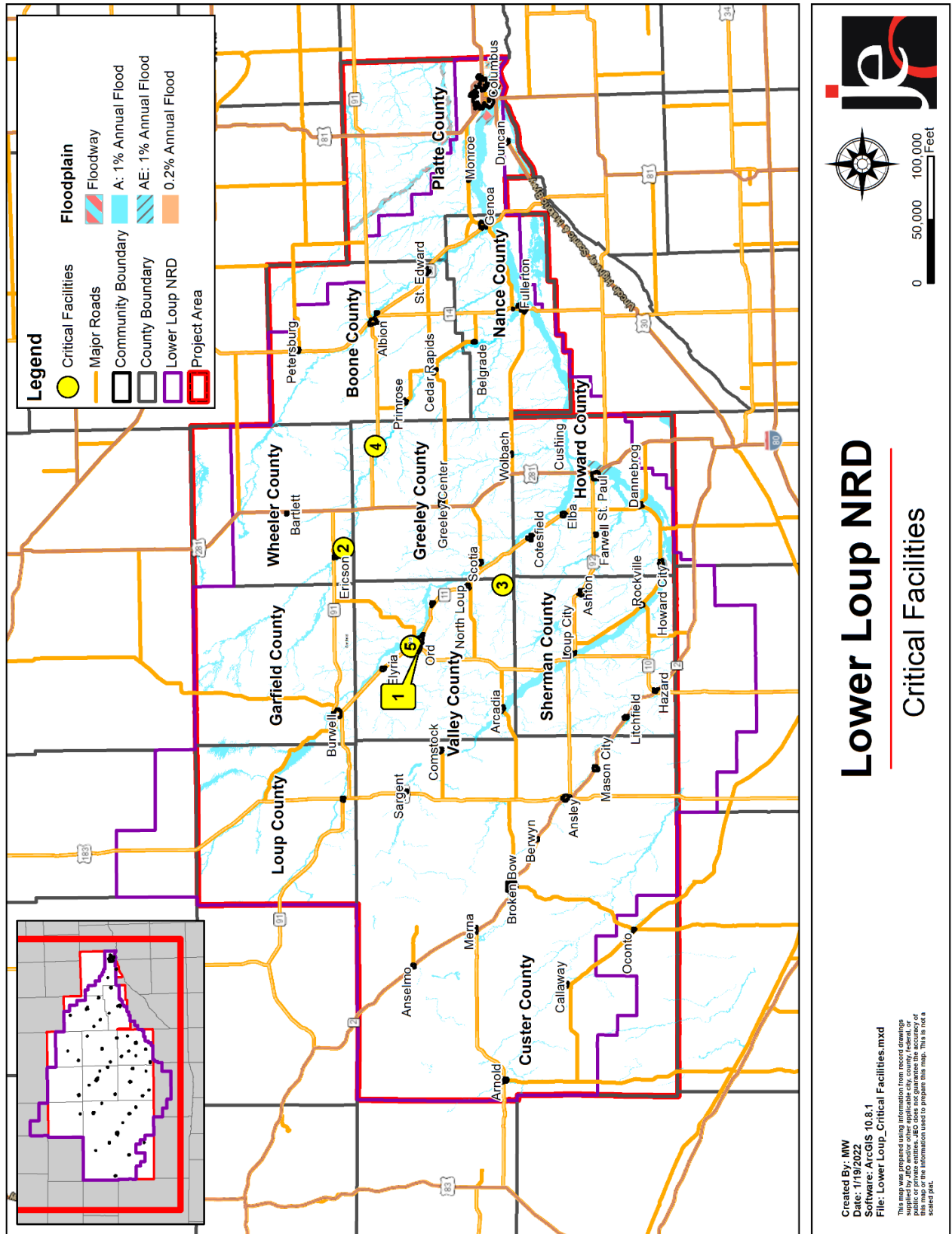
Each participating jurisdiction identified critical facilities vital for disaster response, providing shelter to the public, and essential for returning the jurisdiction's functions to normal during and after a disaster per the FEMA Community Lifelines guidance. Critical facilities were identified during the original planning process and updated by the local planning team as a part of this plan update. The following table and figure provide a summary of the critical facilities for the jurisdiction.

Table LLNRD.2: Lower Loup NRD Critical Facilities

CF #	Name	Address	Shelter (Y/N)	Generator (Y/N)
1	Lower Loup NRD Office	2620 Airport Drive, Ord, NE 68862	N	N
2	Pibel Lake	10 Miles Southeast of Ericson	N	N
3	Davis Creek Recreation Area	6 Miles South of North Loup	N	N
4	Spalding Field Office Building	Spalding, NE	N	N
5	Aagaard Farm Buildings	Ord, NE	N	N

Although not listed in the table above, critical infrastructure also includes power substations, cell towers, and alert sirens in the district. These assets are typically owned and maintained by other agencies and are not the responsibility of the jurisdiction.

Figure LLNRD.2: Lower Loup NRD Critical Facilities



Lower Loup NRD

Critical Facilities

Created By: MW
Date: 1/19/2022
Software: ArcGIS 10.8.1
File: Lower Loup_Critical Facilities.mxd

This map was prepared using information from source drawings supplied by J&E and/or other applicable city, county, federal, or public or private entities. J&E does not guarantee the accuracy of the information used to prepare this map. This is not a scaled plan.

Parcel Improvements and Valuation

Please refer to the individual Community or County Profiles for information regarding parcel improvements, valuation, and discussion for specific jurisdictions across the planning area.

Historical Occurrences

For the complete discussion on historical occurrences, please refer to *Section 4: Risk Assessment*.

Hazard Prioritization

For a full in-depth discussion regarding planning area wide hazards, please see *Section Four: Risk Assessment*.

Mitigation Strategy

Completed Mitigation Actions

OBJECTIVE	ACQUIRE LIDAR
Description	1. Acquire LiDAR imagery for the entire NRD to assist in floodplain mapping and structure designs
Hazard(s) Addressed	Flooding
Status	LiDAR imagery has been acquired for the entire district.

OBJECTIVE	PUBLIC SAFE ROOMS AND STORM SHELTERS
Description	<ol style="list-style-type: none"> 1. Identify and evaluate existing safe rooms and/or storm shelters 2. Improve and/or construct safe rooms and/or storm shelters 3. Design and construct storm shelters and safe rooms in highly vulnerable areas such as mobile home parks, campgrounds, schools, etc.
Hazard(s) Addressed	High Winds and Tornadoes, Severe Thunderstorms
Status	Identified the Davis Creek Recreation Area and LLNRD office as appropriate locations for safe room(s). Wi-Fi service was implemented at Davis Creek Recreation Area so that the public has access to severe weather information. It was determined a shelter was not a viable option. The LLNRD Headquarters office now has a basement to provide storm shelter and protection.

Continued Mitigation Actions

OBJECTIVE	CHANNEL AND BRIDGE IMPROVEMENTS
Description	1. Implement channel and bridge improvements to increase channel conveyance and decrease the base flood elevations
Hazard(s) Addressed	Flooding
Estimated Cost	\$200,000
Potential Funding	LLNRD General Funds
Timeline	5+ Years
Priority	Medium
Lead Agency	LLNRD Board
Status	The district provides technical support and financial assistance for qualifying projects to replace old bridges as needed.

OBJECTIVE	DEVELOP/IMPLEMENT HAZARD/EMERGENCY OPERATIONS & RESPONSE PLAN
Description	<ol style="list-style-type: none"> 1. Identify and evaluate current hazards, response plan and procedures 2. Develop/Update multi-hazard emergency plan and procedures 3. Obtain additional response equipment and material 4. Train additional team members/maintain high training level for all team members
Hazard(s) Addressed	All Hazards
Estimated Cost	Varies by project
Potential Funding	LLNRD General Funds, HMA
Timeline	2-5 Years
Priority	High
Lead Agency	LLNRD Board
Status	Acquired high hazard dam at Pibel Lake, need to create Emergency Action Plan and dam failure exercise.

OBJECTIVE	EVALUATE/IMPROVE BERM, FLOODWALL AND/OR LEVEE
Description	<ol style="list-style-type: none"> 1. Evaluate/Update current or new berm, floodwall and/or levee systems 2. Design and construct measures to protect and/or improve berm/floodwall/levee to 100-year level
Hazard(s) Addressed	Flooding, Levee Failure
Estimated Cost	\$1.9 Million
Potential Funding	LLNRD General Funds
Timeline	5+ Years
Priority	Medium
Lead Agency	LLNRD Board
Status	A berm and channel improvements are being considered to resolve flooding issues in the Village of North Loup and the City of Sargent.

OBJECTIVE	GROUNDWATER RECHARGE
Description	<ol style="list-style-type: none"> 1. Divert excess flows from Loup Power Canal system to create recreation area. 2. Conduct study to determine need and appropriate location(s) for water retention and recharge projects
Hazard(s) Addressed	Drought, Flooding
Estimated Cost	\$1.7 million
Potential Funding	LLNRD General Funds, HMA
Timeline	2-5 Years
Priority	Medium
Lead Agency	LLNRD Board
Status	Water from the Loup Power Canal will be diverted to provide groundwater recharge in the Lost Creek Channel.

OBJECTIVE	IMPROVE STREAM BED/BANK STABILIZATION
Description	<ol style="list-style-type: none"> 1. Evaluate current stream bed and bank stabilization needs 2. Implement stream bed and bank stabilization improvements including grade control structures, rock rip rap, vegetative cover, etc.
Hazard(s) Addressed	Flooding
Estimated Cost	\$25,000 to \$500,000+
Potential Funding	LLNRD General Funds, HMA
Timeline	Ongoing
Priority	High
Lead Agency	LLNRD Board
Status	These actions are done on an ongoing basis in order to effectively manage water resources and reduce flooding impacts. Examples of these projects include: the Loup River stream bank at Monroe, and the Cedar River rip rap and bank stabilization. The LLNRD has an annual budget of \$100,000 for bank stabilization.

SECTION SEVEN: LOWER LOUP NRD DISTRICT PROFILE

OBJECTIVE	PUBLIC EDUCATION ON HAZARD EVENTS & PREPAREDNESS
Description	<ol style="list-style-type: none"> 1. Obtain or develop materials about hazards 2. Conduct multifaceted public education 3. Distribute fact sheet at community events, schools, other venues 4. Conduct scheduled siren/warning system tests 5. Prepare/distribute educational materials listing safe room and shelters
Hazard(s) Addressed	All Hazards
Estimated Cost	\$5,000+
Potential Funding	LLNRD General Funds, HMA
Timeline	Ongoing
Priority	High
Lead Agency	LLNRD Board, Information/Education Coordinator
Status	The LLNRD has an education and outreach budget of \$160,000 annually. The LLNRD utilizes their website, weekly radio shows, a monthly newspaper column, social media, and newsletters to conduct outreach efforts.

OBJECTIVE	REDUCE TREE DAMAGE & DAMAGE FROM TREES
Description	<ol style="list-style-type: none"> 1. Conduct tree inventory 2. Develop tree maintenance/trimming program 3. Implement tree maintenance/trimming program 4. Remove hazardous limbs and/or trees
Hazard(s) Addressed	High Winds and Tornadoes, Severe Winter Storms, Severe Thunderstorm, Grass/Wildfire
Estimated Cost	\$0 to \$5,000 to develop program; implementation unknown
Potential Funding	LLNRD General Funds, HMA
Timeline	2-5 Years
Priority	Medium
Lead Agency	LLNRD Board, Forester
Status	The LLNRD forester conducts tree inventories and assist communities with Tree City USA requirements. The District has implemented a community forestry program to assist with trees for villages and cities.

OBJECTIVE	REDUCE WATER DEMAND/IMPROVE DROUGHT EDUCATION
Description	<ol style="list-style-type: none"> 1. Conduct water use study to evaluate/implement methods to conserve water/reduce consumption 2. Evaluate/implement water use restriction ordinance 3. Identify/evaluate current/additional potable water sources 4. Develop or obtain drought education materials to conduct multi-faceted public education and awareness program
Hazard(s) Addressed	Drought
Estimated Cost	Varies by project
Potential Funding	LLNRD General Funds, HMA
Timeline	Ongoing effort
Priority	High
Lead Agency	LLNRD Board
Status	These actions are done on an ongoing basis to effectively manage water resources within the district. Examples of past projects include: the Clear Creek/Pibel Lake survey to establish best management practices, the South Loup River Watershed Project that aimed to protect water quality and quantity in the watershed, and the Airborne Electromagnetic Survey flights. The LLNRD budget for water quantity projects is \$1.5 million annually.

OBJECTIVE	REDUCE WILDFIRE DAMAGE
Description	<ol style="list-style-type: none"> 1. Identify vulnerable areas and combustion sources 2. Evaluate fire resistant roofing 3. Develop plan to reduce wildfire impact and reduce combustion materials 4. Reduce combustion material by removal or other methods 5. Enact building codes/ordinances for fire resistant roofing
Hazard(s) Addressed	Grass/Wildfire
Estimated Cost	\$500 to \$5,000+
Potential Funding	LLNRD General Funds, HMA
Timeline	2-5 Years
Priority	Medium
Lead Agency	LLNRD Board, Forester
Status	The LLNRD will continue to collaborate, partner & provide financial assistance for prescribed burns. The LLNRD has a forester on staff who will continue to assist communities.

New Mitigation Actions – 2022 Plan

OBJECTIVE	PROJECT SCOPING AS A RESULT OF THE WFPO PROGRAM
DESCRIPTION	1. Evaluate potential flood risk reduction alternatives as identified through the Watershed and Flood Prevention Operations Program including project scoping and implementation
HAZARD(S) ADDRESSED	Flooding
ESTIMATED COST	Varies by project
POTENTIAL FUNDING	General Fund, WFPO, HMA
TIMELINE	2-5 Years
PRIORITY	High
LEAD AGENCY	LLNRD Board, Contractor
STATUS	Mud Creek and Mira Creek WFPO projects are currently under development. No formal alternatives have yet been determined however several alternatives are under further review for each program with communities in the district.

Plan Maintenance

Hazard Mitigation Plans should be living documents and updated regularly to reflect changes in hazard events, priorities, and mitigation actions. These updates are encouraged to occur after every major disaster event, alongside community planning documents (i.e. annual budgets and Capital Improvement Plans), during the fall before the HMA grant cycle begins, and/or prior to other funding opportunity cycles begin including CDBG, Water Sustainability Fund, Revolving State Fund, or other identified funding mechanisms. The NRD's General Manager, Assistant General Manager, and Information/Education Coordinator will review this profile as needed and notify and involve the public via board meetings.