The Upper Big Blue NRD Projects Department is one of five departments at the District. The Projects Department staff consists of the Department Manager (Professional Engineer) and Engineering Technician. The Projects Department is responsible for providing engineering services on District projects, such as dams, recreational facilities, groundwater studies, drainage and storm water management, and regional planning. The Projects Department also manages soil and water conservation programs aimed at protecting Nebraska’s natural resources. The following pages discuss projects and programs administered by the Projects Department.

Inter-local Agreements:
When the District and community cooperate to implement a particular project, a cooperative agreement (Inter-local Agreement) is generally required. The agreement spells out the financial and administrative responsibilities of each entity. The Projects Department staff provides Inter-local agreement administration and coordinates project activities with all parties to the agreement.

Community Assistance
The Projects Department receives various assistance requests from counties and communities located throughout the District. Each request is considered for approval by the Projects and Programs Committee and the Board of Directors. Assistance is generally provided through an Inter-local Agreement. The following are examples of successful District and community assistance activities undertaken by the Upper Big Blue NRD Projects Department:

**STORM WATER SYSTEMS**
1) Mapping and inventory of existing storm water systems
2) Hydrologic evaluation of existing storm water systems
3) Aerial photography and detailed topographic mapping of drainage area
4) Stormwater engineering design, construction management, and financial assistance
5) Technical and financial assistance for review and evaluation of flood levee systems
6) Inspection, technical, and financial assistance for drainage structures

**TRAILS**
1) Project planning, design, and construction management
2) Assist in design and review of trail bridges and crossings
3) Assistance in trail grant applications
4) Technical and financial assistance for trail construction

**LAND ACQUISITION**
1) Assistance in determining needed land acquisition for projects such as dams, drainage, levees, recreation, trails, etc.
2) Preparation of tract maps for approved projects
3) Preparation of acquisition contracts for approved projects
4) Assistance in land value property appraisals for approved projects

**GROUNDWATER MODELS**
1) Review and evaluate groundwater models of adjacent NRDs
2) Participate in the development of Blue Basin Groundwater Model
3) Review and evaluate groundwater models and studies for large groundwater use applications

**EMERGENCY PLANNING**
1) Assist in development and review of hazard mitigation planning activities, including mitigation measure selection and applications
2) Assist in development and review of flood mitigation plans
3) Review of updated RISK mapping, assessment, and planning program flood maps
For additional information visit https://dnr.nebraska.gov/floodplain

**Storm Water and Drainage**

Storm water and drainage improvement projects can include various levels of assistance to communities. The District can provide financial assistance, technical assistance, project management, planning, design, funding, and construction administration, as well as reclamation of either urban or rural lands currently subject to frequent inundation due to poor surface water drainage or a high groundwater table. The District has adopted a cost-share policy on any studies needed for larger projects within the District. If requested by the project sponsor, the District can serve as lead agency to coordinate the project planning, engineering, construction, operations and maintenance, and collection and disbursement of funds. Each request for assistance will be reviewed by the Projects and Programs Committee and the Board of Directors.

**Community Flood Mitigation Planning**

The Nebraska Emergency Management Agency (NEMA) is the State of Nebraska’s coordinating agency for Federal Emergency Management Agency (FEMA) programs and natural disaster relief. The Nebraska Department of Natural Resources (NeDNR) works in partnership with the Federal Emergency Management Agency (FEMA) to produce floodplain mapping products in adherence to the National Flood Insurance Program (NFIP) requirements and regulations. NeDNR also administers the Flood Mitigation Assistance (FMA) Program. The FMA Program provides financial assistance for either planning or projects that assist in decreasing long-term risk of flood damage to structures insured under the NFIP. The FMA Program can be used to assist communities in developing flood mitigation plans so that measures can be put in place before a natural disaster occurs. Once developed, these plans can be used to assist communities with floodplain mapping and zoning, identifying properties to be acquired for relocation or demolition, identifying properties that need to be elevated above 100-year floodplains and planning for flood protection facilities.

Structural mitigation projects aim to divert water away from people and communities. Examples include levees, dams, jetties, and retention ponds. Non-structural mitigation aims at changing the way that people interact with the floodplain. Non-structural projects include maintaining floodplain as open space, elevating structures, and in-depth community flood planning.

Examples of mitigation in a community include planning and zoning, floodplain management, discouraging development in high risk flood areas, and providing outreach and education. Examples of mitigation for homeowners include purchasing flood insurance, elevation of structures, and completely relocating out of the floodplain.

The NeDNR and FEMA are revising flood maps across Nebraska using up-to-date engineering methods and new data through FEMA’s Risk Mapping, Assessment, and Planning program, known as Risk MAP. The goal of Risk MAP is to identify the flood risk present in communities, communicate that risk to the people impacted, and then provide planning and outreach to the communities to help them reduce or mitigate flood risk. Updated flood elevations and floodplain boundaries are determined for 0.2%, 1%, 4%, and 10% annual chance floods using hydrologic data, flood flow amounts, elevation, land use data, and survey data.

The Projects Department at the Upper Big Blue Natural Resources District reviews the updated flood maps and can provide communities technical and financial assistance with updating and implementing their flood mitigation plans and Hazard Mitigation Plans.

For additional information visit https://dnr.nebraska.gov/floodplain

**All-Hazard Mitigation Planning**

The Nebraska Emergency Management Agency (NEMA) is the State of Nebraska’s coordinating agency for Federal Emergency Management Agency (FEMA) programs and disaster relief. The Disaster Mitigation Act of 2000 requires local governments to develop and update hazard mitigation plans as a condition for receiving certain types of non-emergency disaster assistance. Regulations require that entities participate in the planning process in order to be eligible to obtain federal funding under the Hazard Mitigation Grant Program, Pre-Disaster Mitigation Program, and Flood Mitigation Assistance Program.

The Upper Big Blue Natural Resources District (District) serves as the coordinating agency for the update and consolidation of the All-Hazards Mitigation Plans (Plan) of Hamilton, York, and Seward Counties into one plan. Hazard mitigation plans are community-driven, living documents that identify risks and vulnerabilities associated with natural and man-made hazards and develop long-term strategies for protecting people and property in future hazard events.

Hazards pose risk to people, property, the environment, and the economy. Hazard mitigation plans identify strategies to reduce risk to hazards and disasters such as tornadoes, severe winter storms, flooding, dam and levee failure, agricultural diseases, wildfire, and thunderstorms.

Mitigation is any action that reduces risk. Some of the common hazard mitigation plan projects include backup power generators, storm shelters, stormwater projects, elevation or acquisition of flood-prone structures, weather radios, and public awareness programs.

The Projects Department is coordinating this Plan with FEMA, NEMA, and the Emergency Managers of Hamilton, York, and Seward Counties.

For additional information:

https://nema.nebraska.gov/recovery/state-hazard-mitigation-program

https://www.fema.gov/hazard-mitigation-planning-laws-regulations-policies
Natural Resources Districts... the greatest sources of the state's wealth and its assurance for future prosperity

Once dismissed as “The Great American Desert,” Nebraska now is known both nationally and abroad for its agricultural bounty and natural wonders. We sometimes take these wonders for granted, but they surround us from one corner of the state to another; from Niobrara to Red Cloud, from Scottsbluff to Omaha.

The Nebraska Legislature enacted a law in 1969 to combine 154 special purpose entities into 23 Natural Resources Districts (NRDs). NRDs were officially established on July 1, 1972. These Districts are unique to Nebraska and to the rest of the country. NRDs are local government units with broad responsibilities to protect our natural resources. Major Nebraska river basins form the boundaries enabling NRDs to respond best to local needs.

An elected Board of Directors governs each District. Much of their funding comes from local property taxes. In most cases, your local NRD typically uses 1-2 percent of all property taxes collected in the District.

NRDs help Nebraskans respond to natural resources challenges with local control and local solutions. Partnerships have been built with various agencies and organizations, including the USDA Natural Resources Conservation Service, the Nebraska Department of Natural Resources, other state and federal agencies, municipalities, counties, and private organizations.

Many NRD projects and programs leave long-lasting results: dams, terraces, drainage ditches, windbreaks, reservoirs, recreation areas (including parks, campgrounds, and trails), groundwater management (both quantity and quality), and irrigation and crop production educational opportunities.

The Nebraska Association of Resources Districts, a statewide association created by NRDs, provides administrative services, legislative representation, statewide communication, and coordination for the 23 independent Districts. NRDs have experienced tremendous growth in the responsibilities given to them by state statute, especially in protecting groundwater.

The NRDs inform Nebraska’s young people by supplying information, education, and other outreach efforts. It is vital that future generations understand the importance of securing Nebraska’s natural resources.
Land Treatment Program

Land treatment is the construction or installation of conservation practices to prevent or reduce soil erosion, sedimentation, and water contamination, and to assist with management of both surface water and groundwater. Many land treatment practices also provide an additional benefit through creation of habitat for wildlife. Eligible practices include terraces, water impoundment dams, grade stabilization structures, diversions, grassed waterways, sediment control basins, pasture plantings, planned grazing systems, windbreak planting or renovation, stream bank stabilization, and brush management.

The District administers a Land Treatment Program that receives funding from the Nebraska Department of Natural Resources (NeDNR) through the Nebraska Soil & Water Conservation Program (NSWCP). The District’s board also budgets local tax dollars to fund this program. The District also administers the Nebraska Buffer Strip program which receives funding from the Nebraska Department of Agriculture (NDA). This program offers financial incentives to landowners to install filter strips in cropland adjacent to perennial and seasonal streams, ponds, and wetlands.

Through the Land Treatment Program, the District provides technical assistance and financial incentives for soil and water conservation measures in the District. The District’s technical guidelines and funding procedures generally coincide with the Natural Resources Conservation Service (NRCS), NeDNR, and NDA programs. Applications for projects are managed by the District and/or the County NRCS Offices. Cost-sharing rates are based on state average costs determined by the NRCS’s Environmental Quality Incentives Program.

The Projects Department provides technical assistance, management of the application and funding process, and coordination with the NRCS and NeDNR. The Land Treatment Program section of the District’s Programs Book (available at www.upperbigblue.org) includes details regarding eligible conservation practices, cost-share rates, and application procedures.

Groundwater Studies

The Projects Department and the Water Department combine efforts on groundwater modeling. The Upper Big Blue NRD (District) has conducted groundwater studies in the Platte and Blue River Basins. Groundwater studies include mapping, geological investigations, hydrologic analysis, and development of groundwater models. Groundwater models incorporate extensive geological and hydrological evaluations of riverbed conductance and well drilling logs; along with observation well measurements, stream gauge readings, crop evapotranspiration, groundwater and surface water pumping, and precipitation data to simulate groundwater drawdowns, and streamflow losses. Each groundwater study and model are independently “peer” reviewed and verified as accurate by an accredited agency not affiliated with the District. These models have helped determine the extent of the hydrological connection between surface water and groundwater and serve as evidence when enacting rules and regulations pertaining to possible future restrictions of water use. The District took the initiative to model groundwater along the portion of the Platte River in Hamilton County which had been declared fully appropriated. The District’s modeling efforts were accepted by the Nebraska Department of Natural Resources (NeDNR) and proved that a small area of land was hydrologically connected on the Platte River.

The District contracted with a consulting firm to develop a sub-regional groundwater model which covers a large portion of Seward and northern Saline Counties. NeDNR completed a review of the model and provided comments. The District and NeDNR have identified the need for a Blue River Basin-wide groundwater model. The District, NeDNR, the Lower Big Blue NRD, Little Blue NRD, and Tri-Basin NRD have contracted with a consulting firm to evaluate the Blue River Basin Regional Groundwater Model inputs.

The Projects and Water Department staff are available to provide groundwater studies to communities interested in water supply both locally and regionally. In addition to conducting studies, the Projects and Water Departments provide technical reviews for the District on large water user groundwater studies, such as those for ethanol plant proposals.
Private Dams Program
The Upper Big Blue Natural Resources District (District) has a program to provide assistance to landowners wishing to repair/rebuild dams that had washed out or had been breached. Under the Private Dams Program, the District provides planning, design, and financial assistance for the construction or reconstruction of dams located on private property. Dams constructed under this program generally involve only one landowner. Public benefits include flood control, sediment and erosion control, water conservation, groundwater recharge, and fish and wildlife enhancement.

Applications are accepted at the local Natural Resources Conservation Service (NRCS) offices or at the District Office. Planning, design, and construction inspection will normally be provided by the NRCS or the Projects Department. If the NRCS or the District is unable to provide these services, the landowner may hire a private engineering firm. The landowner will be responsible for obtaining any required permits or easements for access or use of lands owned by another person. All required permits must be obtained before construction can begin. The NRCS and/or District can assist the landowner in the permitting/easement process.

Following construction, the landowner is responsible for the cost of all maintenance, which includes preventing over-grazing, removal of debris from or near principle and emergency spillways, soil erosion on the dam, control and removal of trees and brush on the dam and spillways. If repairs are needed due to an event such as a major storm, the District will consider cost-share assistance for such repairs on a case-by-case basis. Factors to be considered in determining the need for and merits of repair shall include the cost of the repairs and the age of the structure.

Under the Private Dams Program, the District will cost-share 75% of the project cost, up to a maximum cost-share amount of $50,000. Eligible reimbursements include construction and design services provided by a private engineering firm. Design costs for a private engineering firm will only be paid if the dam is constructed. Final costs above the District’s approved costs shall be the landowner’s responsibility.

Water Conservation Dams and Reservoirs
The District’s Water Conservation Dam Program provides a means of building dams that are not eligible to be built under the Land Treatment Program or the Private Dams Program. These dams will be considered under the District’s Special Projects Program and must be reviewed/approved by the Projects and Programs Committee and Board of Directors. Benefits that can be incorporated into these dams include flood control, groundwater recharge, irrigation water storage and use, storm water runoff, erosion control, recreation, and wildlife habitat.

Project use rights granted to the sponsor or sponsors of each dam will be determined according to each sponsor’s share of project costs. Structures built under this program have a contributing drainage area greater than 640 acres and a project cost of more than $15,000. These structures can involve single or multiple landowners or agencies. The Projects Department staff can provide planning, design, and construction administration services to sponsors for these projects.

Dam Maintenance
The Upper Big Blue Natural Resources District (District) has dam maintenance responsibilities for 44 dams located throughout the nine counties of the District. Many of these dams are approaching 40 to 50 years of age. Safely maintaining a dam is a key element in preventing a failure and limiting the liability. To reduce risks of costly repairs or even dam failures, regular inspections and routine maintenance is required. The Projects Department conducts inspections at each of these dams to monitor their conditions and to schedule regular maintenance activities. Problems at these dams include trees, rodents, erosion, corrosion of conduits, concrete deterioration, sedimentation, and channel obstructions. Maintenance concerns are addressed and corrected by the Projects Department or contract forces, with assistance from the Natural Resources Conservation Service and/or the Nebraska Department of Natural Resources (NeDNR) Dam Safety Group.

For a more comprehensive list of dam maintenance issues, please visit the NeDNR’s Dam Safety website at https://dnr.nebraska.gov/dam-safety/common-problems-dams