

AGENCY'S MAP SERVICES PROVIDES BENEFICIAL & EXTENSIVE STATEWIDE DATA

The Department of Water Resources (DWR), formerly known as the State Water Commission (SWC), hosts and maintains a variety of digital mapping platforms known as MapServices. These data sets are the foundation of multiple internet map services with specific purposes. The general mapping tools uses the agency's vast data resources such as water data locations, drillers' logs, aquifers, and precipitation information integrated with spatial data holdings including aerial photography, geo-political boundaries, transportation, and hydrographic features. The DWR also provides specialized map services that are designed for specific data sets.

MapServices hosts a tremendous amount of data that has been collected over the last century and is integrated with the latest spatial data available for North Dakota. The public can access these robust services to view water well records, scans of drillers' logs, dams, drains, water chemistry, water levels, and other valuable information. These tens of thousands of records have been combined with the latest geographic datasets including color aerial photography, topographic maps, roads, public land survey, hydrography, and NEXRAD radar feeds.

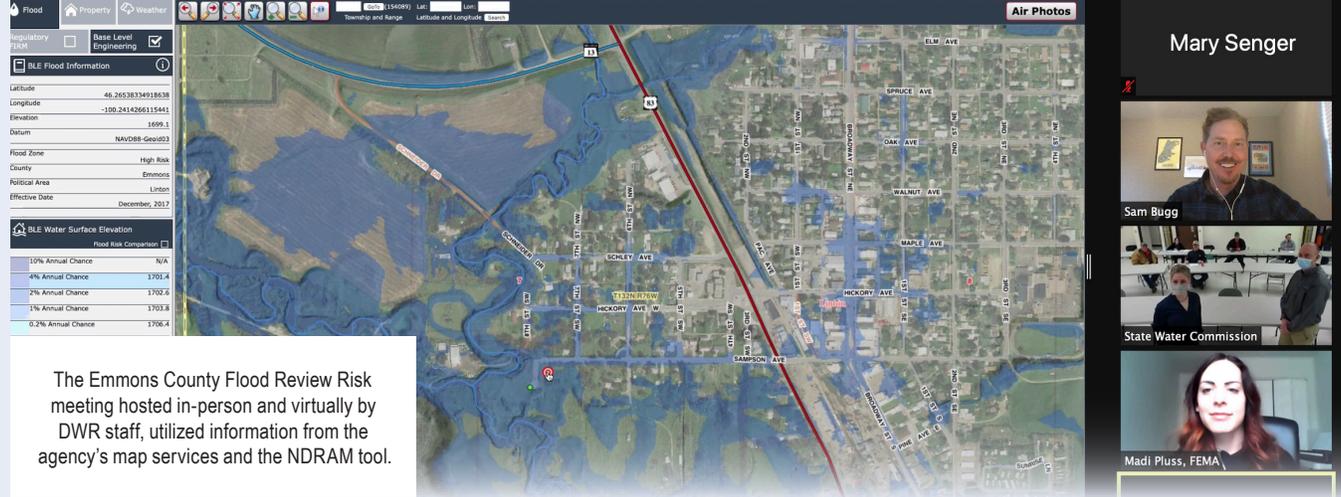
The agency's latest specialized map service, North Dakota Risk Assessment MapService (NDRAM) recently commemorated its second year of innovation. This state-of-the-art service was made public in 2019 as a collaborative effort between the Department of Water Resources and the Federal Emergency Management Agency (FEMA).

This user-friendly tool was developed to provide the state and its stakeholders with valuable mitigation and flood risk assessment data. NDRAM was designed to be a one-stop shop for all things related to potential hydrologic hazards. It provides valuable information to floodplain managers, engineering firms, community leaders, stakeholders, and the general public through the dissemination of engineering models, floodplain assessments in newly mapped areas, live river gage measurements, and is also equipped with Doppler radar and National Weather Service notifications.

In 2017, the initial request was made to the State Water Commission regarding the creation of a map service that could address the state's floodplain assessment needs. Fortunately, nearly 90% of the IT infrastructure needed to build the service had already been established and was being utilized within the agency. For over 15 years, Water Resources collected highly accurate elevation data known as Light Detection and Ranging (LiDAR).



Agency drone footage, LiDAR collection, and NDRAM data provided assistance in a recent watercourse study of a newly developed area in central North Dakota.



The Emmons County Flood Review Risk meeting hosted in-person and virtually by DWR staff, utilized information from the agency's map services and the NDRAM tool.

The efficiency, capability, and technological advancement of the DWR's LiDAR collection led to the successful development of NDRAM. The detailed data allows users to zoom in and visually display current flood risks, including approximate floodplains from Base Level Engineering (BLE) and effective regulatory floodplains from FEMA's National Flood Insurance Program (NFIP).

NDRAM incorporates the building standards and minimum requirements of the NFIP, which was created to help provide a means for property owners in participating communities to financially protect themselves. In exchange, those participating communities agree to adopt and enforce ordinances that meet or exceed FEMA and State requirements to reduce the risk of flooding.

The tool provides users with water surface elevations, flood depths, and the ability to download engineering model data and print customized maps, making it useful for planning, mitigation, and disaster recovery actions.

NDRAM also works as a complement to existing regulatory products. For example, the NFIP previously helped to identify 2.5% of North Dakota as having a high flood risk (i.e., the 1-percent annual

chance flood event) identified on regulatory Flood Insurance Rate Maps (FIRMs). With the assistance of the NDRAM tool, BLE has identified over 17% of the state as having a high flood risk. NDRAM has the functionality to display multiple sized flood events including recurrence interval events of 10% (10 year), 4% (25 year), 2% (50 year), 1% (100 year), and 0.2% (500 year).

Laura Horner, North Dakota's RiskMAP Program Manager; the DWR's in-house I.T. staff, including Paul Moen and Chris Bader; GIS Coordinator, Rod Bassler; and FEMA representatives, and various government constituents have put forth an extensive amount of time, hard work, and collaboration to produce these high-quality and robust map services like NDRAM.

The collaborative conceptual development effort for NDRAM was accomplished by twenty-three team members, provides over 47 terabytes of available data to the general public, and represents nearly \$33M in public investment of forward-facing datasets.

For additional information or to access the Department of Water Resources MapServices, please go to www.dwr.nd.gov.

NDRAM/BLE STATS

- North Dakota is the first state to have base level engineering completed in every county.
- 500+ community stakeholders engaged around the state, including 86 in-person meetings, 429 community maps presented, and 7,658 miles driven.
- It took 24 months of dedicated time and effort to create data and have it available to all North Dakotans.
- Provides live National Weather Service warnings.
- All products developed for the BLE effort are available for download and are provided free of charge through NDRAM.