

Weather Stations out West What is Wise Roads?

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West Dakota Energy Association
Western Roundtable – Watford City, ND



Curtis W. Glasoe, PLS/PE
701-260-9459
curt.glasoe@ndsu.edu



Wise Roads

Weather Information System to Effectively
Reduce Oilfield delays And Disruptions



Problem:

When inclement weather strikes, local governments impose weight restrictions on gravel roads that prohibit the movement of oilfield truck traffic until road conditions improve.





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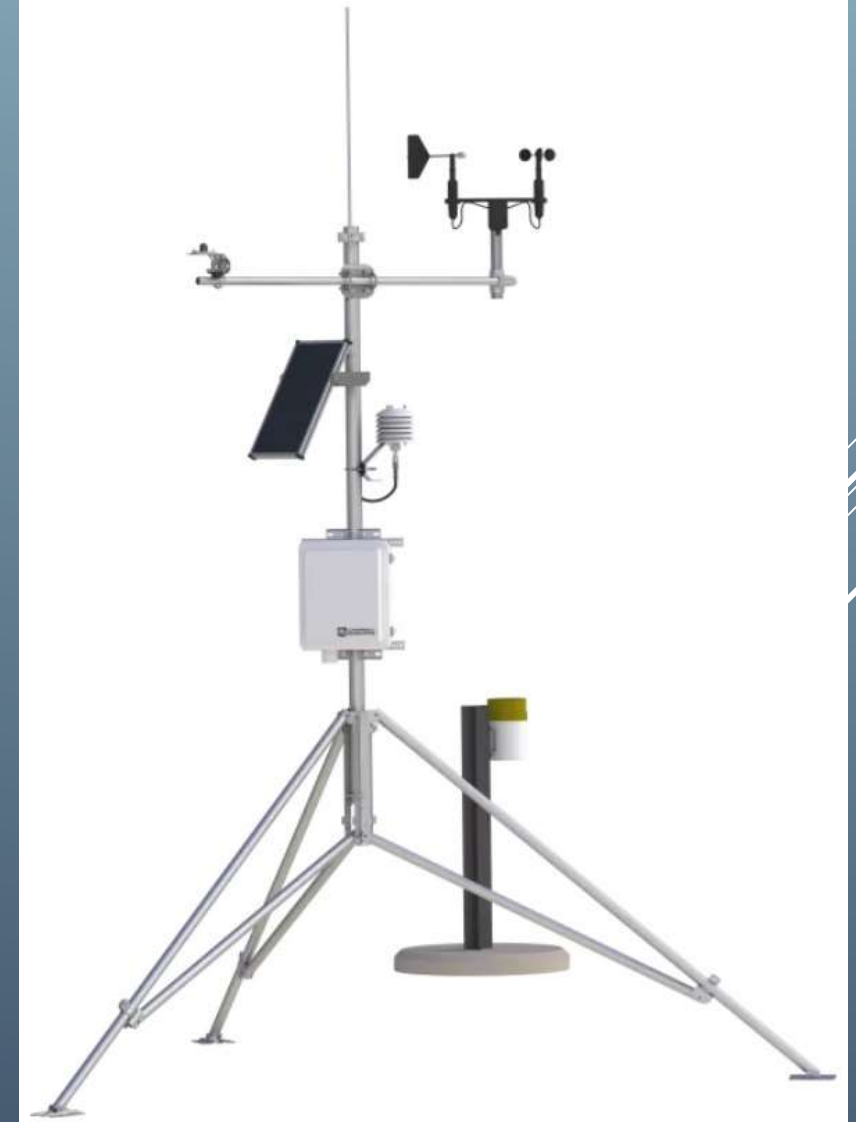
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SCOPE OF WISE ROADS PROJECT

- Install up to 45-50 weather stations in the oil-producing counties
- Prioritize areas with significant drilling and production activity
- Locate stations to fill gaps in existing RWIN (DOT) and NDAWN networks
- Stations will be owned by NDAWN, with operational costs covered by WDEA
- Work data to incorporate NDAWN and LoadPass into same website.



WISE ROADS PROJECT

- ▶ Work with research partners, agriculture, and Industry to maximize benefit
- ▶ Install research-grade weather stations in areas with heavy oilfield traffic
- ▶ Make data publicly available through NDAWN, LoadPass and other sites
- ▶ Provide training to road managers through LTAP



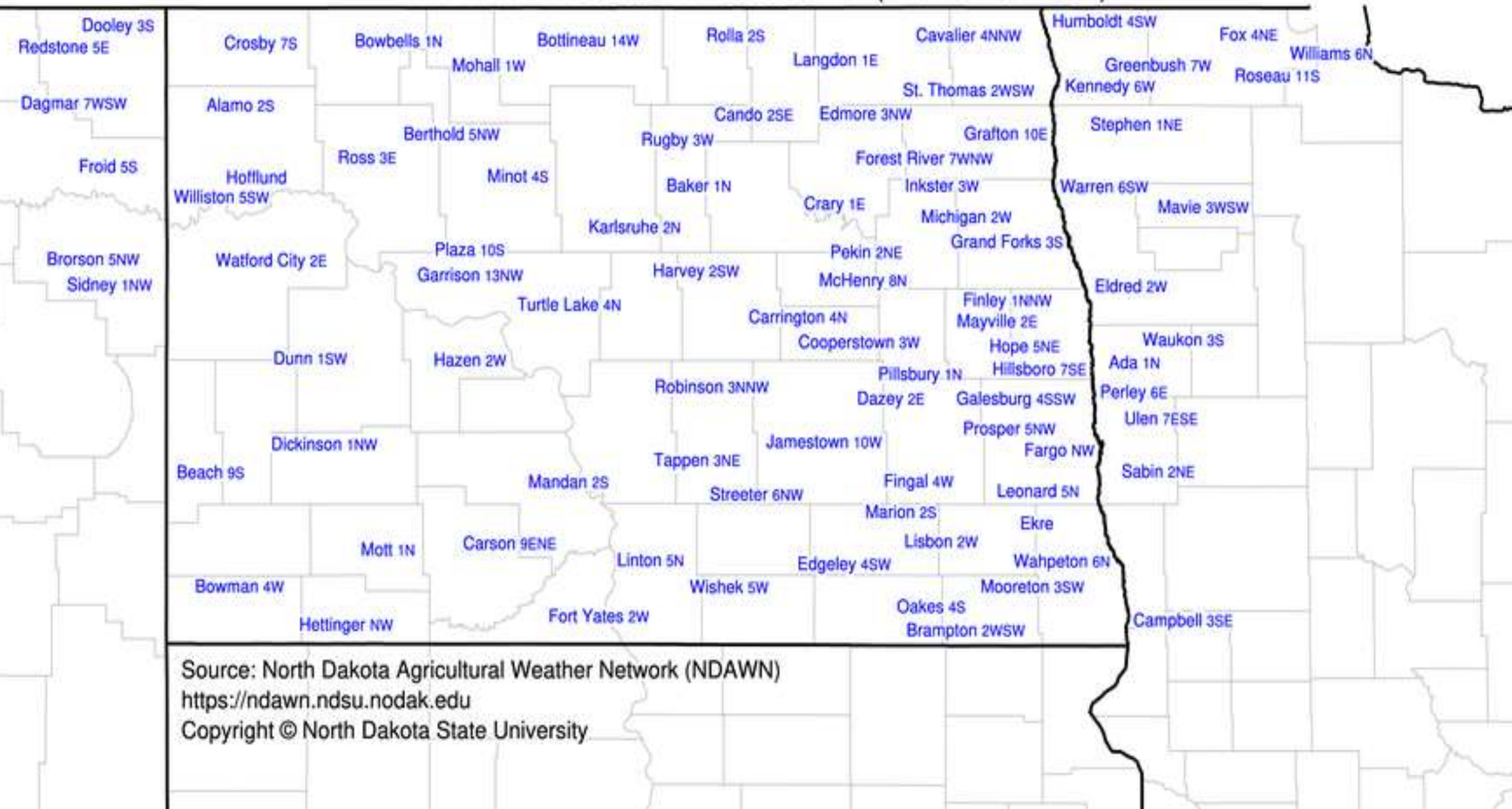


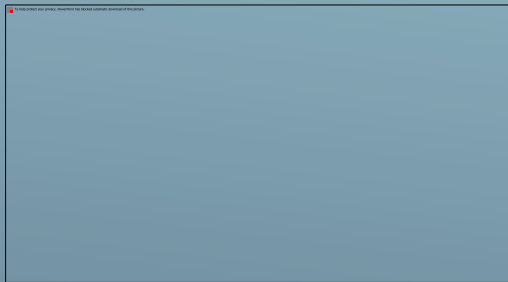
2019-06-27 09:18:59 AM



NDAWN - 9N Arnegard

NDAWN Station Locations (2019-07-02)





NDSU NORTH DAKOTA
STATE UNIVERSITY

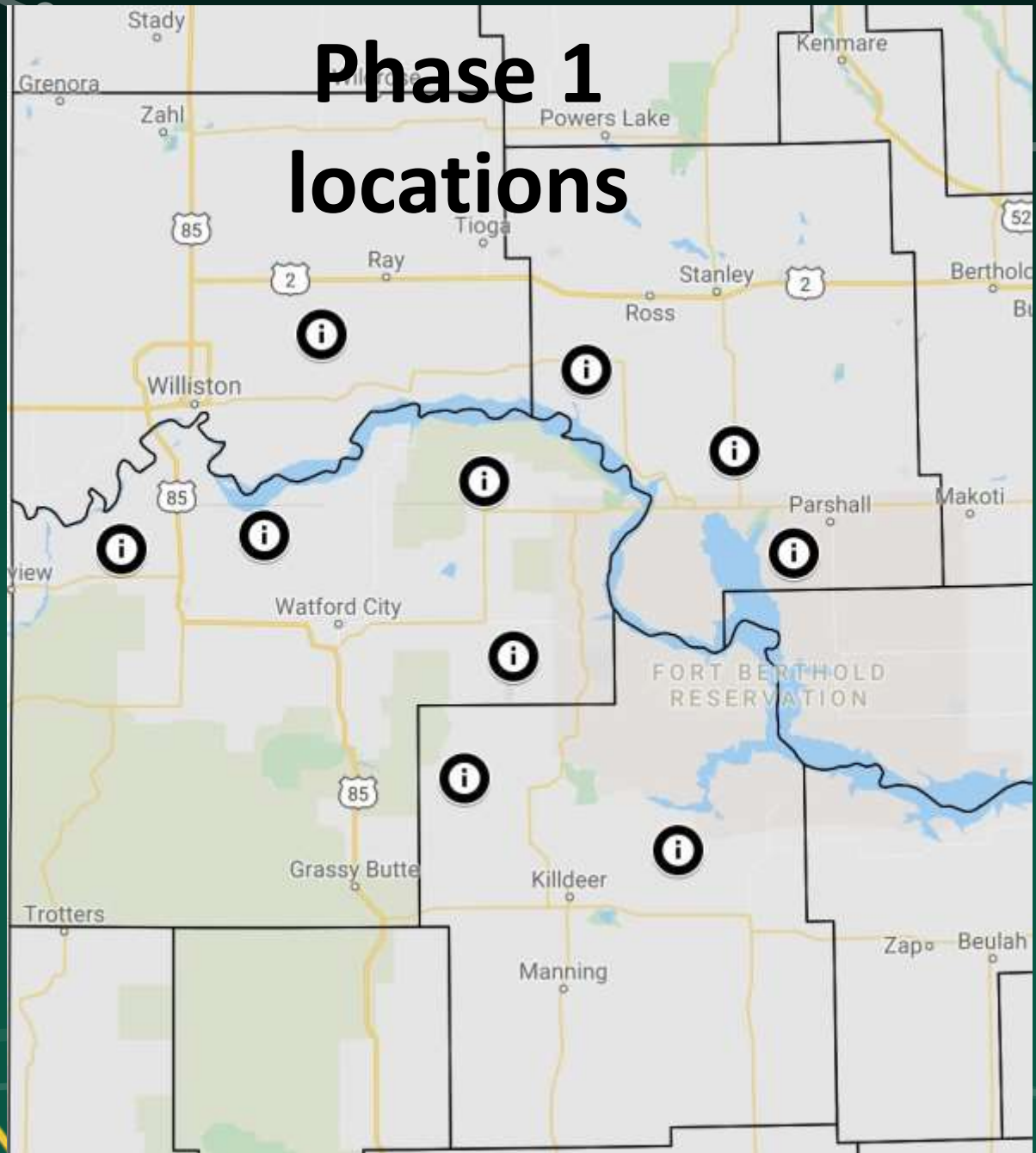


Wise Roads

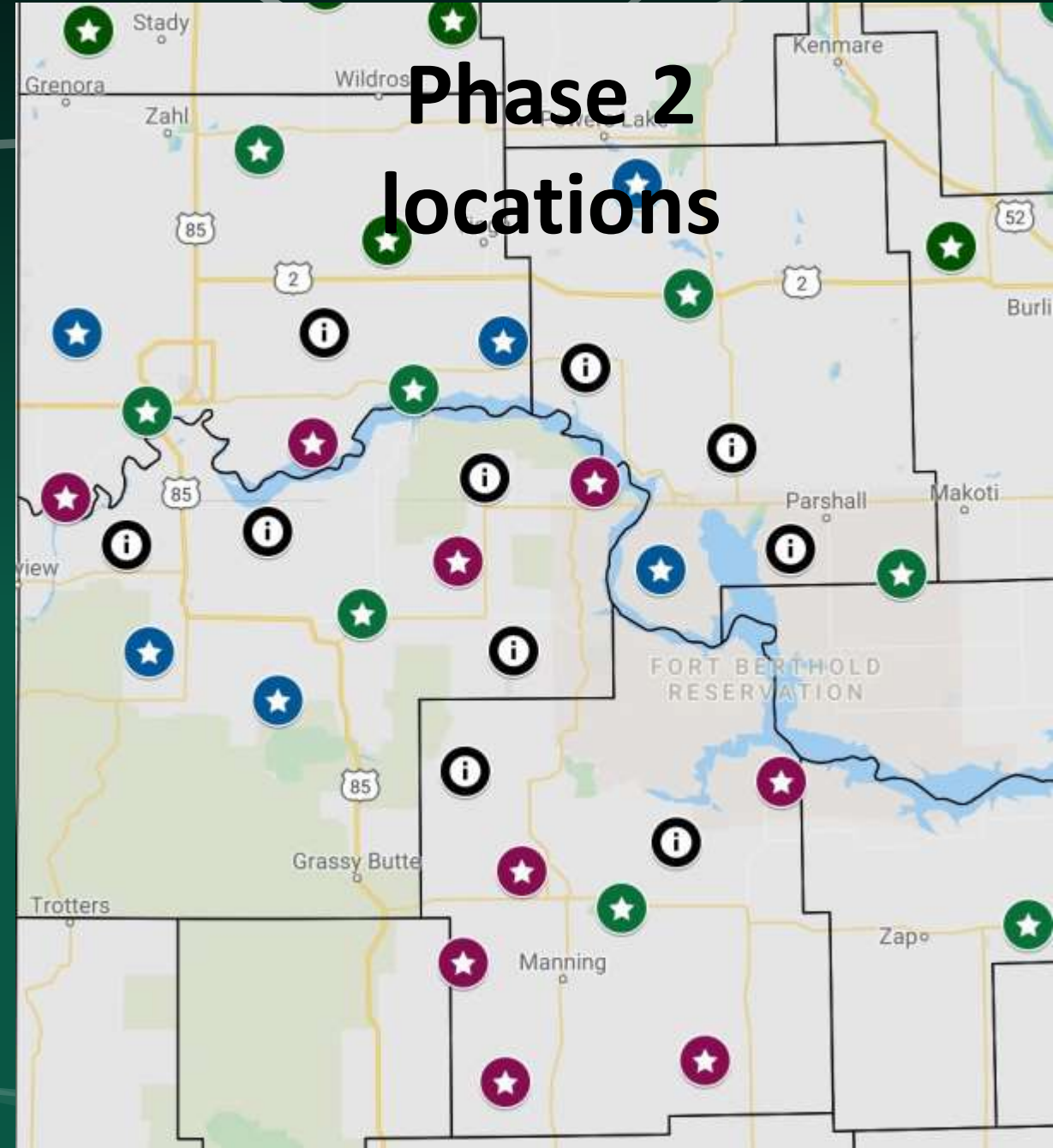
First 10 Stations

Weather
Information
System to
help
improve
the Oilfield
and
other
operations

Phase 1 locations



Phase 2 locations



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NDAWN - 5NW Charbonnet

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NDAWN - 9N Amegard

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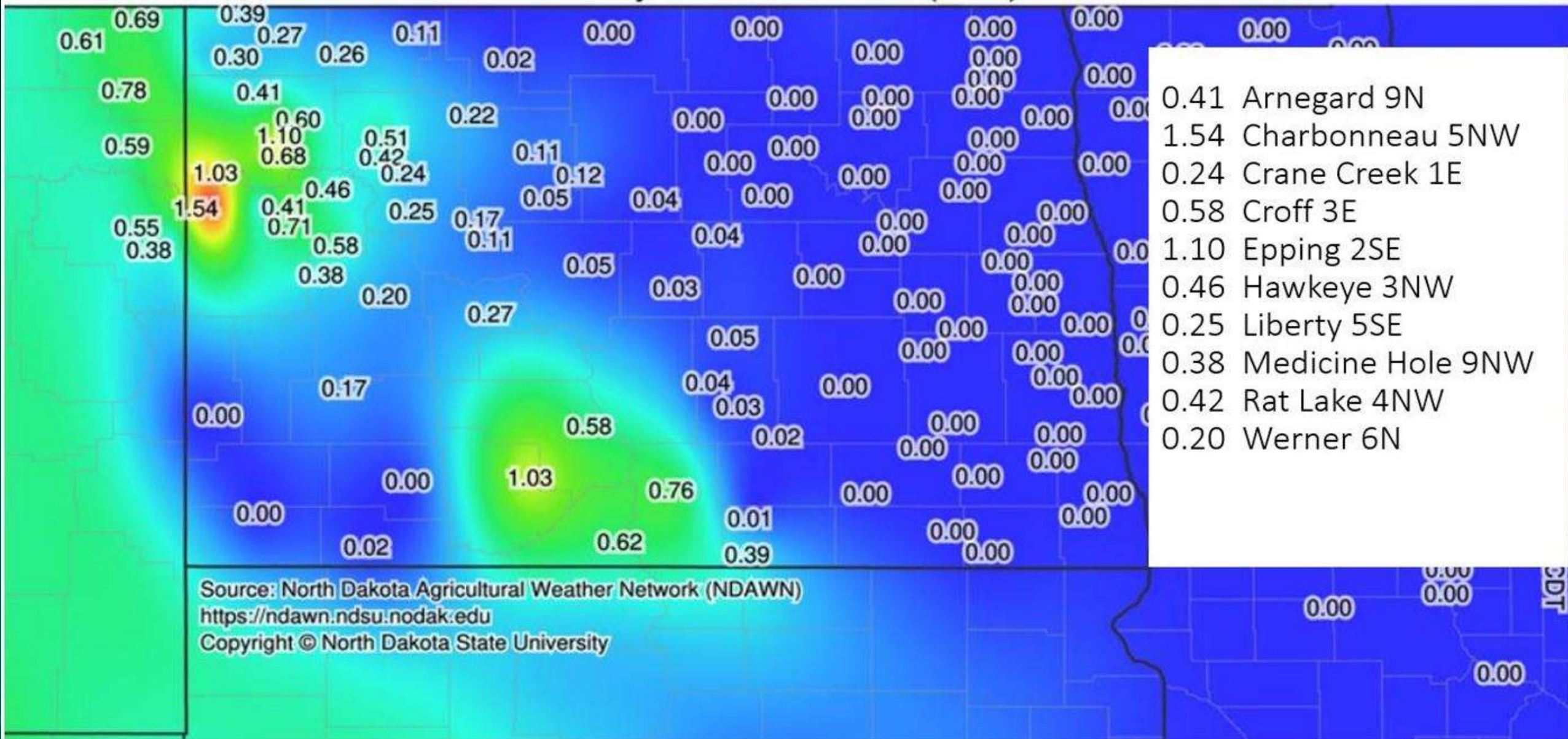
NDAWN - 3E Croff

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NDAWN - 3NW Hawkeya

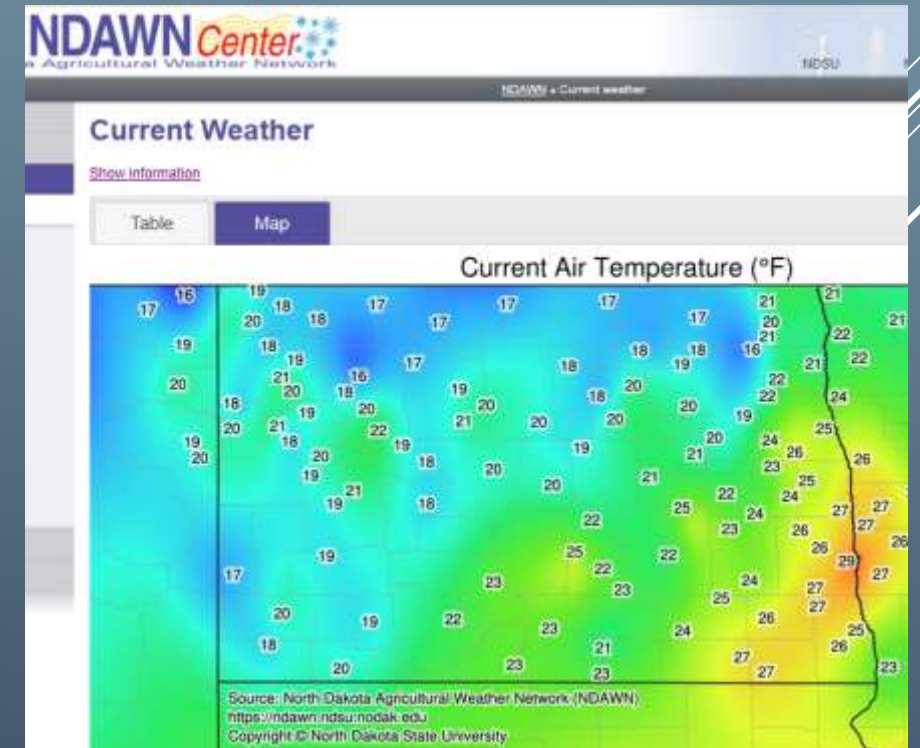
Today's Total Rainfall (inch)



The new stations can be identified by the precipitation numbers on the map. The names are either related to a nearby community or the township in which the station is located.

EXPECTATIONS OF THE PROJECT

- ▶ County Road Departments utilize the weather data to determine the area of impact for closures
- ▶ County Road Departments use weather station locations to create/modify road “zones” for issuing restrictions
- ▶ Forecast and weather accessible from:
 - ▶ Ndenergy.org and LoadPassPermits.com
 - ▶ NDAWN (ndawn.ndsu.nodak.edu)
 - ▶ County Websites





EXPECTED BENEFITS OF THE PROJECT

- ▶ More narrowly define local road restrictions and more geographic zones established
- ▶ Significant savings to oil industry thru improved productivity and reduced revenue loss due to shut-in wells
- ▶ Use of weather data for research to evaluate the performance of road building materials
- ▶ Benefits to agriculture producers, i.e., soil temperature, precipitation, wind speed, etc.

From: LoadPass Notification System
<cms@loadpasspermits.com>
Sent: Tuesday, July 09, 2019 10:05 AM
To: Geoff Simon <geoff@ndenergy.org>
Subject: Notice from Dunn : Restriction Added:
Zone 1 County Gravel roads

LoadPass Notification

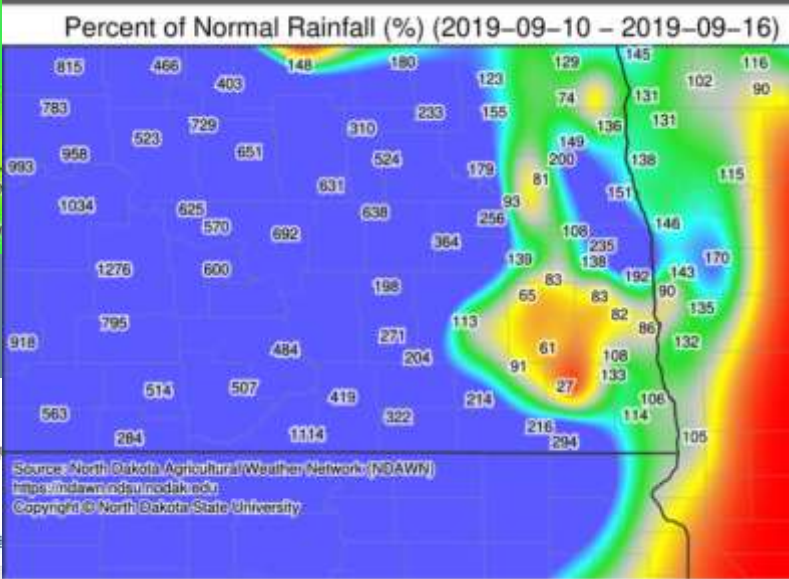
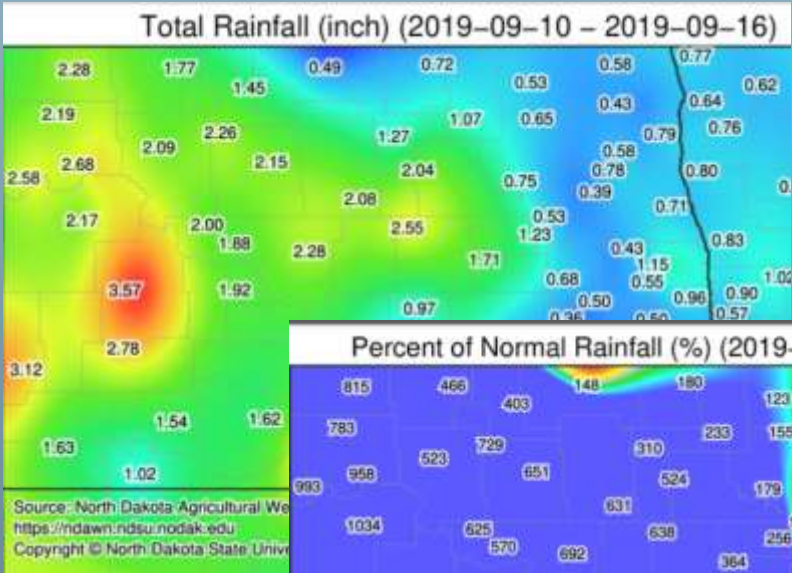
The following restriction has been added:

County: Dunn
Active Date: 7/9/2019
Road: Zone 1 County Gravel roads
URL: <https://permits.loadpasspermits.com/n/1613>
Due to the wet conditions, we will be restricting Zone 1 to 12,000GVW at 10:00am mst until further notice. At this time all other zones will remain open. Please refer to the Zone map for location.
[Load Pass Zone Map](#)

SOLUTION:

PROVIDE ACCURATE WEATHER INFORMATION, SPECIFICALLY PRECIPITATION DATA, TO ASSIST ROAD MANAGERS IN MORE PRECISELY IDENTIFYING ROADS THAT REQUIRE TEMPORARY WEIGHT RESTRICTIONS AND EXCLUDE THOSE THAT DO NOT.

PROVIDE MORE DETAILED WEATHER FORECASTING DATA FOR INDUSTRY TO ASSIST IN PLANNING OPERATIONS



Current Deep Soil Temperatures

This page shows deep soil temperatures for those stations which are equipped with probes. Values are in degrees Celsius and are updated hourly.

Disclaimer: The data on this page have not been quality controlled.

[Switch to metric units](#) [Download current data](#) [Download all data](#)

Table		Graph													
Station	Last Updated	5 cm (2 in)	10 cm (4 in)	20 cm (8 in)	30 cm (12 in)	40 cm (16 in)	50 cm (20 in)	60 cm (24 in)	80 cm (31 in)	100 cm (39 in)	125 cm (49 in)	150 cm (59 in)	175 cm (69 in)	200 cm (79 in)	225 cm (89 in)
Adams	17 Sep 21:00 CDT	66 °F	65 °F	63 °F	60 °F	58 °F	57 °F	56 °F	55 °F	54 °F	53 °F	52 °F	52 °F	51 °F	50 °F
Amidon	17 Sep 21:00 CDT	67 °F	67 °F	65 °F	63 °F	62 °F	61 °F	61 °F	60 °F	59 °F	59 °F	58 °F	57 °F	56 °F	55 °F
Bottineau	17 Sep 21:00 CDT	63 °F	62 °F	60 °F	58 °F	57 °F	57 °F	56 °F	56 °F	55 °F	54 °F	54 °F	53 °F		
Bowman	17 Sep 21:00 CDT	65 °F	65 °F	65 °F	64 °F	62 °F	62 °F	61 °F	59 °F	59 °F	58 °F	57 °F	56 °F	55 °F	54 °F
Carrington	17 Sep 21:00 CDT	68 °F	67 °F	65 °F	63 °F	61 °F	60 °F	59 °F	58 °F	57 °F	57 °F	56 °F	56 °F		
Courtenay	17 Sep 21:00 CDT	75 °F	75 °F	73 °F	69 °F	66 °F	64 °F	62 °F	61 °F	60 °F	59 °F	59 °F	58 °F	57 °F	56 °F
Crane Creek	17 Sep 21:00 CDT	64 °F	64 °F	65 °F	63 °F	61 °F	60 °F	59 °F	58 °F	57 °F	57 °F	56 °F	56 °F	55 °F	54 °F
Croft	17 Sep 21:00 CDT	69 °F	67 °F	64 °F	62 °F	60 °F	59 °F	59 °F	58 °F	57 °F	56 °F	56 °F	55 °F	54 °F	53 °F
Denhoff	17 Sep 21:00 CDT	68 °F	67 °F	65 °F	63 °F	61 °F	60 °F	59 °F	57 °F	57 °F	56 °F	55 °F	54 °F	53 °F	52 °F
Dickinson	17 Sep 21:00 CDT	68 °F	67 °F	65 °F	64 °F	63 °F	62 °F	61 °F	60 °F	60 °F	59 °F	58 °F	58 °F		
Epping	17 Sep 21:00 CDT	65 °F	64 °F	62 °F	60 °F	59 °F	59 °F	58 °F	57 °F	57 °F	56 °F	56 °F	55 °F	54 °F	54 °F

WEATHER DATA RESOURCES

- ▶ NDAWN.ORG

[NDAWN current weather webpage](#)

- ▶ stationname.ndawn.org

Example: [ratlake.ndawn.org](#)

- ▶ Pictures.ndawn.org

[Recent images from new stations](#)

- ▶ More to come in the future

Adding soil probes to the stations will provide additional ground temperatures and information to further determine suitability of road use especially in spring during thaw and fall during freeze up.


Starting plan is to use an existing typical county road with a good gravel template with the proper 4% crown in at least four counties.

Multiple probes can be installed at each station, initially three probes will be placed 1. 3" or surface 2. 42" in 6" intervals 3. 8' or below frost line.

Additional probes may be added up to 4-500' from the station.

These would be for road profile data.

WEATHER DATA UTILIZATION

- ▶ WDEA in partnership with Oil and Gas Research Council has funded this project and has contracted meteorologist services
 - ▶ Jonathan Rosencrans
 - ▶ Services and tasks
 - ▶ Installation, maintenance, and support of weather stations
 - ▶ Data utilization
 - ▶ Forecasting
 - ▶ Training and Support
- 
- A series of white diagonal lines of varying lengths and thicknesses are positioned on the right side of the slide, extending from the middle towards the bottom right corner.



NDLTAP & WDEA

Together, we do great things!



Dale C. Heglund

701-318-6893

dale.heglund@ndsu.edu

"Helping local transportation leaders grow"





ANY QUESTIONS???

