



# Needs Study, What's in it for Me?

Tuesday, December 3, 2019  
North Dakota Township Officers Association  
53<sup>rd</sup> Annual Meeting – Bismarck, ND



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UPPER GREAT PLAINS  
TRANSPORTATION INSTITUTE  
NORTH DAKOTA LOCAL TECHNICAL ASSISTANCE PROGRAM

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# UGPTI Local Road Needs Study

- Update of 2016 Study
- 20-year needs estimates, reported by biennium
- Needs Categories
  - Paved roads
  - Unpaved roads
  - Bridges
- The study results will be used in future distribution of the funding that is to be distributed by HB 1066 (Operation Prairie Dog)



# Trends Impacting Roadways in ND

Oil production

Changing crop mix

Highway funding levels and sources

Population changes

Construction Inflation and aggregate resource depletion

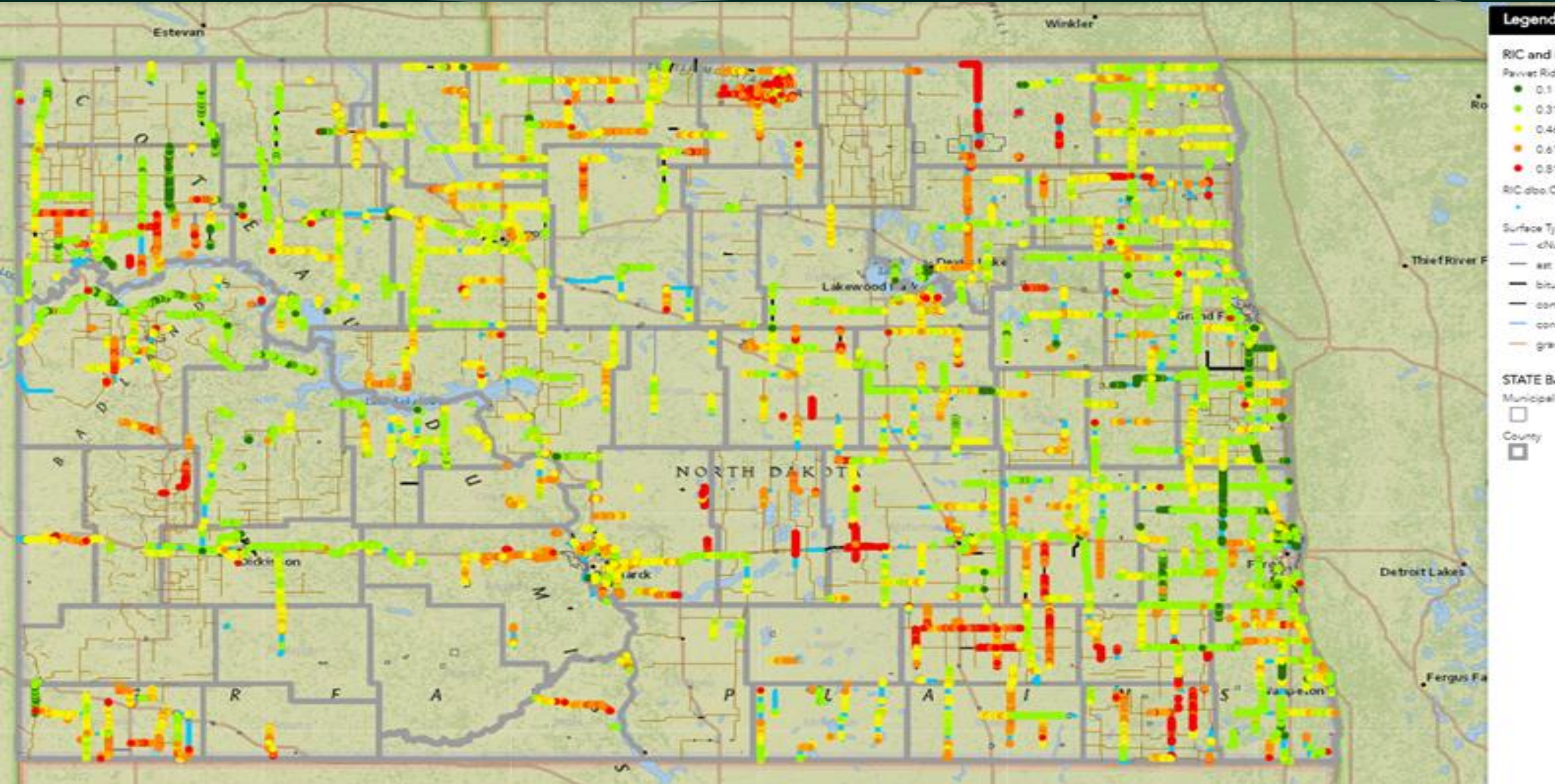
Changing road maintenance practices

# Data Collected for 2019-20 Study

- 1,000+ vehicle counts and classifications by NDDOT & UGPTI (students and consultants)
- 6,000 miles of pavement video image and ride data via 3 smartphone applications
- NBIS data on about 2,300 local bridges
- Requesting gravel costing surveys for 53 counties and 1,360 organized townships



# Pavement Condition Status - 2019



# Created for the 2019-20 Study

- A bridge deterioration and improvement model.
  - A study of bridges located on minimum maintenance roads – approximately 400 bridges excluded from the analysis



# Importance of Gravel Road Data

- Pavement and bridges often get the most attention
- Paved road costs and practices are fairly consistent across the state
- **Unpaved roads account for 60% of the 20-year needs in the previous study**
- Gravel/Scoria costs vary widely from county to county depending on gravel availability, competing uses and quality
- Trucking costs vary significantly based upon gravel availability and pit locations

# North Dakota's Local Road Network

97,600 miles

6,600 miles are paved

59,000 miles are gravel surfaced

32,000 miles are unsurfaced





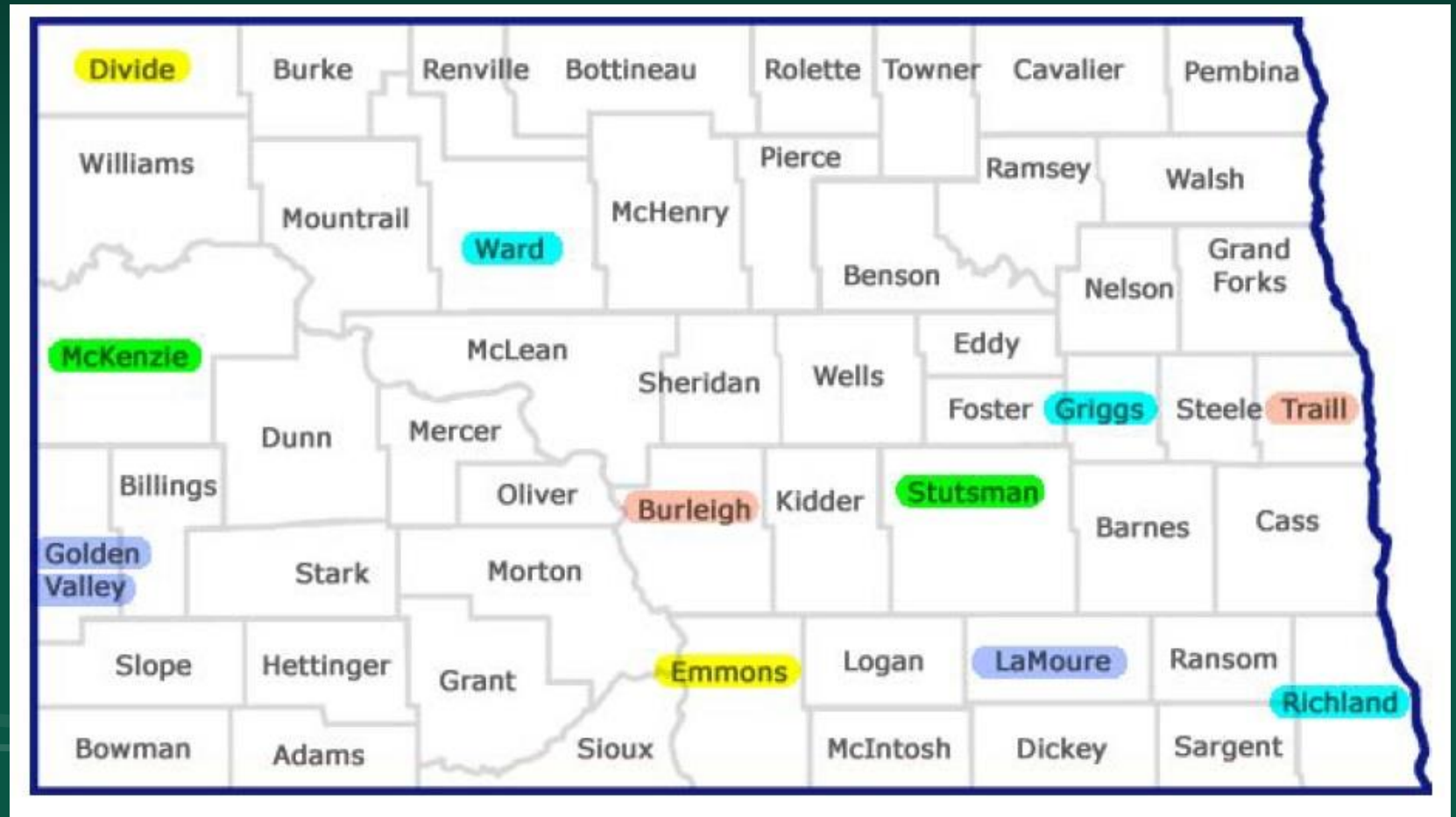
## 2019 – 2021 Needs Study – Gravel Survey Steering Committee

<b>Committee Member</b>	<b>County</b>	<b>Phone Number</b>	<b>Email Address</b>
Marcus Hall, PE	Burleigh	701-390-3980 (c)	mahall@nd.gov
Bryan Haugenoe	Divide	701-339-8388 (c)	bdhaugenoe@nd.gov
Michael (Nick) Lawler	Emmons	701-254-5491	ecshop@nd.gov
Pete Wirtzfeld	Golden Valley	701-872-4123	gvshop@midstate.net
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Larry Syverson	NDTOA	701-786-2697	larry@ndtoa.com
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# Gravel Road Survey

- Similar to 2016 study survey, updated based upon comments from respondents and gravel survey and steering committee inputs



## 2019 COUNTY ROAD NEEDS STUDY SURVEY

Please return this survey in the enclosed envelope by **November 20, 2019**. Please direct any questions to Alan Dybing at 701.231.5988 or [countytwp@ugpti.org](mailto:countytwp@ugpti.org).

County:

Contact:

Name

Phone

Email

Preparer:  Date Prepared:

### Aggregate Description

# NDSU UPPER GREAT PLAINS TRANSPORTATION INSTITUTE

## 2019 TOWNSHIP ROAD NEEDS STUDY SURVEY

Please return this survey in the enclosed envelope by **November 20, 2019**. Please direct any questions to Alan Dybing at 701.231.5988 or [countytwp@ugpti.org](mailto:countytwp@ugpti.org).

Township: \_\_\_\_\_ County: \_\_\_\_\_

Contact: \_\_\_\_\_

Name

Phone

Email

Preparer: \_\_\_\_\_ Date Prepared: \_\_\_\_\_

### Gravel Costs

# Unpaved Road Survey

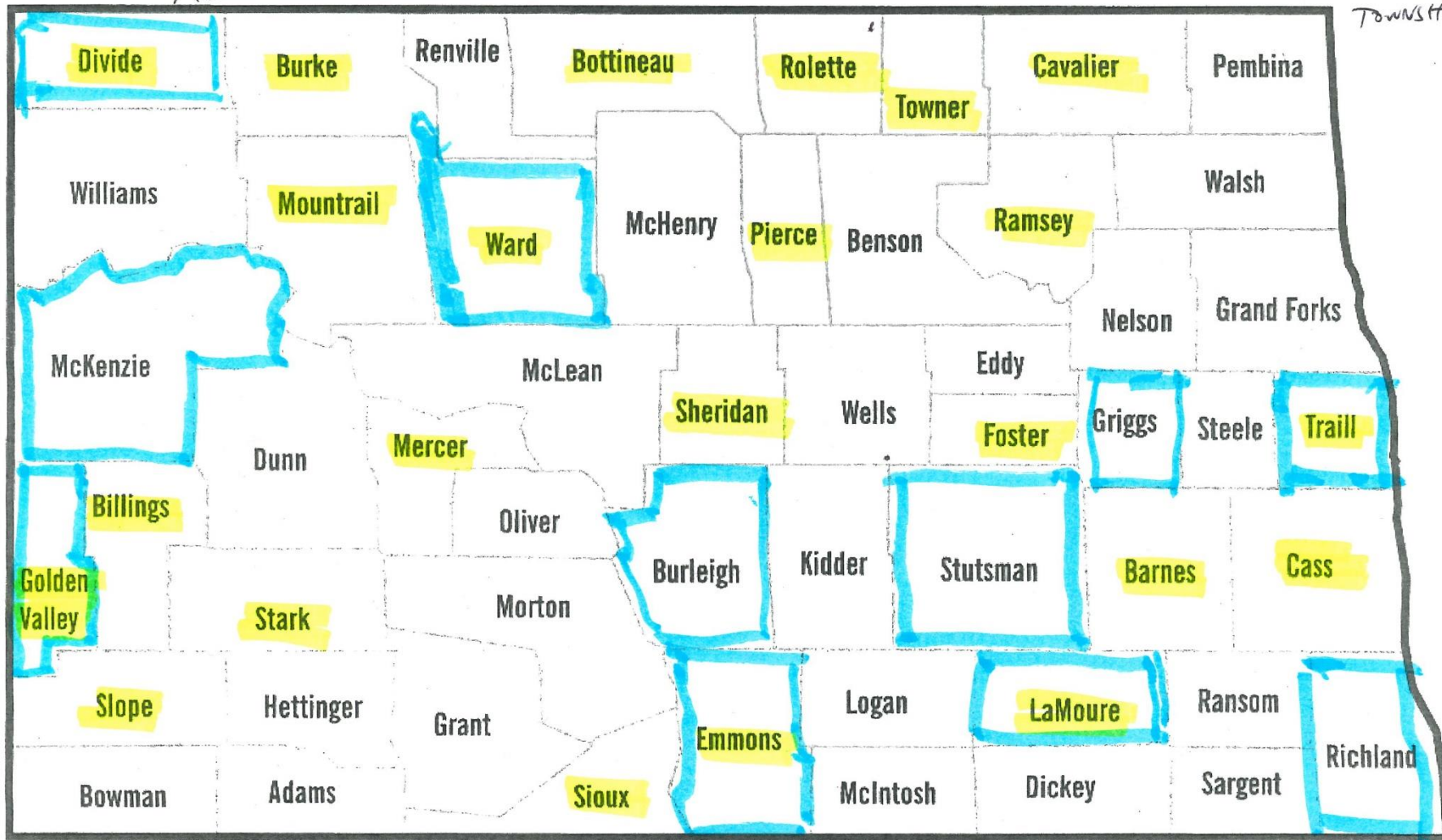
- Costs
  - Aggregate
  - Trucking
  - Placement
  - Dust Suppressant
  - Stabilization
- Practices
  - Gravel overlay intervals
  - Blading frequency
  - Stabilization/Dust Suppressant Usage
- Maintenance Variations
  - How roads are maintained differently at different traffic levels

11/23/19  
DATA FROM  
AL

# NEEDS STUDY - GRAVEL SURVEY

## GRAVEL STUDY STEERING COMM

(23) COUNTY SO FAR  
(21) SO FAR  
TOWNSHIPS



## Local Roads Needs Study Operation Prairie Dog







# LOW COST SAFETY IMPROVEMENTS

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# Unpaved Roads

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U.S. Department of Transportation  
**Federal Highway Administration**

The #1 problem with a gravel road:



It's not a paved road!



# Investment Strategies - Alternatives

## Agency Cost Parameters Setup

HMA AST Gravel Dust Control Stabilized Gravel

HMA

### INITIAL COST

Total Initial Cost (\$/mile): \$ 725,115

[Initial Costs Calculator](#)

### MAINTENANCE COST

Treatment Selection	Treatment Name	Application Times Per Year	Year Interval Between Applications	Application Start Year	Unit Cost (dollars)	Unit Selection
<input checked="" type="checkbox"/>	Crack Sealing	1	4	6	10000	per mile ▼
<input checked="" type="checkbox"/>	Seal Coat	1	7	3	20000	per mile ▼
<input checked="" type="checkbox"/>	Thin Lift OverLay	1	20	20	250000	per mile ▼
<input checked="" type="checkbox"/>	Striping and Marking	1	3	3	2000	per mile ▼
<input checked="" type="checkbox"/>	Patching/Maintenance	1	3	3	3000	per mile ▼
<input type="checkbox"/>	<input type="text" value="Other"/>	1	1	1	0	per mile ▼

[Reset](#)

[Next Surface](#)

[Back to Common Parameters Setup](#)

[View Analysis Summary](#)

[Help](#)



# Questions – Comments

The past Needs Study and gravel survey data can be found on line at:

[https://www.ugpti.org/downloads/road\\_needs/](https://www.ugpti.org/downloads/road_needs/)

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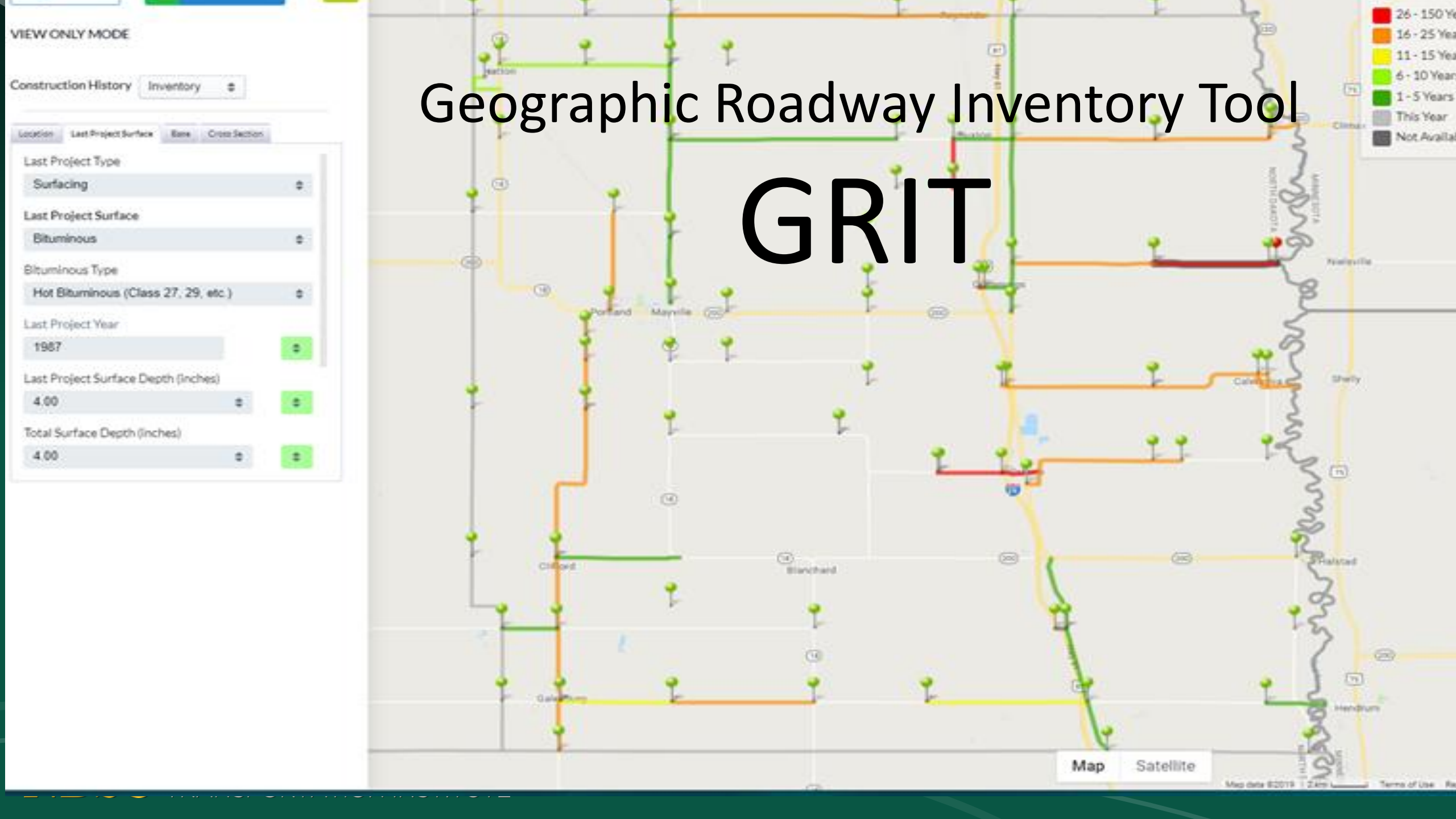
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# Geographic Roadway Inventory Tool

# GRIT



**NDTOA**

**PRESIDENTS AWARD**

Presented to

**Denise Brown**

For Exhibiting the Highest Standards of Dedication, Ability and Service as a Honorary Township Officer while Serving North Dakota Township Government for Many Years.



North Dakota Township Officers Association



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# Unpaved Road Survey Timeline

- Steering Committee Conference Call – October 1
- Survey Update – Week of October 7
- Survey Mailing – October 15
- Gravel Survey Webinar – Oct 23
- Request that surveys be returned by November 20
- Follow up in December with any questions regarding survey responses or non-respondents
- Corresponding Township survey

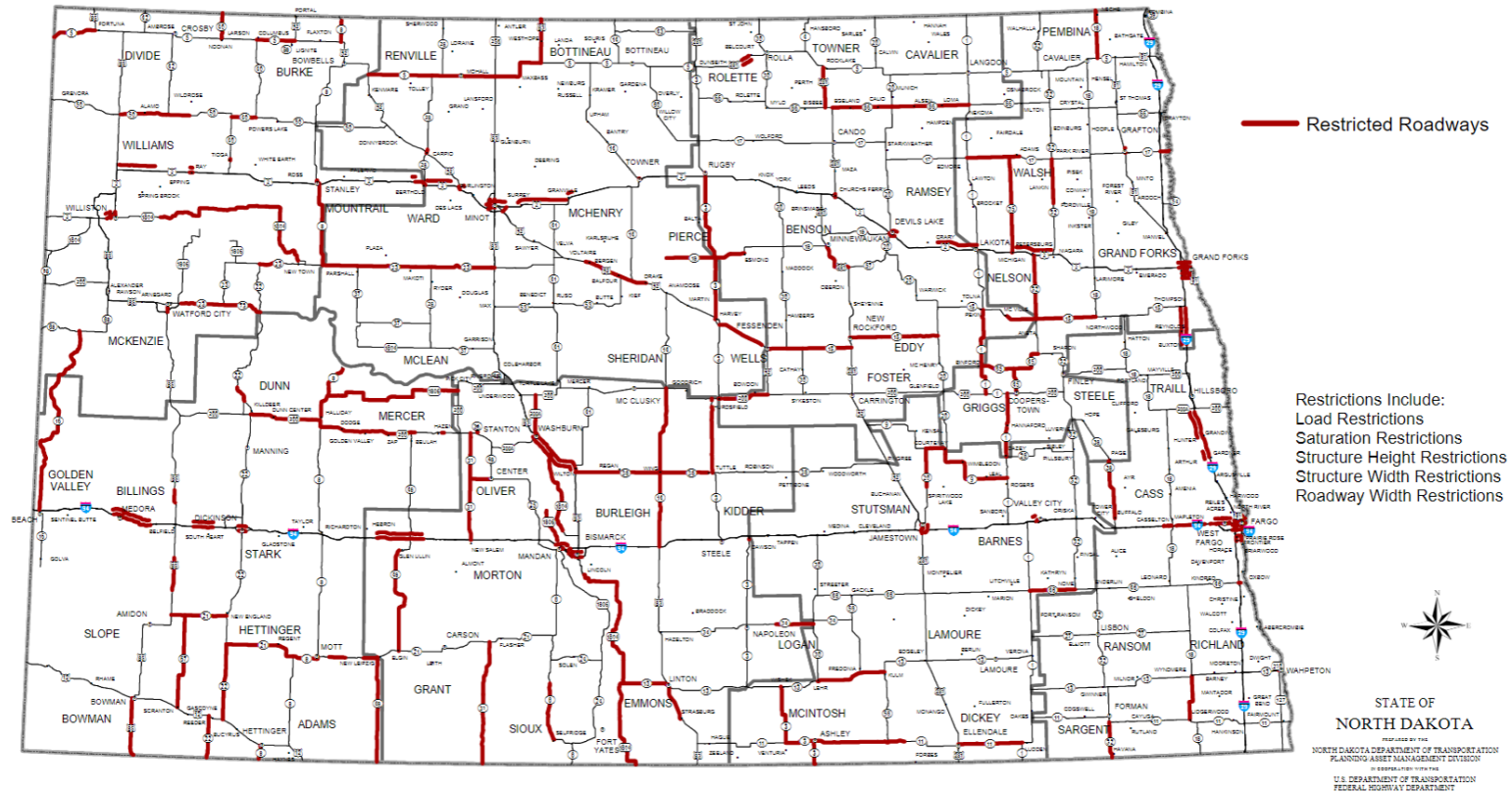
## Upper Great Plains Transportation Institute

- Infrastructure Needs Studies History
  - 2007: NDDOT
  - 2009: NDDOT Level of Service Study
  - **2010:** ND Association of Oil and Gas Producing Counties/ND Commerce Department – Agriculture Producer Groups
  - 2011-13: North Dakota Legislature
  - 2013-15: North Dakota Legislature
  - 2013-15: NDDOT Cities
  - 2015-16: North Dakota Legislature
  - 2019-20: NDDOT Statewide Needs
  - 2019-20: North Dakota Legislature



# Freight Constraints – State System

North Dakota State Highway Freight Constraints, 2019



## OPD Provision for Local Road Study

HB 1066 section 4:

the state treasurer shall distribute the remaining money in the fund to non - oil-producing counties based on the most recent data compiled by the upper great plains transportation institute regarding North Dakota's county, township, and tribal road and bridge infrastructure needs.

## OPD Provision for Local Road Study

HB 1066 section 4:

The total estimated road and bridge investment needs for each county is the twenty-year estimate for unpaved and paved road and bridge needs as identified by the upper great plains transportation institute.

## OPD Provision for Local Road Study

HB 1066 section 4:

If the data compiled by the upper great plains transportation institute includes more than one twenty-year estimate for the total needs of each county, the state treasurer shall use an average of the twenty-year estimates for each county

## Created for the 2019-20 Study

- A statewide TransCAD truck flow model
  - Updated Oil & Gas Data from ND Mineral Resources
    - Inbound fresh water
    - Outbound crude oil
    - Outbound produced water
  - Updated Agricultural Forecasts
    - Yield and crop mix
- An AASHTO-93 Pavement Deterioration Model to predict pavement needs and remaining life

# Gravel Cost and Practices Surveys

- Aggregate (gravel) cost at pit
- Placement cost
- Transportation cost from pit to roads
- Dust suppressant usage/cost
- Stabilization usage/cost
- Intermediate practices
  - Double chip seal/armor coat
- Note: Gravel Mtce. Costs
  - Vary a great deal





# 2019 Traffic Data Collection

- Data collection
  - 1/3 collected by NDSU students and 1/3 by contractor
  - NDDOT normal count schedule for remaining 1/3.
  - 450 counts added to the NDDOT current and past counts.
  - Most counts included truck classification
- Traffic data processing
  - Use ATR's from around state to factor the data
  - Use classification data to factor the volume counts
  - Input all traffic data into travel demand model
- Traffic data reporting
  - Specific count location data will be made available with an interactive map on the Web.

