North Dakota State Freight Plan

Why is NDDOT developing a strategic state freight plan?

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Today, unlike any time in our state's history, North Dakota is uniquely positioned. We are experiencing unparalleled growth in several key sectors of our economy: agriculture, energy and manufacturing. Our population is growing as people are coming to our state seeking a brighter, more prosperous future.

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As a result of this growth, people and businesses are expecting more from our transportation system; both infrastructure and services. They want more four-lane highways, wider roads, greater load carrying capacity, expanded hours of snow removal and above all, they want safe, secure and reliable transportation.

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Why is NDDOT developing a strategic state freight plan?

Moving freight safely, securely and efficiently

ND's Highway System was built in the 1950s & 60s

1/3 of the state's rail lines have been abandoned

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Why is NDDOT developing a strategic state freight plan?

ND's economy is growing and more diversified

Economic growth is resulting in more freight

Freight Plan - vehicle to enhance communication

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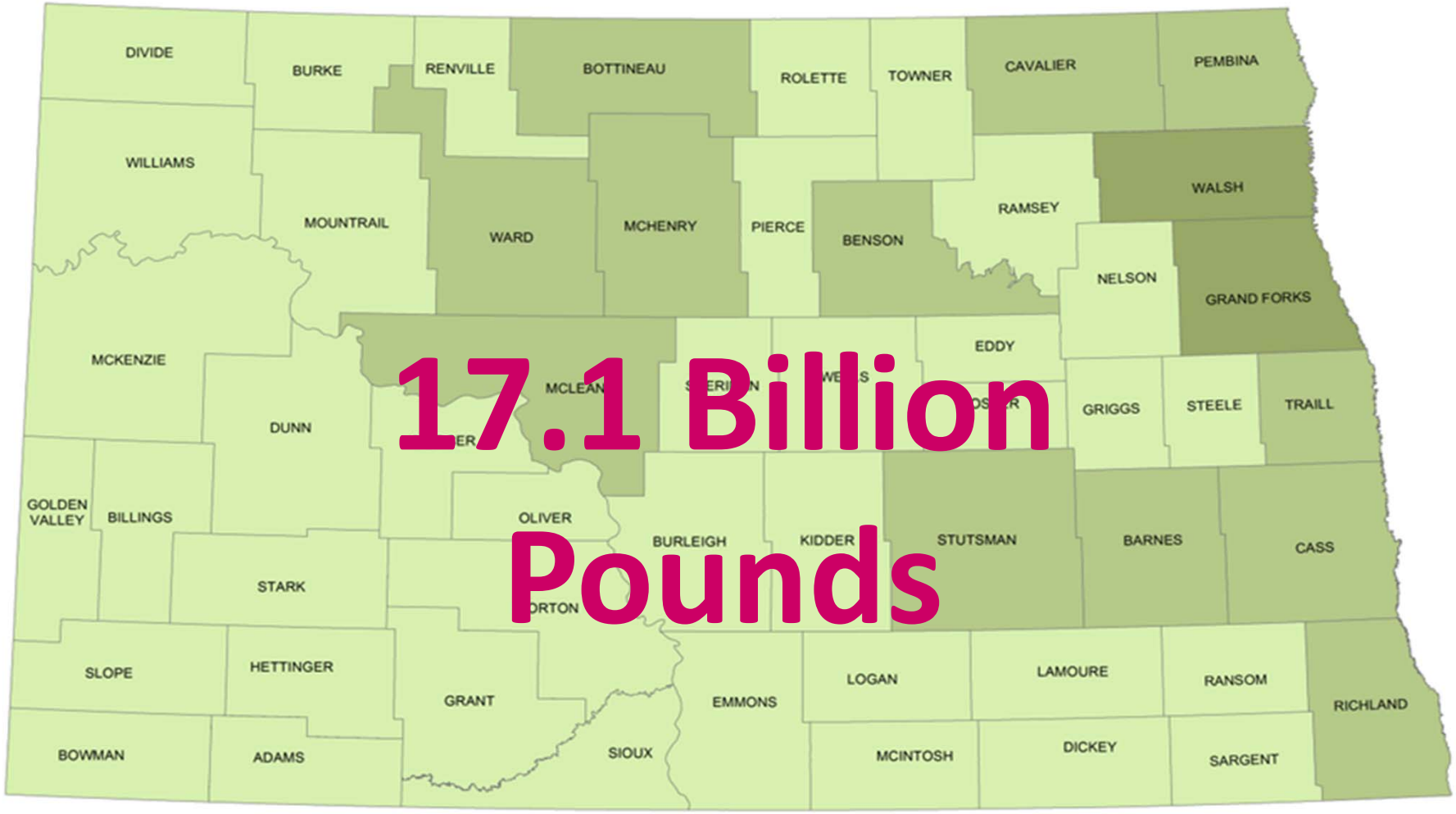
Why is NDDOT developing a strategic state freight plan?

A multimodal, strategically developed transportation system is necessary for North Dakota businesses to participate in the global economy.

Agriculture

FIGURE 28

1950 CROP PRODUCTION



17.1 Billion Pounds

- 0 LBS - 489,000,000 LBS
- 489,000,001 LBS - 1,023,000,000 LBS
- 1,023,000,001 LBS - 1,530,000,000 LBS
- 1,530,000,001 LBS - 3,103,000,000 LBS
- 3,103,000,001 LBS - 4,232,216,000 LBS

Source : United States Department of Agriculture

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North Dakota Department of Transportation

2014

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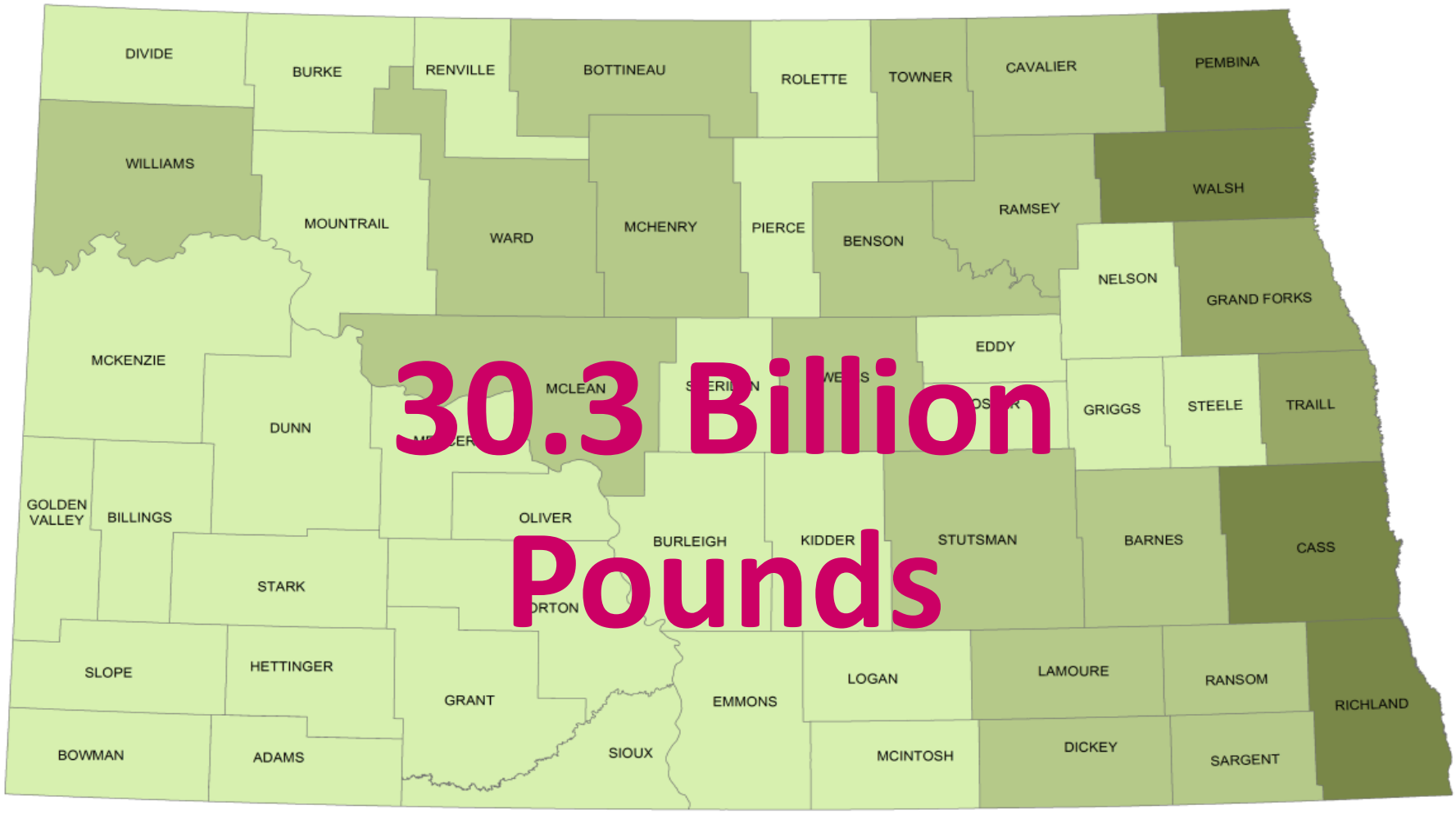
FIGURE 29

1980 CROP PRODUCTION



- 0 LBS - 489,000,000 LBS
- 489,000,001 LBS - 1,023,000,000 LBS
- 1,023,000,001 LBS - 1,530,000,000 LBS
- 1,530,000,001 LBS - 3,103,000,000 LBS
- 3,103,000,001 LBS - 4,232,216,000 LBS

Source : United States Department of Agriculture

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Department of Transportation

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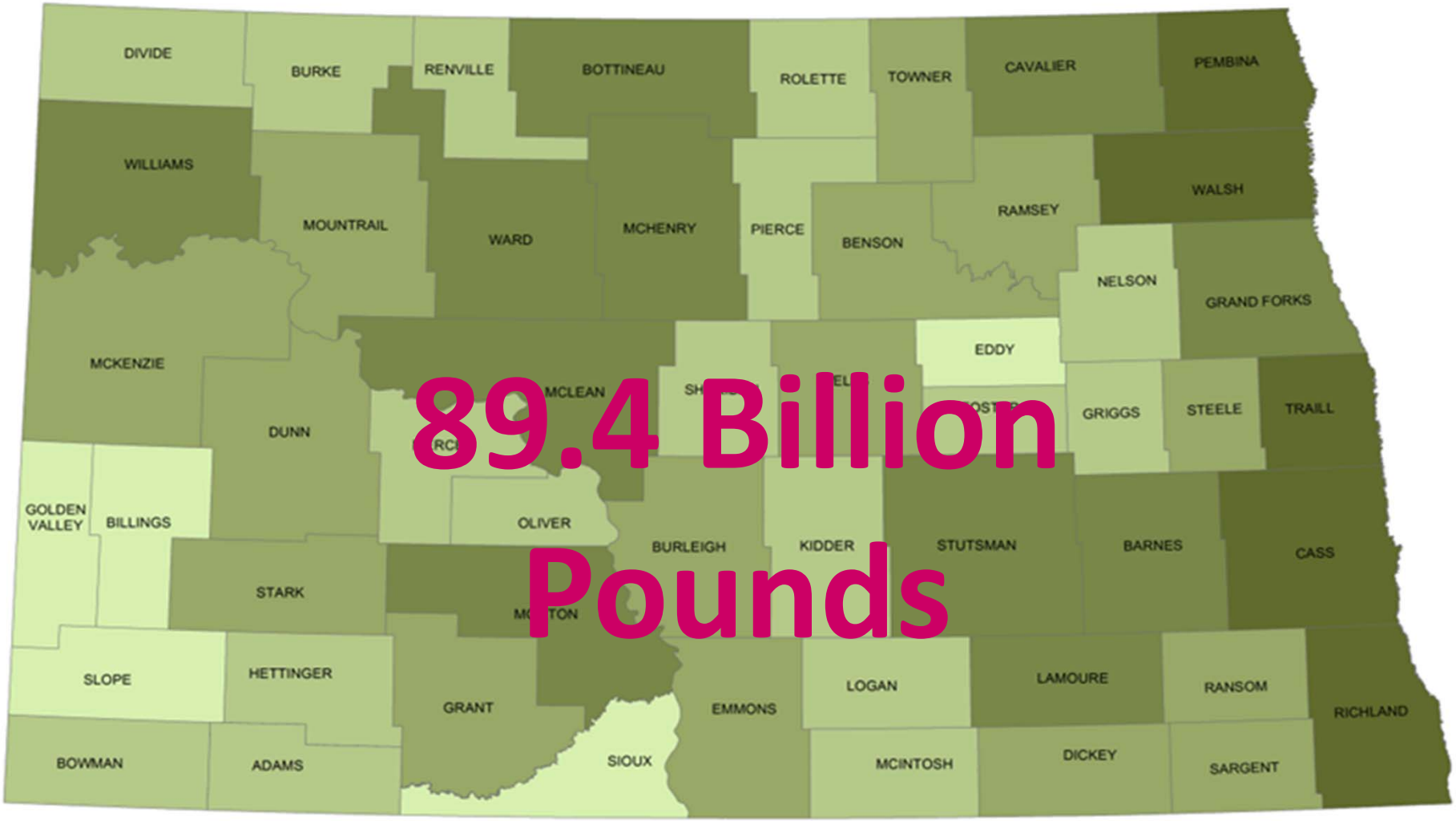
FIGURE 30

2010 CROP PRODUCTION



89.4 Billion Pounds

- 0 LBS - 489,000,000 LBS
- 489,000,001 LBS - 1,023,000,000 LBS
- 1,023,000,001 LBS - 1,530,000,000 LBS
- 1,530,000,001 LBS - 3,103,000,000 LBS
- 3,103,000,001 LBS - 4,232,216,000 LBS

Source : National Agricultural Statistics Service

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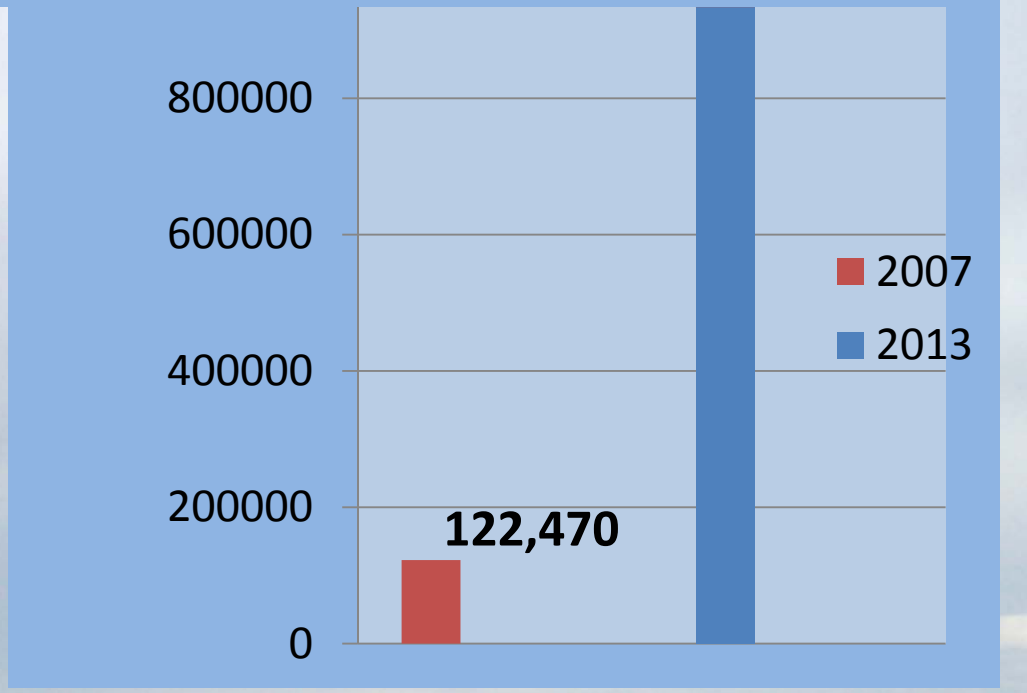
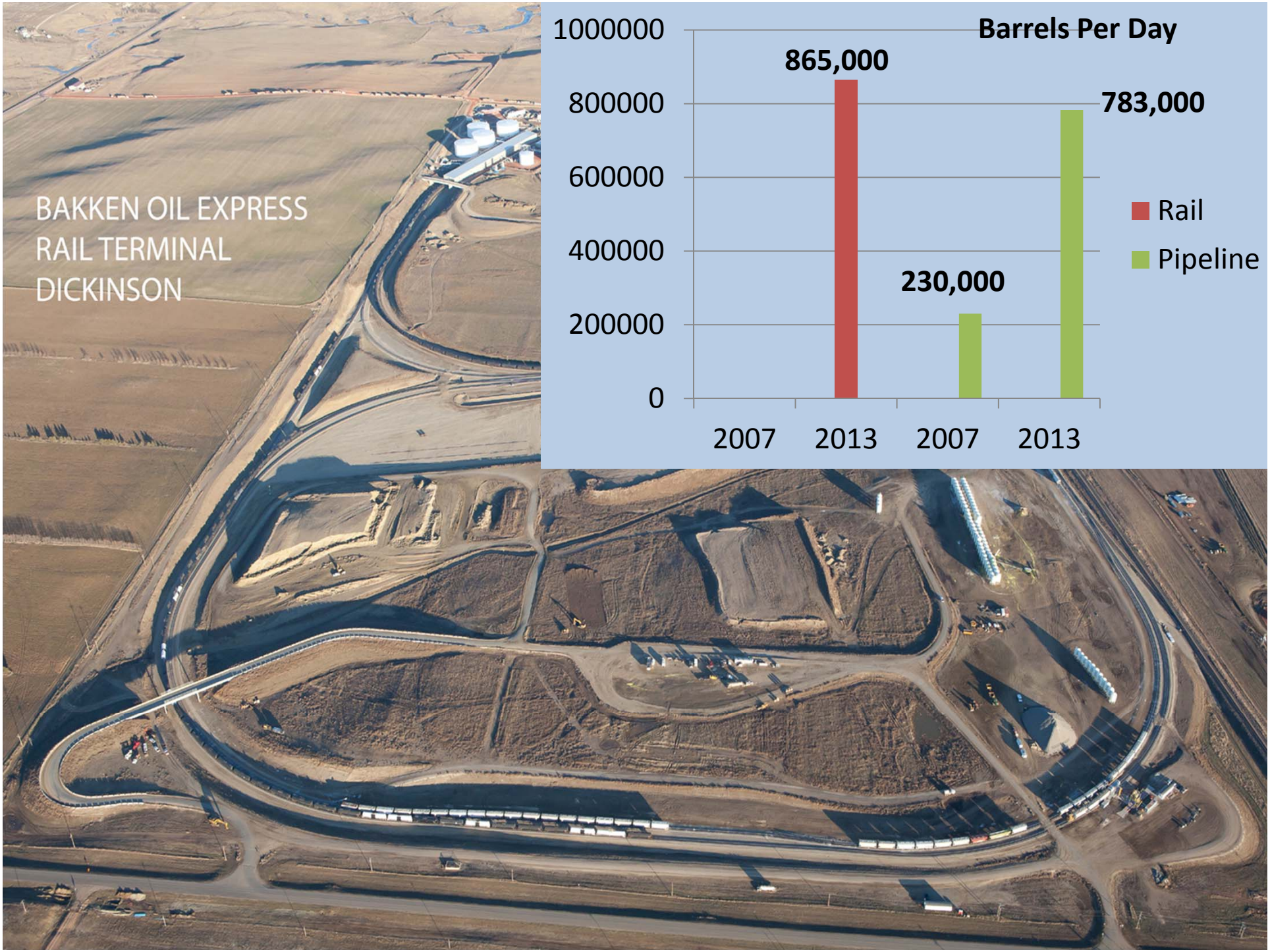
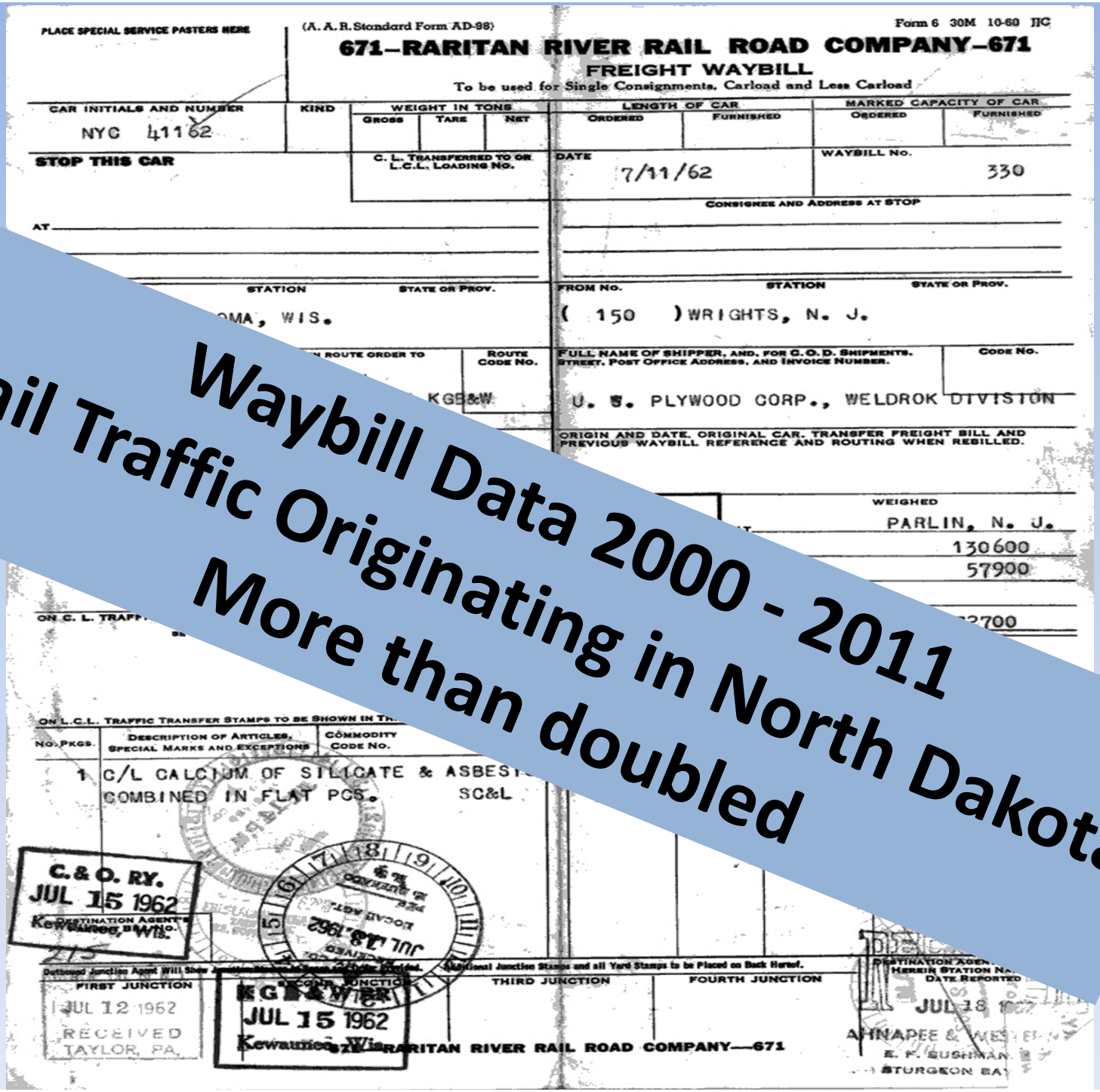
Oil Development

Oil Production 2007 – 2013 Change
Barrels Per Day




BAKKEN OIL EXPRESS
RAIL TERMINAL
DICKINSON
Barrels Per Day
1000000
800000
600000
400000
200000
0
865,000
230,000
783,000
2007
2013
2007
2013
Rail
Pipeline

Waybill Data 2000 - 2011
Rail Traffic Originating in North Dakota
More than doubled



PLACE SPECIAL SERVICE PASTERS HERE

(A. A. R. Standard Form AD-98)

Form 6 30M 10-60 JIC

671—RARITAN RIVER RAIL ROAD COMPANY—671

FREIGHT WAYBILL

To be used for Single Consignments, Carload and Less Carload

CAR INITIALS AND NUMBER	KIND	WEIGHT IN TONS Gross	Tare	Net	LENGTH OF CAR Ordered	Furnished	MARKED CAPACITY OF CAR Ordered	Furnished
NYC 41162								

STOP THIS CAR

C. L. TRANSFERRED TO OR L.C.L. LOADING NO.

DATE 7/11/62

WAYBILL No. 330

CONSIGNEE AND ADDRESS AT STOP

AT

STATION ...OMA, WIS. STATE OR PROV.

FROM No. (150) STATION WRIGHTS, N. J. STATE OR PROV.

ROUTE ORDER TO ... ROUTE CODE NO. KGB&W

FULL NAME OF SHIPPER, AND, FOR C. O. D. SHIPMENTS, STREET, POST OFFICE ADDRESS, AND INVOICE NUMBER. U. S. PLYWOOD CORP., WELDROK DIVISION

CODE NO.

ORIGIN AND DATE, ORIGINAL CAR, TRANSFER FREIGHT BILL AND PREVIOUS WAYBILL REFERENCE AND ROUTING WHEN REBILLED.

WEIGHED

PARLIN, N. J.

130600

57900

...2700

ON C. L. TRAFF...

ON L.C.L. TRAFFIC TRANSFER STAMPS TO BE SHOWN IN TH...

No. Pkgs.	Description of Articles, Special Marks and Exceptions	Commodity Code No.
1	C/L CALCIUM OF SILICATE & ASBEST... COMBINED IN FLAT PCS.	SC&L

C. & O. RY. JUL 15 1962 Destination Agent's Kewaunee, Wis.

JUL 18 1962 Local Agt.

Outbound Junction Agent Will Show ... Additional Junction Stamps and all Yard Stamps to be Placed on Back Hereof.

FIRST JUNCTION JUL 12 1962 RECEIVED TAYLOR, PA.

SECOND JUNCTION KGB&W JUL 15 1962 Kewaunee, Wis.

THIRD JUNCTION

FOURTH JUNCTION

RARITAN RIVER RAIL ROAD COMPANY—671

Destination Agent Herein Station Name Date Reported JUL 18 1962

AHNAPEE & WESTERN

E. F. BUSHMAN

STURGEON BAY

2000 – 2011 BNSF Glasglow Sub

20 to 38 Trains Per Day

2008 to 2014 Trains Volumes Fargo 68 to 100

Worldwide Services
Synchronizing the world of commerce

Air Freight

FedEx

Daily Truck VMT 1.78M - 2000 4.1M - 2012

Truck VMT 14.7% - 2000 22.4% - 2012

North Dakota State Freight Plan

NORTH DAKOTA FREIGHT PLAN – PURPOSE

Promote safe, secure, sustainable, and reliable freight mobility to enhance a diversified and vibrant economy.

NORTH DAKOTA FREIGHT PLAN – SCOPE

Multimodal – "Last Mile Connections"

Comprehensive

- Immediate and Long-Term
- Local, Tribal, State, Federal & Private Sector
- Neighboring States & Provinces

NORTH DAKOTA FREIGHT PLAN - USE

- Promote dialogue
- Provide a decision-making framework
- Promote public/private partnerships
- Identify freight trends, issues, bottlenecks
- Identify critical freight facilities
- Identify State's Strategic Freight System
- Identify studies, potential freight projects, operational changes, innovative applications
- Qualify ND for federal freight funding

Stakeholder Input

Trends/Issues

Needs

Conditions Creating Bottlenecks/Delays

Stakeholder Input

Trends/Issues

Trend 1 Additional freight system capacity will be necessary

Trend 2 ND oil by rail increase; rail's share will be lower

Trend 3 Consumer freight will primarily be transported by trucks

Trend 4 Increased agricultural production will result in higher volumes of freight

Trend 5 The number elevators will decline, storage and throughput will increase

Trend 6 Growth of spin-off industries will increase freight volumes

Trend 7 Reaching customers will require a globally integrated freight system

Trend 8 Air freight will play an ever increasing role meeting these demands

Trend 9 ND's AG producers and manufacturers require intermodal rail service

Trend 10 Truck S/W differences hamper the region's economic competitiveness

Stakeholder Input

Needs

Need 1 Access to competitively-priced intermodal container rail service

Need 2 Additional pipeline capacity to export North Dakota crude oil

Need 3 Expansion of the pipeline gathering system

Need 4 First/Last mile connections State's Strategic Freight System

Need 5 Highway improvements eliminating freight impediments (e.g. load restrictions)

Need 6 Additional railroad capacity and safety enhancements.

Need 7 Upgrading some railroad branchlines to 286,000 lb. capacity.

Need 8 An access management program for the State Highway System

Need 9 A statewide, coordinated permitting system for routing OS/OW vehicles.

Need 10 Improved harmonization of truck S/W regulations with states and provinces

Stakeholder Input

Conditions Creating Bottlenecks/Delays

Conditions Creating Freight Bottlenecks

1. **Deficient Highway Infrastructure** (load, height/width, speed restricted; bridge restrictions, capacity congested, non-friendly truck geometrics, safety issues, weather-related)
2. **Inadequate Modal Connections**
3. **Lacking "First and Last Mile Connections"** (Different Standards – State/Local Systems, traffic generators built on inadequate roads)
4. **Lacking Access to Dedicated Intermodal Container Service**

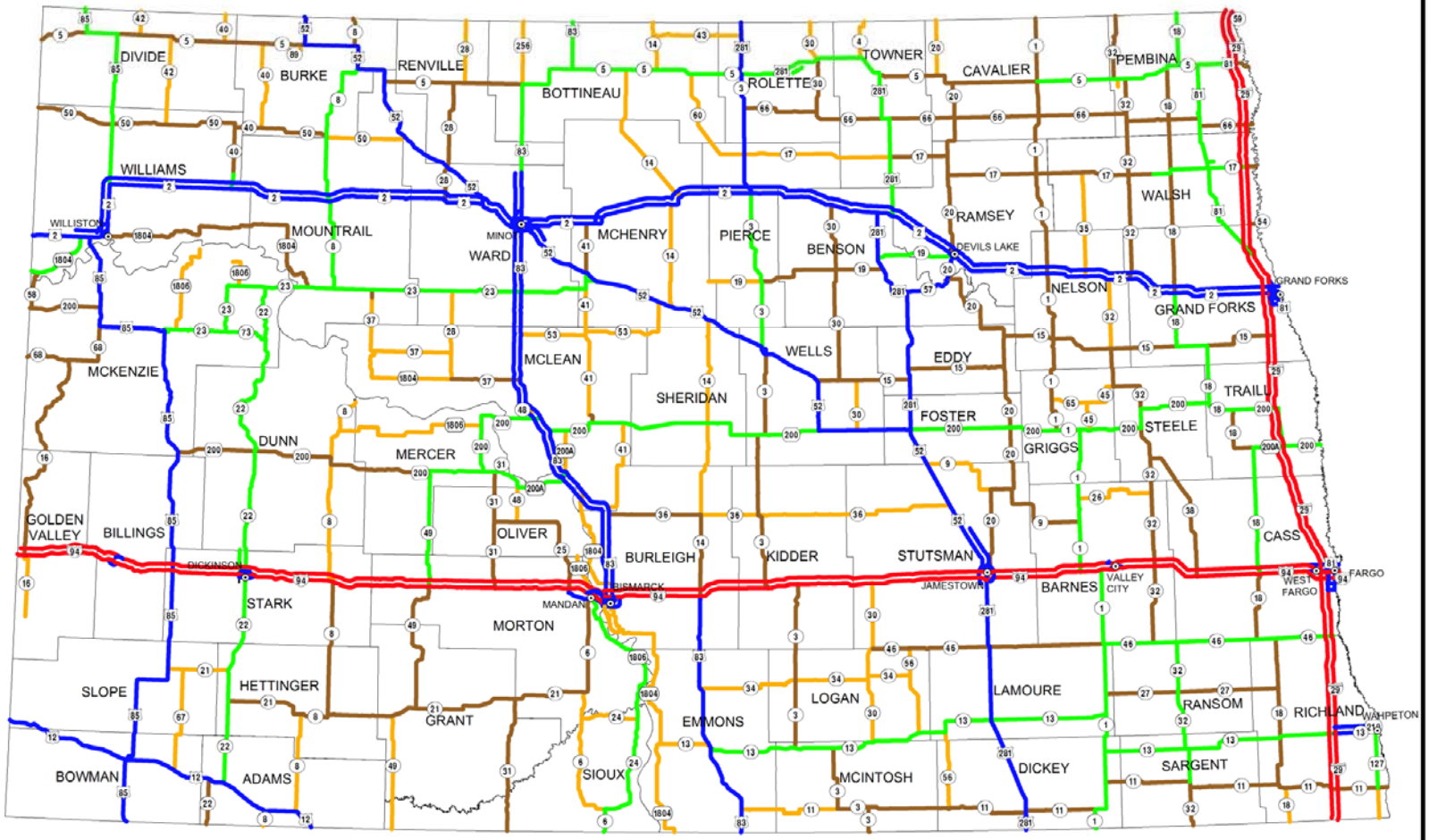
Conditions that Cause Freight Delays

1. **High Truck Volume Segments** (Safety issues, slower traffic speeds & longer/unreliable trip times, truck/automobile conflicts)
2. **At-Grade Rail Crossings**
3. **Construction Work Zones**
4. **Inadequate Inter-Jurisdictional Coordination**
5. **Inadequate Incident/Emergency Response**

Critical Rural Freight Corridors

STATE HIGHWAY PERFORMANCE CLASSIFICATION SYSTEM

FIGURE 11



HIGHWAY CLASSIFICATION SYSTEM

- INTERSTATE
- INTERREGIONAL
- STATE CORRIDOR
- DISTRICT CORRIDOR
- DISTRICT COLLECTOR

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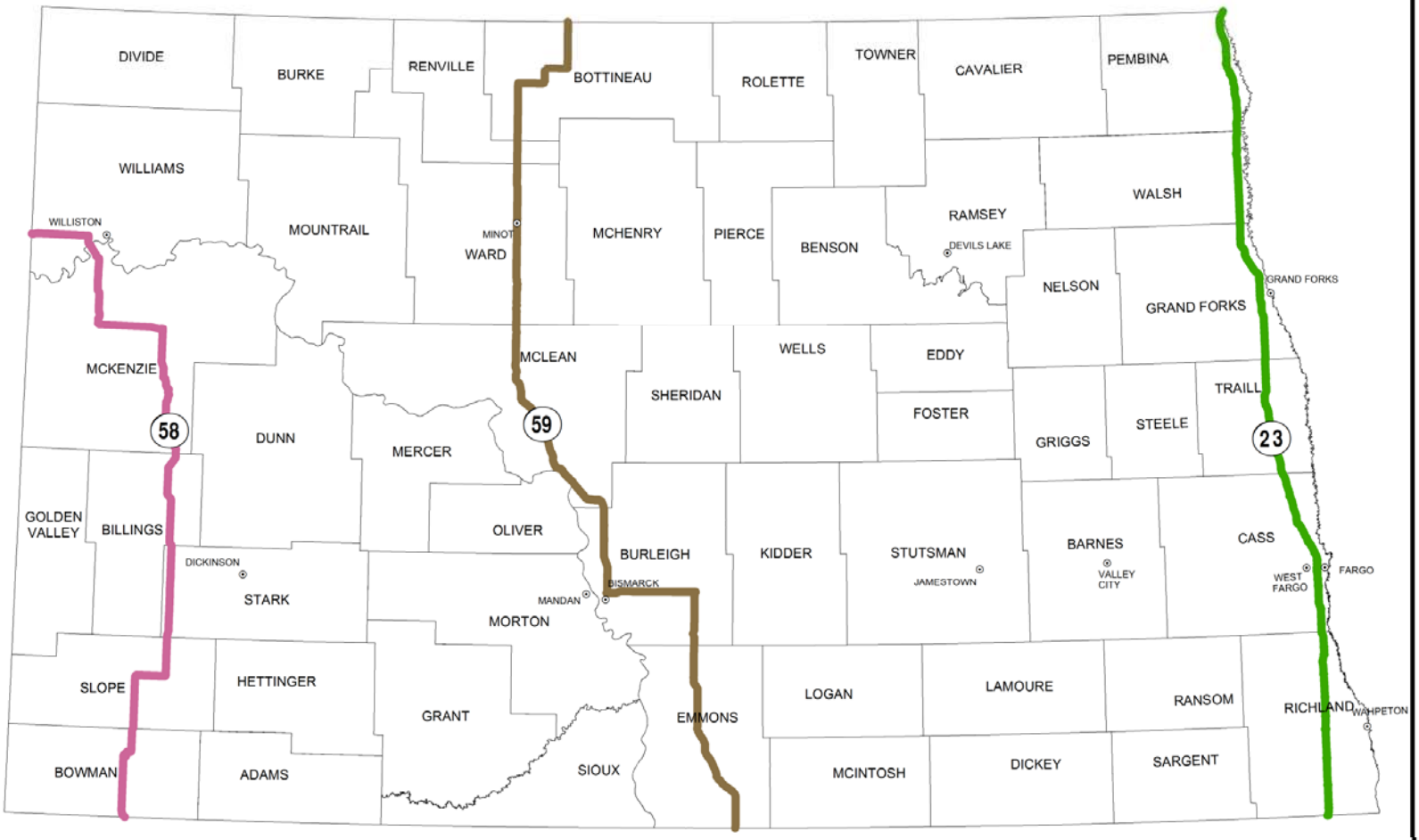
CONGRESSIONAL DESIGNATED HIGH PRIORITY CORRIDORS

FIGURE 12



23 - THE INTERSTATE ROUTE 35 CORRIDOR

58 - THE THEODORE ROOSEVELT EXPRESSWAY

59 - THE CENTRAL NORTH AMERICAN TRADE CORRIDOR

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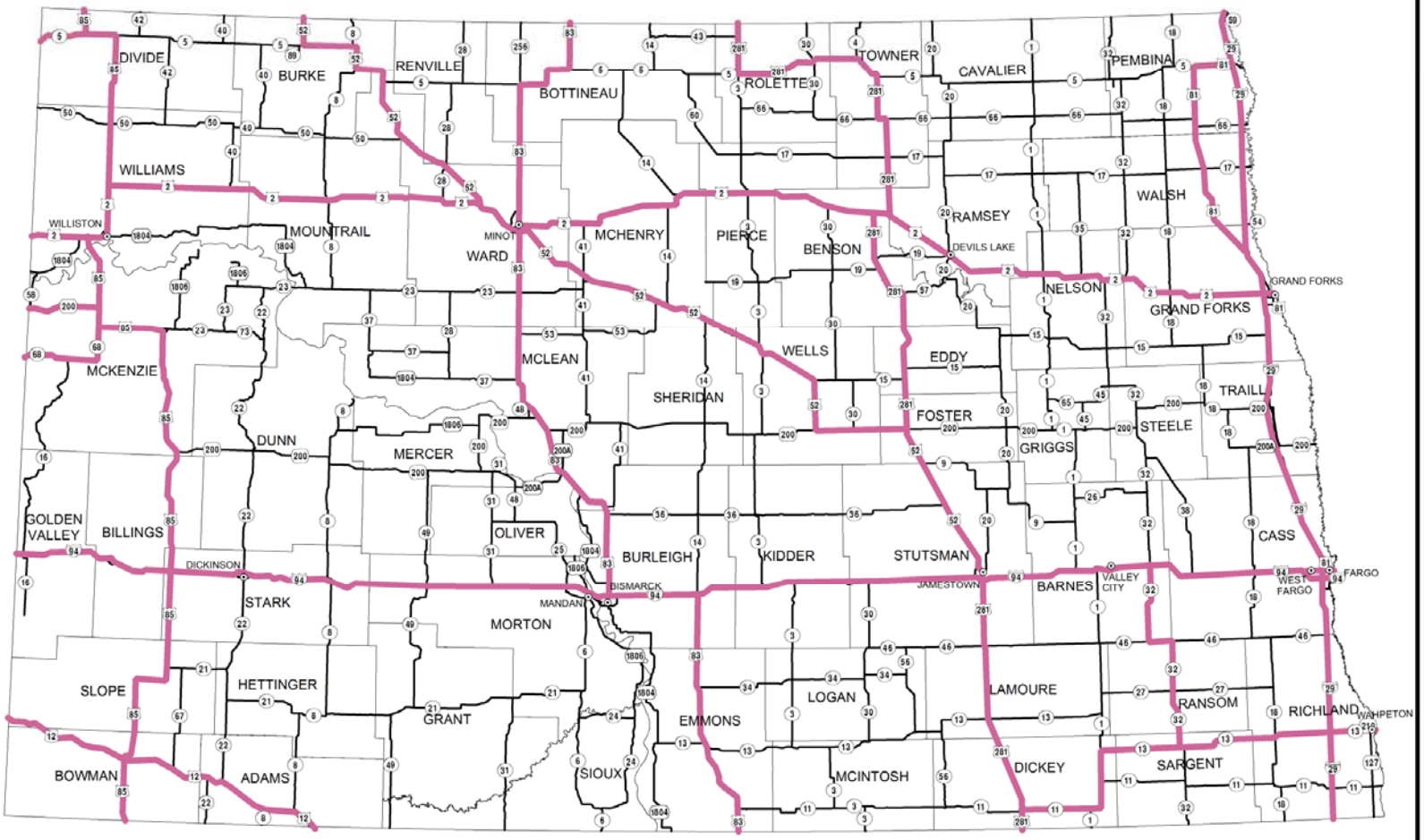
NATIONAL TRUCK NETWORK

FIGURE 13



NATIONAL TRUCK NETWORK

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North Dakota
Department of Transportation

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FIGURE 14

STRAHNET

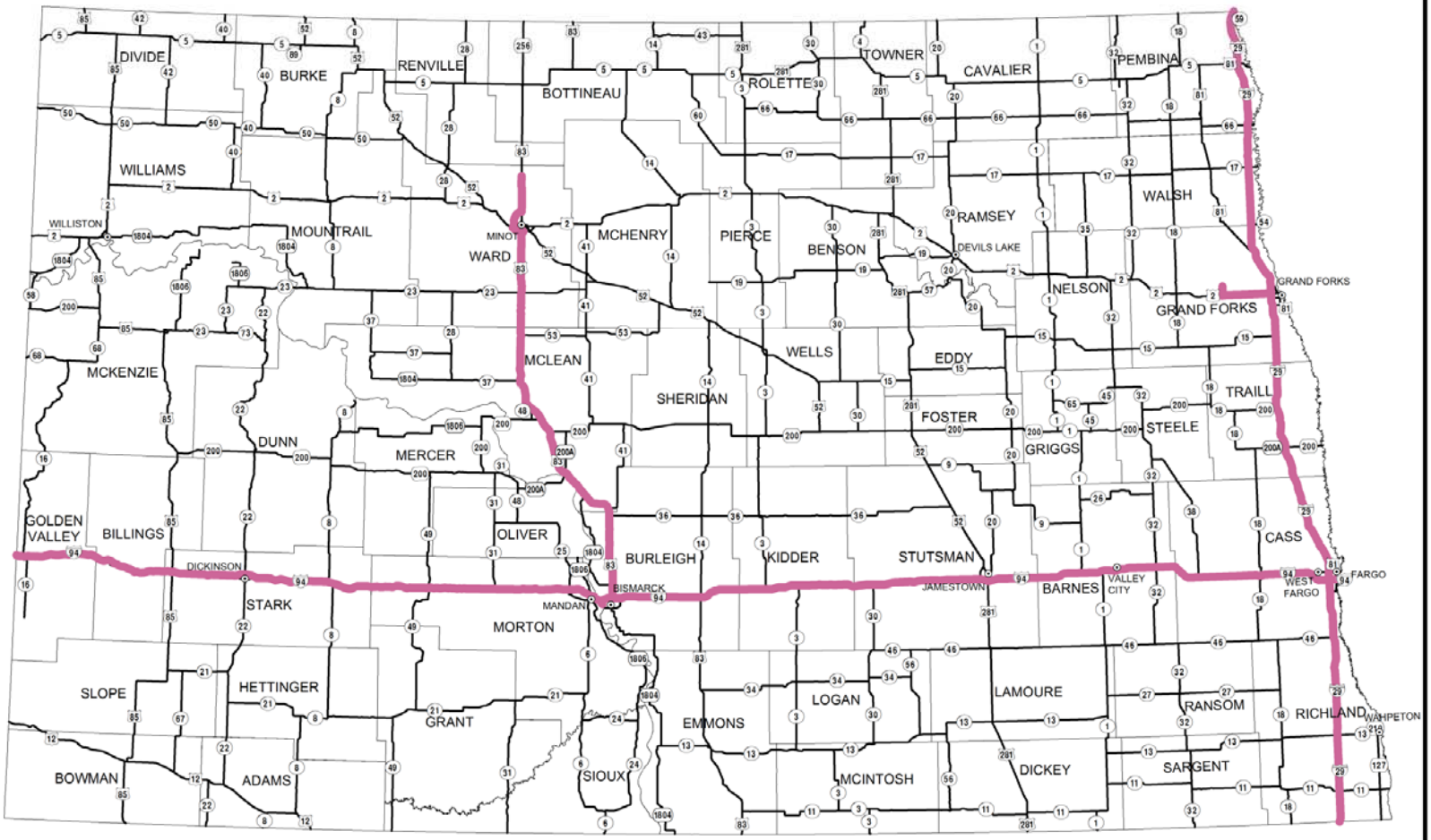

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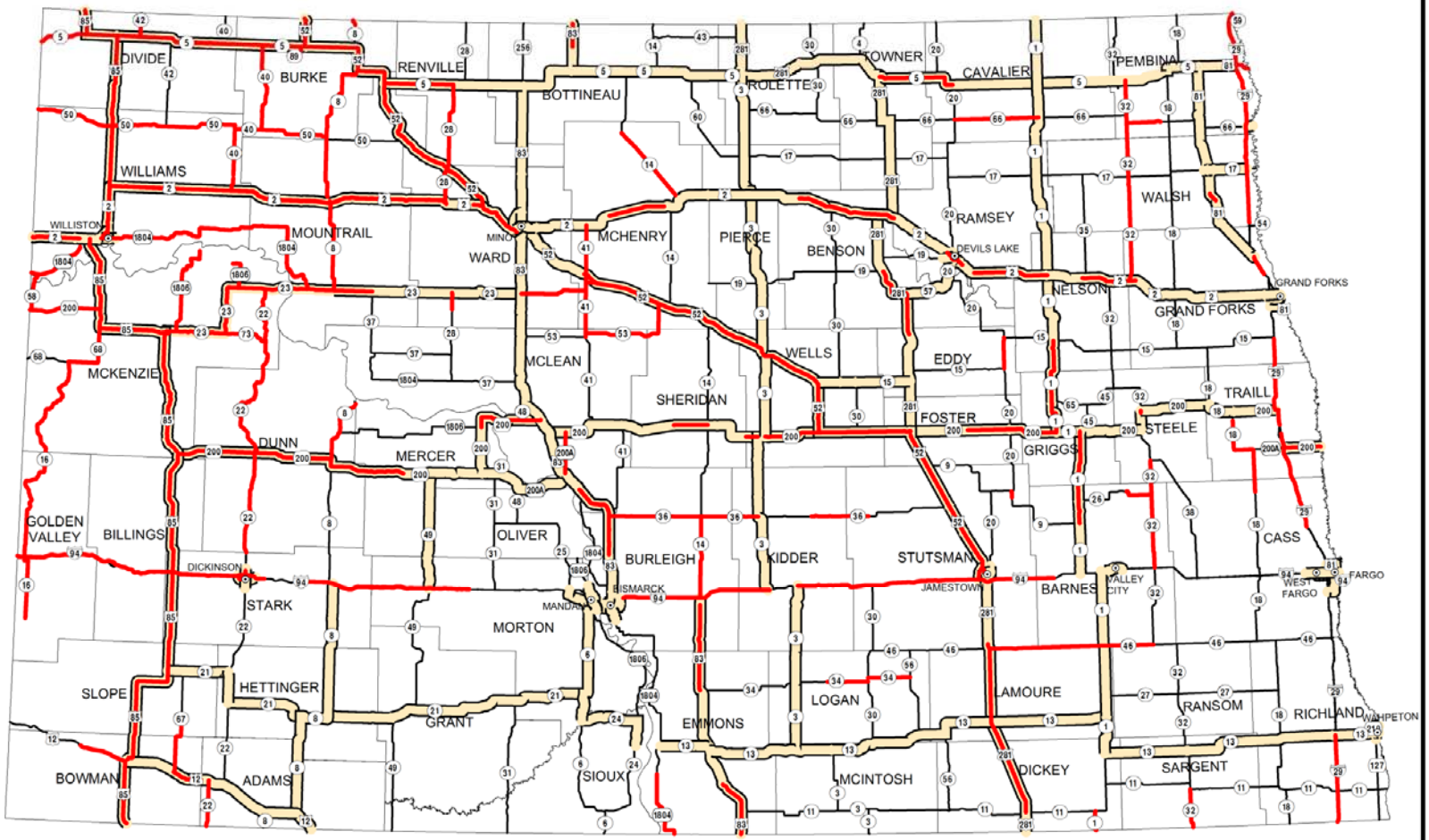
FIGURE 15

PRINCIPAL ARTERIALS 25% or GREATER TAADT



25% TAADT — Principal Arterial

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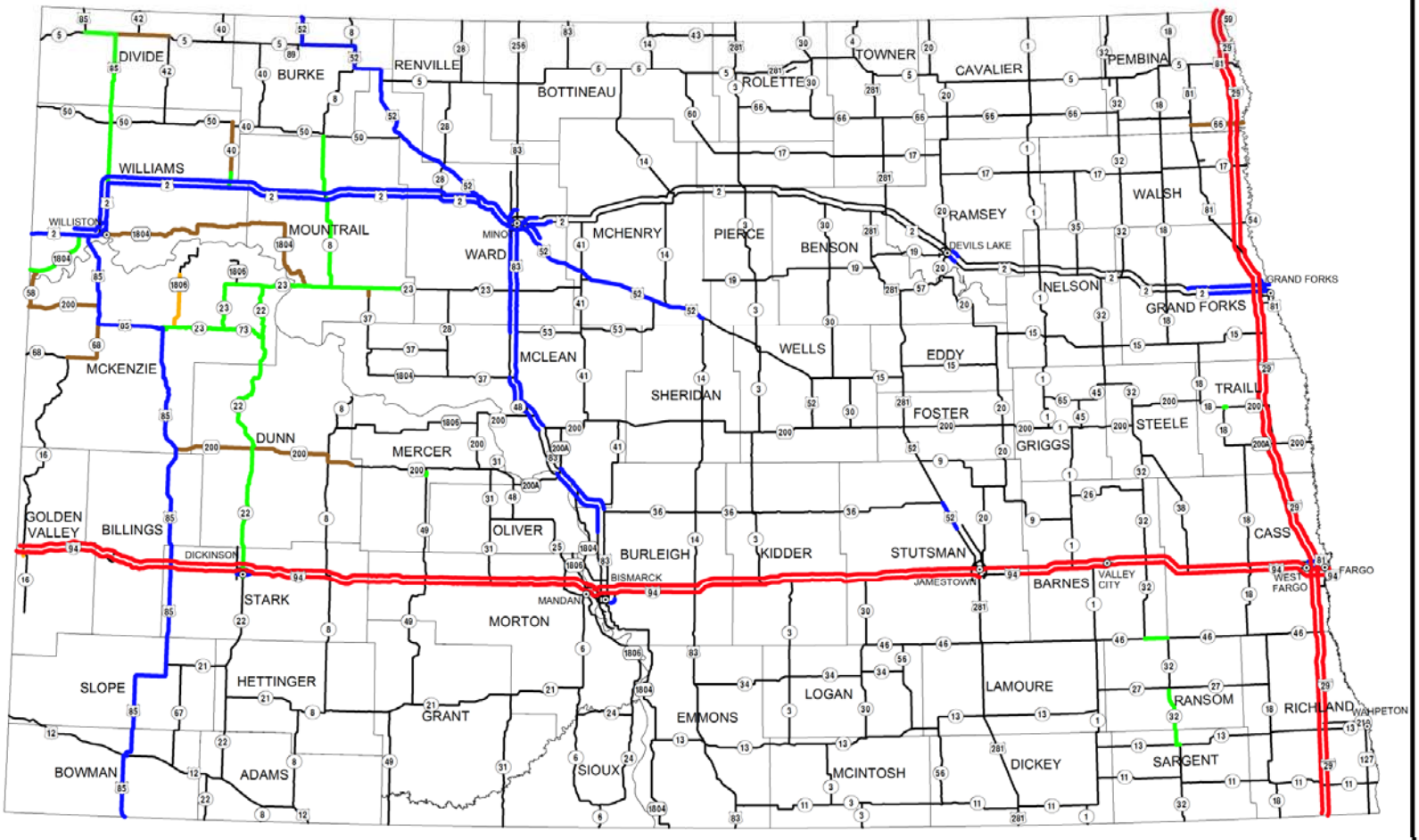
HIGHWAY SEGMENTS GREATER THAN 500 TAADT
2013 TRAFFIC SEASON

FIGURE 16



HIGHWAY CLASSIFICATION SYSTEM

- INTERSTATE
- INTERREGIONAL
- STATE CORRIDOR
- DISTRICT CORRIDOR
- DISTRICT COLLECTOR

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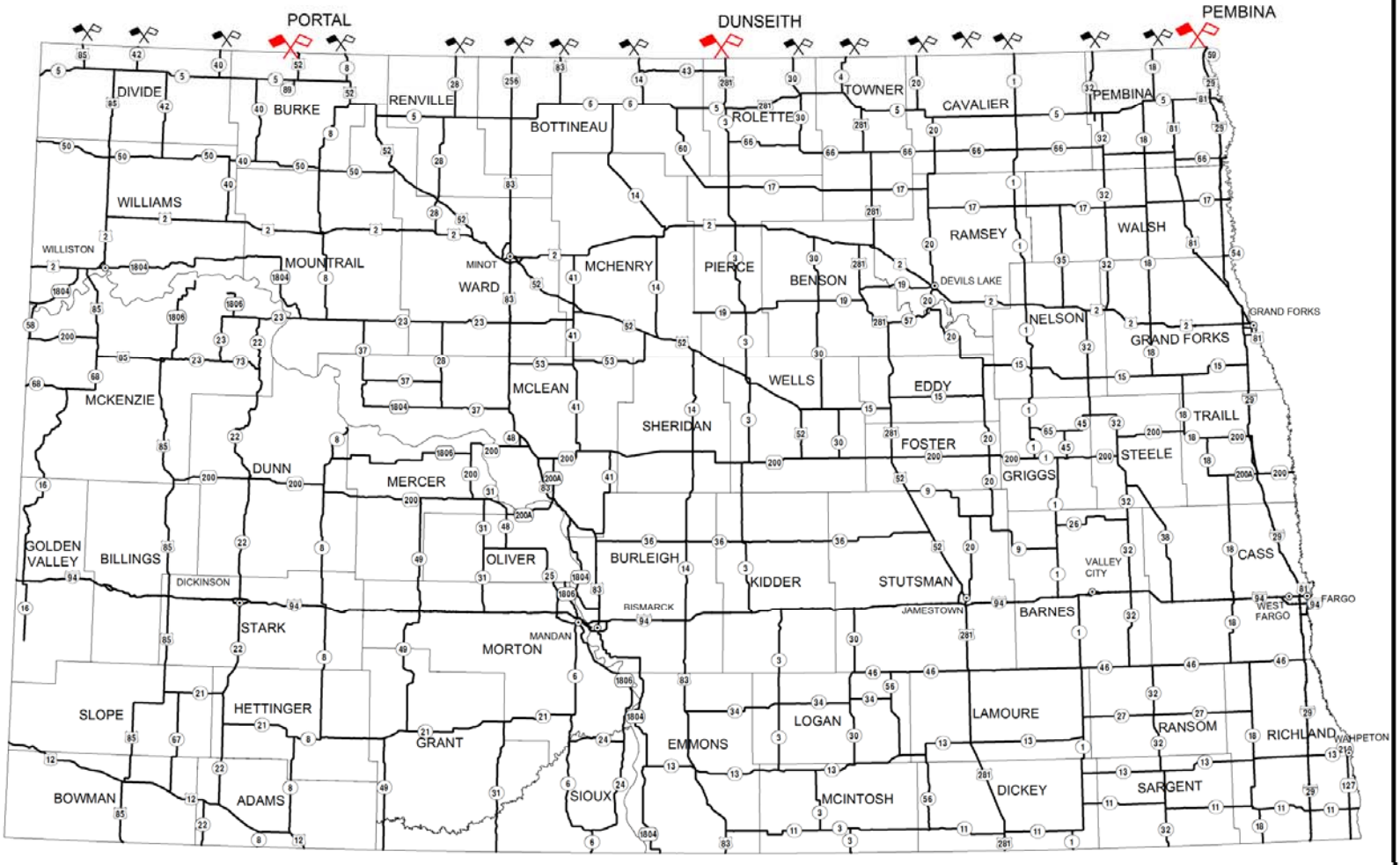
LAND PORTS OF ENTRY

FIGURE 17



A 24 HOUR PORT

RESTRICTED HOURS OF OPERATION

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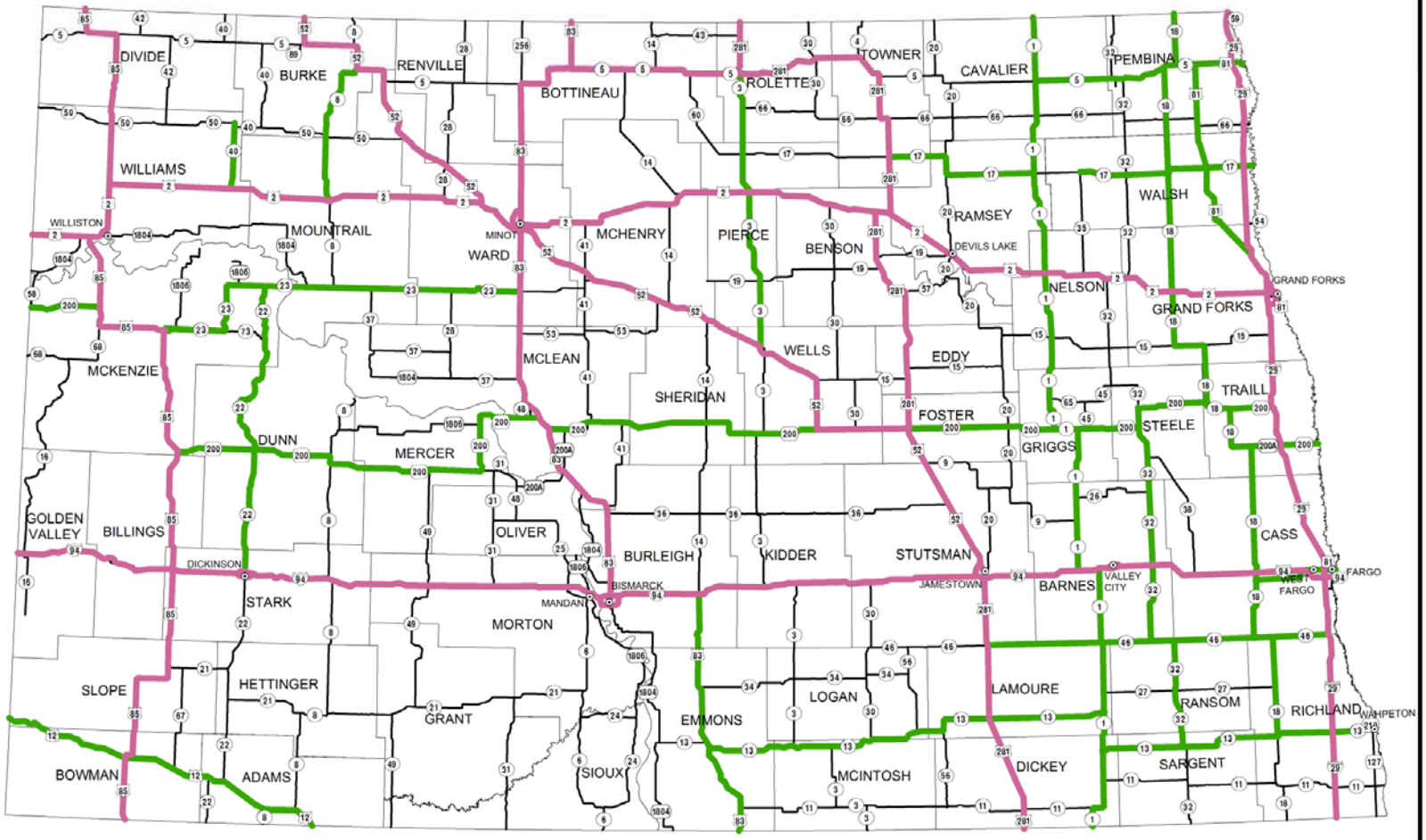
FIGURE 18

APPROVED ROUTES G.V.W. UP TO 250,000 LBS.



APPROVED ROUTES UP TO 250,000 LBS — APPROVED ROUTES UP TO 200,000 LBS

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North Dakota Department of Transportation

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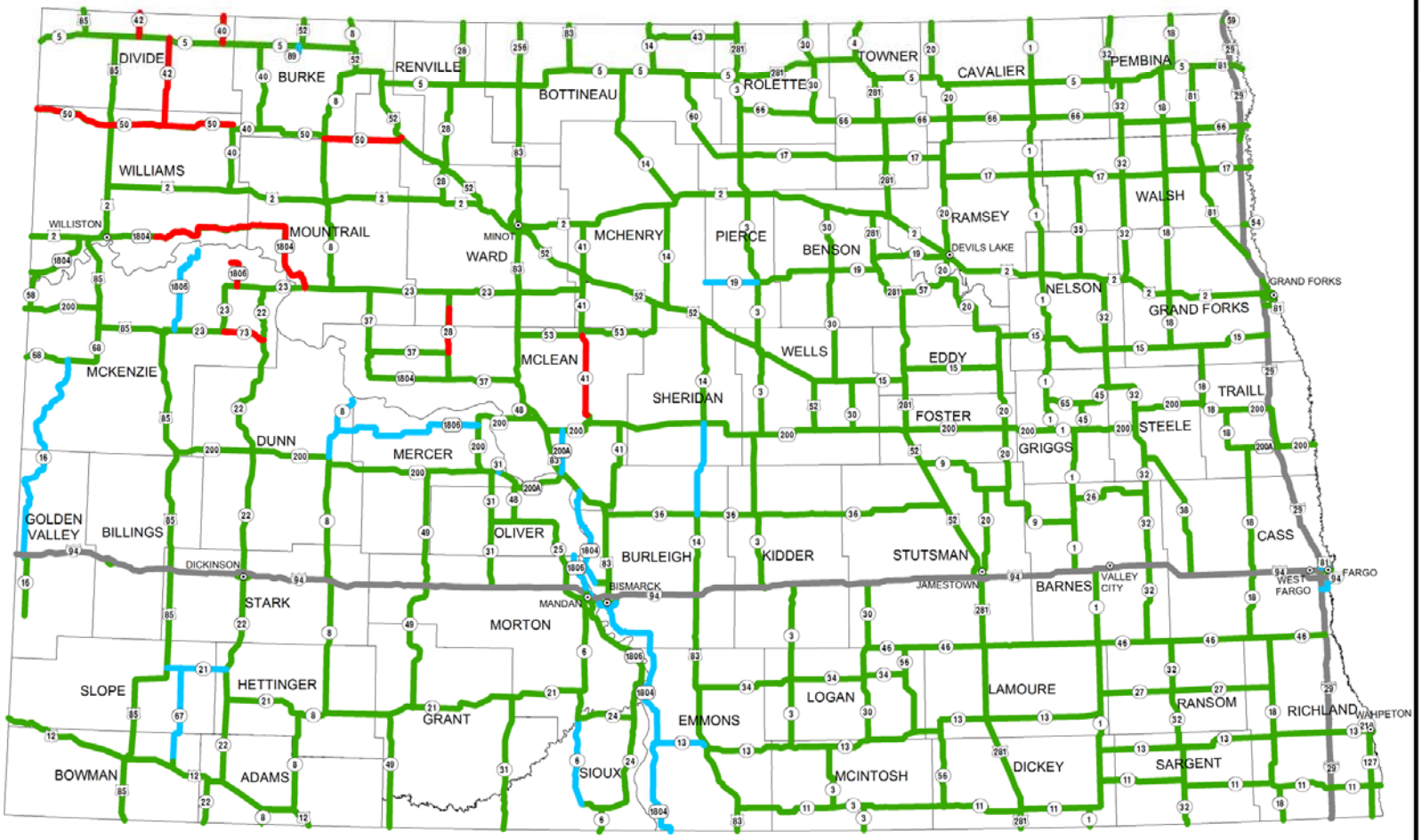
FIGURE 19

LOAD RESTRICTION MAP



ROUTES WITH ADDITIONAL WEIGHT LIMITS - as of February 21, 2014

POSTED ROUTES WITH GROSS VEHICLE WEIGHT NOT TO EXCEED 80,000 LBS.

INTERSTATE ROUTES WITH GROSS VEHICLE WEIGHT NOT TO EXCEED 80,000 LBS.

ROUTES WITH GROSS WEIGHT NOT TO EXCEED 105,500 LBS.

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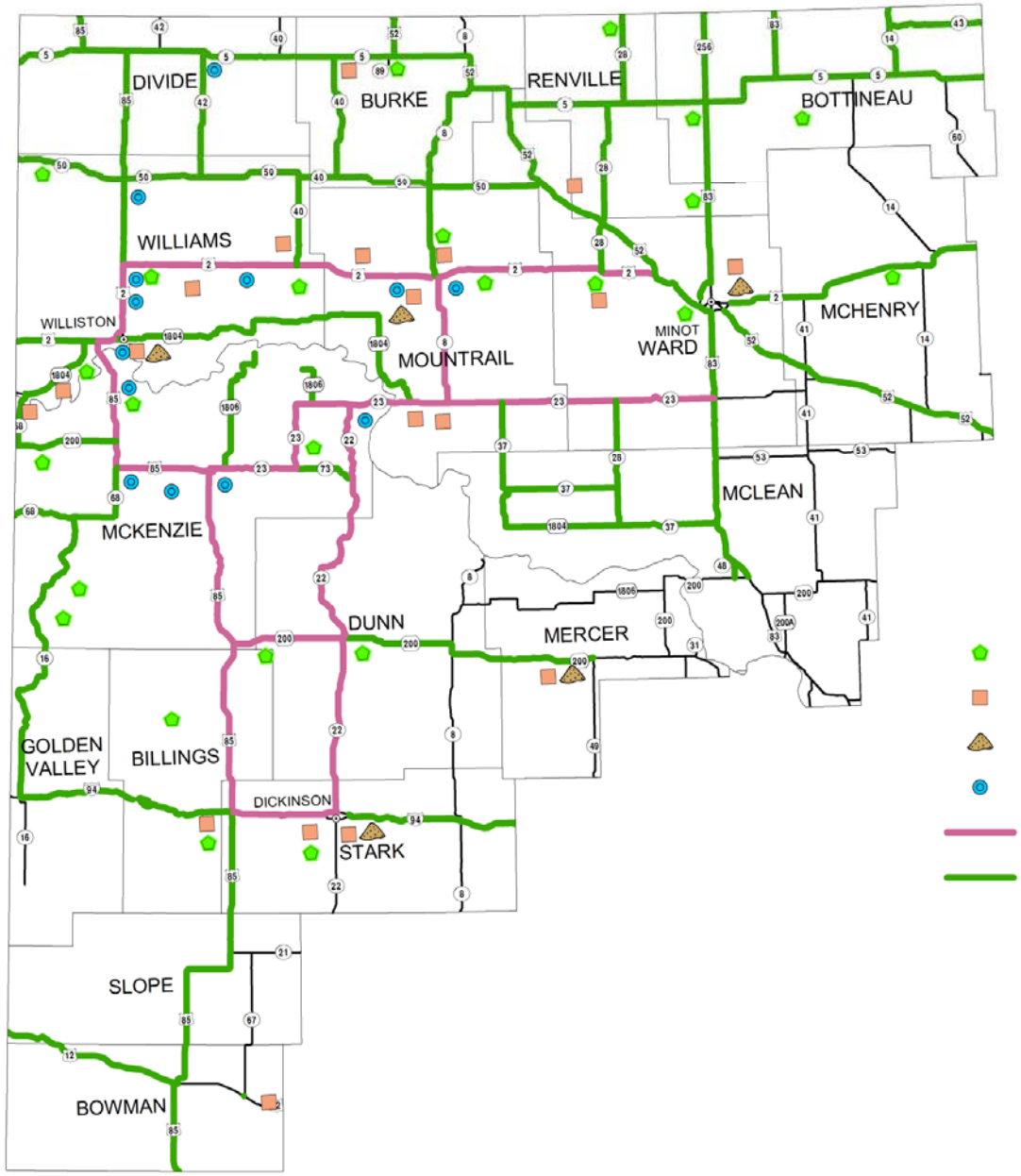
FIGURE 20

WESTERN ND HIGHWAY ENERGY CORRIDORS



COLLECTION - POINTS

RAIL TRANSLOAD - OIL

RAIL LOADING - SAND

WESTERN AREA WATER SUPPLY DEPOT

MAJOR CORRIDORS

FEEDER CORRIDORS

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North Dakota Department of Transportation

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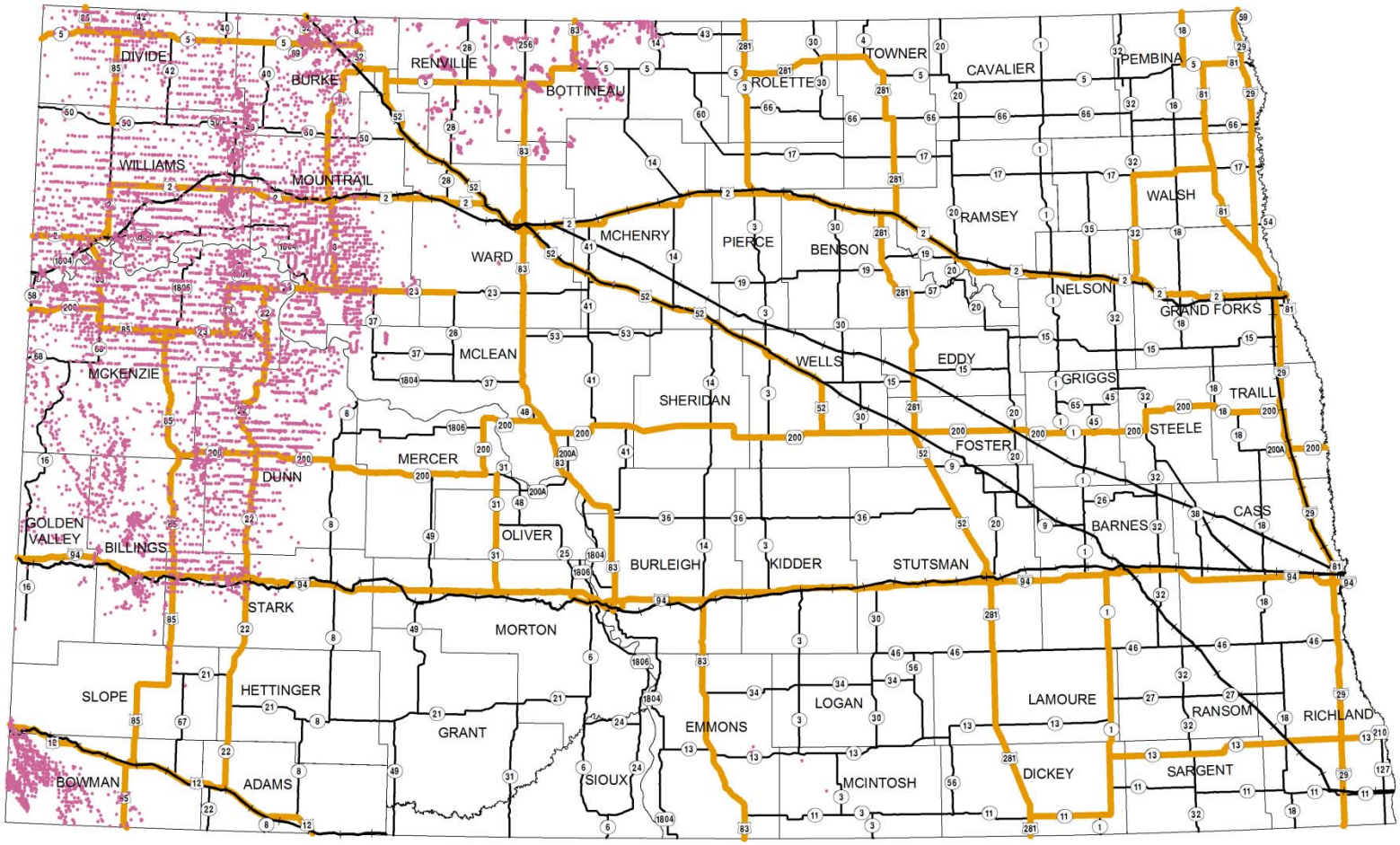
FIGURE 21

OIL WELLS



WELLS AS OF 2-25-2014 — RAILROAD MAIN LINES — LEVEL 1 FREIGHT CORRIDOR

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Department of Transportation

2014

Source : North Dakota Oil & Gas Division

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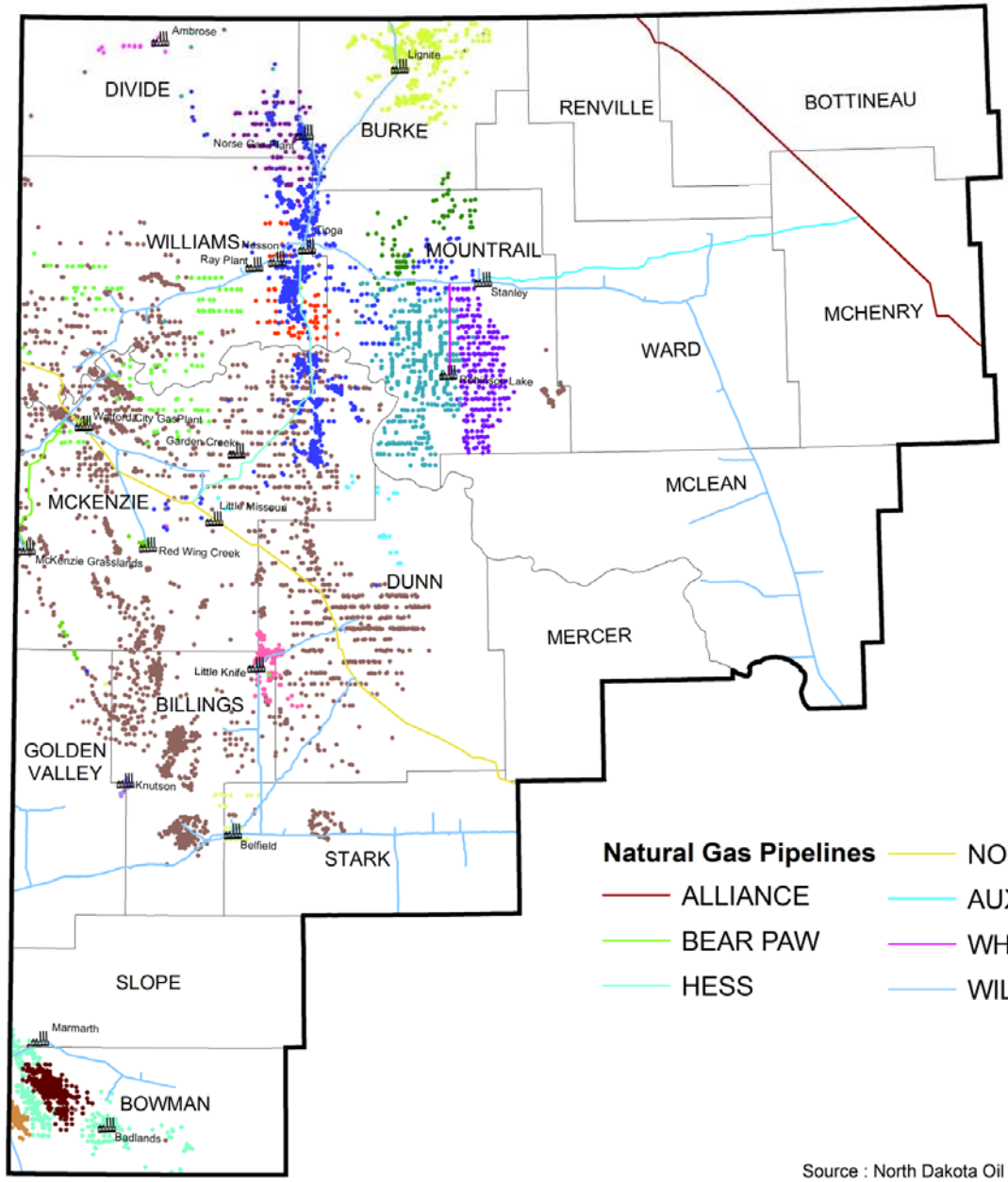
FIGURE 22

NATURAL GAS PROCESSING PLANTS



Natural Gas Pipelines

- ALLIANCE
- BEAR PAW
- HESS
- NORTHERN BORDER
- AUX SABLE
- WHITING
- WILLISTON BASIN

GAS PLANT

NDDOT
North Dakota Department of Transportation

Source : North Dakota Oil and Gas Division

2014

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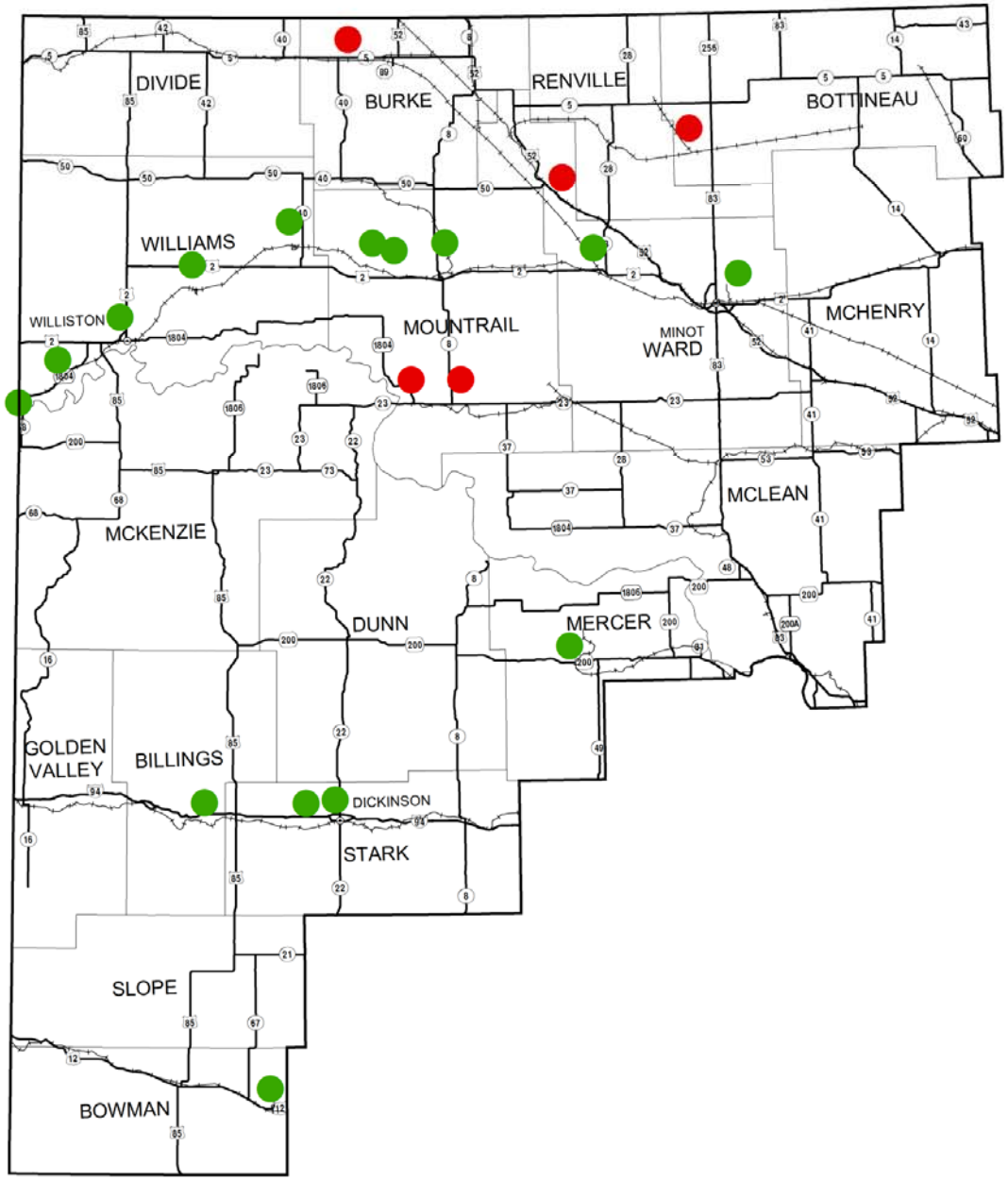
FIGURE 23

CRUDE OIL RAIL LOADING FACILITIES



BNSF

CPR

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North Dakota Department of Transportation

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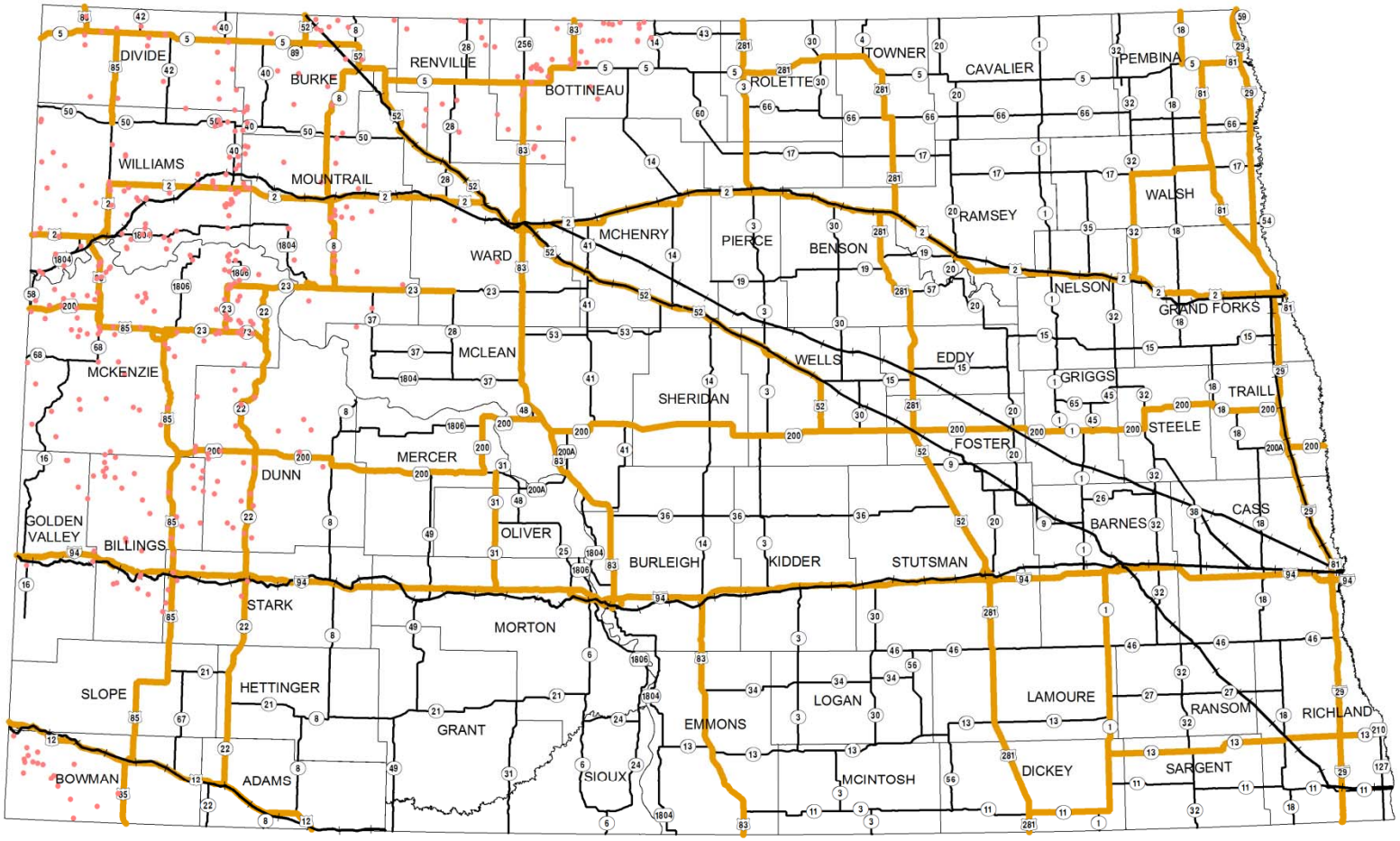
FIGURE 25

SALTWATER DISPOSAL SITES



WELLS AS OF 2-25-2014 — RAILROAD MAIN LINES — LEVEL 1 FREIGHT CORRIDOR

NDDOT
North Dakota
Department of Transportation

2014

Source : North Dakota Oil & Gas Division

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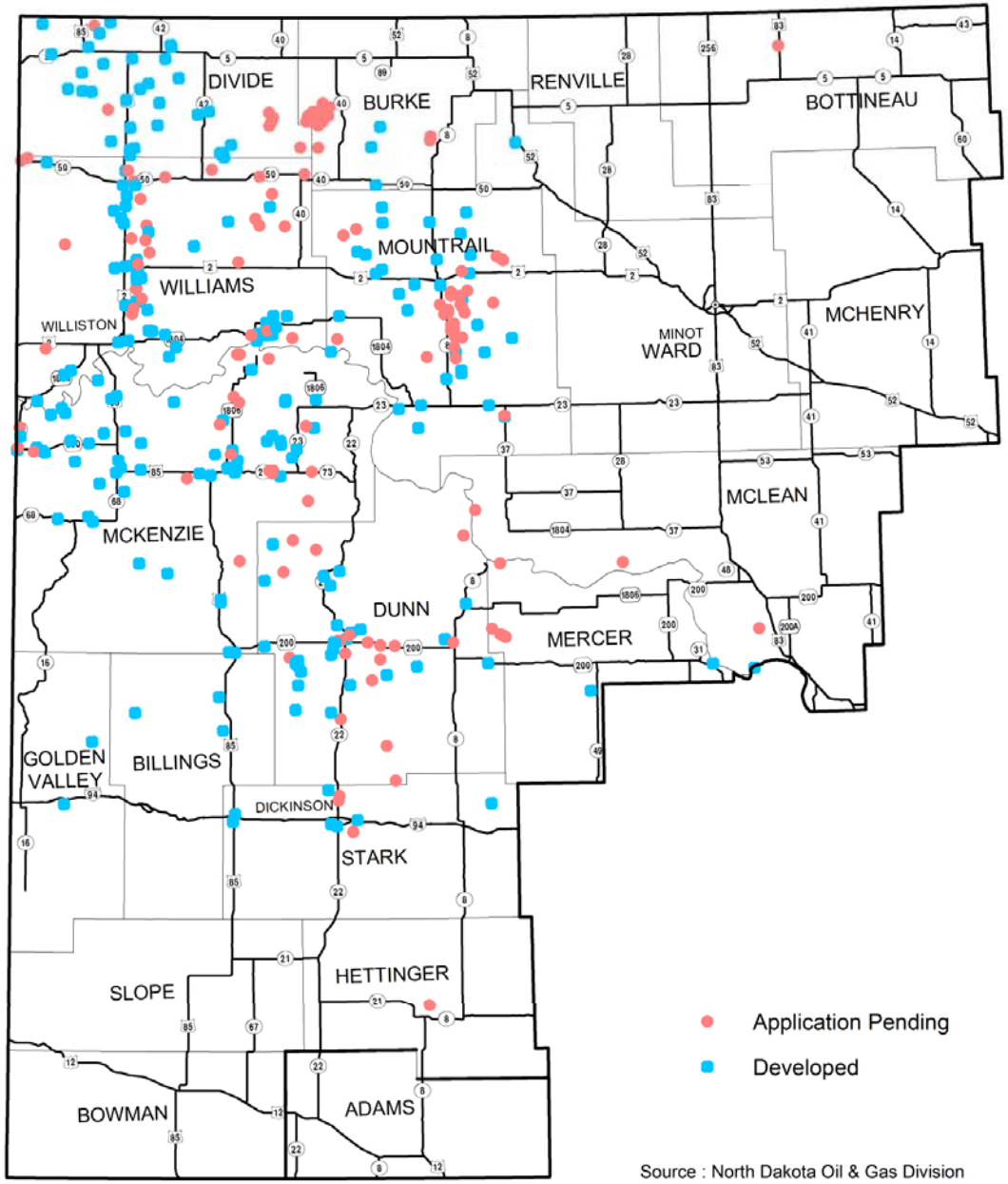
FIGURE 26

FRESHWATER DEPOTS



Application Pending

Developed

Source : North Dakota Oil & Gas Division

NDDOT
North Dakota Department of Transportation

2014

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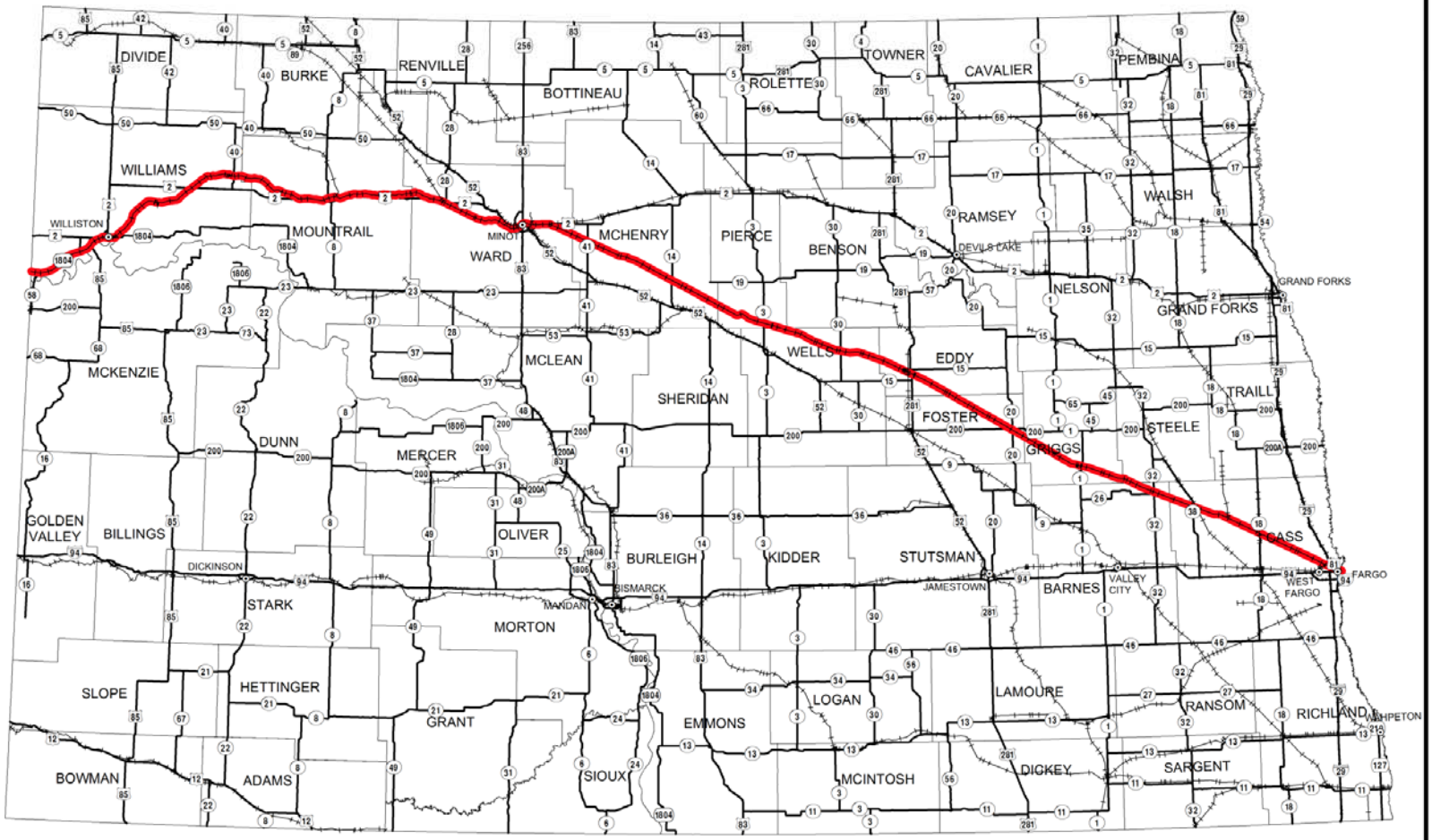
FIGURE 27

STRACNET



Active Roalroads

STRACNET ROUTE

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North Dakota
Department of Transportation

2014

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FIGURE 28

RAIL TRACK CAPACITY

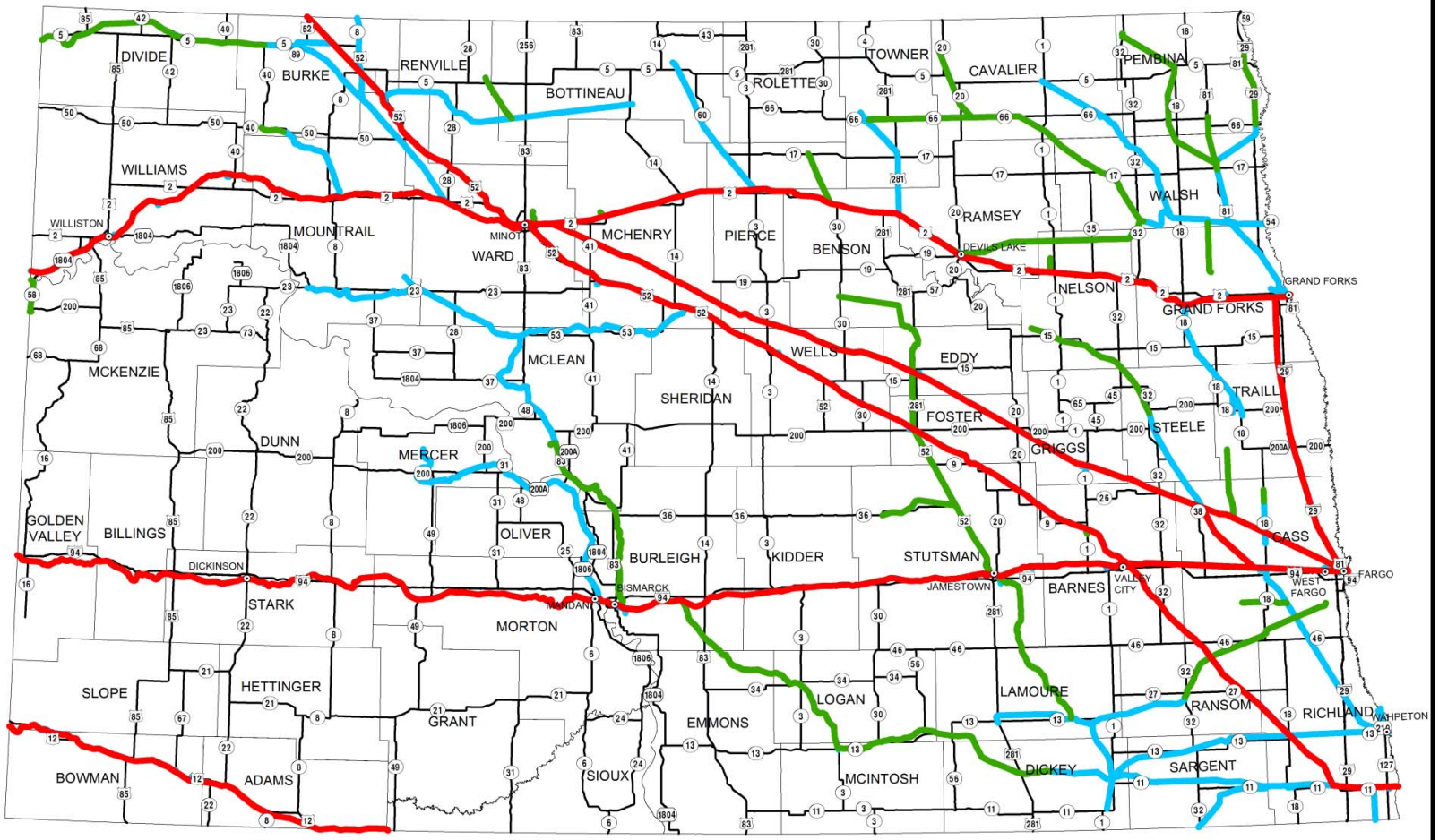

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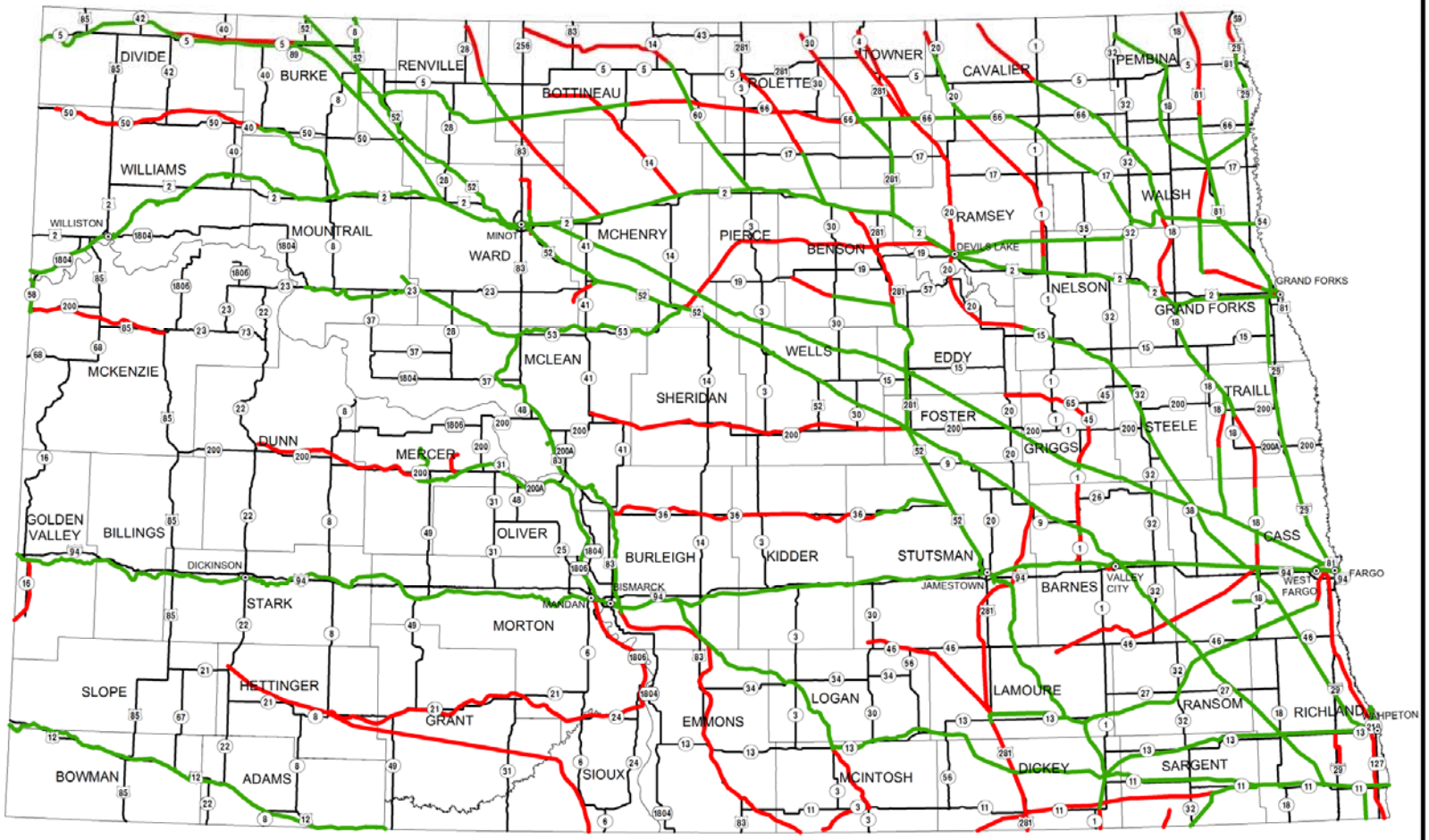
FIGURE 29

RAIL ABANDONMENTS



ACTIVE RAILROADS

ABANDONED (1950-2013)

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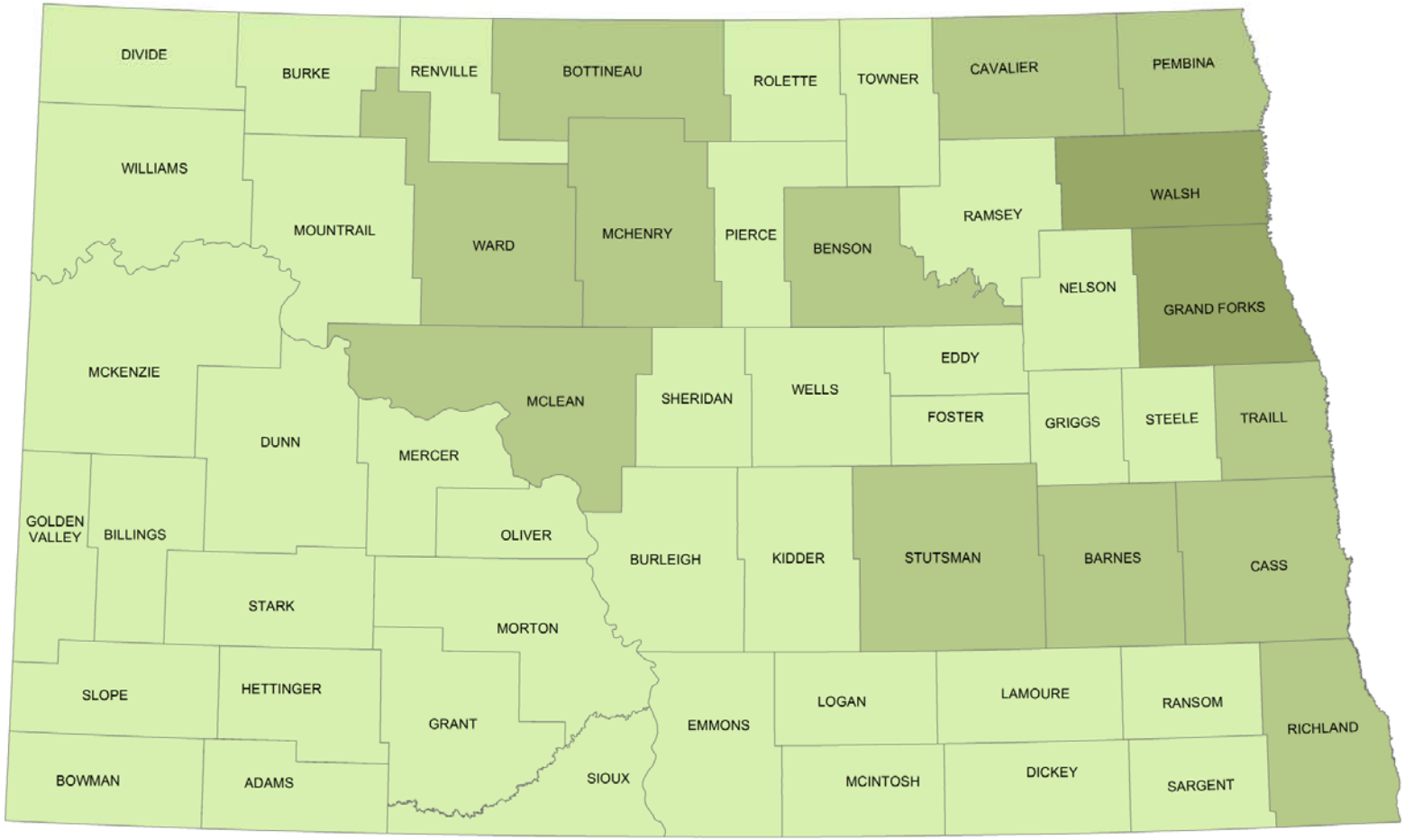
FIGURE 30

1950 CROP PRODUCTION



0 LBS - 489,000,000 LBS

489,000,001 LBS - 1,023,000,000 LBS

1,023,000,001 LBS - 1,530,000,000 LBS

1,530,000,001 LBS - 3,103,000,000 LBS

3,103,000,001 LBS - 4,232,216,000 LBS

Source : United States Department of Agriculture

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North Dakota
Department of Transportation

2014

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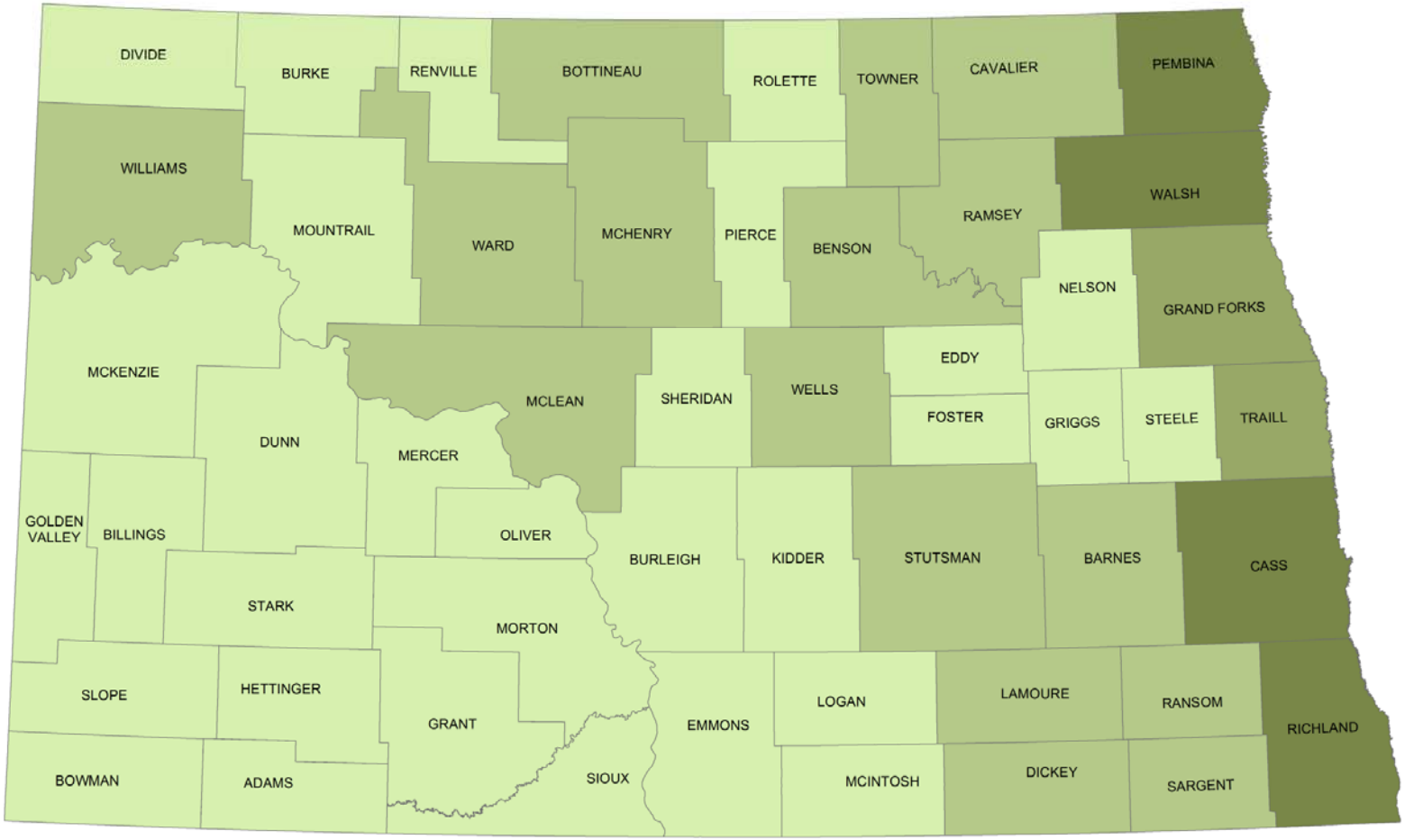
FIGURE 31

1980 CROP PRODUCTION



0 LBS - 489,000,000 LBS

489,000,001 LBS - 1,023,000,000 LBS

1,023,000,001 LBS - 1,530,000,000 LBS

1,530,000,001 LBS - 3,103,000,000 LBS

3,103,000,001 LBS - 4,232,216,000 LBS

Source : United States Department of Agriculture

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North Dakota
Department of Transportation

2014

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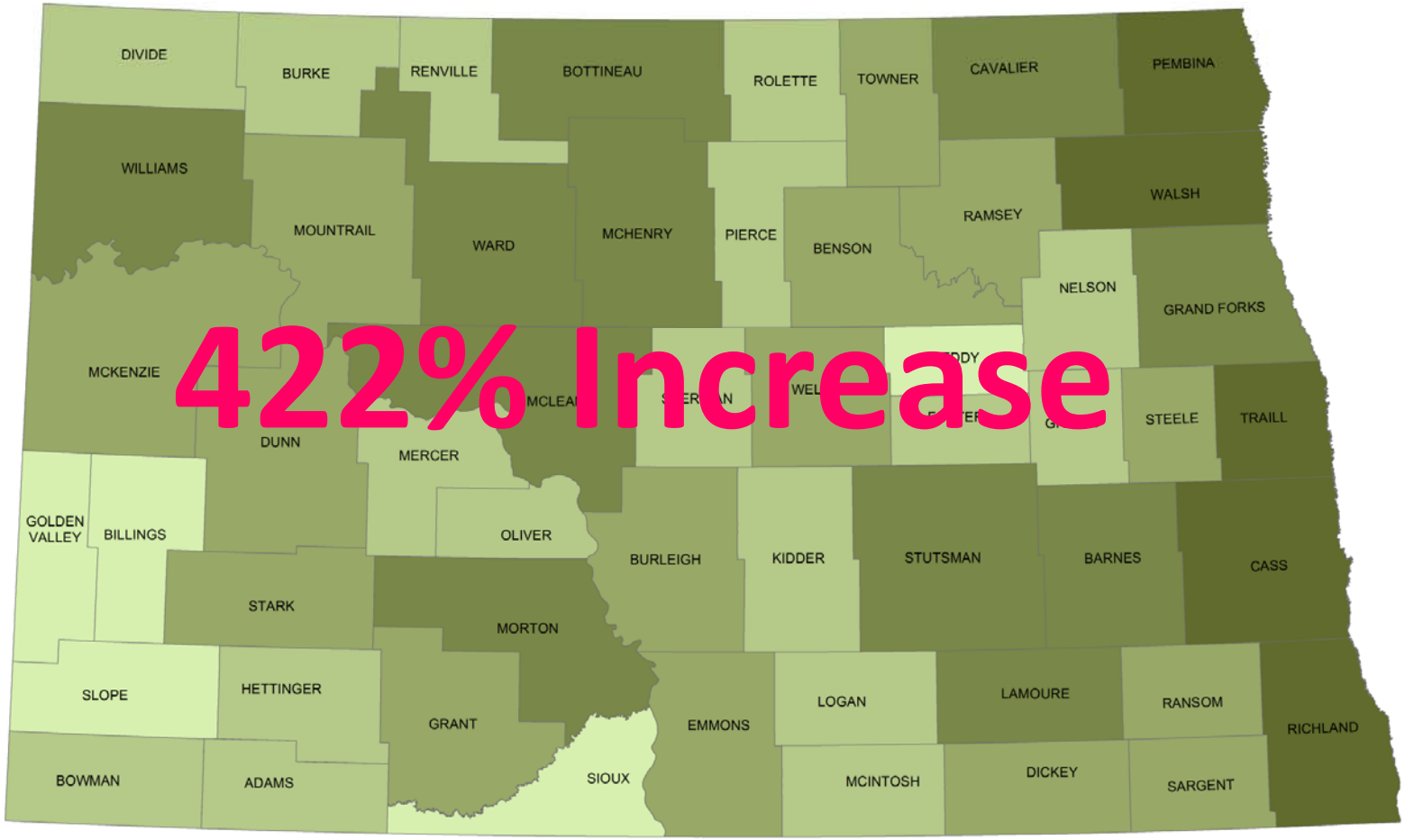
FIGURE 32

2010 CROP PRODUCTION



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489,000,001 LBS - 1,023,000,000 LBS

1,023,000,001 LBS - 1,530,000,000 LBS

1,530,000,001 LBS - 3,103,000,000 LBS

3,103,000,001 LBS - 4,232,216,000 LBS

Source : National Agricultural Statistics Service

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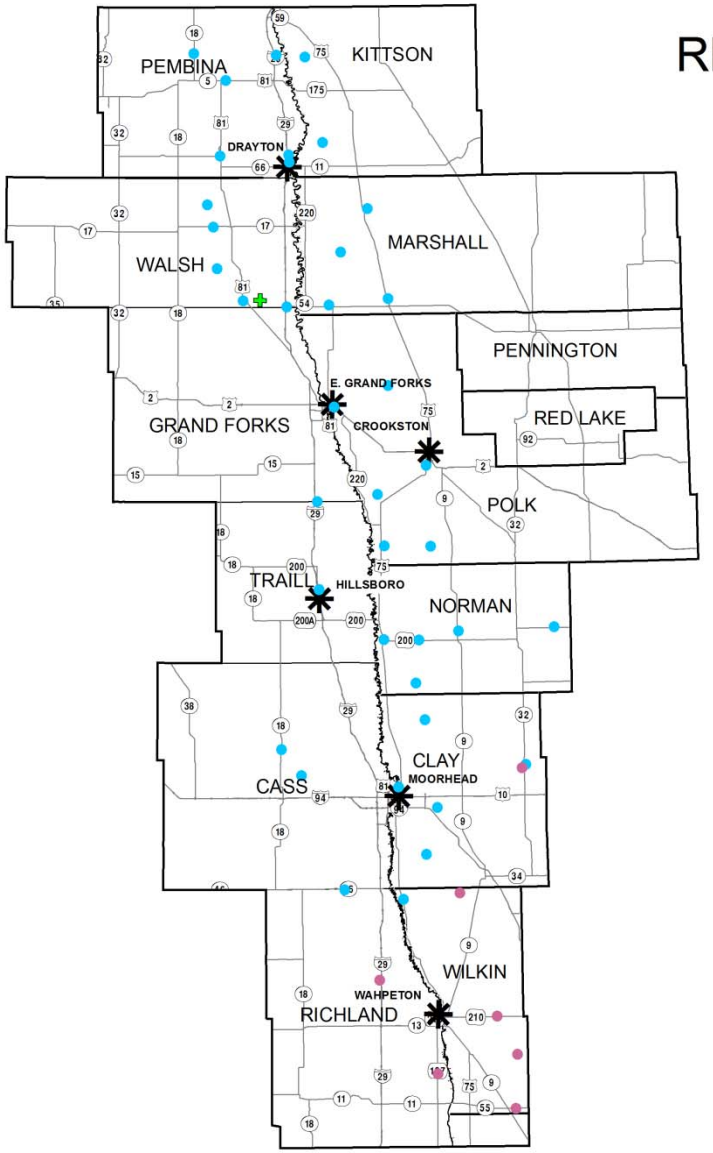
FIGURE 33

RED RIVER VALLEY SUGAR BEET PLANTS & TRANSFER SITES



- MINN-DAK SUGAR BEET TRANSFER PILES
- CRYSTAL SUGAR BEET TRANSFER PILES
- ARDOCH RAIL TRANSLOAD FACILITY
- SUGAR BEET PLANTS

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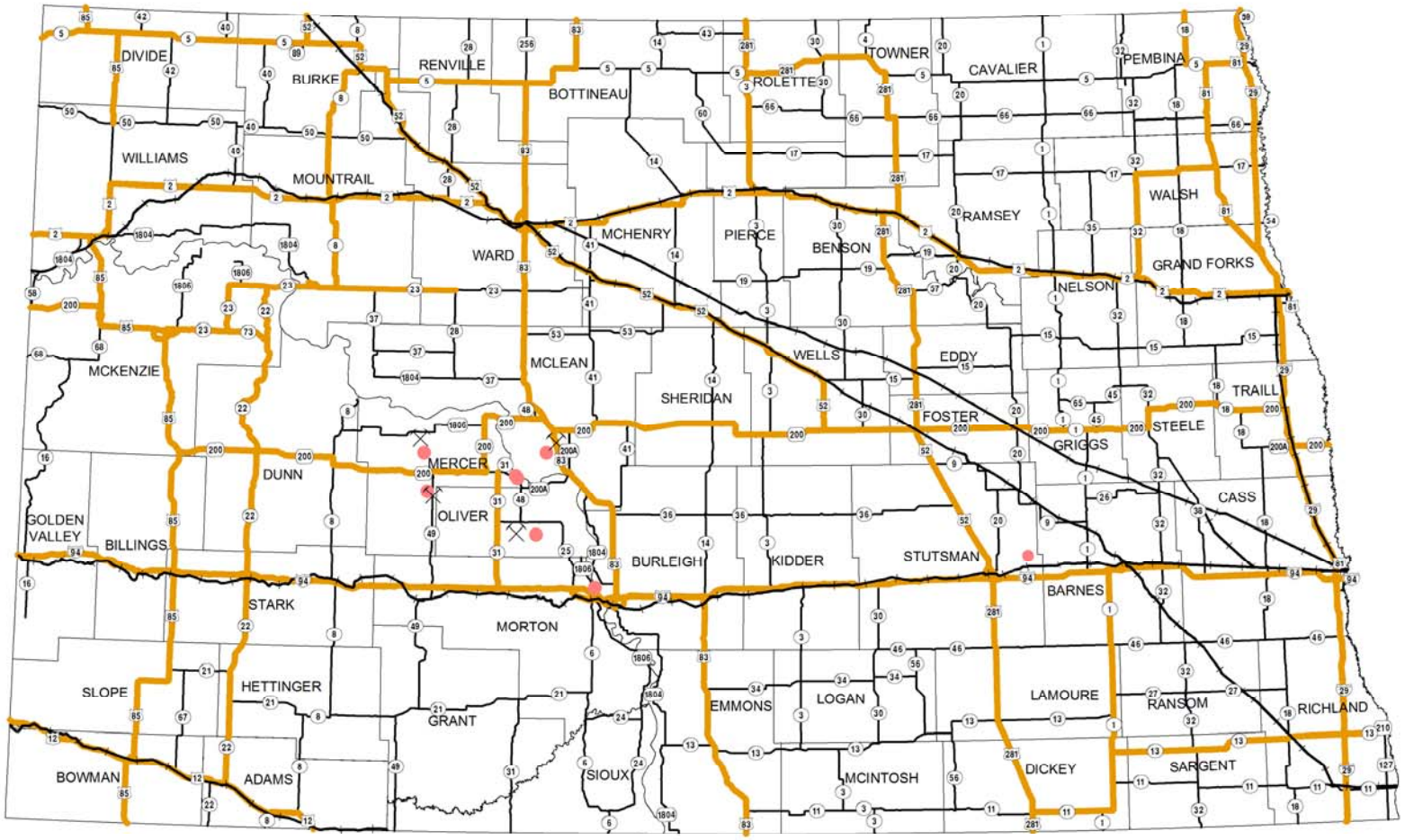
FIGURE 34

COAL MINES & ELECTRIAL GENERATION PLANTS



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Source : North Dakota Department of Commerce

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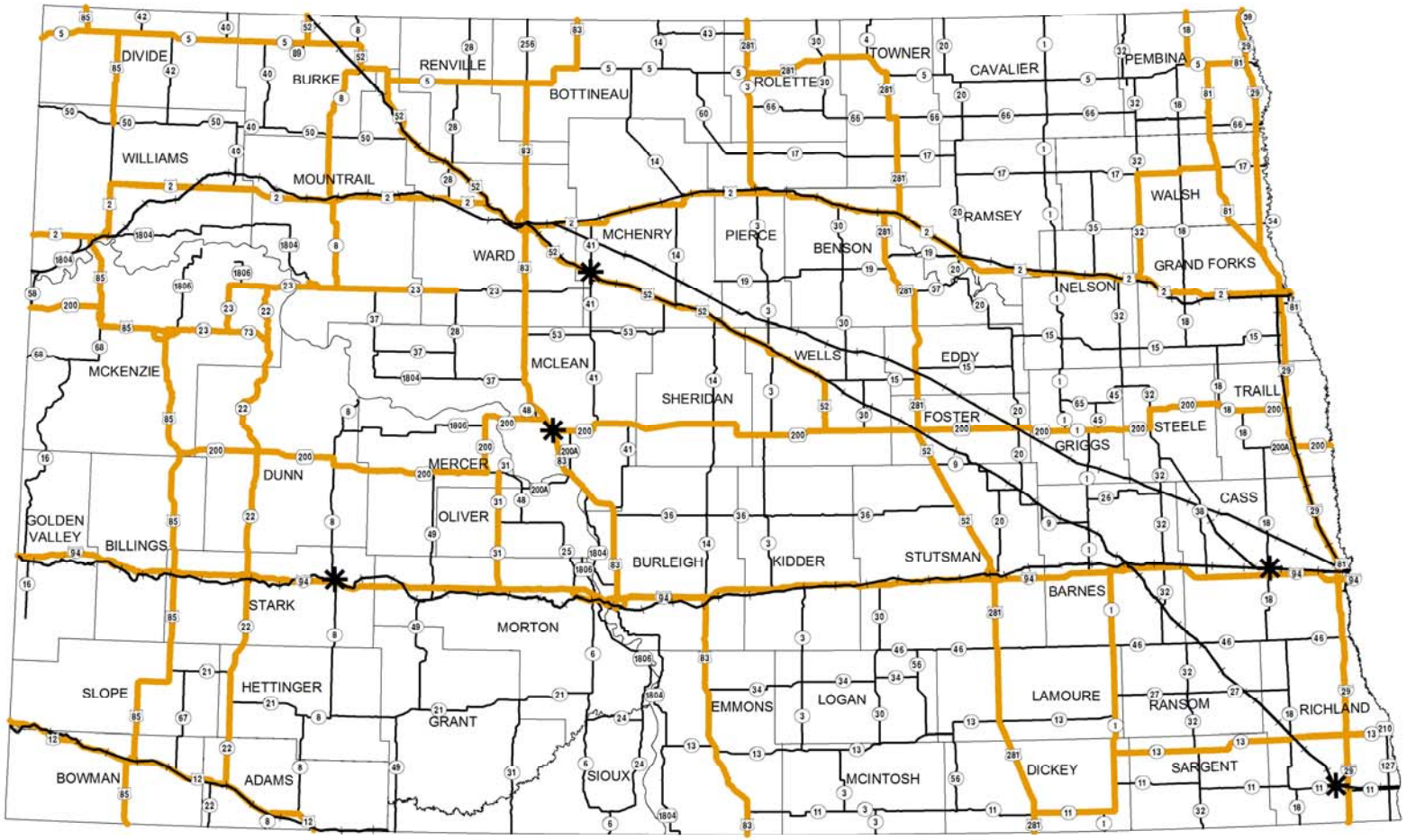
FIGURE 35

ETHANOL & BIODIESEL PLANTS



ETHANOL & BIODIESEL PLANTS

RAILROAD MAIN LINES

LEVEL 1 FREIGHT CORRIDOR

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Source : North Dakota Department of Commerce

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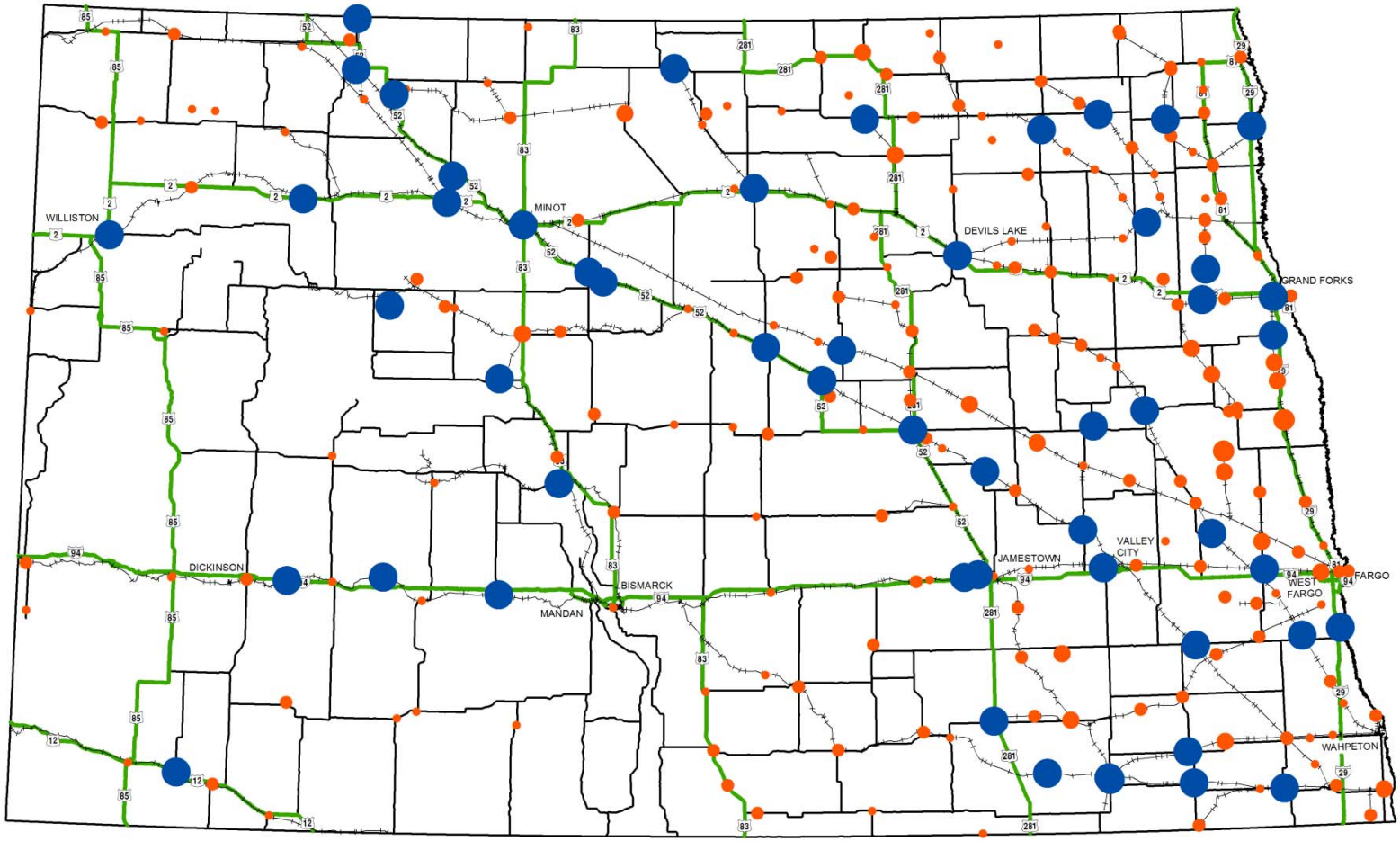
FIGURE 36

LICENSED GRAIN FACILITIES



Shuttle Facility

Elevator < 500,000 BU

Elevator 500,000 - 1,500,000 BU

Elevator 1,500,001 - 4,500,000 BU

Elevator > 4, 500,001 BU

Interstate & US Highways

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Source : Upper Great Plains Transportation Institute - North Dakota State University

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Critical Rural Freight Corridors

North Dakota Strategic Freight System Index

Freight Mode	Level One Critical Rural Freight Corridors International/Interstate	Level Two Regional/Intrastate	Level Three Local
Roads	Interstate & Interregional Highways Congressional Designated High Priority Corridors STRAHNET National Truck Network Energy/Agricultural Access Corridors High Truck Volume Segments Principal Arterials	State Corridors District Corridors Limited County Major Collectors City Principal Arterials	District Collectors Some County, City, Township and Tribal Roads
Rail	Class 1 Mainlines STRACNET	Class 1, Regional Railroad branchlines capable of carrying 286K cars	Class 1, Regional Railroad branchlines capable of carrying 268K cars
Air	Commercial Airports Air Force Bases	General Aviation Airports	Public Use Airports Private Airports
Pipeline	Interstate Pipelines	Gathering Pipelines	Distribution Pipelines

FIGURE 1

STATE STRATEGIC FREIGHT SYSTEM - HIGHWAYS

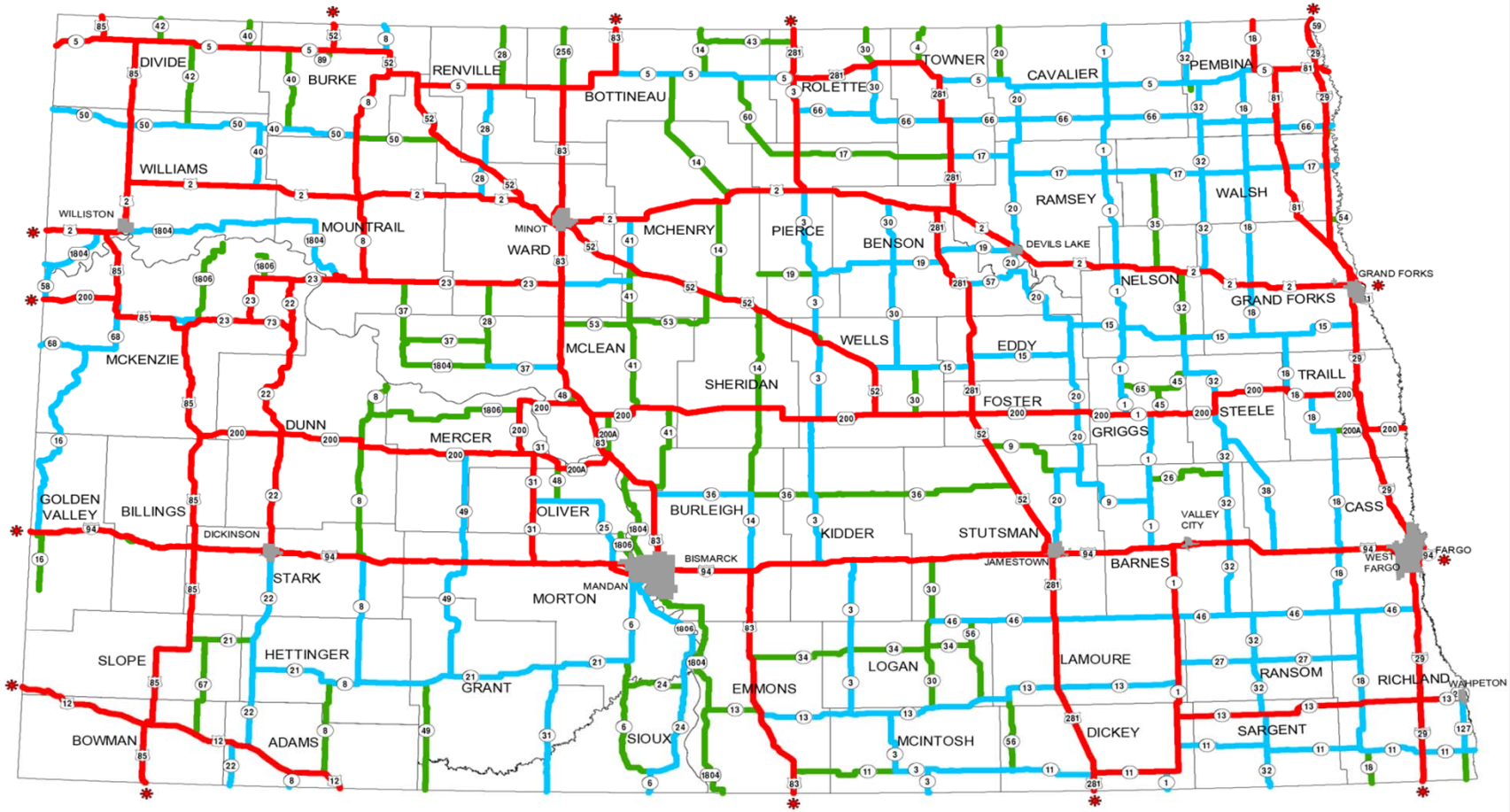

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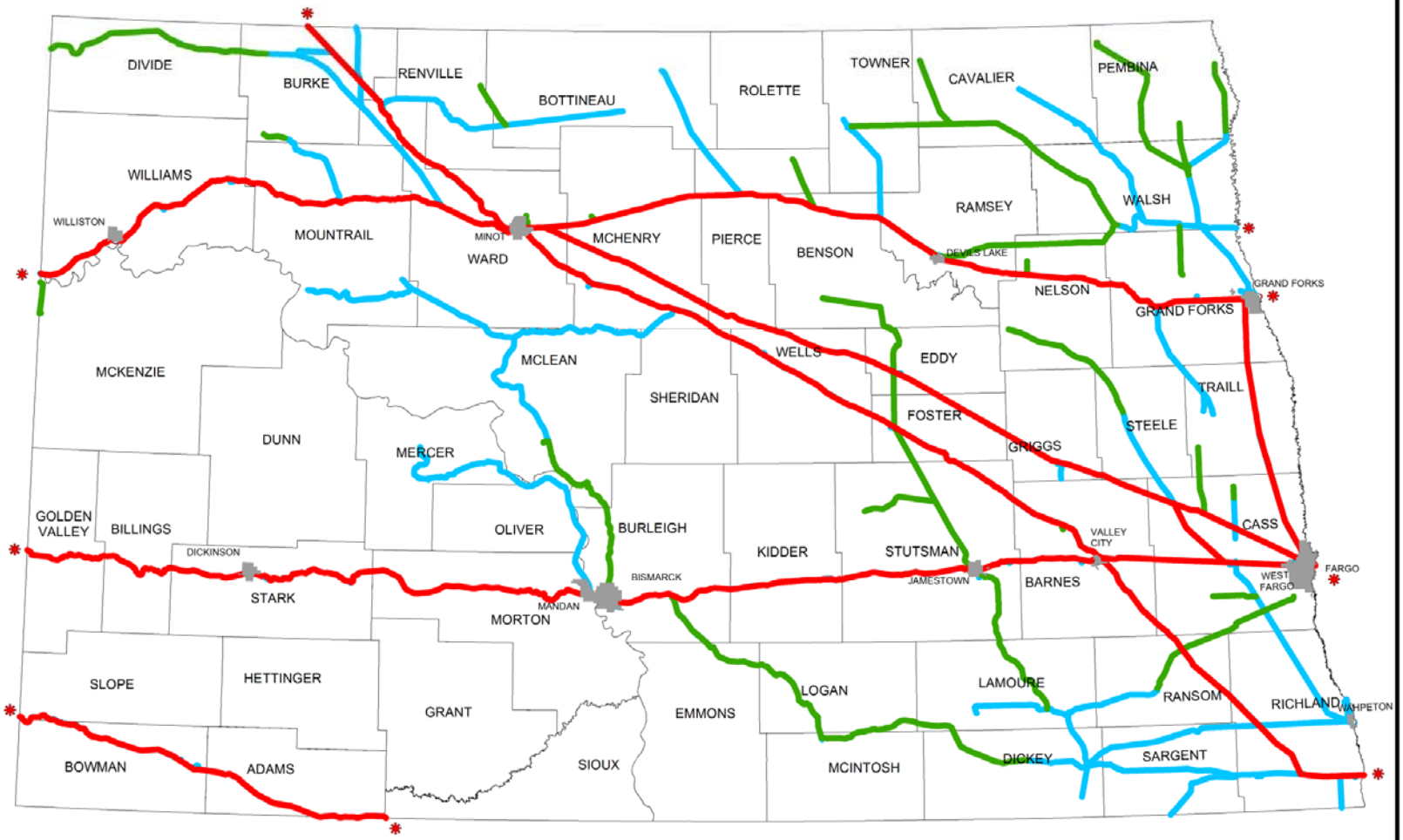
FIGURE 2

STATE STRATEGIC FREIGHT SYSTEM - RAILROADS



Strategic Railroad Level

- MAIN LINE - LEVEL 1
- 286,000 LBS - LEVEL 2
- 268,000 LBS - LEVEL 3

GATEWAY TO THE STATE

URBAN AREA

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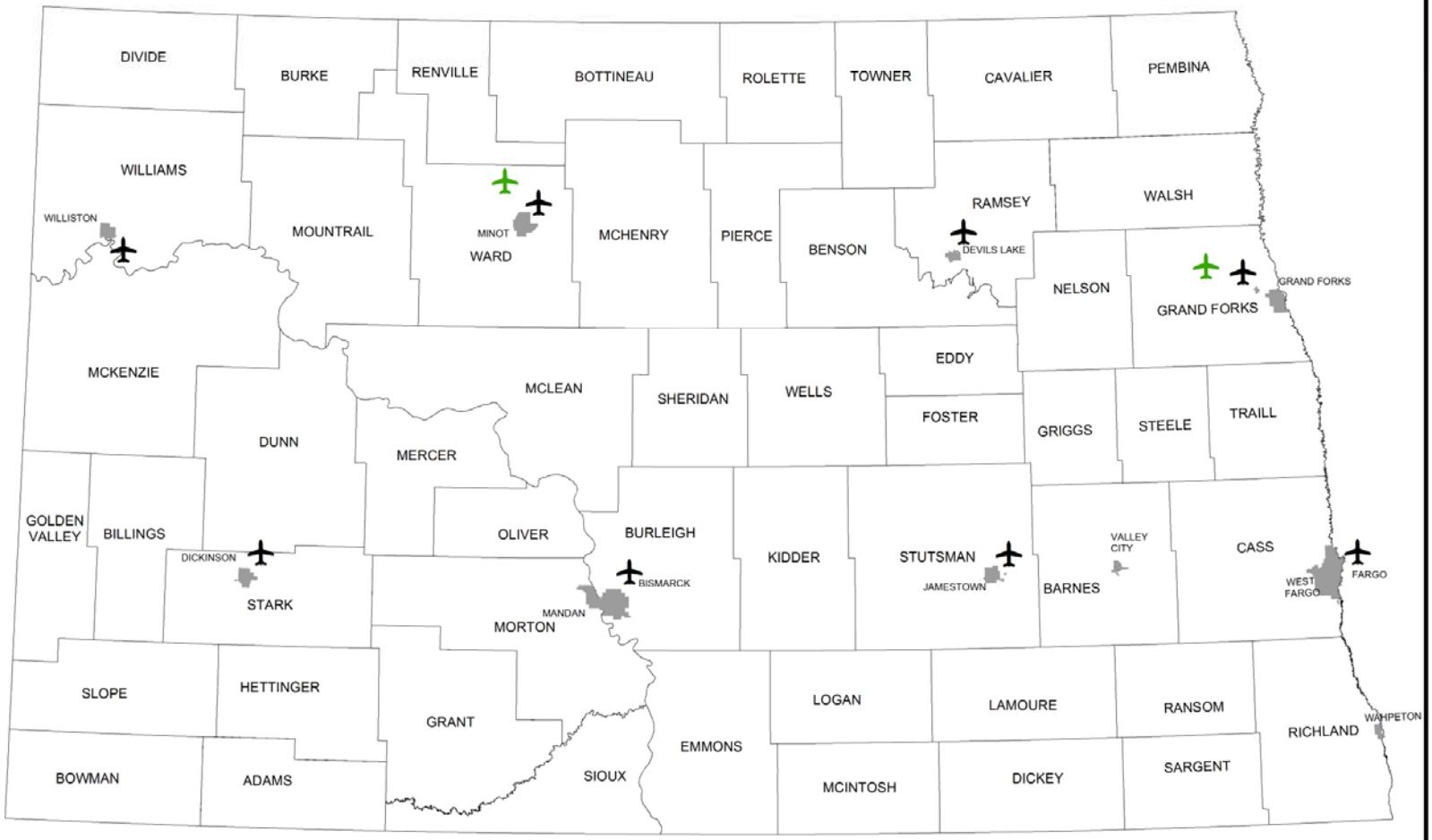
STATE STRATEGIC FREIGHT SYSTEM - AIRPORTS

FIGURE 3



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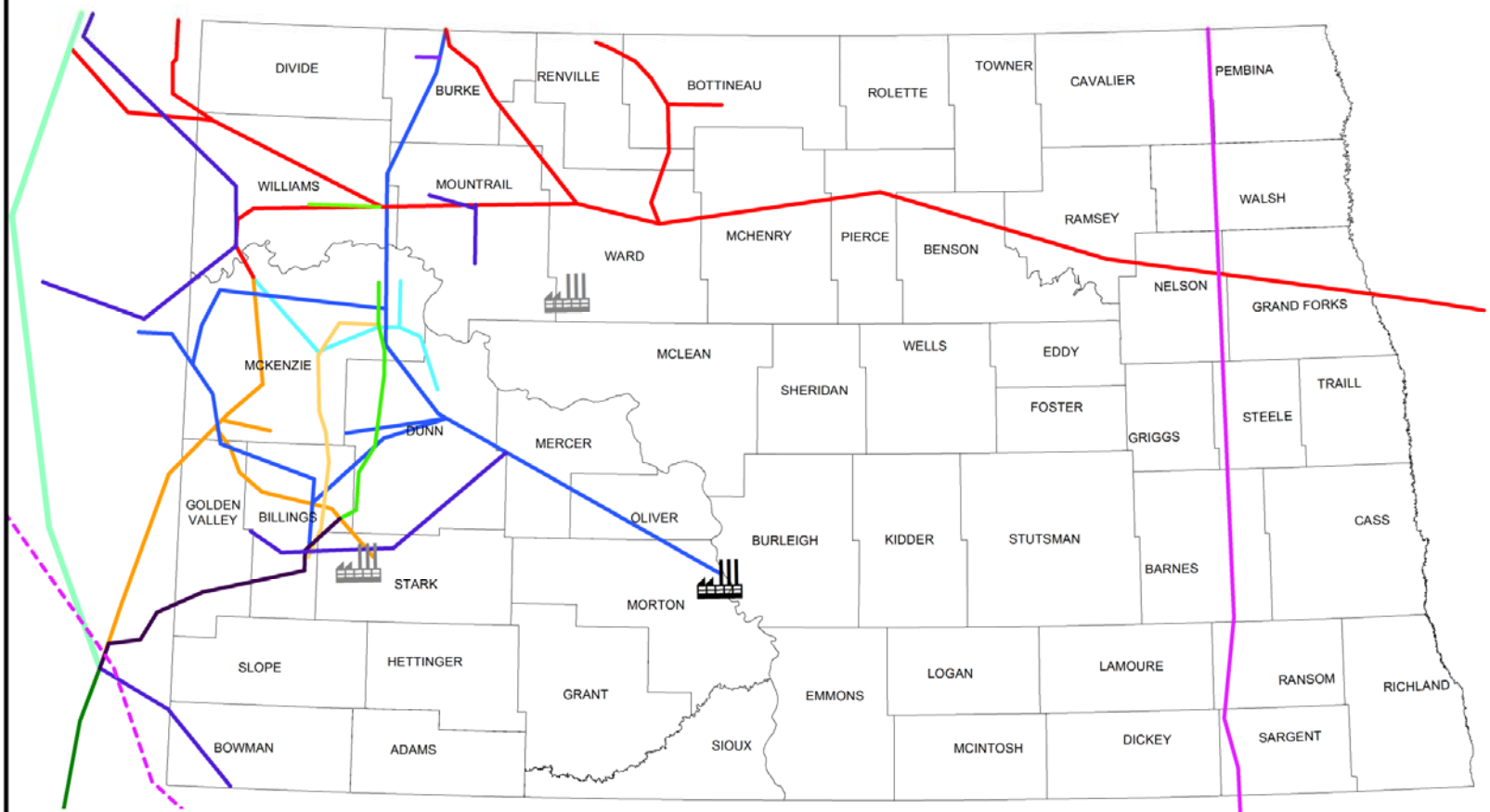
CRUDE OIL PIPELINES

FIGURE 6



BAKKENLINK
BASIN TRANSLOAD
BELLE FOURCHE
BRIDGER
BUTTE
ENBRIDGE
FOUR BEARS
INERGY
KEYSTONE
KEYSTONE XL
LITTLE MISSOURI
PLAINS
TARGA
TESORO
TESORO REFINERY
PROPOSED REFINERIES

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Source : Industrial Commission of North Dakota - North Dakota Pipeline Authority

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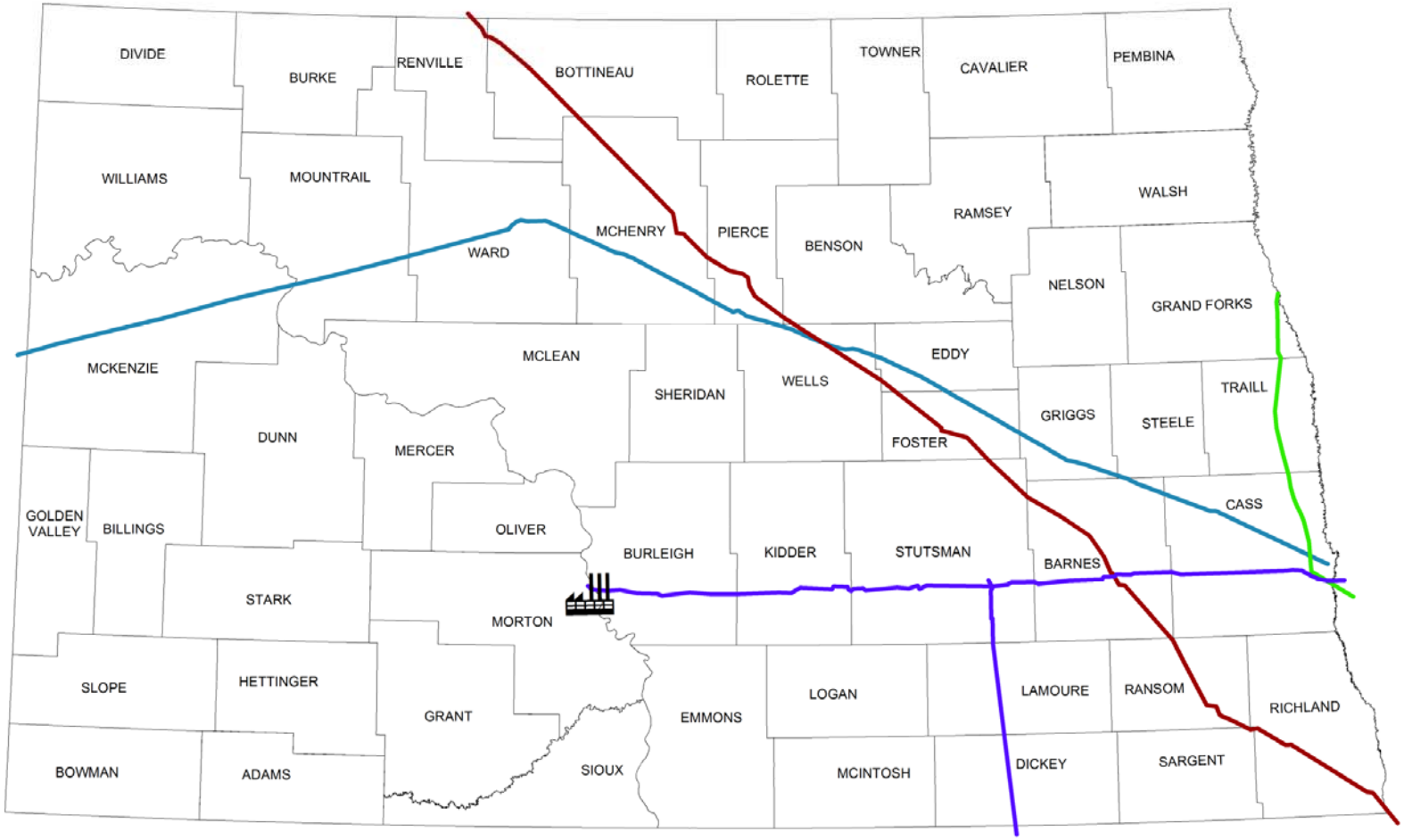
FIGURE 7

PRODUCT PIPELINES



Source : Industrial Commission of North Dakota - North Dakota Pipeline Authority

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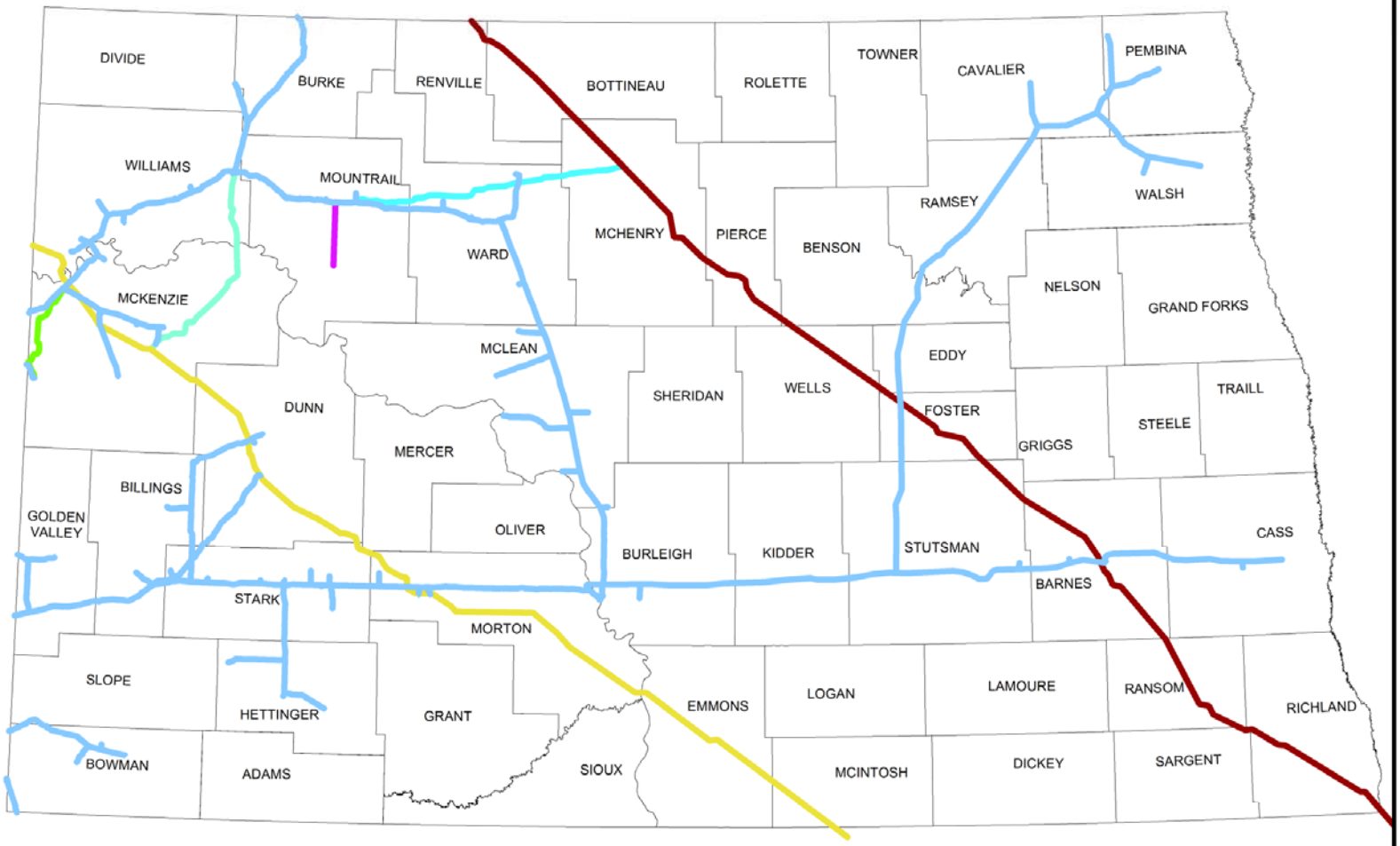
FIGURE 8

NATURAL GAS PIPELINES



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Freight Plan Implementation

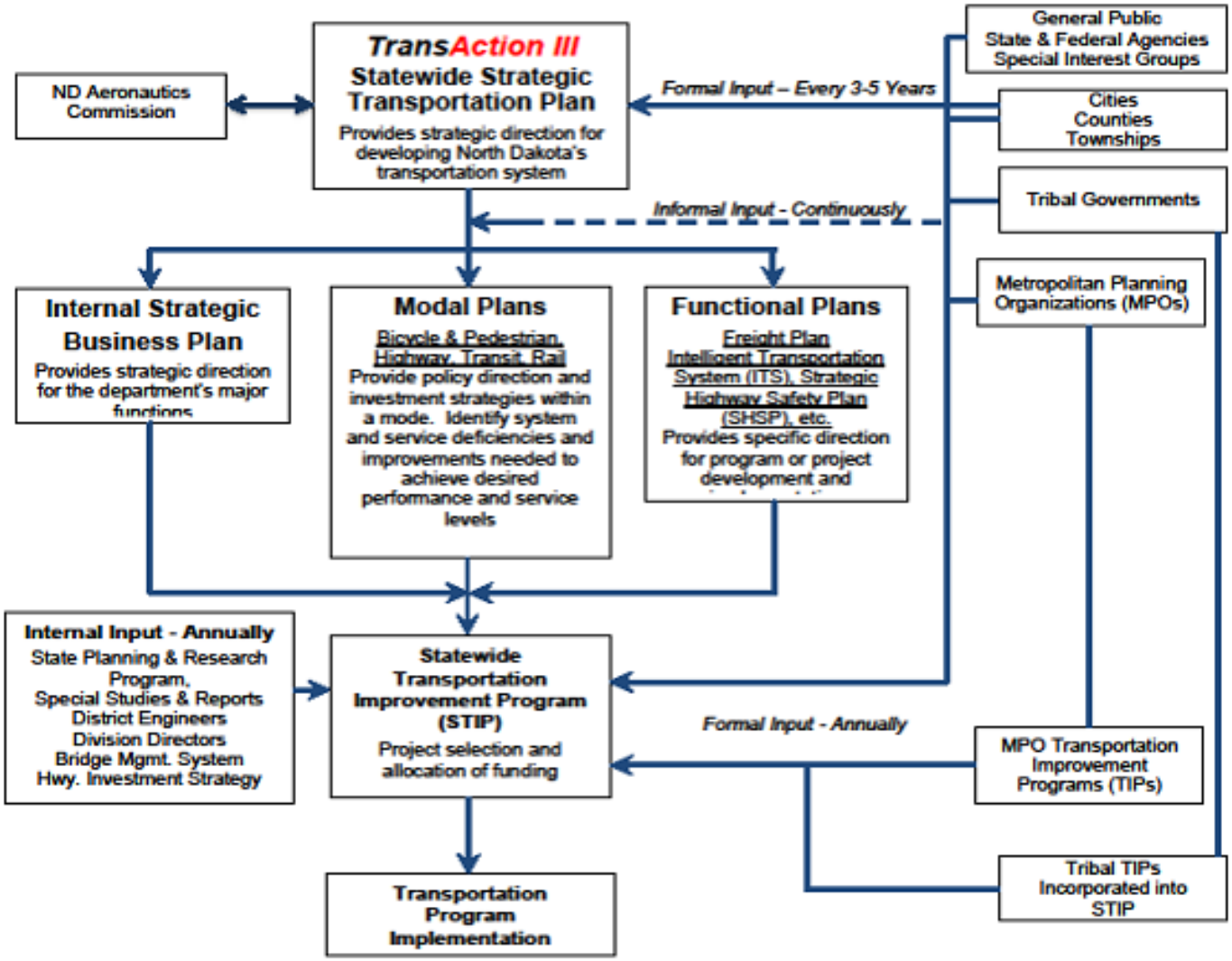
Planning/Feasibility Studies

Freight Plan Implementation

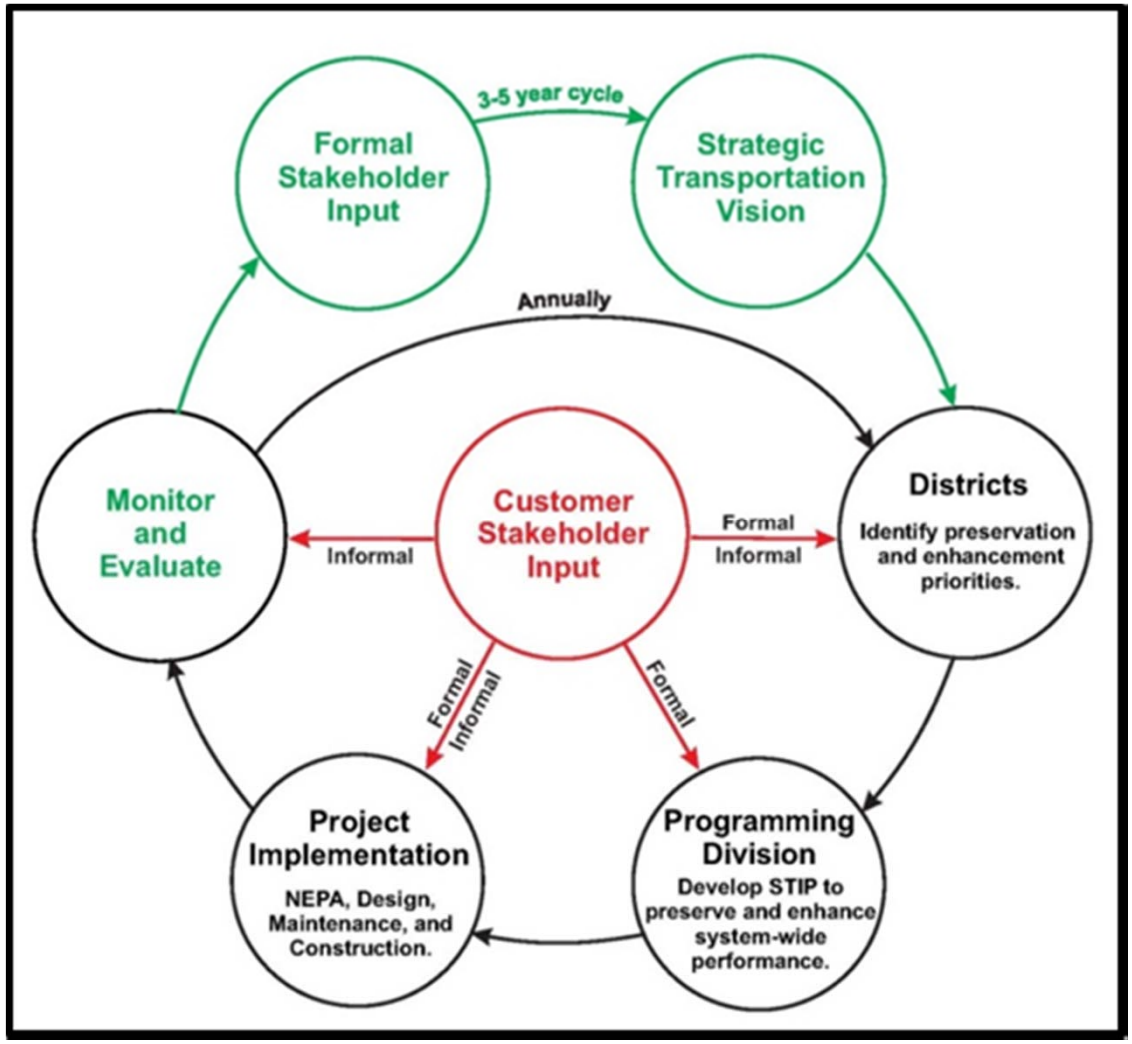
Projects

Figure 9

NDDOT
Decision-Making Process



Project Development



Freight Plan Implementation

Operational Strategies

Freight Plan Implementation

Innovative Technologies

Wilmer
Motor Express Inc

Questions/Comments

http://www.dot.nd.gov/divisions/planning/freight/