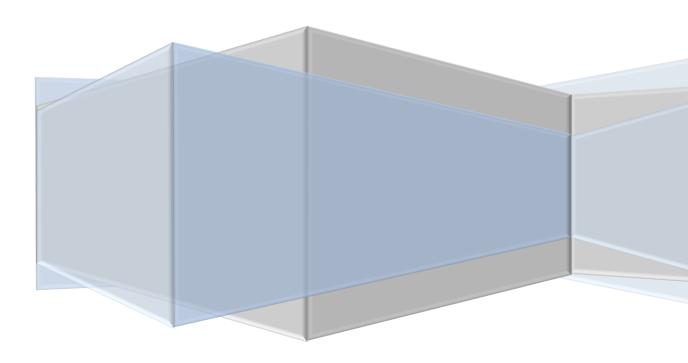


# **GIS Data Requirements**

For Enhanced and Next Generation 9-1-1

Version 3.0 - (Updated 9/14/2021)



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# Change Log from V2 to V3

9/10/2021 - Added FULL\_NAME and FULL\_ANAME to support the full name of both the primary street name and an alias. Renamed (and revised the use of) LABEL field to provide only text that would be used in conjunction with a SHIELD value. New name for the LABEL field is SHIELD\_LBL.

### INTRODUCTION

This document encompasses the NENA standard NENA-STA-006.1-2018¹ "NENA Standard for NG9-1-1 GIS Data Model" as well as a number of additional fields deemed necessary within this state of North Dakota. The purpose of this document is NOT to create a new standard but to aggregate and simplify the requirements for the reader. If the reader is interested in learning more about concepts or fields described within this document they should refer to the following NENA standards: NENA-STA-004² "NENA Civic Location Data Exchange Format (CLDXF) Standard" and NENA-STA-005³ "NENA Standards for the Provisioning and Maintenance of GIS data to ECRF/LVF". In the future, if additional requirements are identified due to NENA standardization or other state requirements, this document will be updated accordingly.

The document provides a definition of the Esri File Geodatabase format for GIS data exchange either between local or state agencies or vendors providing services to the same.

#### WHO IS THIS DOCUMENT FOR?

This document was developed for 9-1-1 coordinators, addressing officials, GIS personnel, the vendor community and any other entity or agency developing and/or maintaining GIS data for use in an enhanced 9-1-1 (E9-1-1) or next generation 9-1-1 (NG9-1-1) system within the State of North Dakota.

### CONVENTIONS USED IN THIS BOOK

#### DATA MODELS

Each layer is associated with a data model table that represents the minimum field requirements associated with the layer. Fields without shading indicates those fields where values must be provided (i.e. required fields). Fields shaded in grey indicate fields where values that may be provided (i.e. optional fields).

# Field Heading

No shading indicates fields where a value MUST be provided

Shading indicates fields where a value MAY be provided

Additionally, under each field heading, a required field name is provided in **bold** and further outlining whether the field is a NENA or ND911 Association defined field. When exchanging GIS data, these field names are required.

#### TERMINOLOGY & ACRONYMS

ALI – Automatic Location Identification

DES - The North Dakota Department of Emergency Services

E9-1-1 - Enhanced 9-1-1

NENA - National Emergency Number Association

FHWA – Federal Highway Administration

EPSG - European Petroleum Survey Group

NG9-1-1 – Next Generation 9-1-1

Ordinal<sup>4</sup> – The number designating place in an ordered sequence (e.g. first, second, third, fourth, etc.)

QA/QC - Quality Assurance / Quality Control

# ATTRIBUTE REQUIREMENTS

#### **V**ALUES

During the transition to NG9-1-1 both the legacy address fields and the next generation address fields will contain USPS formatted addresses and supporting abbreviations and upper-case capitalization. As the state approaches full NG9-1-1 compliance the values in the next generation address fields will be updated to be fully spelled out. The only difference between the next generation address fields and the legacy address fields, in the meantime, is that there are more address elements in a next generation address. Attribute values in next generation 9-1-1 address fields should be title cased whereas attribute values in legacy address fields should be capitalized.

## SPATIAL REQUIREMENTS

#### **DATA FORMAT**

For data exchange purposes, the GIS file format shall be Esri File Geodatabase. A copy of the Esri File Geodatabase template can be found on the ND9-1-1 Association <u>website</u>.

#### **PROJECTION**

All layers shall be made available in the World Geodetic System of 1984 (i.e. WGS 84 EPSG:4326). While agencies may build and maintain GIS information in other projections, GIS layers provided for 9-1-1 database purposes shall be projected to WGS 84 geographic projection prior to exchange. As an example, if using Esri software and the North American Datum of 1983, the WGS\_1984\_(ITRF00)\_To\_NAD\_1983 transformation shall be used. Using a transformation to convert a local coordinate system to WGS84 is important to minimize error and eliminate the chance of creating unnecessary overlaps and gaps when merged with neighboring data.

#### **ACCURACY**

Horizontal Accuracy: The accuracy of the GIS Layers should meet the National Spatial Data Infrastructure's (NSDI) "National Standard for Spatial Data Accuracy"<sup>5</sup> at a scale of 1:5000. This equates to a horizontal accuracy of **+/- 13.89 feet** at 95% confidence.

The accuracy of +/-13.89 feet is a goal that should be pursued. Funding and resources will dictate how long it will take the GIS layers mentioned in this document to achieve that goal.

Note: An exception to this horizontal accuracy requirement applies to the Road Centerline layer. As part of the initial development of the Seamless Basemap, this layer was collected at sub-meter accuracy. While it may not always be possible to collect features to this degree of accuracy it is a goal that should be pursued. As funding and resources allow, Road Centerline features with accuracy in excess of one meter should be brought into compliance with the sub-meter horizontal accuracy requirement.

Vertical Accuracy: There is no vertical accuracy requirement.

## LOCAL ID EXPLAINED

The Road Centerline and Structure Point layers each contain a field known as "Local ID". This is an optional field provided by local government agencies that can be used in combination with the "Source" field to extract information from the statewide dataset and join or relate records back to locally-maintained tables that hold extended information about the records.

If an agency wishes to join or relate features back to locally maintained information, the agency should pass along Local ID values when submitting data to the statewide dataset. The agency's Road Centerline and Structure Point layers will then be merged into the statewide dataset. When the agency takes an extract of the statewide dataset they can use the "Local ID" field along with "Source" field to extract the information they originally provided and join or relate it back to their local information.

As an example, a County decides it wants to keep track of the number of citations issued on each road in their county. The County could provide a Local ID on their segments as a primary key and then begin tracking the number of citations associated with that segment in a local "citations" table. Then, when road centerline data is extracted from the statewide dataset, they can subset their data out by the Source field and join or relate the road centerline's Local ID to their citations table which would contain the same Local ID of the road centerline.

## Addressing Requirements

#### RURAL ADDRESSING PLAN

After January 1<sup>st</sup>, 1993 all rural addressing plans in ND must conform to the Modified Burkle Addressing Plan. Rural addressing plans that were in place prior to January 1<sup>st</sup>, 1993 are permitted. For more information on the Modified Burkle Addressing Plan please see Appendix A.

#### ORDINAL RULE

Ordinal abbreviations shall be used when referring to numbered streets. For example, N 65TH AVE is required over N 65 AVE, 1ST AVE N is required over 1 AVE N, etc.

There are two exceptions to the ordinal rule:

- 1) On streets assigned a fractional component such as  $65\ 1/2\ ST\ NW$ . In these particular cases  $65\ 1/2\ AVE\ NW$  is the proper representation as opposed to  $65TH\ 1/2\ AVE\ NW$ , and
- 2) on some streets associated with the Modified Burkle Addressing Plan such as 101P AVE NW. In these particular cases 101P AVE NW is the proper representation as opposed to 101ST P AVE NW or 101 P AVE NW.

#### ABBREVIATED ADDRESS ELEMENTS

Traditionally, type and directional information have been abbreviated in 9-1-1 addresses in accordance with the United State Postal Service (USPS) Publication 28. For example, referring to "North First Avenue" with the text "N 1ST AVE" is standard practice. This abbreviated representation will continue to be standard practice for years to come. However, NG9-1-1 systems and databases offer new capabilities for addressing authorities to fully spell out each of their

addressing elements. NG9-1-1 has added this explicit level of detail since a fully spelled out address is less likely to be miscommunicated than an address that has been abbreviated. For example, a dispatcher may not necessarily know that "SIERRA VIS" refers to the street name "SIERRA VISTA".

That said abbreviations will be used as long as E9-1-1 databases are in service and during the transition to NG9-1-1.

### FIRST RESPONDER NAMING BEST PRACTICES

A number of the layers in this document, including the Law Enforcement, Fire and Ambulance Boundaries, the Emergency Service Zone and Emergency Service Point layers contain a field representing the name of the first responder. In the interest of maintaining consistency and reducing confusion in local naming conventions the following best practices are encouraged. Note: If an agency does not fit within the descriptions below it is best to use the fully spelled out name of the agency (e.g. NORTH DAKOTA GAME AND FISH, BUREAU OF INDIAN AFFAIRS, CUSTOMS AND BORDER PROTECTION, etc.)

#### LAW ENFORCEMENT NAMING BEST PRACTICES

For Police Departments the naming convention should typically follow the pattern: Town or City Name + "CITY" + "POLICE".

For Example... BISMARCK CITY POLICE, FARGO CITY POLICE, BEULAH CITY POLICE.

For Sheriff's Departments the naming convention should typically follow the pattern: County Name + "COUNTY" + "SHERIFF"

For Example... CASS COUNTY SHERIFF, FOSTER COUNTY SHERIFF, OLIVER COUNTY SHERIFF

#### FIRE NAMING BEST PRACTICES

For Fire Departments the naming convention should typically follow the pattern:

Town or City Name + "FIRE"

OR

Town or City Name + "RURAL" + "FIRE"

For Example... LANGDON FIRE, FARGO FIRE, GRAND FORKS RURAL FIRE

#### AMBULANCE NAMING BEST PRACTICES

For Ambulance agencies the naming convention should typically follow the pattern: Town or City Name + "EMS"

OR

Private Company Name + "EMS" For Example... CARPIO EMS, DICKINSON EMS, MINOT COMMUNITY EMS

# FIRST RESPONDER NAMING BEST PRACTICES FOR AGENCIES WITH MULTIPLE SERVICE AREAS

In some cases, such as in a large community, there will be multiple first responder departments serving the community. In these cases the prior naming conventions should be used followed by a dash (-) and then the fully-spelled out name of the department.

For example... FARGO FIRE - STATION 1, BISMARCK CITY POLICE - BEAT A, METRO AREA AMBULANCE - NORTH SUBSTATION

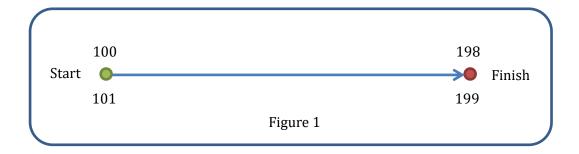
### LAYERS & THEIR INDIVIDUAL REQUIREMENTS

#### **ROAD CENTERLINES**

The Road Centerline layer is a representation of the centerline of a road or street. The layer is represented by **Line** geometry and is used for locating and validating addresses in the absence of a Structure Point layer or Structure Point features. The layer may also be used for determining the shortest or quickest route between two or more locations. The centerline should be represented as a single line in the case of an undivided road (e.g. a typical city street, county highway, most state highways, etc.) or is represented by multiple lines in the case of divided roads (e.g. interstates, some US highways, some city streets, etc.).

#### LINE DIRECTION

To minimize confusion and reduce addressing errors, roads should be digitized (drawn) in the direction of increasing addresses. This is illustrated in Figure 1.

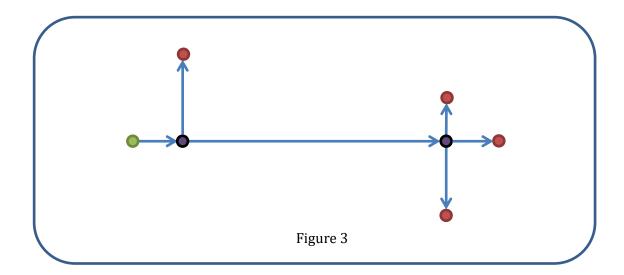


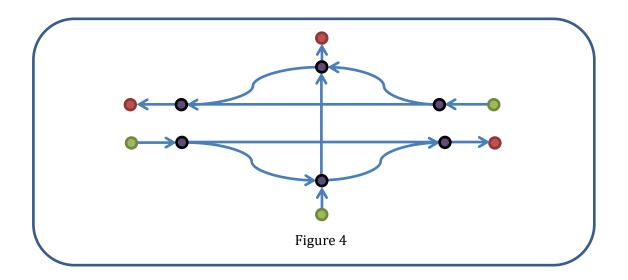
Additionally, lines should be digitized (drawn) in the direction of the flow of traffic. Divided

highways are examples of where the road should be drawn in the direction of the flow of traffic. This recommendation may be challenging when the digitized direction based on traffic flow would cause the centerline to be digitized opposite to the direction in which addresses increase (Figure 2). In such cases, individuals should choose the digitized direction that best suits them while paying close attention to how their decision impacts the address range and one way values. In Figure 2 a line has been digitized in the direction of the flow of traffic. However, this creates a condition where the from address is higher than the to address. This is not a problem if attention is paid to how line direction impacts range and one way values.

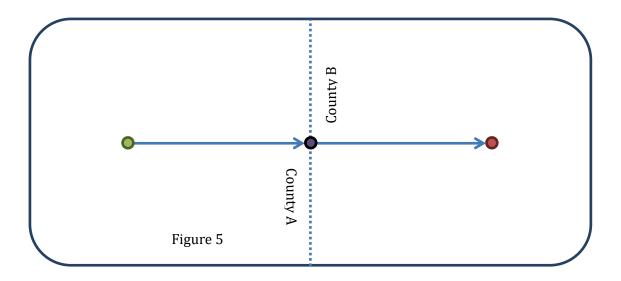
#### **CONNECTIVITY**

Roads connect at intersections allowing one to drive from their origin to their destination. To simulate this, the Road Centerline layer must also connect at intersections. Wherever multiple roads come together to form an intersection, the end points of the Road Centerline features must meet. The only exception to this rule is where overpasses/underpasses exist. In overpass/underpass scenarios it is preferable for the road centerlines to cross without sharing a common beginning or ending point, however, exceptions to this rule may be necessary for certain applications. For example, certain applications require road centerlines to be connected to intersecting road centerlines at beginning or end points. In those cases additional attribution is used for routing purpose. A From Z Level and To Z Level attribute may be used in these scenarios. Figure 3 illustrates the most commonly encountered scenario. Figure 4 illustrates an overpass scenario.



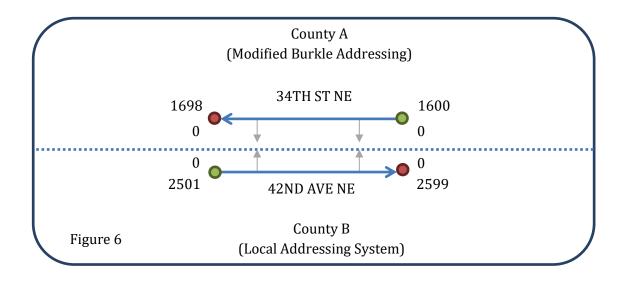


Additionally, roads should be broken at state, county, and city boundaries where those boundaries serve as a meet point between two addressing authorities. For example: If County A maintains their GIS data locally and County B maintains their GIS data locally, the Road Centerline feature should be broken at a common meet point. That meet point is the point at which the feature crosses a state, county or city boundary. The state, county and city boundary layers defined within this document, and maintained at a state level, will define one axis of the intersection point. Agencies must then coordinate as to where, along the centerline axis of the road, the common node is placed. Figure 5 illustrates this scenario.



#### Incompatible Addressing Systems

While the Modified Burkle Addressing system is the most common addressing system in North Dakota there are counties that use alternative addressing systems. There are also cases where the addressing for a county is not the same as that which is used by an adjacent city. In these cases stacked geometries are used to ensure the name and range combinations are limited to only those addresses that theoretically can be used. Figure 6 illustrates a scenario where County A uses the Modified Burkle Addressing System and where County B uses a different addressing system that was defined locally. In this example it should be noted that the Left From and Left To ranges have been zeroed out in this example. This is done to ensure that no theoretical addresses exist where they should not exist and where the neighboring jurisdiction has addressing responsibility.



CONVERSION OF FEDERAL HIGHWAY ADMINISTRATION'S FUNCTIONAL SYSTEM AND OWNER TO NENA'S ROAD CLASS

NENA's Road Class field was determined to be insufficient to adequately display the state's road network. Therefore, a combination of the Federal Highway Administration's Functional System and Owner values were added to the data model and, along with other road centerline attributes, will be used to populate the NENA Road Class field. The conversion goes as follows:

FHWA Functional System	Road Centerline Selection	NENA / MTFCC Equivalent
<u>Code</u>	<u>Statement</u>	
Interstate		Primary
Principal Arterials		Primary
Minor Arterials		Primary
Major Collector		Secondary
Minor Collector		Secondary
Local		Local

NA	St_Name LIKE '%RAMP%'	Ramp
	OR St_PosTyp LIKE	
	'%RAMP%' OR St_PosMod	
	LIKE '%RAMP%'	
NA	OWNER = 26	Private

### ROAD CENTERLINE DATA MODEL

Road Centerlines		
Field	Data Type	Description
Discrepancy Agency ID (DiscrpAgID) NENA	Text (75)	Agency that receives a Discrepancy Report (DR) and will take responsibility for ensuring discrepancy resolution.  Example: nd.gov, bismarcknd.gov
Date Updated (DateUpdate)  NENA	Date	An Esri Date/Time value that indicates when the record was last modified, specified in Coordinated Universal Time (UTC).  Example: 1/9/2015 3:08:01 PM
Effective Date (Effective) NENA	Date	A Esri Date/Time value that indicates when the record goes into effect, specified in Coordinated Universal Time (UTC).  Example: 1/9/2015 3:08:01 PM
Expiration Date (Expire) NENA	Date	An Esri Date/Time value that indicates when the record expires, specified in Coordinated Universal Time (UTC).  Example: 1/9/2015 3:08:01 PM
Road Centerline NENA Globally Unique ID (RCL_NGUID)) NENA	Text (254)	The NENA Globally Unique ID for each Road Centerline.  Example: {4D71F943-7155-46FA-9A66-D6F0DBA11C7F}

	Ro	oad Centerlines
Left Address Number Prefix (AdNumPre_L) NENA	Text (15)	An extension of the Address Number that precedes it and further identifies a location along a thoroughfare or within a defined area, on the Left side of the road segment.  Example: "A" in A3200
Right Address Number Prefix (AdNumPre_R) NENA	Text (15)	An extension of the Address Number that precedes it and further identifies a location along a thoroughfare or within a defined area, on the Right side of the road segment.  Example: "A" in A3201
Left From Address (FromAddr_L) NENA	Long Integer	The address on the Left side of the road segment at the FROM node. NOTE: This address can be higher than the "Left To Address"  Example: 100
Left To Address (ToAddr_L) NENA	Long Integer	The address on the Left side of the road segment at the TO node. NOTE: This address can be lower than the "Left From Address"  Example: 198
Right From Address (FromAddr_R) NENA	Long Integer	The address on the Right side of the road segment at the FROM node. NOTE: This address can be higher than the "Right To Address"  Example: 101
Right To Address (ToAddr_R)  NENA	Long Integer	The address on the Right side of the road segment at the TO node. NOTE: This address can be lower than the "Right From Address"  Example: 199

	Ro	oad Centerlines
Parity Left (Parity_L)  NENA	Text (1)	Parity of Address Range on the Left side of the road segment. Valid entries: E, O, B, Z for Even, Odd, Both, or Zero respectively. The value of "Z" applies when both the to and the from assignment on a given side of the road are equal to "0".  One of:  O, E, B, Z
Parity Right (Parity_R) NENA	Text (1)	Parity of Address Range on the Right side of the road segment. Valid entries: E, O, B, Z for Even, Odd, Both, or Zero respectively. The value of "Z" applies when both the to and the from assignment on a given side of the road are equal to "0".  One of: O, E, B, Z
Street Name Pre Modifier (St_PreMod) NENA	Text (15)	A word or phrase that precedes the Street Name element but is separated from it by a Street Name Pre Type or a Street Name Pre Directional or both.  Example: "OLD" in OLD HIGHWAY 25
Street Name Pre Directional (St_PreDir) NENA	Text (9)	A word preceding the Street Name that indicates the direction taken by the street from an arbitrary starting point or line, or the sector where it is located.  Example: "N" in N PARK PLACE
Street Name Pre Type (St_PreTyp) NENA	Text (50)	A word or phrase that precedes the Street Name element and identifies a type of thoroughfare in a complete street name.  Example: "AVENUE" in AVENUE A

Road Centerlines		
Street Name Pre Type Separator (St_PreSep) NENA	Text (20)	A preposition or prepositional phrase between the Street Name Pre Type and the Street Name.  Example: "OF THE" in AVENUE OF THE AMERICAS
Street Name ( <b>St_Name</b> ) NENA	Text (60)	The official name of the road, usually defined by the lowest jurisdictional authority (e.g. city) and as assigned by the local addressing authority.  Example: "CAPITOL" in N CAPITOL AVE
Street Name Post Type (St_PosTyp) NENA	Text (50)	A word or phrase that follows the Street Name element and identifies a type of thoroughfare in a complete street name.  During transition to NG9-1-1 valid entries are limited to the abbreviations listed in USPS Publication 28 Appendix C1.  Example: "AVE" in N CAPITOL AVE
Street Name Post Directional (St_PosDir) NENA	Text (9)	A word following the Street Name that indicates the direction taken by the street from an arbitrary starting point or line, or the sector where it is located.  Example: "W" in 34TH AVE W
Street Name Post Modifier (St_PosMod) NENA	Text (25)	A word or phrase that follows and modifies the Street Name, but is separated from it by a Street Name Post Type or a Street Name Post Directional or both.  Example: "EXTENDED" in AVE E EXTENDED

Road Centerlines		
Legacy Street Name Pre Directional (LSt_PreDir) NENA	Text (2)	The directional component that precedes the street name as defined by the Master Street Address Guide.  Examples: NE, S, SW, W
Legacy Street Name (LSt_Name) NENA	Text (75)	The name of the street as defined by the Master Street Address Guide. May differ from the standardized street name.  Examples: MAIN, 40TH, PLUM
Legacy Street Name Type (LSt_Type) NENA	Text (4)	The street type component as defined by the Master Street Address Guide. Valid types may be found in USPS Publication 28.  Examples: AVE, ST
Legacy Street Name Post Directional (LSt_PosDir) NENA	Text (2)	The directional component that follows the street name as defined by the Master Street Address Guide.  Examples: NE, S, SW, W
ESN Left (ESN_L) NENA	Text (5)	Emergency Service Number associated with the location of the address as identified by the MSAG, on the Left side of the road segment.  Examples: 00250, 12345
ESN Right (ESN_R) NENA	Text (5)	Emergency Service Number associated with the location of the address as identified by the MSAG, on the Right side of the road segment.  Examples: 00250, 12345

	Ro	oad Centerlines
MSAG Community Name Left (MSAGComm_L) NENA	Text (30)	Valid service community name on the Left side of the road segment as identified by the MSAG, may or may not be the same as the Community name assigned by the United States Postal Service (USPS).  Example: MINOT
MSAG Community Name Right (MSAGComm_R) NENA	Text (30)	Valid service community name on the Right side of the road segment as identified by the MSAG, may or may not be the same as the Community name assigned by the United States Postal Service (USPS).  Example: MINOT
Country Left (Country_L) NENA	Text (2)	The name of a country represented by its two-letter ISO 3166-1 English country alpha-2 code elements in capital ASCII letters, on the Left side of the road segment.  One of: US, CA
Country Right (Country_R) NENA	Text (2)	The name of a country represented by its two-letter ISO 3166-1 English country alpha-2 code elements in capital ASCII letters, on the Right side of the road segment.  One of: US, CA
State Left (State_L) NENA	Text (2)	Two alpha-character U.S. State abbreviation as defined by USPS Publication 28, or Canadian province abbreviation equivalent, on the Left side of the road segment.  One of:  ND, SD, MT, MN, MB, SK

Road Centerlines		
State Right (State_R) NENA	Text (2)	Two alpha-character U.S. State abbreviation as defined by USPS Publication 28, or Canadian province abbreviation equivalent, on the Right side of the road segment.  One of:  ND, SD, MT, MN, MB, SK
County Left (County_L) NENA	Text (40)	County Name, or equivalent, on the Left side of the road segment, completely spelled out, as given in INCITS 38:2009  Example: MERCER COUNTY
County Right (County_R) NENA	Text (40)	County Name, or equivalent, on the Right side of the road segment, completely spelled out, as given in INCITS 38:2009  Example: MERCER COUNTY
Incorporated Municipality Left (IncMuni_L) NENA	Text (100)	The name of the incorporated municipality where the address is located, on the Left side of the road segment. Only used if a named municipality exists, otherwise populate with "Unincorporated".  Examples: BISMARCK, UNINCORPORATED
Incorporated Municipality Right (IncMuni_R) NENA	Text (100)	The name of the incorporated municipality where the address is located, on the Right side of the road segment. Only used if a named municipality exists, otherwise populate with "Unincorporated".  Examples: BISMARCK, UNINCORPORATED
Unincorporated Community Left (UnincCom_L) NENA	Text (100)	The Unincorporated Community, either within an incorporated municipality or in an unincorporated portion of a county, or both, on the Left side of the road segment relative.  Examples: COLGAN, FRYBURG, GRASSY BUTTE

	Ro	oad Centerlines
Unincorporated Community Right (UnincCom_R) NENA	Text (100)	The Unincorporated Community, either within an incorporated municipality or in an unincorporated portion of a county, or both, on the Right side of the road segment relative.  Examples: COLGAN, FRYBURG, GRASSY BUTTE
Neighborhood Community Left (NbrhdCom_L) NENA	Text (100)	The name of an unincorporated neighborhood, subdivision or area, either within an incorporated municipality or in an unincorporated portion of a county or both, on the Left side of the road segment relative to the FROM Node.  Examples: EDGEWATER PARK
Neighborhood Community Right (NbrhdCom_R) NENA	Text (100)	The name of an unincorporated neighborhood, subdivision or area, either within an incorporated municipality or in an unincorporated portion of a county or both, on the Right side of the road segment relative to the FROM Node.  Examples: EDGEWATER PARK
Postal Code Left (PostCode_L) NENA	Text (7)	The 5-digit Postal Code on the Left side of the road segment relative to the FROM Node.  Example: 58501
Postal Code Right (PostCode_R)  NENA	Text (7)	The 5-digit Postal Code on the Right side of the road segment relative to the FROM Node.  Example: 58501
Postal Community Name Left (PostComm_L) NENA	Text (40)	A city name for the ZIP Code of an address, as given in the USPS City State file on the Left side of the road segment relative to the FROM Node.  Example: BISMARCK

Road Centerlines		
Postal Community Name Right (PostComm_R) NENA Road Class	Text (40)	A city name for the ZIP Code of an address, as given in the USPS City State file on the Right side of the road segment relative to the FROM Node.  Example: BISMARCK  The general description of the type of road.
(RoadClass) NENA	Text (15)	The general description of the type of road. Classifications are derived from the US Census MTFCC codes. This field is calculated based on an ETL (extract, transform, load) task based on values in the functional class, ownership, and other Road Centerline fields. This field does not need to be maintained directly.  One of:  Primary Secondary Local (City, Neighborhood, or Rural Road) Ramp Service (usually along a limited access highway) Vehicular Trail (4WD, snowmobile) Walkway (Pedestrian Trail, Boardwalk) Alley Private (logging, oil field, ranch, private drives etc.) Parking Lot Trail (Ski, Bike, Walking / Hiking Trail) Other
One Way ( <b>OneWay</b> ) NENA	Text (2)	The direction of traffic movement along a road in relation to the FROM node and TO node of the line segment representing the road in the GIS data. If left blank, travel in both directions is permitted.  One of:  B (travel in both directions is allowed)  FT (One-way traveling from FROM node to TO node)  TF (One-way traveling from TO node to FROM Node)

Road Centerlines		
Speed Limit (SpeedLimit)	Short Integer	The posted speed limit of the road centerline segment in miles per hour.
NENA		Example: 55
Validation Left (Valid_L) NENA	Text (1)	Indicates if the address range on the left side of the road segment should be used for civic location validation.  One of:  Y N
Validation Right (Valid_R)  NENA	Text (1)	Indicates if the address range on the right side of the road segment should be used for civic location validation.  One of:  Y N
Local ID (LOCAL_ID)  ND911	Text (100)	An identifier provided by the GIS source provider for the purpose of linking records back to locally managed data. It is preferable that the GIS record's LOCAL_ID not change over time.
Full Street Name (FULL_NAME) ND911	Text (100)	The full name of the primary street name when all street name elements are concatenated.  Example: N CAPITOL AVE, OLD HIGHWAY 25 S
Alternate Street Name Pre Modifier (A_PRE_MOD) ND911	Text (15)	A word or phrase that precedes the Street Name element but is separated from it by a Street Name Pre Type or a Street Name Pre Directional or both.  Example: "OLD" in OLD HIGHWAY 25
Alternate Street Name Pre Directional (A_PRE_DIR) ND911	Text (10)	A word preceding the Street Name that indicates the direction taken by the street from an arbitrary starting point or line, or the sector where it is located.  Example: "N" in N PARK PLACE

Road Centerlines		
Alternate Street Name Pre Type (A_PRE_TYPE) ND911	Text (30)	A word or phrase that precedes the Street Name element and identifies a type of thoroughfare in a complete street name.  Example: "AVENUE" in AVENUE A
Alternate Street Name Pre Type Separator (A_PRETYP_S) ND911	Text (15)	A preposition or prepositional phrase between the Street Name Pre Type and the Street Name.  Example: "OF THE" in AVENUE OF THE AMERICAS
Alternate Street Name (A_STREET) ND911	SText (75)	The legal street name as assigned by the local addressing authority.  Example: "CAPITOL" in N CAPITOL AVE
Alternate Street Name Post Type (A_POST_TYP) ND911	Text (30)	A word or phrase that follows the Street Name element and identifies a type of thoroughfare in a complete street name.  Valid entries are limited to the abbreviations listed in USPS Publication 28 Appendix C1.  Example: "AVE" in N CAPITOL AVE
Alternate Street Name Post Directional (A_POST_DIR) ND911	Text (10)	A word following the Street Name that indicates the direction taken by the street from an arbitrary starting point or line, or the sector where it is located.  Example: "W" in 34TH AVE W
Alternate Street Name Post Modifier (A_POST_MOD) ND911	Text (15)	A word or phrase that follows and modifies the Street Name, but is separated from it by a Street Name Post Type or a Street Name Post Directional or both.  Example: "EXTENDED" in AVE E EXTENDED

Road Centerlines		
Full Alias Street Name (FULL_ANAME)	Text (100)	The full name of the alias street name when all alias street name elements are concatenated.
ND911		Example: N CAPITOL AVE, OLD HIGHWAY 25 S
Shield Type (SHIELD)	Text (10)	The type of shield to use when labeling the feature.
ND911		One of:  I (Interstate Shield)  USHY (United States Highway Shield)  STHY (State Highway Shield)  CORD (County Road Shield)  BIA (Bureau of Indian Affairs Highway Shield)  FSRD (Forest Service Road Shield)  EXIT (Exit or Ramp Shield)
Shield Label (SHIELD_LBL) ND911	Text (10)	Used only in combination with features that a have <b>SHIELD</b> value. The <b>SHIELD_LBL</b> should contain a short numeric or alphanumeric value to place within the shield symbol.  Examples: "94", "29", "83"
From Z Level (F_ZLEV) ND911	Long Integer	The From Z Level value for the first vertex of the line. The From Z Level value is an arbitrary number that supports certain routing applications.  Example: 0, 1, 100, etc.
To Z Level (T_ZLEV) ND911	Long Integer	The To Z Level value for the last vertex of the line. The To Z Level value is an arbitrary number that supports certain routing applications.  Example: 0, 1, 100, etc.
Length in Miles (LENGTH_MI)  ND911	Double	Length of road centerline segment in miles.  Example: 1.1

Road Centerlines		
Road Status (STATUS) ND911	Text (10)	The current status of the road indicating whether the road is open or closed for travel. If left blank, the road is assumed to be open.  One of:  OPEN (road is open for travel)  CLOSED (road is closed for travel)  PROPOSED (road is planned but either not constructed or under construction)
Minutes (MINUTES) ND911	Double	The time to traverse the road centerline segment, based on the segments length and speed limit.  Example: 1.12
Source of Record (SOURCE) ND911	Text (75)	The source or provider of the GIS record.  Example: Stark County
Accuracy (ACCURACY) ND911	Text (50)	The estimated horizontal accuracy associated with the record.  One of: Sub meter Sub decimeter Sub centimeter Sub 3 meters Sub 10 meters Greater than 10 meters Unknown

Road Centerlines		
Functional System (FUNC_SYS)  ND911	Short Integer	Value that represents the FHWA approved functional system. Values should be determined in cooperation with federal, state, local and tribal road departments.  One of:  1 = Interstate  2 = Principal Arterial – Other Freeways and Expressways  3 = Principal Arterial – Other  4 = Minor Arterial  5 = Major Collector  6 = Minor Collector  7 = Local  Example: 4
		Example: 4

Road Centerlines		
Ownership (OWNER) ND911	Short Integer	The level of government that best represents the highway owner irrespective of whether agreements exist for maintenance or other purposes. If more than one code applies, code the lowest numerical value using the following codes. Values should be determined in cooperation with federal, state, local and tribal road departments.  One of:  1 = State Highway Agency 2 = County Highway Agency 3 = Town or Township Highway Agency 4 = City or Municipal Highway Agency 11 = State Park, Forest, or Reservation Agency 12 = Local Park, Forest or Reservation Agency 21 = Other State Agency 25 = Other Local Agency 26 = Private (other than Railroad) 27 = Railroad 31 = State Toll Road
		<ul> <li>21 = Other State Agency</li> <li>25 = Other Local Agency</li> <li>26 = Private (other than Railroad)</li> <li>27 = Railroad</li> </ul>
		73 = Navy/Marines 74 = Army 80 = Other Example: 2

Road Centerlines		
Notes	Text (254)	Notes associated with the record.
(NOTES)		Example: Record should be spatially adjusted when time
ND911		permits.

### SITE / STRUCTURE ADDRESS POINTS

The Site / Structure Address Point layer is a representation of an addressable site or structure. The layer is represented by **Point** geometry and is used for locating and validating addresses.

In an E9-1-1 operating environment, all site / structure points must be defined with an address number and street name. However, in an NG9-1-1 environment, a structure point may be identified by an Address Number and Street Name as in the case of "110 Main St" OR it may be represented with Landmark name as in the case of "State Capitol". Due to the differences between E9-1-1 and NG9-1-1 these address elements are not individually marked as "MUST be provided" but it is generally a good idea to associate all site/ structure points with a physical street address if possible.

#### **PLACEMENT**

Site / Structure Address Points should be placed on the physical site or structure, not on the access point from the road (such as where a private drive intersects an addressed road centerline). For smaller structures, such as a residential home, the centroid of the structure is preferred. For larger structures, such as a strip mall with multiple tenants, it is recommended that the structure point be placed on the structure at the primary point of access for emergency services.

SITE / STRUCTURE ADDRESS POINT DATA MODEL

Site / Structure Address Points		
Field	Data Type	Description
Discrepancy Agency ID (DiscrpAgID)	Text (75)	Agency that receives a Discrepancy Report (DR) and will take responsibility for ensuring discrepancy resolution.  Example: nd.gov, bismarcknd.gov
NENA		

	Site / Str	ructure Address Points
Date Updated (DateUpdate)	Date	An Esri Date/Time value that indicates when the record was last modified, specified in Coordinated Universal Time (UTC).
NENA		Example: 1/9/2015 3:08:01 PM
Effective Date (Effective) NENA	Date	An Esri Date/Time value that indicates when the record goes into effect, specified in Coordinated Universal Time (UTC).
		Example: 1/9/2015 3:08:01 PM
Expiration Date (Expire)	Date	An Esri Date/Time value that indicates when the record expires, specified in Coordinated Universal Time (UTC).
NENA		Example: 1/9/2015 3:08:01 PM
Site NENA Globally Unique ID (Site_NGUID) NENA	Text (254)	The NENA Globally Unique ID for each Site/Structure Address Point.  Example: {4D71F943-7155-46FA-9A66-D6F0DBA11C7F}
Country (Country) NENA	Text (2)	The name of a country represented by its two-letter ISO 3166-1 English country alpha-2 code elements in capital ASCII letters.  One of: US CA
State (State) NENA	Text (2)	Two alpha-character U.S. State abbreviation as defined by USPS Publication 28, Appendix B.  One of: ND SD MT MN MB SK

Site / Structure Address Points		
County (County)	Text (40)	County Name, or equivalent, completely spelled out, as given in INCITS 31:2009
NENA		Example: MERCER COUNTY
Additional Data URI (AddDataURI)	Text (254)	URI(s) for additional data associated with the site/structure address point. Additional data could
NENA		include floor plans, list of hazardous materials, etc.
IVLIVI		Example: https://addl686033.example.com
Incorporated Municipality (Inc_Muni)	Text (100)	The name of the incorporated city where the address is located. Only used if a named city exists, otherwise populate with "Unincorporated".
NENA		Examples: BISMARCK, UNINCORPORATED
Unincorporated Community (Uninc_Comm) NENA	Text (100)	The name of an Unincorporated Community, either within an incorporated municipality or in an unincorporated portion of a county, or both, where the address is located.  Example: COLGAN, FRYBURG, GRASSY BUTTE
Neighborhood Community (Nbrhd_Comm) NENA	Text (100)	The name of an unincorporated neighborhood, subdivision, or area, either within an incorporated municipality or in an unincorporated portion of a county or both, where the address is located. Neighborhood communities are only used when they are known and have a clearly defined boundary. Neighborhood communities are usually not used for addressing purposes, but are often used as differentiators within an area that have the same or similar sounding street names.  Example: EDGEWATER PARK

	Site / Str	ructure Address Points
Address Number Prefix (AddNum_Pre) NENA	Text (15)	An extension of the address number that precedes it and further identifies a location along a thoroughfare or within a defined area.  Example: "101-" in 101-123 GRID WAY DR
Address Number (Add_Number) NENA	Long Integer	The numeric identifier of a location along a thoroughfare or within a defined community.  Example: "101" in 101 MAIN ST
Address Number Suffix (AddNum_Suf) NENA	Text (15)	An extension of the address number that follows it and further identifies a location along a thoroughfare or within a defined area. Note: In the process of building a complete address number, the address number and address number suffix fields are concatenated. It is context dependent on whether the complete address number requires a space or not, see examples below.  Examples: "1/2" in 101 1/2 OAK ST, "B" in 345B JAY AVE
Street Name Pre Modifier (St_PreMod) NENA	Text (15)	A word or phrase that precedes the Street Name element but is separated from it by a Street Name Pre Type or a Street Name Pre Directional or both.  Example: "OLD" in OLD HIGHWAY 25
Street Name Pre Directional (St_PreDir) NENA	Text (9)	A word preceding the Street Name that indicates the direction taken by the street from an arbitrary starting point or line, or the sector where it is located.  Example: "N" in N PARK PLACE
Street Name Pre Type (St_PreTyp) NENA	Text (50)	A word or phrase that precedes the Street Name element and identifies a type of thoroughfare in a complete street name.  Example: "AVENUE" in AVENUE A

	Site / Str	ructure Address Points
Street Name Pre Type Separator (St_PreSep)	Text (20)	A preposition or prepositional phrase between the Street Name Pre Type and the Street Name.
NENA		Example: "OF THE" in AVENUE OF THE AMERICAS
Street Name (St_Name)	Text (60)	The legal street name as assigned by the local addressing authority.
NENA		Example: "CAPITOL" in N CAPITOL AVE
Street Name Post Type (St_PosTyp) NENA	Text (50)	A word or phrase that follows the Street Name element and identifies a type of thoroughfare in a complete street name.  Valid entries are limited to the abbreviations listed in USPS Publication 28 Appendix C1.
		Example: "AVE" in N CAPITOL AVE
Street Name Post Directional (St_PosDir) NENA	Text (9)	A word following the Street Name that indicates the direction taken by the street from an arbitrary starting point or line, or the sector where it is located.  Example: "W" in 34TH AVE W
Street Name Post Modifier (St_PosMod) NENA	Text (25)	A word or phrase that follows and modifies the Street Name, but is separated from it by a Street Name Post Type or a Street Name Post Directional or both.  Example: "EXTENDED" in AVE E EXTENDED
Legacy Street Name Pre Directional (LSt_PreDir) NENA	Text (2)	The leading street direction prefix as it previously existed prior to the adoption of the NG9-1-1 Data Model as assigned by the local addressing authority.  Example: N, S, E, W, NW, SW, NE, SE
Legacy Street Name (LSt_Name) NENA	Text (75)	The street name field as it would appear in the MSAG, as assigned by the local addressing authority.  Example: MAIN, 1ST, BOWEN

Site / Structure Address Points		
Legacy Street Name Type (LSt_Type) NENA	Text (4)	The valid street abbreviation as it previously existed prior to the adoption of the NG9-1-1 Data Model as assigned by the local addressing authority.  Example: AVE, ST, LN
Legacy Street Name Post Directional (LSt_PosDir) NENA	Text (2)	The trailing street direction suffix as it previously existed prior to the adoption of the NG9-1-1 Data Model as assigned by the local addressing authority.  Example: N, S, E, W, NW, SW, NE, SE
Emergency Service Number (ESN) NENA	Text (5)	Emergency Service Number associated with the location of the address as identified by the MSAG. All ESNs should be represented with 5 numeric characters.  Examples: 00250, 12345
MSAG Community Name (MSAGComm) NENA	Text (30)	Valid service community name associated with the location of the address as identified by the MSAG.  Example: MINOT
Postal Community Name (Post_Comm) NENA	Text (40)	The city name for the ZIP code of an address as given in the USPS City State file, or its Canadian equivalent.  Example: BISMARCK
Postal Code (Post_Code) NENA	Text (7)	A system of 5-digit codes that identifies the individual USPS Post Office or metropolitan area delivery station associated with an address.  Example: 58501
Zip Plus 4 (Post_Code4) NENA	Text (4)	The addition of the ZIP Plus-4 refines the mail delivery point down to a specific block or building, and may prove useful to validate locations.  Example: 0154

	Site / Str	ructure Address Points
Building (Building) NENA	Text (75)	One among a group of buildings that have the same address number and complete street name.  Examples: BUILDING 2, TERMINAL A
Floor (Floor) NENA	Text (75)	A floor, story, or level within a building.  Examples: FLOOR 4, MEZZANINE
Unit (Unit) NENA	Text (75)	A group or suite of rooms within a building that are under common ownership or tenancy, typically having a common primary entrance.  Examples: APARTMENT 14, SUITE 1100, UNIT 5
Room (Room) NENA	Text (75)	A single room within a building.  Examples: LOBBY, ROOM 302
Seat (Seat) NENA	Text (75)	A place where a person might sit within a building.  Examples: SEAT A, CUBICLE 3T
Additional Location Information (Addtl_Loc) NENA	Text (225)	In an E9-1-1 database environment this field typically contains additional location information along with secondary address unit designators found within USPS Publication 28 Appendix C2. In an NG9-1-1 database environment this field contains that part of a subaddress that is not a Building, Floor, Unit, Room, or Seat.  E9-1-1 Example: APT 4  NG9-1-1 Example: SW CORNER OF WAREHOUSE
Complete Landmark Name (LandmkName) NENA	Text (150)	The name by which a prominent feature is publicly known or Vanity address.  Examples: INTERNATIONAL PEACE GARDEN, STATE CAPITOL

Site / Structure Address Points			
Mile Post (Mile_Post) NENA	Text (150)	A distance travelled along a route such as a road or highway, typically indicated by a milepost sign.  Example: Mile Marker 32	
Place Type (Place_Type) NENA	Text (50)	Type of feature identified by the address. Limited to the Location Types listed in the Location Types Registry (IETF RFC4589).  Examples: OFFICE, STORE, SCHOOL, RESIDENCE	
Placement Method (Placement) NENA	Text (25)	The methodology used for placement of the address point.  Examples: Geocoding, Parcel, Property Access, Structure	
Longitude (Long) NENA	Double	The longitude of the record in decimal degrees, carried out to a minimum of six decimal places. A negative sign is used to note that the longitude is measured in degrees west of the Prime Meridian.  Example: -101.001155	
Latitude (Lat) NENA	Double	The latitude of the record in decimal degrees, carried out to a minimum of six decimal places.  Example: 42.012245	
Elevation (Elev) NENA	Short Integer	The height above mean sea level in meters.  Example: 250	
Local ID (LOCAL_ID) ND911	Text (100)	An identifier provided by the GIS source provider for the purpose of linking records back to locally managed data. It is preferable that the GIS record's LOCAL_ID not change over time.	

Site / Structure Address Points		
Address (ADDRESS) ND911	Text (210)	The full address including the address number prefix, address number, address number suffix, prefix modifier, prefix direction, prefix type, street, post type, post direction, post modifier. May differ from the Master Street Address Guide.  Example: 101 N MAIN ST
Source of Record (SOURCE) ND911	Text (75)	The source or provider of the GIS record.  Example: STARK COUNTY 911
Accuracy (ACCURACY) ND911	Text (50)	The estimated horizontal accuracy associated with the record. Use "unknown" if the accuracy is not known.  Examples: submeter, subdecimeter, subcentimeter, unknown
Notes (NOTES) ND911	Text (254)	Notes associated with the record.  Example: RECORD SHOULD BE SPATIALLY ADJUSTED WHEN TIME PERMITS.
MSAG Address (MSAG_ADD) ND911	Text (75)	The full address including the address number, address number suffix and the full street name as defined by the Master Street Address Guide. May differ from the standardized street name.  Examples: 10101 USHY 25, 2501 CORD 13, 110 MAIN ST

# STATES OR EQUIVALENTS

The States or Equivalents layer is a representation of the geographic extent of North Dakota. The layer is represented by **Polygon** geometry and is used for aligning administrative boundaries, PSAP boundaries and other emergency service boundaries.

There are cases where the States or Equivalents boundary may not be coincident with PSAP or emergency responder boundaries. This is particularly true along rivers and streams. Differences occur where the legal description of property may not be the same as the physical features that now divide the land.

The States or Equivalents layer is a layer that is maintained by the North Dakota State Water Commission. For changes associated with the States or Equivalents layer please contact the State Water Commission.

STATES OR EQUIVALENTS DATA MODEL

States or Equivalents		
Field	Data Type	Description
Discrepancy Agency ID (DiscrpAgID) NENA	Text (75)	Agency that receives a Discrepancy Report (DR) and will take responsibility for ensuring discrepancy resolution.  Example: nd.gov, bismarcknd.gov
Date Updated (DateUpdate)  NENA	Date	An Esri Date/Time value that indicates when the record was last modified, specified in Coordinated Universal Time (UTC).  Example: 1/9/2015 3:08:01 PM
Effective Date (Effective)  NENA	Date	An Esri Date/Time value that indicates when the record goes into effect, specified in Coordinated Universal Time (UTC).  Example: 1/9/2015 3:08:01 PM

States or Equivalents		
Expiration Date (Expire)	Date	An Esri Date/Time value that indicates when the record expires, specified in Coordinated Universal Time (UTC).
NENA		Example: 1/9/2015 3:08:01 PM
State NENA Globally Unique ID (StateNGUID) NENA	Text (254)	The NENA Globally Unique ID for each State (or its equivalent) Boundary.  Example: STATE1@ND.GOV
Country (Country) NENA	Text (2)	The name of a country represented by its two-letter ISO 3166-1 English country alpha-2 code elements in capital ASCII letters.  One of: US CA
State (State) NENA	Text (2)	Two alpha-character U.S. State abbreviation as defined by USPS Publication 28, Appendix B.  One of: ND
Source of Record (SOURCE) ND911	Text (75)	The source or provider of the GIS record.  Example: STATE WATER COMMISSION
Notes (NOTES) ND911	Text (254)	Notes associated with the record.  Example: Record should be spatially adjusted when time permits.

# **COUNTIES OR EQUIVALENTS**

The Counties or Equivalents layer is a representation of the geographic extent of each county. The layer is represented by **Polygon** geometry and is used for aligning administrative boundaries, PSAP and other emergency service boundaries.

There are cases where the Counties or Equivalents boundary may not be coincident with PSAP or emergency responder boundaries. This is particularly true along rivers and streams. Differences occur because the legal description of property may not be the same as the physical features that presently divide the land.

The Counties or Equivalents layer is a layer that is maintained by the North Dakota State Water Commission. For changes associated with the County Layer please contact the State Water Commission.

COUNTIES OR EQUIVALENTS DATA MODEL

Counties or Equivalents		
Field	Data Type	Description
Discrepancy Agency ID (DiscrpAgID) NENA	Text (75)	Agency that receives a Discrepancy Report (DR) and will take responsibility for ensuring discrepancy resolution.  Example: nd.gov, bismarcknd.gov
Date Updated (DateUpdate)  NENA	Date	An Esri Date/Time value that indicates when the record was last modified, specified in Coordinated Universal Time (UTC).  Example: 1/9/2015 3:08:01 PM
Effective Date (Effective) NENA	Date	An Esri Date/Time value that indicates when the record goes, specified in Coordinated Universal Time (UTC).  Example: 1/9/2015 3:08:01 PM
Expiration Date (Expire) NENA	Date	An Esri Date/Time value that indicates when the record expires, specified in Coordinated Universal Time (UTC).  Example: 1/9/2015 3:08:01 PM

Counties or Equivalents		
County NENA Globally Unique ID (CntyNGUID) NENA	Text (254)	The NENA Globally Unique ID for each County (or its equivalent) Boundary.  Example: CAVALIER@ND.GOV
Country (Country) NENA	Text (2)	The name of a country represented by its two-letter ISO 3166-1 English country alpha-2 code elements in capital ASCII letters.  One of: US CA
State (State) NENA	Text (2)	Two alpha-character U.S. State abbreviation as defined by USPS Publication 28, Appendix B.  One of: ND
County (County) NENA	Text (75)	The name of a County or County-equivalent where the address is located.  Example: SHERIDAN COUNTY
Source of Record (SOURCE) ND911	Text (75)	The source or provider of the GIS record.  Example: STATE WATER COMMISSION
Notes (NOTES) ND911	Text (254)	Notes associated with the record.  Example: Record should be spatially adjusted when time permits.

### INCORPORATED MUNICIPALITY BOUNDARY

The Incorporated Municipality Boundary layer is a representation of the geographic extent of each incorporated municipality in North Dakota. The layer is represented by **Polygon** geometry and is used for aligning PSAP and other emergency service boundaries.

There are cases where the Incorporated Municipality Boundary may not be coincident with PSAP or emergency responder boundaries. This is particularly true along rivers and streams. Differences occur because the legal description of property may not be the same as the physical features that now divide the land.

The Incorporated Municipality Boundary layer is a layer that is maintained by the North Dakota Department of Transportation in cooperation with the Office of State Tax Commissioner. For changes associated with the Incorporated Municipality Boundary Layer please supply changes to the Office of State Tax Commissioner prior to a change taking effect.

INCORPORATED MUNICIPALITY BOUNDARY DATA MODEL

Incorporated Municipal Boundary		
Field	Data Type	Description
Discrepancy Agency	Text (75)	Agency that receives a Discrepancy Report (DR) and will
ID		take responsibility for ensuring discrepancy resolution.
(DiscrpAgID)		Example: nd.gov, bismarcknd.gov
NENA		
Date Updated	Date	An Esri Date/Time value that indicates when the record
(DateUpdate)		was last modified, specified in Coordinated Universal Time (UTC).
NENA		Example: 1/9/2015 3:08:01 PM
	_	
Effective Date	Date	An Esri Date/Time value that indicates when the record
(Effective)		goes into effect, specified in Coordinated Universal Time (UTC).
NENA		Example: 1/9/2015 3:08:01 PM

I	Incorporated Municipal Boundary		
Expiration Date (Expire) NENA	Date	A, Esri Date/Time value that indicates when the record expires, specified in Coordinated Universal Time (UTC).  Example: 1/9/2015 3:08:01 PM	
Incorporated Municipality NENA Globally Unique ID (IncM_NGUID) NENA	Text (254)	The NENA Globally Unique ID for each Incorporated Municipality Boundary.  Example: FARGO1@ND.GOV	
Country (Country) NENA	Text (2)	The name of a country represented by its two-letter ISO 3166-1 English country alpha-2 code elements in capital ASCII letters.  One of: US CA	
State (State) NENA	Text (2)	Two alpha-character U.S. State abbreviation as defined by USPS Publication 28, Appendix B.  One of: ND	
County (County) NENA	Text (75)	The name of a County or County-equivalent where the address is located.  Example: SHERIDAN COUNTY	
Incorporated Municipality (Inc_Muni) NENA	Text (100)	The name of the Incorporated Municipality or other general-purpose local governmental unit (if any) where the address is located.  Example: FARGO	
Source of Record (SOURCE) ND911	Text (75)	The source or provider of the GIS record.  Example: CITY OF FARGO	

Incorporated Municipal Boundary		
Notes (NOTES)	Text (254)	Notes associated with the record.
(NOTES)		Example: Record should be spatially adjusted when time
ND911		permits.

### **PSAP BOUNDARY**

The Public Safety Answering Point (PSAP) Boundary is a representation of the geographic extent of each PSAP's dispatch jurisdiction. The layer is represented by **Polygon** geometry and is used for determining which PSAP a 9-1-1 call should be delivered to.

PSAP boundaries will typically be defined by administrative boundaries but may also be delineated by other physical features such as a river, stream, lake, etc. The extent of the PSAP boundaries in the state should be developed in cooperation with neighboring states and provinces to ensure that emergency service coverage is contiguous.

The PSAP layer is a layer that is maintained by the North Dakota Association of Counties in cooperation with the Department of Emergency Services. For changes associated with the PSAP Layer please contact the North Dakota Association of Counties.

### PSAP BOUNDARY DATA MODEL

PSAP Boundary		
Field	Data Type	Description
Discrepancy Agency ID (DiscrpAgID) NENA	Text (75)	Agency that receives a Discrepancy Report (DR) and will take responsibility for ensuring discrepancy resolution.  Example: nd.gov, bismarcknd.gov
Date Updated (DateUpdate)  NENA	Date	An Esri Date/Time value that indicates when the record was last modified, specified in Coordinated Universal Time (UTC).  Example: 1/9/2015 3:08:01 PM
Effective Date (Effective) NENA	Date	An Esri Date/Time value that indicates when the record goes into effect, specified in Coordinated Universal Time (UTC).  Example: 1/9/2015 3:08:01 PM

	PSAP Boundary		
Expiration Date (Expire) NENA	Date	An Esri Date/Time value that indicates when the record expires, specified in Coordinated Universal Time (UTC).  Example: 1/9/2015 3:08:01 PM	
Emergency Service Boundary NENA Globally Unique ID (ES_NGUID) NENA	Text (254)	The NENA Globally Unique ID for each Emergency Service Boundary and PSAP Boundary.  Example: PSAP1@ND.GOV	
State (STATE) NENA	Text (2)	Two alpha-character U.S. State abbreviation as defined by USPS Publication 28, Appendix B.  One of: ND SD MT MN MB SK	
Agency ID (Agency_ID) NENA	Text (100)	A domain name which is used to uniquely identify any agency.  Example: stark.nd.gov	
Service URI (ServiceURI) NENA	Text (254)	The uniform resource identifier used for contacting the PSAP. Multiple URIs may be provided by delimiting each entry with a vertical bar (aka a pipe delimiter).  Examples: sip:sos@stark.nd.gov xmpp:sos@stark.nd.gov	
Service URN (ServiceURN) NENA	Text (50)	The uniform resource name used for the PSAP service.  Examples: urn:service:sos, urn:nena:service:sos	

PSAP Boundary		
Service Number (ServiceNum) NENA	Text (15)	The 10 digit emergency services number appropriate for the location.  Example: 911
Agency vCard (AVcard_URI) NENA	Text (254)	URI for the vCARD associated with the PSAP in vCard 2.1 format.  Example: https://stark.nd.gov/psap.vcf
Display Name (DsplayName) NENA	Text (60)	The name of the PSAP.  Example: RED RIVER REGIONAL DISPATCH CENTER
Source of Record (SOURCE) ND911	Text (75)	The source or provider of the GIS record.  Example: STARK COUNTY
Notes (NOTES) ND911	Text (254)	Notes associated with the record.  Example: Record should be spatially adjusted when time permits.

## LAW ENFORCEMENT BOUNDARY

The Law Enforcement Boundary is a representation of the geographic extent of each law enforcement's jurisdiction in North Dakota. The layer is represented by **Polygon** geometry and is used for determining which law enforcement agency is associated with a 9-1-1 incident location. Contact information and secondary call routing information may also be gathered from the layer.

The Law Enforcement Boundary layer is a layer that is maintained by the Department of Emergency Services in cooperation with local government. For changes associated with the Law Enforcement Boundary Layer please contact the Department of Emergency Services

LAW ENFORCEMENT BOUNDARY DATA MODEL

Law Enforcement Boundary		
Field	Data Type	Description
Discrepancy Agency	Text (75)	Agency that receives a Discrepancy Report (DR) and will
ID		take responsibility for ensuring discrepancy resolution.
(DiscrpAgID)		Example: nd.gov, bismarcknd.gov
NENA		
Date Updated	Date	An Esri Date/Time value that indicates when the record
(DateUpdate)		was last modified, specified in Coordinated Universal
		Time (UTC).
NENA		Example: 1/9/2015 3:08:01 PM
Effective Date	Date	An Esri Date/Time value that indicates when the record
(Effective)		goes into effect, specified in Coordinated Universal Time (UTC).
NENA		
		Example: 1/9/2015 3:08:01 PM
Expiration Date	Date	An Esri Date/Time value that indicates when the record
(Expire)		expires, specified in Coordinated Universal Time (UTC)
NENA		Example: 1/9/2015 3:08:01 PM

Law Enforcement Boundary		
Emergency Service Boundary NENA Globally Unique ID (ES_NGUID) NENA	Text (254)	The NENA Globally Unique ID for each Emergency Service Boundary and PSAP Boundary.  Example: LAW1@ND.GOV
State (State) NENA	Text (2)	Two alpha-character U.S. State abbreviation as defined by USPS Publication 28, Appendix B.  One of: ND SD MT MN MB SK
Agency ID (Agency_ID) NENA	Text (100)	A domain name which is used to uniquely identify any agency.  Example: responder.stark.nd.gov
Service URI (ServiceURI) NENA	Text (254)	The uniform resource identifier used for contacting the PSAP. Multiple URIs may be provided by delimiting each entry with a vertical bar (aka a pipe delimiter).  Examples: sip:sos@stark.nd.gov xmpp:sos@stark.nd.gov
Service URN (ServiceURN) NENA	Text (50)	The uniform resource name used for the responder service.  Example: urn:service:sos.police
Service Number (ServiceNum) NENA	Text (15)	The 10 digit emergency services number associated with the responder.  Example: 701123XXXX

Law Enforcement Boundary		
Agency vCard URI (AVcard_URI)	Text (254)	URI for the vCARD associated with the responder in vCard 2.1 format.
NENA		Example: https://stark.nd.gov/responder.vcf
Display Name	Text (60)	The name of the responder.
(DsplayName) NENA		Example: MINOT CITY POLICE
Source of Record (SOURCE) ND911	Text (75)	The source or provider of the GIS record.  Example: WARD COUNTY
Notes (NOTES) ND911	Text (254)	Notes associated with the record.  Example: Record should be spatially adjusted when time permits.

### AMBULANCE BOUNDARY

The Ambulance Boundary is a representation of the geographic extent of each licensed ambulance service area in North Dakota. The layer is represented by **Polygon** geometry and is used for determining which ambulance service is associated with a 9-1-1 incident location. Contact information and secondary call routing information may also be gathered from the layer.

The Ambulance Boundary layer is a layer that is maintained by the Department of Emergency Services in cooperation with local government. For changes associated with the Ambulance Boundary Layer please contact the Department of Emergency Services.

AMBULANCE BOUNDARY DATA MODEL

Ambulance Boundary		
Field	Data Type	Description
Discrepancy Agency ID (DiscrpAgID) NENA	Text (75)	Agency that receives a Discrepancy Report (DR) and will take responsibility for ensuring discrepancy resolution.  Example: nd.gov, bismarcknd.gov
Date Updated (DateUpdate)  NENA	Date	An Esri Date/Time value that indicates when the record was last modified, specified in Coordinated Universal Time (UTC).  Example: 1/9/2015 3:08:01 PM
Effective Date (Effective) NENA	Date	An Esri Date/Time value that indicates when the record goes into effect, specified in Coordinated Universal Time (UTC).  Example: 1/9/2015 3:08:01 PM
Expiration Date (Expire) NENA	Date	An Esri Date/Time value that indicates when the record expires, specified in Coordinated Universal Time (UTC).  Example: 1/9/2015 3:08:01 PM

Ambulance Boundary		
Emergency Service Boundary NENA Globally Unique ID (ES_NGUID) NENA	Text (254)	The NENA Globally Unique ID for each Emergency Service Boundary and PSAP Boundary.  Example: EMS1@ND.GOV
State (State) NENA	Text (2)	Two alpha-character U.S. State abbreviation as defined by USPS Publication 28, Appendix B.  One of:  ND SD MT MN MB SK
Agency ID (Agency_ID) NENA	Text (100)	A domain name which is used to uniquely identify any agency.  Example: responder.stark.nd.gov
Service URI (ServiceURI) NENA	Text (254)	The uniform resource identifier used for contacting the PSAP. Multiple URIs may be provided by delimiting each entry with a vertical bar (aka a pipe delimiter).  Examples: sip:sos@stark.nd.gov xmpp:sos@stark.nd.gov
Service URN (ServiceURN) NENA	Text (50)	The uniform resource name used for the responder service.  Example: urn:service:sos.ambulance
Service Number (ServiceNum) NENA	Text (15)	The 10 digit emergency services number associated with the responder.  Example: 701123XXXX

Ambulance Boundary		
Agency vCard	Text (254)	URI for the vCARD associated with the responder in
(AVcard_URI)		vCard 2.1 format.
NENA		Example: https://stark.nd.gov/responder.vcf
Display Name	Text (60)	The name of the responder.
(DsplayName)		Example: KIDDER COUNTY EMS, METRO AREA
NENA		AMBULANCE EMS
Source of Record	Text (75)	The source or provider of the GIS record.
(SOURCE)		Example: BURLEIGH COUNTY
ND911		
Notes	Text (254)	Notes associated with the record.
(NOTES)		Example: Record should be spatially adjusted when time
ND911		permits.

### FIRE BOUNDARY

The Fire Boundary is a representation of the geographic extent of each fire department's service area in North Dakota. The layer is represented by **Polygon** geometry and is used for determining which fire department is associated with a 9-1-1 incident location. Contact information and secondary call routing information may also be gathered from the layer.

The Fire Boundary layer is a layer that is maintained by the Department of Emergency Services in cooperation with local government. For changes associated with the Fire Boundary Layer please contact the Department of Emergency Services.

FIRE BOUNDARY DATA MODEL

Fire Boundary		
Field	Data Type	Description
Discrepancy Agency ID (DiscrpAgID) NENA	Text (75)	Agency that receives a Discrepancy Report (DR) and will take responsibility for ensuring discrepancy resolution.  Example: nd.gov, bismarcknd.gov
Date Updated (DateUpdate)  NENA	Date	An Esri Date/Time value that indicates when the record was last modified, specified in Coordinated Universal Time (UTC).  Example: 1/9/2015 3:08:01 PM
Effective Date (Effective) NENA	Date	An Esri Date/Time value that indicates when the record goes into effect, specified in Coordinated Universal Time (UTC).  Example: 1/9/2015 3:08:01 PM
Expiration Date (Expire) NENA	Date	An Esri Date/Time value that indicates when the record expires, specified in Coordinated Universal Time (UTC).  Example: 1/9/2015 3:08:01 PM

	Fire Boundary		
Emergency Service Boundary NENA Globally Unique ID (ES_NGUID) NENA	Text (254)	The NENA Globally Unique ID for each Emergency Service Boundary and PSAP Boundary.  Example: FIRE1@ND.GOV	
State (State) NENA	Text (2)	Two alpha-character U.S. State abbreviation as defined by USPS Publication 28, Appendix B.  One of: ND SD MT MN MB SK	
Agency ID (Agency_ID) NENA	Text (100)	A domain name which is used to uniquely identify any agency.  Example: responder.stark.nd.gov	
Service URI (ServiceURI) NENA	Text (254)	The uniform resource identifier used for contacting the PSAP. Multiple URIs may be provided by delimiting each entry with a vertical bar (aka a pipe delimiter).  Examples: sip:sos@stark.nd.gov xmpp:sos@stark.nd.gov	
Service URN (ServiceURN) NENA	Text (50)	The uniform resource name used for the responder service.  Example: urn:service:sos.fire	
Service Number (ServiceNum) NENA	Text (15)	The 10 digit emergency services number associated with the responder.  Example: 701123XXXX	

Fire Boundary		
Agency vCard (AVcard_URI)	Text (254)	URI for the vCARD associated with the responder in vCard 2.1 format.
NENA		Example: https://stark.nd.gov/responder.vcf
Display Name (DsplayName) NENA	Text (60)	The name of the responder  Example: BURLEIGH COUNTY FIRE
Source of Record (SOURCE) ND911	Text (75)	The source or provider of the GIS record.  Example: BURLEIGH COUNTY
Notes (NOTES) ND911	Text (254)	Notes associated with the record.  Example: Record should be spatially adjusted when time permits.

## **EMERGENCY SERVICE ZONE BOUNDARY**

The Emergency Service Zone Boundary is a layer associated with E9-1-1 systems and used during the transition from E9-1-1 to NG9-1-1. It is a representation of the combined Law, Fire and EMS agencies associated with a given geographic area. The layer is represented by **Polygon** geometry and is used for determining which Law, Fire and EMS agencies are associated with a 9-1-1 incident location in an E9-1-1 system.

The Emergency Service Zone Boundary layer is a layer that is maintained by the state's 911 system service provider in cooperation with state, tribal and other local government agencies. For changes associated with the Emergency Service Zone Boundary layer please contact the North Dakota Association of Counties.

EMERGENCY SERVICE ZONE BOUNDARY DATA MODEL

Emergency Service Zone Boundary		
Field	Data Type	Description
Discrepancy Agency ID (DiscrpAgID) NENA	Text (75)	Agency that receives a Discrepancy Report (DR) and will take responsibility for ensuring discrepancy resolution.  Example: des.nd.gov
Date Updated (DateUpdate)  NENA	Date	An Esri Date/Time value that indicates when the record was last modified, specified in Coordinated Universal Time (UTC).  Example: 1/9/2015 3:08:01 PM
Effective Date (Effective) NENA	Date	An Esri Date/Time value that indicates when the record goes into effect, specified in Coordinated Universal Time (UTC).  Example: 1/9/2015 3:08:01 PM
Expiration Date (Expire) NENA	Date	An Esri Date/Time value that indicates when the record expires, specified in Coordinated Universal Time (UTC).  Example: 1/9/2015 3:08:01 PM

Emergency Service Zone Boundary		
Emergency Service Boundary NENA Globally Unique ID	Text (254)	The NENA Globally Unique ID for each Emergency Service Boundary.
(ES_NGUID) NENA		Example: ESZ3475@ND.GOV
PSAP Agency ID (Agency_ID) NENA	Text (100)	A domain name which is used to uniquely identify any agency. This Agency ID should be based on the PSAP associated with the ESZ/ESN and should be consistent with the Agency ID in the PSAP Boundary layer.
State (State)	Text (2)	Two alpha-character U.S. State abbreviation as defined by USPS Publication 28, Appendix B.
NENA		One of: ND SD MT MN MB SK
Emergency Service Number (ESN) ND911	Text (5)	Emergency Service Number associated with the location of the address as identified by the MSAG. All ESNs should be represented with 5 numeric characters.  Examples: 00250, 12345
Law Name (LAW_NAME)	Text (60)	The name of the default law enforcement responder.
ND911 Fire Name (FIRE_NAME)	Text (60)	Example: BISMARCK CITY POLICE  The name of the default fire department responder.
ND911		Example: MERCER COUNTY FIRE

Emergency Service Zone Boundary		
EMS Name (EMS_NAME)	Text (60)	The name of the default emergency medical service responder.
ND911		Example: KIDDER COUNTY EMS, METRO AREA AMBULANCE EMS
PSAP Name (PSAP_NAME) ND911	Text (60)	The name of the PSAP associated with the ESZ  Example: RED RIVER REGIONAL DISPATCH CENTER
MSAG System (MSAG_SYS) ND911	Text (20)	The code associated with the MSAG system. This value determines which agencies are allowed to make changes to the ESN associated with the Emergency Service Zone Boundary.  Example: DKCOND
Source of Record (SOURCE) ND911	Text (75)	The source or provider of the GIS record.  Example: BURLEIGH COUNTY
Notes (NOTES) ND911	Text (254)	Notes associated with the record.  Example: Record should be spatially adjusted when time permits.

## **EMERGENCY SERVICE POINT**

The Emergency Service Point is a layer used to represent the primary dispatch location(s) of first responders. Emergency services primarily include representations of Law, Fire, EMS agencies associated with a given geographic area. The layer is represented by **Point** geometry and is used, primarily, for determining the proximity between an incident location and emergency services.

The Emergency Service Point layer is a layer that is maintained by the Department of Emergency Services in cooperation with state, tribal and other local government agencies. For changes associated with the Emergency Service Point layer please contact the Department of Emergency Services.

EMERGENCY SERVICE POINT DATA MODEL

Emergency Service Point		
Field	Data Type	Description
Discrepancy Agency ID (DiscrpAgID) ND911	Text (75)	Agency that receives a Discrepancy Report (DR) and will take responsibility for ensuring discrepancy resolution.  Example: des.nd.gov
Date Updated (DateUpdate)  ND911	Date	An Esri Date/Time value that indicates when the record was last modified, specified in Coordinated Universal Time (UTC).  Example: 1/9/2015 3:08:01 PM
Effective Date (Effective)  ND911	Date	An Esri Date/Time value that indicates when the record goes into effect, specified in Coordinated Universal Time (UTC).  Example: 1/9/2015 3:08:01 PM
Expiration Date (Expire)  ND911	Date	An Esri Date/Time value that indicates when the record expires, specified in Coordinated Universal Time (UTC).  Example: 1/9/2015 3:08:01 PM

Emergency Service Point		
Emergency Service Point Globally Unique ID (ES_NGUID) ND911	Text (254)	The NENA Globally Unique ID for each Emergency Service Point.  Example: ES3475@ND.GOV
Agency ID (Agency_ID)  ND911	Text (100)	A domain name which is used to uniquely identify any agency.
State (State) ND911	Text (2)	Two alpha-character U.S. State abbreviation as defined by USPS Publication 28, Appendix B.  One of:  ND  SD  MT  MN  MB  SK
Address (ADDRESS) ND911	Text (210)	The full address including the address number prefix, address number, address number suffix, prefix modifier, prefix direction, prefix type, street, post type, post direction, post modifier. May differ from the Master Street Address Guide.  Example: 101 N MAIN ST
Postal Community Name (Post_Comm) ND911	Text (40)	The city name for the ZIP code of an address as given in the USPS City State file, or its Canadian equivalent.  Example: BISMARCK

Emergency Service Point		
Emergency Service	Text (60)	The name of the emergency service. This name should be consistent with the corresponding name on the
(NAME)		emergency service polygon.
ND911		Example: CASS COUNTY SHERIFF
Source of Record	Text (75)	The source or provider of the GIS record.
(SOURCE)		Example: BURLEIGH COUNTY
ND911		
Notes	Text (254)	Notes associated with the record.
(NOTES)		Example: Record should be spatially adjusted when time
ND911		permits.

## APPENDIX A – MODIFIED BURKLE ADDRESSING SYSTEM

The text below was taken directly from the Burkle-Kostelecky Addressing Q&A page of the North Dakota 9-1-1 Association website<sup>7</sup>.

"The state of North Dakota was divided into four quadrants based on Township and Range line. The west-east Centerline of North Dakota is between Township T-145 & T-146 which is near State highway 200. This center line is called Main Street. The South-North Center line of North Dakota is between Range 77 & 78 located twelve miles east of Bismarck, this is called Center Avenue. Farms have been assigned house numbers relative to these reference lines. House numbers are assigned at 1/50 mile intervals. Each mile can be assigned house numbers 0 through 99, with odd numbers on the North & West side of road and even numbers on the South & East side of road. Streets & Avenues are numbered at increments of one mile (See maps for example). Because the rural address system uses a base of one mile, subdivisions have to have a smaller base, the base for subdivisions is 1/100 of a mile. We can also name or identify a road that originates between section lines by adding a letter designation. Ex. 100M AVE would be on the half section line between 100TH AVE and 101ST AVE. 30F ST would be on the quarter section line between 30TH and 31ST ST."

When the Burkle Addressing System was developed it provided a method for addressing roads, primarily, along section lines (See Figure A1). The "Modified" portion of the Modified Burkle Addressing System took the addressing system one step further and provided a method for addressing roads that were within a given section, such as a rural subdivision (See Figures A2-A5).

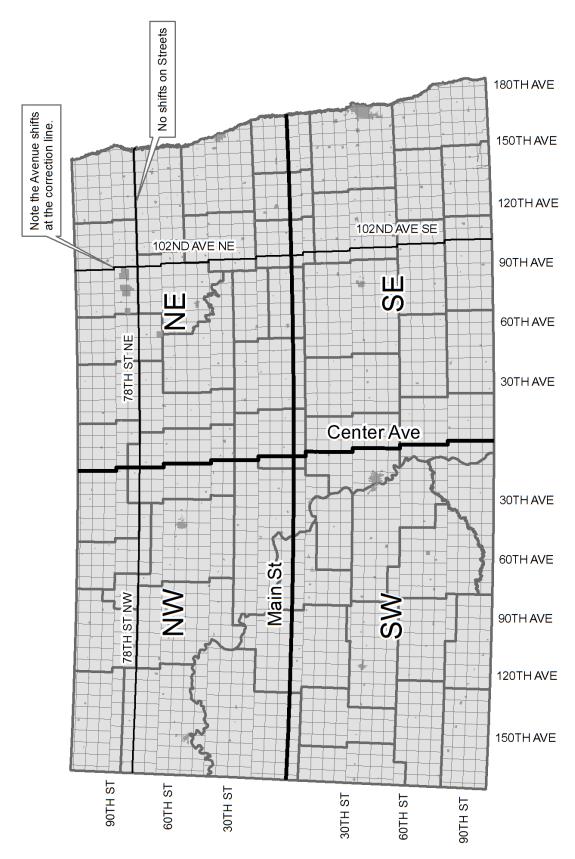


Figure A1

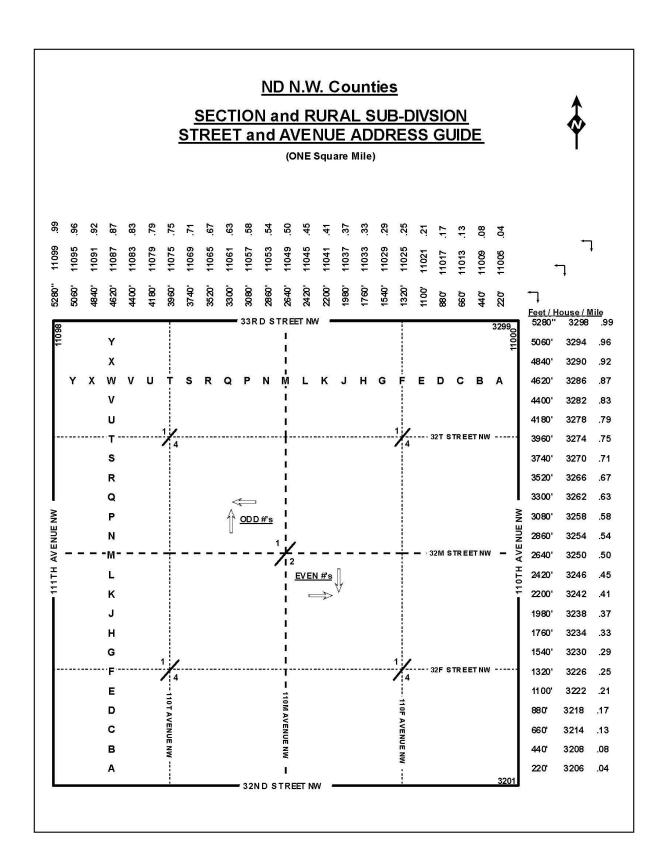


Figure A2

#### ND N.E. Counties **SECTION and RURAL SUB-DIVSION** STREET and AVENUE ADDRESS GUIDE (ONE Square Mile) 11017 11021 1100 Feet / House / Mile 5280" 3298 . Υ 50601 3294 4840 X 3290 .92 W 46201 3286 .87 4400' 3282 .83 4180 3278 .79 ---- 32T STREET NE ---3960 3274 .75 S 3740' 3270 .71 R 35201 3266 .67 3300' 3262 .63 3080 ODD#'s 3258 .58 11 OTH AVENUE NE 2860' 3254 .54 - 32M STREETNE 2640' 3250 .50 EVEN#s 2420' 3246 .45 Κ 2200' 3242 .41 1980' 3238 .37 1760' 3234 Н .33 1540' 3230 .29 --- 32F STREET NE 1320' 3226 .25 Ε 11 00' 3222 .21 110T AVENUE NE D 880' 3218 .17 C 660 3214 .13 В 440 3208 .08 220 3206 .04 32ND STREET NE

Figure A3

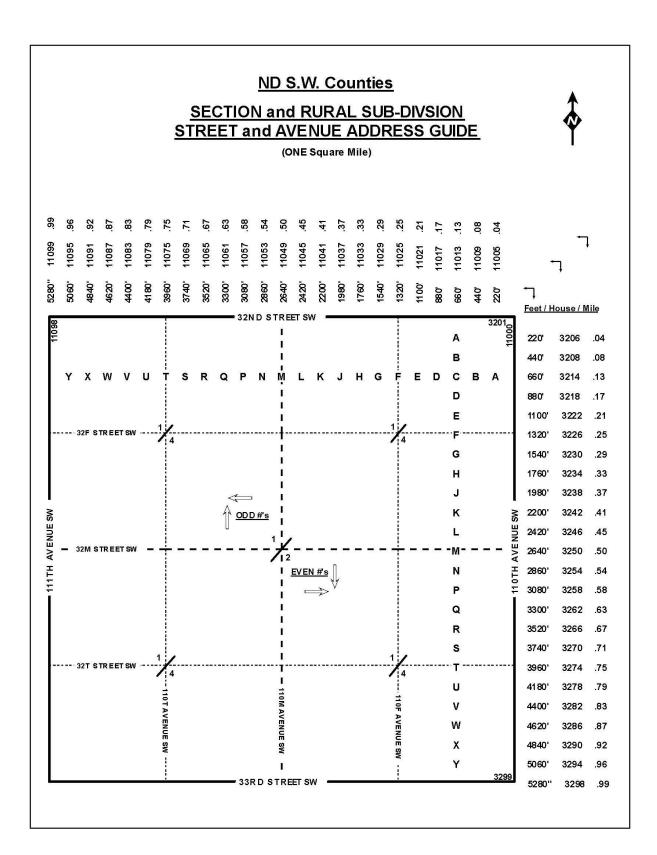


Figure A4

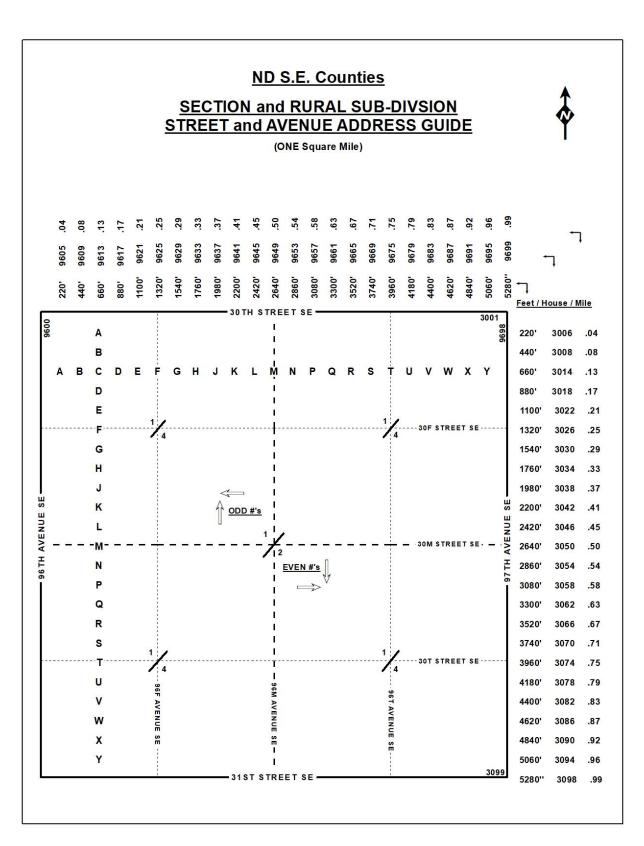


Figure A5

# REFERENCES

- 1. NENA Standard for NG9-1-1 GIS Data Model, National Emergency Number Association, NENA-STA-006.1.1-2020
- 2. NENA Civic Location Data Exchange Format (CLDXF) Standard, National Emergency Number Association, NENA-STA-004
- 3. NENA Standards for the Provisioning and Maintenance of GIS data to ECRF/LVF, National Emergency Number Association, NENA-STA-005
- 4. Wolfram|Alpha. http://www.wolframalpha.com/input/?i=ordinal (access January 14, 2013).
- 5. National Standard for Spatial Data Accuracy. <a href="https://www.fgdc.gov/standards/projects/FGDC-standards-projects/accuracy/part3/chapter3">https://www.fgdc.gov/standards/projects/FGDC-standards-projects/accuracy/part3/chapter3</a> (FGDC-STD-007.3-1998)
- 6. Klyne, G. and Newman C., "Date and Time on the Internet: Timestamps", RFC 3339, July 2002.
- 7. ND 911 Association. <a href="https://docs.wixstatic.com/ugd/ae755a\_630cbd47dad9405681215bd780b950f3.pdf">https://docs.wixstatic.com/ugd/ae755a\_630cbd47dad9405681215bd780b950f3.pdf</a> (access February 11, 2014).