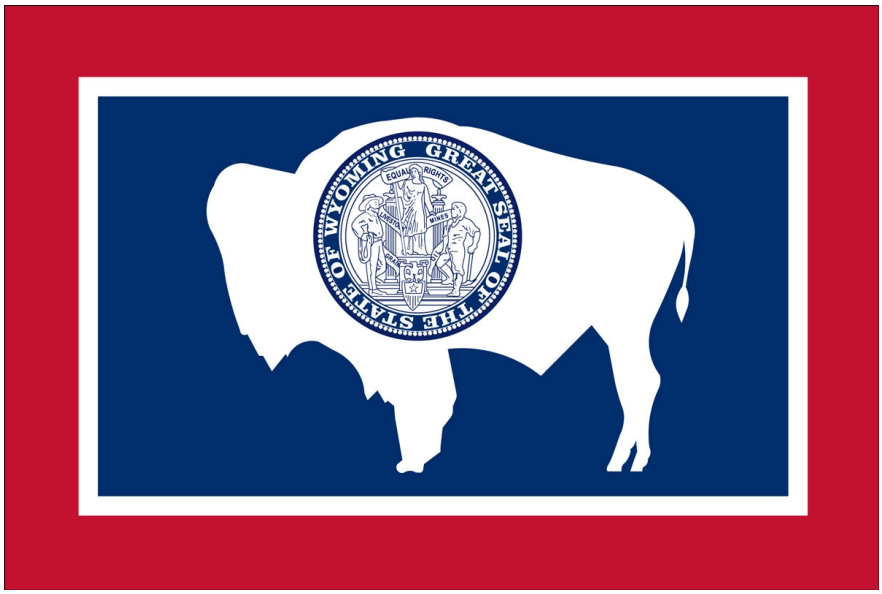
Wyoming NG9-1-1

GIS Data Model

Version 1.0

Approved by the Public Safety Communications Commission 6/9/2023



Prepared by the GIS Committee on behalf of the Wyoming 911 Coordinating Council

Document Change Log

Date	Author	Change	Reason
3/1/2023	GIS Committee	Draft Version 1.0 created based on *Kansas NG 911 Data Model V2.2*	Version 1.0
8/9/2023	PSCC	Adoption of the Wyoming GIS Data Model V1.0	Formal Adoption of the Document

For reference and updates to NENA, Most Recent Document
NENA Standard for NG9-1-1 GIS Data Model (NENA-STA-006.2-2022)
https://cdn.ymaws.com/www.nena.org/resource/resmgr/standards/nena-sta-006.2-2022_ng9-1-1_.pdf

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1 Introduction

In NG9-1-1, emergency call routing occurs through GIS data aggregated into regional or statewide datasets. There is no better way to ensure the accuracy of the data than through local stewardship: cities and counties maintaining the data for their area. Getting local data aggregated into a single large dataset for call routing requires some consistency in attribution and geometry. In an effort to assure the successful creation of the aggregated datasets necessary to support NG9-1-1's GIS-based call routing, the GIS Committee of the Wyoming 911 Coordinating Council has assembled this document to provide guidance for the remediation and maintenance of local GIS data in Wyoming.

The March 2014 draft of the "NENA Standard for NG9-1-1 GIS Data Model" was used as the authoritative basis for this document. While the NENA Standard focuses primarily on feature attributes, basic guidance for feature geometry was developed and included in this document to help ensure consistency across the various entities maintaining the data. These guidelines were developed with the proper functioning of an aggregated call routing dataset in mind.

1.1 Document Conventions and Terminology

The terms "shall", "must" and "required" are used throughout this document to indicate required parameters and to differentiate from those parameters that are recommendations. Recommendations are identified by the words "desired", "preferred" and "recommended".

The term "data steward" is used throughout this document to indicate the person or persons responsible for supervising maintenance on the GIS data for an agency.

The term "data maintainer" is used throughout this document to indicate the person or persons responsible for performing maintenance on the GIS data for an agency.

The term "data aggregator" is used throughout this document to indicate the person or persons responsible for incorporating local datasets into the aggregated state-wide dataset.

1.2 Authoritative Data

The Authoritative Boundary layer produced by each data steward represents the area for which all of the data submitted by that data steward is authoritative, often a city or county boundary. The features of remaining data layers shall only be accepted from the data steward within that Authoritative Boundary. All features intended for submission must be inside that boundary.

1.3 Data Layer and Attribute Standards and Conventions

1.3.1 Inclusion of Attributes

Many of the attributes listed in NENA Standard will be maintained by the data aggregator rather than the local data steward. Those attributes have not been included in this guidance. Additionally, some fields have been added to the list required by the NENA Standard. These fields are categorized in the attribute descriptions as "Fields Added for Wyoming" and are intended to both aid in the data aggregation process and enhance the effectiveness of the aggregated data.

All attributes listed in the attribute tables of this standard shall be included in the local dataset, even if they are unpopulated. It is strongly recommended that the attributes be kept in the same order presented in this document, unless the data steward has a business reason for changing the order. Data stewards may add

any other attributes they find necessary for their own business
processes. The attributes in this standard represent the minimum required set, not an exclusive list.

1.3.2 Field Names

A field name has been assigned to each attribute in the standard. These field names were held to eight characters or less in case conversion to shapefile is ever necessary. The use of these field names is required.

1.3.3 Letter Case

All attribute values shall be stored in upper case characters, unless the attribute description in this document specifies otherwise. The primary exceptions to this recommendation are the [LABEL], [ADDURI], and [UPDATEBY] fields which may be in any case that fits the data steward's needs.

1.3.4 Unique Identifiers

The attribute table for each data layer includes a field for a unique identifier within the local dataset. The data aggregator will combine each of these unique identifier fields with the value in the [DiscrpAgID] field to create the unique identifier in the aggregated dataset required by NENA. Data stewards may use any type of unique identifier they choose: sequential numbers; unique names; creation date and time; or any other format fitting in their business processes. However, data stewards are required to ensure their chosen identifier is unique for each record in the data layer.

1.3.5 Effective and Expiration Dates

The Effective and Expiration dates on data layers are meant to allow data stewards who know a change is coming to have both the current and the future geometry and attribution submitted to the aggregated dataset. For example, an annexation of land to a municipality may require edits to nearly every layer the data steward is responsible for. If that annexation is scheduled to take effect on July 1, the data steward can set records showing the current geometry and attributes to expire on July 1 and records showing the new geometry and attributes to be effective July 1. There are two major benefits to this. First, the NG9-1-1 system will be immediately accurate to the legal boundary both before and after the change goes into effect. Second, the data steward can begin the data editing process as soon as they are aware of the coming change and does not have to rush a new data set to the aggregator on a specific day.

If a data steward does choose to take advantage of this method of maintenance, the Expiration Date must be populated on the retiring feature, and it must be equal to the Effective Date of the new feature.

1.3.6 Domains

Many attributes have a specific list of valid values (a domain) assigned in the NENA Standard or the Wyoming NG9-1-1 Data Model. Those fields shall only be populated with values from the given domain in order to facilitate data exchange in the NG911 system. If no value exists for the attribute, it may be left blank or NULL. The full listing of domains is available as a spreadsheet that can be downloaded along with the file geodatabase templates from the WY 911 Coordinating Council website.

1.3.7 Mandatory/Conditional/Optional

In the NENA Standard, attributes are tagged as **M**andatory (**M**), **C**onditional (**C**), or **O**ptional (**O**). That convention has been kept throughout this document.

- **Mandatory** implies the data field must be populated
- **Conditional** implies that if an attribute value exists for a given feature, it must be populated. If no value exists for a given feature, the data field is left blank unless other guidance is given.

- **Optional** implies the data field may or may not be populated.

1.3.8 Attribute Types

Attribute types are listed as per the NENA standard. The types are defined as:

- **A** – Alphanumeric (any combination of upper and lower case letters from A to Z and/or any number from 0 to 9). Example: Text fields in ESRI feature classes and shapefiles. (A = P, E, U, types used in NENA)
- **D** – Date and time. The field type shall be specifically chosen for storing date and time data Example: Date fields in ESRI geodatabase feature classes and shapefiles. – *Note: NENA requires the ISO 8601 date/time format with time zone information. Many GIS applications cannot easily produce this particular format. Local data stewards shall store date attributes in the more common format, and the attributes will be converted in the state-wide dataset.*
- **I** - Integer (consisting of whole numbers only) Example: In ESRI geodatabase feature classes and shapefiles, these shall be Short Integer or Long Integer fields. Note that address number fields must be Long Integer fields.
- **F** – Floating (decimal) Example: In ESRI geodatabase feature classes and shapefiles, these shall be Double fields.

1.3.9 Data Layer Names

Data layers intended for submission shall be named according to the following guidelines. Data layers with different names will not be included in quality assurance tests or aggregated into statewide datasets. See NENA Document for updates on Required, Strongly Recommended and Recommended layers.

- Road Centerline layer: RoadCenterline; Required
- Address Point layer: AddressPoints ; Required
- PSAP Boundary layer: ESB_PSAP; Required
- Sheriff/Police Department Boundary layer: ESB_LAW; Required
- EMS Department boundary layer: ESB_EMS; Required
- Fire Department boundary layer: ESB_FIRE; Required
- Authoritative Boundary layer: AuthoritativeBoundary; Required
- County boundary layer: CountyBoundary; Required
- Emergency Service Zones: ESZ; Required

- Road Alias table: RoadAlias; Strongly Recommended
- Combined ESB layer: ESB; Strongly Recommended
- City limit boundary layer: MunicipalBoundary; Strongly Recommended
- Other ESB layers are named as the Data Steward wishes. Only the “ESB_” prefix is required

- Fire Hydrant layer: HYDRANTS; Supplemental
- Gate layer: GATES; Supplemental
- Land parcel boundary layer: PARCELS; Supplemental
- Cell Sector Centroid point layer: CELLSECTORS; Supplemental
- Cell Tower Site point layer: CELLSITES; Supplemental
- Utility Service Areas: UT_GAS, UT_ELECTRIC, UT_WATER, UT_SEWER; Supplemental
- Bridges: BRIDGES; Supplemental

1.3.10 Attribute Tables and Descriptions

Each data layer is described in this document with a table listing the attributes followed by a more detailed

attribute description. The tables are formatted with the following information:

- **Attribute**: a recommendation for the attribute field name. These recommended names were selected to be eight characters or less so the full field name would be maintained if the data is ever converted to shapefile format.
- **Description**: basic description of the data field
- **Type:** the required attribute type. Types are A=Text Field; D=Date Field; N=Integer Field
- **Width:** the maximum field width.
- **M/C/O:** whether populating the attribute is mandatory, conditional or optional.

Full attribute descriptions are listed after the table. The descriptions include an explanation of the field along with any required domain of valid values.

1.4 Software and Storage Format Considerations

The Wyoming NG9-1-1 GIS Data Model includes some technical aspects which may impact the choices of software and the data file storage formats used by data stewards. One of these is the requirement that all data meet certain topological standards, such as no overlapping features in a given data layer. Some software vendors limit the ability to test topology to specific license levels. For example, Esri's ArcGIS for Desktop software can only create and test topology at the "Standard" or "Advanced" license levels. The "Basic" license level cannot perform these functions. Similarly, topology rules cannot be applied to shapefiles. The shapefile must be converted to another storage format for topology tests to be run.

1.5 Submission of Data Updates

Updates must be submitted through the Wyoming NG911 Portal in the Wyoming NG911 Template Geodatabase format. To be accepted as a submission, the geodatabase must pass a series of validation tests run inside the Portal. Identical tools to those run in the Portal are included in the Validation Toolset of the NG911 GIS Toolbox so Local Data Stewards or Local Data Maintainers can examine and test their data prior to submission. The most recent copy of the toolbox is available here. The geodatabase must pass all subtests of tools #1 through #5 under the Validation Toolset (to run all checks back to back, choose tool #9). These validation tests check various aspects of the data including but not limited to geodatabase template schema, existence and validity of required field values, feature locations, feature geometries, geocoding compatibility and number of records for submission.

The Validation Tools report issues with the data in two categories: errors and notices. Even one error will prevent a geodatabase from being accepted as a submission; notices do not prevent a geodatabase from being accepted as a submission. After the Validation Tools run, the submitter will receive an email regarding the status of their submission. If any errors were found, the submitter is notified of the issues and the submission can be replaced at any point in the future.

At this point in time the NG911 Portal and toolsets are still in development.

1.6 Changes to the Data Model

A log of significant changes will be kept in the Appendices to allow data stewards familiar with one version of the Wyoming model to quickly locate changes that have happened in the current version.

Changes to the data model are initiated with Change Order Requests (CORs) filed through the Wyoming 911 Coordinating Council Web Portal. Any user of the portal is eligible to submit a COR about any aspect of the NG911 project, including the GIS Data Model. See the Wyoming NG911 GIS Change Management Policy document for more information on the COR process.

1.7 Acknowledgements

The Wyoming 911 Coordinating Council's GIS Committee would like to thank the following organizations for their assistance with the creation of this document:

- The Tennessee Office for Information Resources/GIS Services for the use of portions of the "TIPS GIS Modeling Specifications, Next Generation 9-1-1" in this document
- Alexander Open Systems
- The remediation vendors: Allied Technical Consultants, Inc.; GeoComm; GDR; Kimble Mapping, Inc.; and R&S Digital
- The PSAPs and GIS staffs of the local governments in Wyoming

2 Road Centerlines

Road centerlines represent the estimated centerline of a real world roadway and are used for querying and geocoding of civic addresses, map displays and storage of spatially related attributes for other applications. See NENA Table 4.2 Road Centerlines Layer for NENA Field Names and Descriptions.

2.1 Road Centerline Attribute Table

Road Centerlines Attribute Description M/C/O Type Width				
Field Name	Descriptive Name	M/C/O	Type	Width
DiscrpAgID	Agency that owns record/Data Steward	M	A	100
DateUpdate	Date updated	M	D	-
Effective	Effective Date	O	D	-
Expire	Expiration Date	O	D	-
NGUID	NENA Globally Unique ID	M	A	254
AdNumPre_L	Left Address Number Prefix	C	A	15
AdNumPre_R	Right Address Number Prefix	C	A	15
FromAddr_L	Left From Address	M	N	6
ToAddr_L	Left To Address	M	N	6
FromAddr_R	Right From Address	M	N	6
ToAddr_R	Right To Address	M	N	6
Parity_L	Left Address Range Parity	M	A	1
Parity_R	Right Address Range Parity	M	A	1
St_PreMod	Street Name Pre Modifier	C	A	15

St_PreDir	Street Name Pre Directional	C	A	2
St_PreTyp	Street Name Pre Type	C	A	50
St_PreSep	Street Name Pre Type Separator	C	A	20
St_Name	Street Name	M	A	254
St_PosTyp	Street Name Post Type	C	A	4
St_PosDir	Street Name Post Directional	C	A	2
St_PosMod	Street Name Post Modifier	C	A	25
ESN_L	Left ESN	C	A	5
ESN_R	Right ESN	C	A	5
MSAGComm_L	Left MSAG Community Name	C	A	30
MSAGComm_R	Right MSAG Community Name	C	A	30
State_L	State Left	M	A	2
State_R	State Right	M	A	2
County_L	County Left	M	A	100
County_R	County Right	M	A	100
IncMuni_L	Incorporated Municipality Left	M	A	100
IncMuni_R	Incorporated Municipality Right	M	A	100
UnincCom_L	Unincorporated Community Left	O	A	100
UnincCom_R	Unincorporated Community Right	O	A	100
NbrhdCom_L	Neighborhood Community Left	O	A	100
NbrhdCom_R	Neighborhood Community Right	O	A	100
PostCode_L	Left Postal Code	C	A	5
PostCode_R	Right Postal Code	C	A	5
PostComm_L	Left Postal Community Name	C	A	40
PostComm_R	Right Postal Community Name	C	A	40
RoadClass	Road Class	O	A	15
OneWay	One Way	O	A	2

SpeedLimit	Speed Limit	O	N	3
Valid_L	Validation Left	O	A	1
Valid_R	Validation Right	O	A	1

Additional Fields Added For Wyoming (Not NENA)

UPDATEBY	Person or agency that last updated the record	O	A	50
LABEL	Concatenated Street Name	O	A	121
ELEV_F	Elevation at start node (0,1,2)	O	N	2
ELEV_T	Elevation at end node (0,1,2)	O	N	2
SURFACE	Surface Type	O	A	10
STATUS	Open, Closed, Not Built	O	A	10
TRAVEL	Direction of travel on divided roadways	O	A	20
LRSKEY	Key for WYDOTs LRS	O	A	24
AUTH_L	Authoritative Data Left	O	A	1
AUTH_R	Authoritative Data Right	O	A	1
EXCEPTION	Exception	O	A	20
GEOMSAGL	Left side address range to be used in GeoMSAG	O	A	1
GEOMSAGR	Right side address range to be used in GeoMSAG	O	A	1
SUBMIT	For Submission to Master Repository	O	A	1
NOTES	Notes	O	A	255

2.2 Attribute Descriptions

2.2.1 Identifier and Update Fields

- **[DiscrpAgID] –** The GNIS/INCITS code for the agency responsible for maintenance of the data.
- **[DateUpdate] –** The date of the last update of the record
- **[Effective] –** The date the record is or was scheduled to take effect. For agencies not recording this information previously, the date of January 1, 2014 (20140101) can be used for all currently effective records
- **[Expire] –** The date the record is scheduled to expire. This field shall only be populated if the record

has a defined end date. Example: A road segment being permanently re-routed.
- **[RCL_NGUID] –** The is an identifier used for tracking centerline segments within the local dataset (ex. 4658). NGSEGID can be utilized as a way to link to an alternate road name table.

2.2.2 Administrative Location Fields

- **[State_L] -** The 2-character state abbreviation designated on the Left side of the road segment.
- **[State_R] -** The 2-character state abbreviation designated on the Right side of the road segment.
- **[County_L] –** The designated county area on the Left side of the road segment
- **[County_R] –** The designated county area on the Right side of the road segment.
- **[IncMuni_L] – (Municipality Left) -** 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"
- **[IncMuni_R] – (Municipality Right) -** 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."
- **[UnincCom_L] – (Unincorporated Community Left) -** The name of the unincorporated community where the address is located on the Left side of the road segment.
- **[UnincCom_R] – (Unincorporated Community Right) -** The name of the unincorporated community where the address is located on the Right side of the road segment.

2.2.3 Address Ranges

- **[FromAddr_L] – (Left From Address) –** The beginning value of an address range, on the Left side of the road segment.
- **[ToAddr_L] – (Left To Address) -** The ending value of an address range, on the Left side of the road segment
- **[FromAddr_R] – (Right From Address) –** The beginning value of an address range, on the Right side of the road segment.
- **[ToAddr_R] – (Right To Address) –** The ending value of an address range, on the Right side of the road segment.
- **[Parity_L] – (Left Address Range Parity) -** Parity of Address Range on the Left side of the road segment. Valid entries: E, O, B, Z for Even, Odd, Both, or Zero (if the range is 0 to 0).
- **[Parity_R] – (Right Address Range Parity) -** Parity of Address Range on the Right side of the road segment. Valid entries: E, O, B, Z for Even, Odd, Both, or Zero (if the range is 0 to 0).

2.2.4 Miscellaneous Administrative Information

- **[PostComm_L] – (Postal Community Left) -** The 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.
- **[PostComm_R] – (Postal Community Right) -** The 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.
- **[PostCode_L] – (Postal Code/ZIP Code Left) -** The 5-digit postal or ZIP code identifies the Left side of the road segment.
- **[PostCode_R] – (Postal Code/ZIP Code Right) -** The 5-digit postal or ZIP code identifies the Right side of the road segment.
- **[ESN_L] – (ESN Left) -** The emergency service number on the Left side of the road segment
- **[ESN_R] – (ESN Right) -** The emergency service number on the Right side of the road segment.
    - *Note on ESN Fields: The ESN of the actual centerline may be different than either field. Example: when a city has annexed the land on both sides of the road right-of-way, but not the road itself. If that is the case, the data steward can populate the optional [ESN_C] field to record the ESN of the actual centerline.*

- **[MSAGComm_L], -** The MSAG Community name on the Left side of the road segment
- **[MSAGComm_R] –** The MSAG Community name on the Right side of the road segment.

2.2.5 Full Street Name

- **[St_PreMod] – (Street Name Pre Modifier Description) –** A word or phrase that precedes and modifies the Street Name element but is separated from it by a Street Name Pre Type or a Street Name Pre Directional or both. Domain: None Example: “Alternate” in “Alternate Route 8”; “Old” in “Old North Church Street”.
- **[St_PreDir] – (Pre-Directional) –** A cardinal direction abbreviation preceding the street name key. Only N, S, E, W or NE, NW, SE, SW can be used.
- **[St_PreTyp] – (Preceding Type) –** A Street type which precedes the street name key. This must always be spelled out fully. Example: AVENUE 3, not AVE 3
- **[St_Name] – (Street Name) –** The name of the street as designated by the local addressing authority
- **[St_PosTyp] – (Street Post Type) –** An abbreviated suffix following the street name. Valid values are limited to the “Common Abbreviations” listed in USPS Publication 28, Appendix C1. The NG911 Template Geodatabase will have only the Official USPS abbreviations loaded into the domain at dissemination. Data Stewards wishing to use items from the "Common Abbreviations" list should add the desired value to the Street Type domain in their local copy of the template. The value shown in the "Common Abbreviations" list shall be used as the Code, but the Data Steward may use any Description they choose.
- **[St_PosDir] – (Post Directional) -** A cardinal direction abbreviation following the street name key. *****Only N, S, E, W or NE, NW, SE, SW can be used
- **[St_PosMod] – (Post Modifier)** – An additional value sometimes found on certain roads. Valid values include but are not limited to: ACCESS, ALTERNATE, BUSINESS, BYPASS, CONNECTOR, EXTENDED, EXTENSION, LOOP, PRIVATE, PUBLIC, SCENIC, SPUR, RAMP, UNDERPASS, OLD, OVERPASS.
    - *Note on Street Name fields: Many applications have limitations on how street names can be parsed. If local applications do not have a mechanism for interpreting one or more fields in this standard (Preceding Type and Post Modifier are rarely accounted for in Computer Aided Dispatch systems, for example), then the data steward can choose not to use those fields. For example: Avenue 3 could either have “Avenue” in the Preceding Type field and “3” in the Street Name field or “Avenue 3” all in the Street Name field. At a minimum, the Pre-Directional, Street Name and Post Type should be used when applicable. While the full street name should always be represented, it can be parsed into the remaining fields or not as needed locally.*

Example

Old North Road Church Street South Extension	
Field	Value
St_PreMod	Old
St_PreDir	North (N)
St_PreTyp	Road (Rd)
St_Name	Church
St_PosTyp	Street (St)

St_PosDir	South (S)
St_PosMod	Extension

2.2.6 Legal Travel Fields

- **[SpeedLimit] – (Speed Limit) –** Posted Speed Limit in mph
- **[OneWay] – (One-Way) –** One way direction of travel.
    - B or Blank – travel in both directions allowed
    - FT – One-way traveling from "FROM" node to "TO" node
    - TF – One way traveling from "TO" node to "FROM" Node
- **[RoadClass] – (Road Class)** Type of road from the following domain
    - 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 (service vehicles, logging, oil fields, ranches, etc.)
    - PARKING LOT
    - TRAIL (Ski, Bike, Walking / Hiking Trail)
    - OTHER
- **[TRAVEL]** – Direction of travel on divided roadways. Example: WB for the westbound lane of Interstate 80.

2.2.7 Fields added for Wyoming

- **[LABEL]** - This value is the concatenation of the values found in the [St_PreMod], [St_PreDir], [St_PreTyp], [St_Name], [St_PosTyp], [St_PosDir], and [St_PosMod] fields with the appropriate spacing interposed. Proper case shall be used. This field can be used to label the full street name in GIS application or map production.
- **[UPDATEBY]** – The person who last updated the record. The format of this can be set by the data steward, but it should be sufficient to identify the specific individual. First and last names are recommended. The purpose of this field is to allow the data aggregator to contact the specific person who made a change if there is a question about the edit.
- **[SURFACE]** – Basic road surface description. This field is important for informative map display. It is optional in the data model, but it is strongly recommended by the GIS Committee that Data Stewards consider populating this field. Values must be selected from the following domain
    - PAVED
    - GRAVEL
    - SOIL
    - PROPOSED
    - MINIMUM – For roads legally declared as minimum maintenance
- **[STATUS]** - The current status of the segment. All roads that exist in the centerline file but are not actually built on the ground shall have this attribute set to "Not Built." Examples include "paper" roads or roads that are platted but not built. Valid values for this attribute are:
    - OPEN – Road is open to vehicle traffic

    - CLOSED – Road is closed to vehicle traffic
    - NOT BUILT – The road is platted or planned but no road has yet been built
- **[ELEV_F]** – (Elevation at From Node) – Elevation of the start node of the segment with relation to other road features. Ground level roads have an elevation of “0”. Overpasses have an elevation of “1”.
- **[ELEV_T]** – (Elevation at To Node) - Elevation of the end node of the segment with relation to other road features. Ground level roads have an elevation of “0”. Overpasses have an elevation of “1”.
- **[LRSKEY]** – (Linear Reference System Key) Unique identifier within the KDOT road network, allowing the centerline segment to be related back to the KDOT LRS.
- **[EXCEPTION]** – Status of the feature as an Exception to the standard. Valid values for this attribute are:
    - EXCEPTION DANGLES – Feature is an exception to the “Must Not Have Dangles” topology rule
    - EXCEPTION INSIDE – Feature is an exception to the “Must Be Inside Authoritative Boundary topology rule.
    - EXCEPTION BOTH– Feature is an exception to both topology rules
    - NOT EXCEPTION – Feature is not an exception to the topology rules
- **[AUTH_L]** – Flag indicating if the Left side data is authoritative. For segments that run along county lines or other jurisdictional boundaries, the side referring to addresses within the Data Steward’s Authoritative Boundary should be flagged as “Y” and the side that referencing addresses in the neighboring jurisdiction should be flagged as “N”.
- **[AUTH_R]** – Flag indicating if the Right side data is authoritative. For segments that run along county lines or other jurisdictional boundaries, the side referring to addresses within the Data Steward’s Authoritative Boundary should be flagged as “Y” and the side that referencing addresses in the neighboring jurisdiction should be flagged as “N”.
- **[GEOMSAGL]** – Flag indicating if the Data Steward intends the left side address range to be used in the generation and maintenance of an MSAG. Any segment left side intended for the MSAG should be flagged with “Y”, and any segment left side not intended for the MSAG (like 0-0 address range segments) should be flagged with “N”.
- **[GEOMSAGR]** – Flag indicating if the Data Steward intends the right side address range to be used in the generation and maintenance of an MSAG. Any segment right side intended for the MSAG should be flagged with “Y”, and any segment right side not intended for the MSAG (like 0-0 address range segments) should be flagged with “N”.
- **[SUBMIT] –** Flag indicating if the feature is intended for use in call routing or a “Local Only” feature that is not intended for use in call routing. Examples of features not intended for use in call routing can include features outside the Authoritative Boundary or features that are not part of the standard but still desired in the local data. Valid values for this attribute are:
    - **Y –** For Submission to the Master GIS Repository for call routing
    - **N –** Local Only, not to be used in the Master GIS Repository for call routing
- **[NOTES]** – Notes about the feature, primarily used for communication between the Local Data Maintainer and the Data Aggregator

2.3 Road Centerline Creation

Road centerlines represent all public and addressed private streets. Road names must conform to the legal names as assigned by the local addressing authority. All centerline attributes should be accurate, complete, and standardized to the format in this document. All abbreviations of Street Prefixes and Suffixes should be

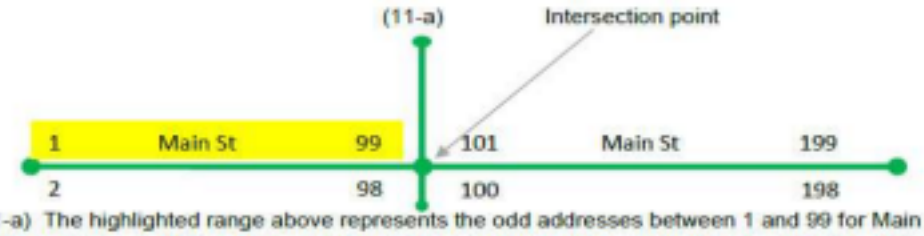
incorporated according to NENA Standards. Road centerlines must match the corrected MSAG data to a 98% or higher rate, and all related NENA standards shall be met or exceeded.

2.3.1 Centerline characteristics

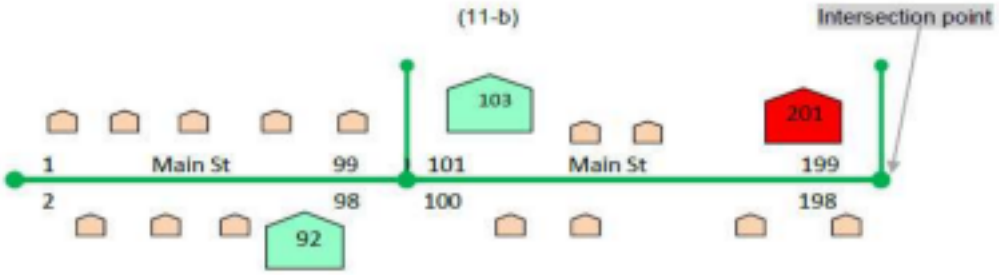
Road centerlines are drawn in segments. Segments shall be broken and snapped to the endpoint of the adjoining segments in the following circumstances:

- Not All line segment intersections, see example below about road break points.
  (Example: Overpasses and the roads they route over do not intersect)
- At State, County, Municipal, ESB and ESZ boundaries
- At any change in the primary road name
- At any change in surface type, if the data steward uses that attribute
- Data stewards may include any additional breaks in the segments that they require, as long as each segment is snapped to the endpoint of the adjoining segments and attributes are properly populated.

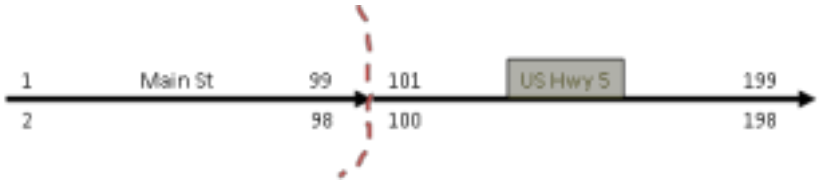
2.3.2 Centerlines and Range placement



(11-a) The highlighted range above represents the odd addresses between 1 and 99 for Main St. The address range should be numbered Low address to High address, following the direction of the centerline. Any necessary deviations should be documented.



(11-b) All address point addresses along a section of centerline should fall within the range of that particular centerline segment. The address point for 201 Main St. is not included in the range, the point should be verified and either centerline range or address point location should be modified.



(11-c)

(11-c) - Street names can change. Main St is located inside the city limits, but when it leaves the city, the name changes to US Hwy 5. The address range data may change with the new name, but not always.

2.3.3 Potential vs Actual Address Ranges

Data stewards may use potential or actual address ranges on centerline segments as local need requires. Some data stewards may elect to use both strategies, keeping some of their segments with potential ranges and others with actual ranges. This is also acceptable. If they are using potential ranges, data stewards are encouraged to keep the range to what will reasonably get built. For example, if a given city assigns addresses no higher than x50 in an area, the potential address range for a segment in that area should be 500 to 550 rather than 500 to 598.

2.3.4 Overlapping Address Ranges

Address ranges intended for the MSAG on segments for any given street name within the same MSAG Community may not overlap. The example below shows three common types of overlaps.

	Overlapping Range 1		**Overlapping Range 2**		**Overlapping Range 3**	
From	100	150	500	501	100	150
To	198	172	598	599	150	198
Parity	EVEN	EVEN	EVEN	BOTH	EVEN	EVEN
Street	E 1ST ST	E 1ST ST	RAIN RD	RAIN RD	RAIN RD	RAIN RD
MSAG Community	ANYTOWN	ANYTOWN	ANYTOWN	ANYTOWN	ANYTOWN	ANYTOWN

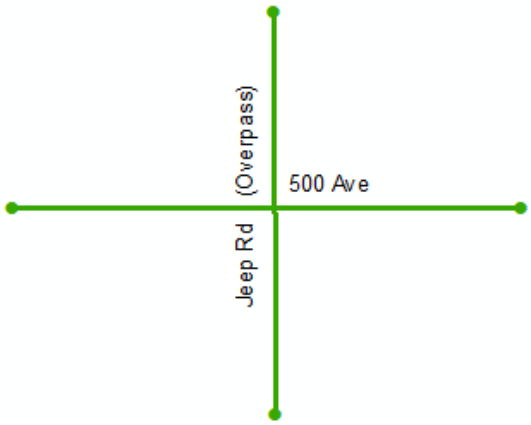
2.3.5 One way streets

Follow the center of the lane or lanes with a single line segment. The segment shall be drawn in the direction of low address to high address, not the direction of travel. Populate the ONEWAY field with FT or TF depending on which is appropriate.

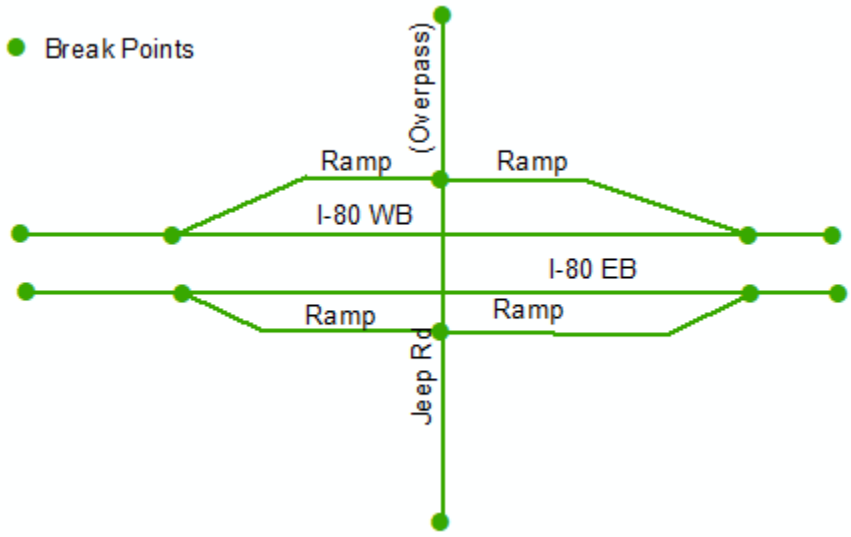
2.3.6 Elevation Values / Overpasses and Underpasses

All road centerline segments shall be broken at intersection with any other road centerline segment, Only if the roads intersect, such as an overpass or underpass. This allows for a topology in road centerlines that can be validated quickly and accurately. However, the actual intersection of roads must be documented. The elevation attributes [ELEV_F] and [ELEV_T] shall be used to show intersection. Nodes at the lowest level (usually ground level, but could be a tunneled underpass) will be given an elevation value of 0. A segment representing a road that passes over another road will have an elevation value of 1. See the diagrams below

for examples of the elevation values in use. The first diagram shows the Jeep Road overpass of 500 Ave, an undivided road. The second shows the Jeep Road overpass of Interstate 70, a divided highway.



Overpass of an undivided road (Roads do not intersect)



Overpass of a divided road (Break Roads only at Intersection Points)

2.3.7 Access ramps

Roads with limited access are entered using an access ramp. The address attributes for the ramp segment or segments shall be all zeroes. It is recommended the name of the access ramp reflect the roads the ramp joins.

Example: the ramp from N Main St to Westbound Interstate 80 could be “N MAIN ST TO WB I80.” Whatever naming scheme the data steward chooses, the Post-Modifier field [St_PosMod] shall be “RAMP”

2.3.8 Service Drives

A Service Drive is a road or portion of a road providing access to businesses, facilities, and rest areas along a limited-access highway: this road may intersect other roads and be named. If it is unnamed and unaddressed, the address range attributes shall be zeroes and the name shall be “SERVICE DRIVE”

2.3.9 Road Centerline Geometry

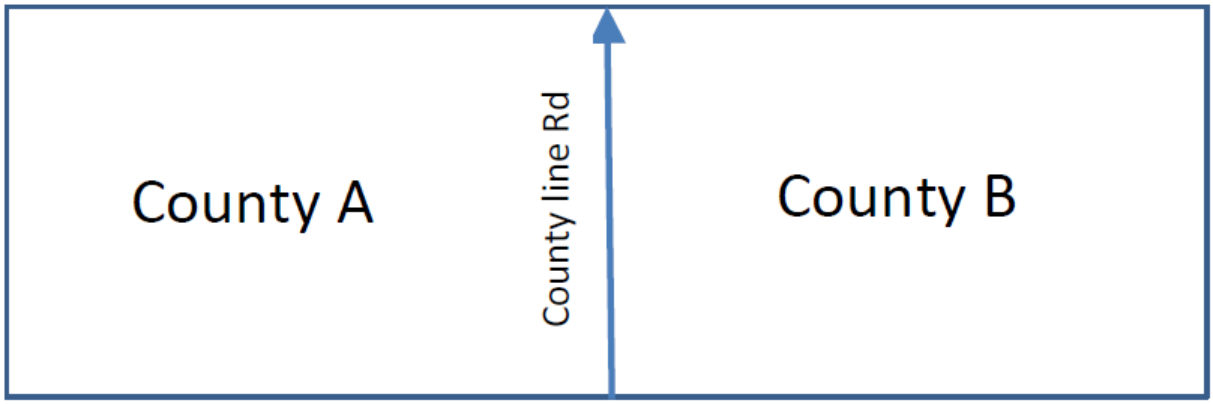
It is recommended that Road Centerline Geometry be set up and edited in a way that would allow for best practices for use in routing software.

2.4 Border Roads

Roads that form the border between Authoritative Boundaries such as counties will be present in the data of more than one agency. Each agency is responsible for the attributes on the side of the line segment associated with addresses in their jurisdiction. Values for attributes on the side of the line segment

associated with addresses that are not in their jurisdiction will be dropped in aggregation. In order to determine which agency's data should be used in aggregation, the Authoritative Left (AUTH_L) and Authoritative Right (AUTH_R) flags will be checked. Values for any segments side with the flag set to "N" will be ignored for testing and dropped in aggregation. If the agency does not need to populate those out of agency values or does not know the correct values, they can leave those fields blank, as long as the flag is set to "N".

In the example below, the left side attributes are the responsibility of County A and the right side attributes are the responsibility of County B. County A does not need values for any local application, but County B prefers to have them filled out.



Attribute	County A Table	County B Table
COUNTY_L	COUNTY A	COUNTY A
COUNTY_R		COUNTY B
MUNI_L	UNINCORPORATED	UNINCORPORATED
MUNI_R		UNINCORPORATED
POSTCO_L	ANYTOWN	ANYTOWN
POSTCO_R		ANYTOWN
ZIP_L	55555	55555
ZIP_R		55555
ESN_L	4567	0
ESN_R	0	9912
MSAGCO_L	ANYTOWN	NONE
MSAGCO_R	OOC	ANYTOWN

L_F_ADD	500	0
R_F_ADD	0	501
L_T_ADD	598	0
R_T_ADD	0	599
RD	COUNTY LINE	COUNTY LINE
STS	RD	RD
AUTH_L	Y	N
AUTH_R	N	Y

2.5 Summary of NG9-1-1 Road Centerline Requirements

Centerlines shall be continually updated.

Centerlines shall represent all public and addressed private streets

Attributes shall be accurate, complete and standardized (address ranges, ESN's Communities, spelling abbreviations…). The abbreviations can be found in **USPS Publication 28** (Google Search: USPS Publication 28; https://pe.usps.com/text/pub28/welcome.htm)

Address ranges intended for use in the MSAG on centerlines within a given MSAG Community shall not overlap.

Road centerlines shall match to the corrected MSAG at a 98 percent or higher rate, per **NENA 71- 501**, Version 1.1 (Google Search: NENA Information Document for Synchronizing Geographic Information System Databases with MSAG & ALI, NENA 71-501; https://cdn.ymaws.com/www.nena.org/resource/resmgr/Standards/NENA_71-501_GIS_MSAG_ALI_05-.pdf).

Road names shall conform to the legal names as assigned by the addressing authority. The abbreviations can be found in **USPS Publication 28**

Abbreviations of all Street Prefixes and Suffixes shall be incorporated according to NENA Standards. The abbreviations can be found in **USPS Publication 28**

Where values exist, all "Mandatory" and "Conditional" attributes shall be populated.

Centerline segments with no addressing along one or both sides, including small connector pieces shall have zeroes entered into the relevant Address Range fields.

All line segments shall be oriented in the direction of increasing address ranges

Each centerline segment shall share an exact start or end node with another centerline segment, unless it is a dead-end.

Road centerline segments shall be split at:

- Intersections with State, County, City, ESB and ESN/ESZ boundaries
- Intersection with another segment, even if it does not represent a real-world intersection
- Change in primary road name
- Change in surface type, if that attribute is used by the data steward

2.6 Road Alias Table

Per the NENA Standard, the road name used in the Road Centerline file must be the legal name used by the local addressing authority. Many roads are known by additional names, including highway designators, old names that are still in use colloquially or county road numbers that are known as alias names. The Road Alias Table holds those additional names. The Road Alias Table is “strongly recommended” layer in the NENA standard, but it is required in the Wyoming NG9-1-1 Data Model. Data stewards are encouraged to include as many alias names as they believe are in use for the roads in their area. However, the only entries required in the Road Alias Table are for State Highway System segments. Specific examples are listed below the attribute information.

See NENA Table 4.3 Street Name Alias Table for reference

2.6.1 Attribute Table

Field Name	Descriptive Name	Type	Width	M/C/O
DiscrpAgID	Data Steward	A	100	M
DateUpdate	Date updated	D	26	M
Effective	Effective Date	D	26	O
Expire	Expiration Date	D	26	O
NGUID	NENA Globally Unique ID (Primary Key)	A	254	M
RCL_NGUID	Road Centerline NENA Globally Unique ID (Foreign Key)	A	254	M
ASt_PreMod	Alias Street Name Pre Modifier	A	15	C
ASt_PreDir	Alias Street Name Pre Directional	A	2	C
ASt_PreTyp	Alias Street Name Pre Type	A	50	C
ASt_Name	Alias Street Name	A	60	M
ASt_PosTyp	Alias Street Name Post Type	A	4	C
ASt_PosDir	Alias Street Name Post Directional	A	2	C
ASt_PosMod	Alias Street Name Post Modifier	A	25	C
StFullName	Concatenated Full Street Name	A	254	O
UPDATEBY	Person or Agency that last updated the	A	50	O

	record			
SUBMIT	For Submission to Master Repository	A	1	O
NOTES	Notes	A	255	O

2.6.2 Attribute Descriptions

- **[DiscrpAgID] –** The GNIS/INCITS code for the agency responsible for maintenance of the data.
- **[DateUpdate] –** The date of the last update of the record
- **[Effective] –** The date the record is or was scheduled to take effect. For agencies not recording this information previously, the date of January 1, 2014 (20140101) can be used for all currently effective records
- **[Expire] –** The date the record is scheduled to expire. This field shall only be populated if there is a defined end date.
- **[NGALIASID] –** An identifier used for tracking Authoritative Boundaries in the local dataset.
- **[NGSEGID] –** The SEGID from the road centerline file for the segment the record refers to
- **[ASt_PreDir] – (Alias Pre - Directional) –** A cardinal direction abbreviation preceding the street name key. Only N, S, E, W or NE, NW, SE, SW can be used.
- **[ASt_PreTyp] – (Alias Preceding Type) –** A Street type which precedes the street name. This must always be spelled out fully. Example: AVENUE 3, not AVE 3
- **[ASt_Name] – (Alias Street Name) –** The alias name for the segment
- **[ASt_PosTyp] – (Alias Street Post Type) –** A abbreviated suffix following the street name key
- **[ASt_PosDir] – (Alias Post Directional) -** A cardinal direction abbreviation following the street name key. *****Only N, S, E, W or NE, NW, SE, SW can be used
- **[ASt_PosMod] – (Alias Post Modifier)** – An additional value sometimes found on certain roads. Valid values include but are not limited to: Access, Alternate, Business, Bypass, Connector, Extended, Extension, Loop, Private, Public, Scenic, Spur, Ramp, Underpass, Old, Overpass.

2.6.3 Fields added for Wyoming

- **[StFullName]** - This value is the concatenation of the values found in the [A_St_PreMod], [ASt_PreDir], [ASt_PreTyp], [ASt_Name], [ASt_PosTyp], [ASt_PosDir], and [ASt_PosMod] fields with the appropriate spacing and punctuation interposed. For aesthetics, proper case may be used. This field can be used to label the full street name in GIS application or map production.
- **[UPDATEBY] –** The person who last updated the record. The format of this can be set by the data steward, but it should be sufficient to identify the specific individual. First and last name are recommended. The purpose of this field is to allow the data aggregator to contact the specific person who made a change if there is a question about the edit.
- **[SUBMIT] –** Status of the feature as a “Local Only” feature that is not intended for submission to the Master GIS Repository. Examples can include features outside the Authoritative Boundary or features that are not part of the standard but still desired in the local data. Valid values for this attribute are:
    - **Y –** For Submission to the Master GIS Repository
    - **N –** Local Only, not to be used in the Master GIS Repository
- **[NOTES]** – Notes about the feature, primarily used for communication between the Local Data Maintainer and the Data Aggregator

2.6.4 Road Alias Entries for State Highway System

Across the state, there are a variety of names for roads on the State Highway System. Some are addressed by a local road name that makes no reference to the highway number, particularly when they pass through an incorporated municipality. Even when the roads are addressed with their highway number, local addressing authorities have chosen a variety of formats for the road name. The legal address of a building with the number 101 on K-5 might be 101 Hwy 5 or 101 K-5 Highway, depending on the county it is in. Additionally, some roads on the State Highway System join with others as “riders” for a portion of their route. For example, part of Interstate 70 is also US Highway 24 while another part is US Highway 40.

Because of these variations, all State Highway System road segments shall have entries in the Road Alias Table for each highway they represent formatted as shown in the table below, unless the data steward is already using the exact format of the Alias Road Name [ASt_Name] field shown below as the Street Name [RD] attribute in the Road Centerline file.
Note: the format of the Alias Road Name [ASt_Name] field is mandatory and must follow the exact format shown; however, the format of the Label [LABEL] field is only a recommendation.

Highway Name	**Alias Road Name [ASt_Name]**	**Label [LABEL]**
Wyoming Highway 225	WY 225	WY-225
U.S. Highway 87	US 87	US-87
Interstate 80	I80	I-80
U.S. Highway 85 Business	US85 BUS	US-85 Bus
U.S. Highway 85 Alternate	US85 ALT	US-85 Alt
Wyoming HIghway 31 Spur	WY31 SPUR	WY-31 Spur

2.6.5 Sample Road Alias Table

In the sample table, segments 101 and 102 are locally known as Main St but are also on K-19, requiring entries in the Road Alias Table. Segments 201, 202 and 203 are shown in the graphic with their local address names. Segment 201 is both US 77 and US 56 BUS. It requires two entries in the table. US-77 follows segment 202 while US-56 BUS follows segment 203

Segment ID [SEGID]	Alias Road Name [ASt_Name]
101	S 3RD ST
101	US 287
102	N 3RD ST
102	I 80 BUS
102	US 287
102	US 30
201	GRAND AVE
201	US 30
201	I 80 BUS

3 Address Points

Address points represent all structures and locations with an assigned street address. The Address Points layer is “strongly recommended” in the NENA standard, but it is required in the Wyoming NG9- 1-1 Data Model. See NENA section Table 4-4 SiteStructureAddressPoint Layer for NENA Field Names and descriptions.

3.1 Site Structure Address Points Attribute Table

Address Points Attribute Table				
Name	**Attribute Description**	Type	Width	M/C/O
DiscrpAgID	Agency that updates the record/Data Steward	A	100	M
DateUpdate	Date updated	D	-	M
Effective	Effective Date	D	-	O
Expire	Expiration Date	D	-	O
Site_NGUID	Unique identifier in the local dataset (NGUID)	A	254	M
Country	Country	A	2	M
State	State	A	2	M
County	County	A	40	M
AddCode	Additional Code	A	6	C
AddDataURI	Additional Data URI	A	254	C
Inc_Muni	Incorporated Municipality	A	100	M
Uninc_Comm	Unincorporated Community	A	100	O
Nbrhd_Comm	Neighborhood Community	A	100	O
AddNum_Pre	Address Number Prefix	A	15	C
Add_Number	Address Number	N	6	M
AddNum_Suf	Address Number Suffix	A	15	C
St_PreMod	Street Name Pre Modifier	A	15	C
St_PreDir	Street Name Pre Directional	A	2	C
St_PreTyp	Street Name Pre Type	A	50	C
St_Name	Street Name	A	60	M
St_PosTyp	Street Name Post Type	A	4	C
St_PosDir	Street Name Post Directional	A	2	C
St_PosMod	Street Name Post Modifier	A	25	C
ESN	ESN of the structure	A	5	C

MSAGComm	MSAG Community	A	30	C
Post_Comm	Postal Community	A	40	C
Post_Code	Postal Code/ZIP Code, 5-digit code only	A	5	C
Post_Code4	Postal Code/ZIP plus 4 code, no dash	A	4	O
Building	Building	A	75	O
Floor	Floor	A	75	O
Unit	Unit Type and Designator	A	75	O
Room	Room	A	75	O
Seat	Seat	A	75	O
Addtl_Loc	Additional Location Information	A	255	O
LandmkName	Complete Landmark Name	A	150	C
Mile_Post	Measurement or Mile Marker number	A	150	C
Place_Type	Place Type	A	50	O
Placement	Placement Method	A	25	O
Long	Longitude in Decimal Degrees	F	-	O
Lat	Latitude in Decimal Degrees	F	-	O
Elev	Elevation in Meters above mean sea level	N	6	O

Additional Fields Added For Wyoming (Not NENA)

AddrFill	Concatenated Full Address	A	255	O
AddrBase	Concatenated Base Address (No Unit Information)	A	224	O
UPDATEBY	Person or Agency that last updated the record	A	50	O
LOCTYPE	Point location type	A	30	O
WYPID	19-character parcel identifier	A	19	O
RCLMATCH	NGSEGID of Segment the point matches to	A	38	O
RCLSIDE	Side of the Segment the point matches to	A	1	O
GEOMSAG	Point to be used in GeoMSAG	A	1	O
SUBMIT	For Submission to Master Repository	A	1	O

NOTES	Notes	A	255	O
Active	Address Status, Active, Future, Utility Box, …	A	12	O
	Site Alias	A	255	O
	Address Alias	A	255	O

3.2 Attribute Descriptions

3.2.1 Identifier Fields

- **[DiscrpAgID] –** GNIS/INCITS code for the agency responsible for maintenance of the data.
- **[DateUpdate] –** The date of the last update of the record
- **[Effective] –** The date the record is or was scheduled to take effect. For agencies not recording this information previously, the date of January 1, 2014 (20140101) can be used for all currently effective records
- **[Expire] –** The date the record is scheduled to expire. This field shall only be populated if there is a defined end date. Ex: A building scheduled to be re-addressed.
- **[Site_NGUID] – (Address ID) -** The Address ID is an identifier used for tracking address points within the local dataset (ex. 4658).

3.2.2 Administrative Location

- **[State] –** Two-character abbreviation for the state where the address point is located
- **[County] –** County name spelled out for the county where the address point is located
- **[Inc_Muni] – (Municipality) -** The name of the incorporated municipality where the address point is located. Only used if a named municipality exists, otherwise use “Unincorporated”
- **[Uninc_Comm] – (Unincorporated Community)** – The name of the unincorporated community where the address point is located. This could be an unincorporated town name, a subdivision name, or a plat name.

3.2.3 Address

- **[AddNum_Pre]- (Address Number Prefix)** - The Street or House number prefix for the address.
- **[Add_Number] – (Address Number) -** The street or house number for address. It does not include any secondary information like suite or apartment numbers
- **[AddNum_Suf] – (Address Number Suffix) -** An extension of the address number that follows it and further identifies a location. Example “1/2” in 101 ½ Oak St
- **[St_PreDir] – (Pre - Directional) –** A cardinal direction abbreviation preceding the street name key. Only N, S, E, W or NE, NW, SE, SW can be used.
- **[St_PreTyp] – (Preceding Type) –** A street type which precedes the street name key. This must always be spelled out fully. Example: AVENUE 3, not AVE 3
- **[St_Name] – (Street Name) –** The name of the street as designated by the local addressing authority
- **[St_PosTyp] – (Street Post Type) –** An abbreviated suffix following the street name. Valid values are limited to the “Common Abbreviations” listed in USPS Publication 28, Appendix C1. The NG911 Template Geodatabase will have only the Official USPS abbreviations loaded into the domain at

dissemination. Data Stewards wishing to use items from the "Common Abbreviations" list should add the desired value to the Street Type domain in their local copy of the template. The value shown in the "Common Abbreviations" list shall be used as the Code, but the Data Steward may use any Description they choose.

- **[St_PosDir] – (Post Directional) -** A cardinal direction abbreviation following the street name key. *Only N, S, E, W or NE, NW, SE, SW can be used
- **[St_PosMod] – (Post Modifier)** – An additional value sometimes found on certain roads. Valid values include but are not limited to: ACCESS, ALTERNATE, BUSINESS, BYPASS, CONNECTOR, EXTENDED, EXTENSION, LOOP, PRIVATE, PUBLIC, SCENIC, SPUR, RAMP, UNDERPASS, OLD, OVERPASS.
    - *Note on Street Name fields: Many applications have limitations on how street names can be parsed. If local applications do not have a mechanism for one or more fields in this standard (Preceding Type and Post Modifier are rarely accounted for in Computer Aided Dispatch systems), then the data steward can choose not to use those fields. For example, Avenue 3 could either have "Avenue" in the Preceding Type field and "3" in the Street Name field or "Avenue 3" all in the Street Name field. At a minimum, the Pre-Directional, Street Name and Post Type should be used when applicable. While the full street name should always be represented, it can be parsed into the remaining fields or not as needed locally.*

3.2.4 Secondary Address Information

- **[Building] – (Building) –** One among a group of buildings that have the same address number and complete street name.
- **[Floor] – (Floor) –** A floor, story or level within a building
- **[Unit] – (Unit) –** The unit type and unit number (or other designator) for a group or suite of rooms within a building that are under common ownership or tenancy, typically having a common primary entrance. Examples: Apt 2C, Lot 6, Ste 301. Unit type shall be abbreviated using the Secondary Unit Designators list from USPS Publication 28
- **[Room] – (Room) –** A single room within a building
- **[Seat] – (Seat)** – A place where a person might sit within a building
- **[Addtl_Loc] – (Additional Location) –** Any part of a sub-address that is not a Building, Floor, Unit, Room or Seat. Example: A building that is in two different ESNs may have one address point with "WEST HALF" in this field and a second with "EAST HALF"

3.2.5 Miscellaneous Location Information

- **[ESN] –** Emergency Service Number for the address
- **[MSAGComm] – (MSAG Community) –** The MSAG community name for the address
- **[Post_Comm] – (Postal Community) –** The city name for the ZIP code of an address as given in the USPS City State file
- **[Post_Code] – (ZIP Code) –** The 5-digit postal or ZIP code
- **[Post_Code4] – (ZIP Plus 4 Code) –** The ZIP plus 4 code without the dash
- **[LandmkName] – (Landmark) –** The name by which a prominent feature is publically known or Vanity address. Example: The White House, Harvard University
- **[Mile_Post] –** A numeric measurement from a given beginning point used for specifying locations along interstate highways, recreational trails and other unaddressed routes as well as stretches of county, State Highway System roads where the distance measurement is posted. May be included in addition to address numbers or in place of them if the route is unaddressed. A value is required if the road is unaddressed, like most interstates, otherwise, the field is optional. Example: Mile Marker 231.5. On large Highway adjustments (example: on I-90, 16.19 AH 14.61 BK [1.58 mi back])

the first low MP and the last high MP should be used to average the distance over the adjustment. This is to eliminate duplicate MP Numbers, i.e. two 15 and two 16 MP in this example.

- **[Place_Type] – (Place Type) –** The type of feature identified by the address. The domain for this attribute is from RFC 4589. *Although this field is listed as Conditional in the NENA Standard, it is the opinion of the GIS Committee that it should be an Optional attribute or have a different domain. Until the final NENA NG9-1-1 Data Model is published, the use of this field will be suspended in the Wyoming NG9-1-1 Data Model. It shall be included in the attribute table but not populated. See [WYPID] below.*
- **[Placement] – (Placement Method) –** The methodology used for placement of the address point Domain; Site; Parcel; Geocoding; PropertyAccess; Unknown
- **[Long] – (Longitude) –** In decimal degrees.
- **[Lat] – (Latitude) –** In decimal degrees.
- **[Elev] – (Elevation) –** Height above Mean Sea Level in meters. Note: WGS84 (GPS) elevation is measured as height above the ellipsoid, which varies significantly from height above the geoid (approximately Mean Sea Level).
- **[ADDURI] – (Additional Data URI) –** URI for accessing additional information about the address. Information on how to appropriately populate this attribute is not yet available. This document will be updated when that information becomes available.

3.2.6 Fields added for Wyoming

- **[AddrFill] – (Full Address, includes Units)** – A composite of the street number and naming information with the unit number in proper case for cartographic use. Building names, unit numbers and other secondary address elements should be preceded by the Secondary Unit Designator from the Official USPS Abbreviations list Examples: 101 E 1st St Apt B (Fields include: [AddNum_Pre], [Add_Number], [AddNum_Suf], [St_PreMod], [St_PreDir], [St_PreTyp], [St_Name], [St_PosTyp], [St_PosDir], [St_PosMod], [Building], [Floor], [Unit], [Room], [Seat], [Addtl_Loc].
- **[AddrBase] – (Base Address, no units)** – A composite of the street number and naming information without the unit number in proper case for cartographic use. (Fields include: [Add_Number],[St_PreMod], [St_PreDir], [St_PreTyp], [St_Name], [St_PosTyp], [St_PosDir], [St_PosMod],
- **[UPDATEBY] –** The person who last updated the record. The format of this can be set by the data steward, but it should be sufficient to identify the specific individual. Entries may be in upper case, lower case or both. The purpose of this field is to allow the data aggregator to contact the specific person who made a change if there is a question about the edit.
- **[LOCTYPE] – (Point location type) –** The location of the point relative to the structure in question selected from the following domain: PRIMARY (on the structure or the site), SECONDARY-ACCESS (on driveway or other access point), SECONDARY-OTHER.
    - ***Note:*** *Only the points attributed as "Primary" will be included in the call-routing database.*
- **[WYPID] –** The 19 character parcel ID or "CAMA" number for the parcel on which the address point sits. This attribute has been included to insure the Place Type attribute can be populated as economically as possible, should it be retained as a required attribute in the final NENA NG9-1-1 Data Model.
- **[GEOMSAG]** – Flag to indicate if the Data Steward intends the point to be used in the generation and maintenance of an MSAG. Any point intended for the MSAG should be flagged with "Y", and any point that is not intended for the MSAG (like those addresses already accommodated by the Road Centerline data) should be flagged with "N".

- **[RCLMATCH]** – NGSEGID of the road segment the address point should match to. If the address point should not match to any segment, then the field shall be populated with "NO_MATCH." Examples of address points that will not match a segment include addresses using a road name not shown in the Road Centerline data, like old road names or alias road names and addresses assigned outside the range of an existing segment.
- **[RCLSIDE]** – Side of the road segment the address point should match chosen from the following domain: R (Right), L (Left), N (No Match)
- **[SUBMIT] –** Status of the feature as a "Local Only" feature that is not intended for submission to the Master GIS Repository. Examples can include features outside the Authoritative Boundary or features that are not part of the standard but still desired in the local data.. Valid values for this attribute are:
    - **Y –** For Submission to the Master GIS Repository
    - **N –** Local Only, not to be used in the Master GIS Repository
- **[NOTES]** – Notes about the feature, primarily used for communication between the Local Data Maintainer and the Data Aggregator
- **[Active]** - Address Status (Domain?) Active, Future, 911 Only, Deactivated, Tank, ….

3.3 Address Point Placement

Address points represent all structures and sites with an assigned street address. At a minimum, there shall be a point on every addressable single-unit building, a point on each living unit/occupancy of every multi-unit building or complex, and a point for every telephone service address in the TN listing.

A unique address is a unique combination of the following fields: [State], [County], [Inc_Muni], [AddNum_Pre], [Add_Number], [AddNum_Suf], [St_PreMod], [St_PreDir], [St_PreTyp], [St_Name], [St_PosTyp], [St_PosDir], [St_PosMod], Building], [Floor], [Unit], [Room], [Seat], [Addtl_Loc]. Successful call routing requires no more than one point for each unique address. However, there can be several reasons data stewards may need to store more than one point for a specific address. To address this issue, the [LOCTYPE] field has been added. The point that should be used for call-routing shall have the value of "PRIMARY" in this field.

For some structures and sites, access is not obvious. Long driveways in rural areas can be an example of this. It is recommended that data stewards maintain subordinate points for those access locations. Any point representing an access point shall have the value "SECONDARY ACCESS" in the [LOCTYPE] field.

3.3.1 Primary Point Placement

The primary address point shall be placed on the structure or on the site, if no structure exists. It is important to note that this is a requirement for point placement, not address assignment. It is common for rural addresses to be assigned based on the location of the driveway as it joins the road, which is appropriate. However, the actual address point shall be placed on the structure itself.

If the site or structure is within the authoritative boundary of one PSAP and the access point is within the authoritative boundary of a different PSAP, only one data steward may maintain the "PRIMARY" point. Example: A residence in one county has a driveway and its address off of a road in another county. The decision on which data steward should maintain the primary point is dictated by the nature of NG9-1-1 call-routing. The data steward for the PSAP that should receive the initial 9-1-1 call must maintain the "PRIMARY" point. If that data steward does not have the actual site or structure within their authoritative boundary, the "PRIMARY" point shall be placed along the driveway or other access, just within the border of

their authoritative boundary. The data steward for the other PSAP shall place a point on the site or structure with the [LOCTYPE] of “SECONDARY-OTHER”.

3.3.2 Single Address Structures

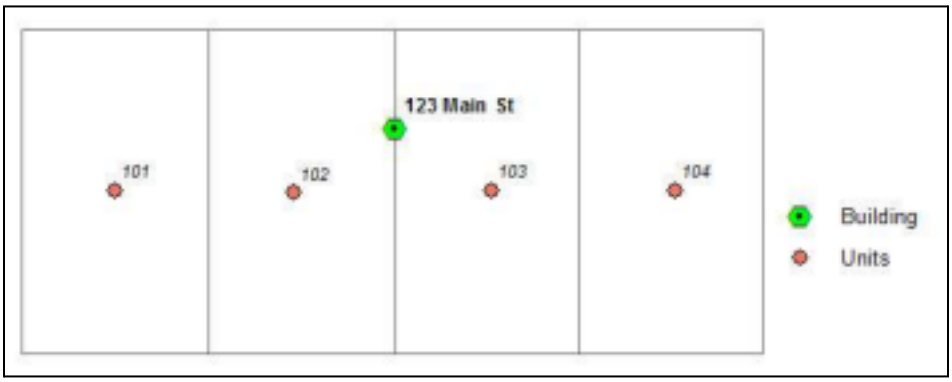
The address point shall be placed on the structure or on the site, if no structure exists.

3.3.3 Multiple address structures

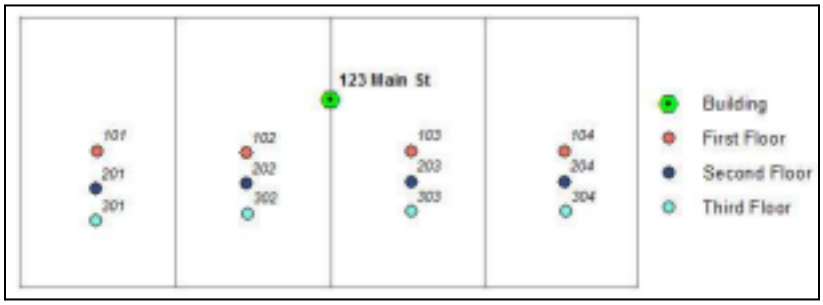
Buildings or complexes that have a street address with individual units bearing unit identifiers (apartment numbers, room numbers, building names, etc), shall have an address point for each unit. It is recommended, but not required, that an additional address point with no unit information be placed on the structure. The purpose of this point is to represent the common areas like stairwells, hallways, lobbies and parking areas that are not a part of any specific unit. Address points for individual units shall be place on the structure, in the approximate location of the unit within the building. When there are units in similar locations on multiple stories, it is recommended that the points for each unit shall be placed near the others but not stacked on top of them at the same coordinate.

Point placement on Duplex

Point placement on a single story with multiple units (ex. Apartment numbers 101-104) I would remove this section, Base and units, to just be units and not have a base address along with units.



Point placement on two or more stories with multiple units



Example of attributes for an individual apartment and the recommended point for the building

Field Description	Field name	Point for Apartment 101	Point for the building
Address Number Prefix	AddNum_Pre	A	A
Address Number	Add_Number	123	123
Address Number Suffix	AddNum_Suf	1/2	1/2
Street Name Pre Modifier	St_PreMod	Old	Old
Street Name Pre Directional	St_PreDir	N	N
Street Name Pre Type	STP	Rd	Rd
Street Name	RD	Church	Church
Street Name Post Type	STS	ST	ST
Street Name Post Directional	POD	S	S
Street Name Post Modifier	POM	Extension	Extension
ESN of the structure	ESN		
Building	BLD		
Floor	FLR		
Unit	UNIT	APT 101	
Room	ROOM		
Seat	SEAT		

Part of Sub Address	LOC		
Label	LABEL	A 123 ½ Old N Rd Church ST S Extension Apt 101	A 123 ½ Old N Rd Church ST S Extension Apt 101
Point location type	LOCTYPE	PRIMARY	PRIMARY

3.3.4 Special Circumstances

If the data steward is using the Point Location Type field (LOCTYPE), all of the points discussed in the special circumstances below should be shown as “PRIMARY”.

Strip centers/ retail: Individual address points should be assigned to each occupancy. If a single street address and unit numbers are used then a point shall be placed for each suite or unit.

Hospitals, Schools, Offices: A single point per building is all that is needed. Individual suite numbers are difficult to maintain at best in these type occupancies. If the building has entrances on multiple sides and addresses have been assigned off of that entrance then those points should be added.

Malls: Show the point for the mall and all appropriate address points with suite numbers (if used).

Recreation Facilities / Parks: It is recommended but not required that address points are placed for these locations. In the event that the facility has individually named or numbered areas like camping spaces or boat ramps, it is recommended that an address point be assigned to each of those sites in addition to the point for the location as a whole.

3.4 Summary of NG9-1-1 address point requirements

Address points shall be continually updated

Each address point shall represent a unique address. *(For data stewards keeping secondary points, each address point for which the [LOCTYPE] is “PRIMARY” shall represent a unique address)* A unique address is a unique combination of the following fields: [State], [County], [Inc_Muni], [AddNum_Pre], [Add_Number], [AddNum_Suf], [St_PreMod], [St_PreDir], [St_PreTyp], [St_Name], [St_PosTyp], [St_PosDir], [St_PosMod], [Building], [Floor], [Unit], [Room], [Seat], [Addtl_Loc].

Address points shall, at a minimum, represent all public and private addressable structures, all living units/occupancies in multi-unit buildings and every telephone service address in the TN listing.

Attributes shall be accurate, complete and standardized (ESN’s, Community names, spelling and abbreviations). The abbreviations can be found in USPS Publication 28

NENA standards shall be met or exceeded

Where values exist, all “Mandatory” and “Conditional” attributes shall be populated.

4 Authoritative Boundaries

Authoritative Boundaries are polygons representing the boundaries for which the data layers are authoritative. For most data stewards, this will be a city or county boundary. Many data stewards will only

have one polygon in this data layer. The Authoritative Boundary layer shall have no overlaps and shall have gaps only where there is a true separation of entity boundaries. See NENA Table 4-7 PSAP Boundary. 911 call boundary.

4.1 Service Boundary Layers Attribute Table

Attribute				
Name	**Descriptive Name**	**M/C/O**	**Type**	**Width**
DiscrpAgID	Data Steward, Discrepancy Agency ID	M	A	100
DateUpdate	Date updated	M	D	26
Effective	Effective Date	O	D	-
Expire	Expiration Date	O	D	-
ES_NGUID	Unique identifier in the local dataset; (NGUID) Emergency Service Boundary NENA Globally Unique ID	M	A	254
State	State	M	A	2
Agency_ID	LCPA PSAP Code followed by ".wy.us"	M	A	100
ServiceURI	Service URI	M	A	254
ServiceURN	Service URN	M	A	50
ServiceNum	Service Number	O	A	15
AVcard_URI	Agency vCard URI	M	A	254
DsplayName	Display Name	M	A	60
UPDATEBY	Person or Agency that last updated the record	O	A	50
SUBMIT	For Submission to Master Repository	O	A	1
NOTES	Notes	O	A	255

4.2 Attribute Descriptions

- **[DiscrpAgID] –** The GNIS/INCITS code for the agency responsible for maintenance of the data.
- **[DateUpdate] –** The date of the last update of the record
- **[Effective] –** The date the record is or was scheduled to take effect. For agencies not recording this information previously, the date of January 1, 2014 (20140101) can be used for all currently effective records
- **[Expire] –** The date the record is scheduled to expire. This field shall only be populated if there is a defined end date. Ex: A city limit boundary that is scheduled to change.
- **[ES_NGUID] –** An identifier used for tracking Authoritative Boundaries in the local dataset.
- **[State] –** Two-character abbreviation for the state where the address point is located
- **[Agency_ID] –** Unique ID for the PSAP created by combining the LCPA PSAP Code from the Wyoming NG911 Strategic Plan 2014-2017 with ".wy.us" to create an identifier that will be unique even if combined with data from other states. This field shall be stored as lower case characters. Example:

The LCPA PSAP Code for Dickinson County Emergency Communication is “dk”. The [Agency_ID] for that PSAP is psap.dk.wy.us

- **[DsplayName] – (Display Name) –** The Display Name of the authoritative source entity. Examples: ROOKS COUNTY WY, ANDOVER WY

4.2.1 Fields added for Wyoming

- **[UPDATEBY] –** The person who last updated the record. The format of this can be set by the data steward, but it should be sufficient to identify the specific individual. First and last name are recommended. The purpose of this field is to allow the data aggregator to contact the specific person who made a change if there is a question about the edit.
- **[SUBMIT] –** Status of the feature as a “Local Only” feature that is not intended for submission to the Master GIS Repository. Examples can include features outside the Authoritative Boundary or features that are not part of the standard but still desired in the local data. Valid values for this attribute are:
    - **Y –** For Submission to the Master GIS Repository
    - **N –** Local Only, not to be used in the Master GIS Repository
- **[NOTES]** – Notes about the feature, primarily used for communication between the Local Data Maintainer and the Data Aggregator.

5 Emergency Service Boundaries

Emergency Service Boundaries are polygons representing the service area of the PSAP and various emergency service providers. At minimum law enforcement, fire and emergency medical response must be represented. Data stewards may choose to maintain these as three or more separate polygon layers or as a single combined layer. Every ESB layer shall completely fill the Authoritative Boundary layer with no gaps and no overlaps.

Earlier versions of the WY NG911 GIS Data Standard included the PSAP boundary layer as one of the required ESB layers. Because of the need for a statewide, seamless PSAP boundary layer to support geospatial call routing, the WY 911 Coordinating Council has taken ownership of this layer.
The PSAP boundaries submitted by local Data Stewards were aggregated, and any significant gaps or overlaps were discussed with the involved agencies. Any future changes to the PSAP layer shall require documentation submitted to the Council. Filed annexation ordinances and Letters of Agreement between two PSAPs are examples of the type of required documentation. Any Data Steward wishing to adjust their PSAP boundary should contact the Council for guidance on what is required. See NENA 3.4 Emergency Service Boundary for reference.

Note: The NENA Standard identifies three fields not included in this guidance: Route URI, Service URN, and Agency vCard URI. As this data is not currently in use nor fully defined in the NENA Standard, it has been left out of this guidance. Once guidelines are firmly established, they will be added to this document. Until that time, data stewards may proceed without them. See NENA 3.4 Emergency Service Boundary See NENA Table 4.3.4 Data Structure For Each Service Boundary

5.1 Attribute Table - Data Structure for each Service Boundary Layer

Separate Fire, LAW, EMS

Attribute

Field Name	Descriptive Name	Type	Width	M/C/O
DiscrpAgID	Data Steward; Discrepancy Agency ID	A	100	M
DateUpdate	Date updated	D	-	M
Effective	Effective Date	D	-	O
Expire	Expiration Date	D	-	O
ES_NGUID	Unique identifier in the local dataset (NGUID)	A	254	M
State	State	A	2	M
Agency_ID	LCPA PSAP Code followed by ".wy.us"	A	100	M
ServiceURI	Service URI	A	254	M
ServiceURN	Service URN	A	50	M
ServiceNum	Numbers dialed a phone to reach the agency	A	15	O
AVcard_URI	Agency vCard URI	A	254	M
DsplayName	Display Name	A	60	M
ESB_TYPE	Description of the type of boundary in the layer. COMBINED or specific boundary type.	A	20	O
	If ESB_TYPE = COMBINED, the following four fields shall be populated			
PSAP	Display Name of the PSAP	A	60	O
LAW	Display Name of Law Enforcement Entity	A	60	O
FIRE	Display Name of Fire Entity	A	60	O
EMS	Display Name of EMS Entity	A	60	O
UPDATEBY	Person that last updated the record	A	50	O
SUBMIT	For Submission to Master Repository	A	1	O
NOTES	Notes	A	255	O

5.2 Attribute Descriptions

- **[DiscrpAgID] –** The GNIS/INCITS code for the agency responsible for maintenance of the data.
- **[DateUpdate] –** The date of the last update of the record
- **[Effective] –** The date the record is or was scheduled to take effect. For agencies not recording this

information previously, the date of January 1, 2014 (20140101) can be used for all currently effective records

- **[Expire] –** The date the record is scheduled to expire. This field shall only be populated if there is a defined end date.
- **[NGESBID] – A**n identifier used for tracking Emergency Services Boundaries in the local dataset.
- **[State] –** Two-character state abbreviation for the state where the ESB is located
- **[Agency_ID] –** Unique ID for the PSAP created by combining the LCPA PSAP Code from the Wyoming NG911 Strategic Plan 2014-2017 with ".wy.us" to create an identifier that will be unique even if combined with data from other states. This field shall be stored as lower case characters. Example: The LCPA PSAP Code for Dickinson County Emergency Communication is "dk". The [Agency_ID] for that PSAP is psap.dk.wy.us
- **[ServiceNum] –** (Service Number) – The number dialed by the public on a phone (12-digit keypad) to reach the emergency service. This will usually be 911.
- **[DsplayName] – (Display Name) –** The Display Name of the service. Examples: TOPEKA PD, DISTRICT 1 FIRE DEPT, COOPER EMS/COOPER 1ST RESPONDERS

5.2.1 Fields added for Wyoming

- **[ESB_TYPE] –** Description of the type of service represented in the layer. Either COMBINED or the specific boundary type. Specific boundary type examples include: PSAP, LAW, FIRE, EMS, RESCUE and WRECKER
    - *The following four attributes shall be populated if the data steward uses the "combined" ESB Type. If the COMBINED layer represents more emergency service types, they shall add a display name field for each type.*
- **[PSAP] – (PSAP Display Name) –** The PSAP that serves the area
- **[LAW] – (Law Enforcement Display Name) – L**aw enforcement agency for the area
- **[FIRE] – (Fire Department Display Name) –** The fire response agency for the feature. If the feature defines an area where there is no fire service, then this attribute shall be populated with "NO FIRE SERVICE."
- **[EMS] – (EMS Display Name) –** The emergency medical response for the feature
- **[UPDATEBY] –** The person who last updated the record. The format of this can be set by the data steward, but it should be sufficient to identify the specific individual. First and last name are recommended.
- **[SUBMIT] –** Status of the feature as a "Local Only" feature that is not intended for submission to the Master GIS Repository. Examples can include features outside the Authoritative Boundary or features that are not part of the standard but still desired in the local data. Valid values for this attribute are:
    - **Y –** For Submission to the Master GIS Repository
    - **N –** Local Only, not to be used in the Master GIS Repository
- **[NOTES]** – Notes about the feature, primarily used for communication between the Local Data Maintainer and the Data Aggregator

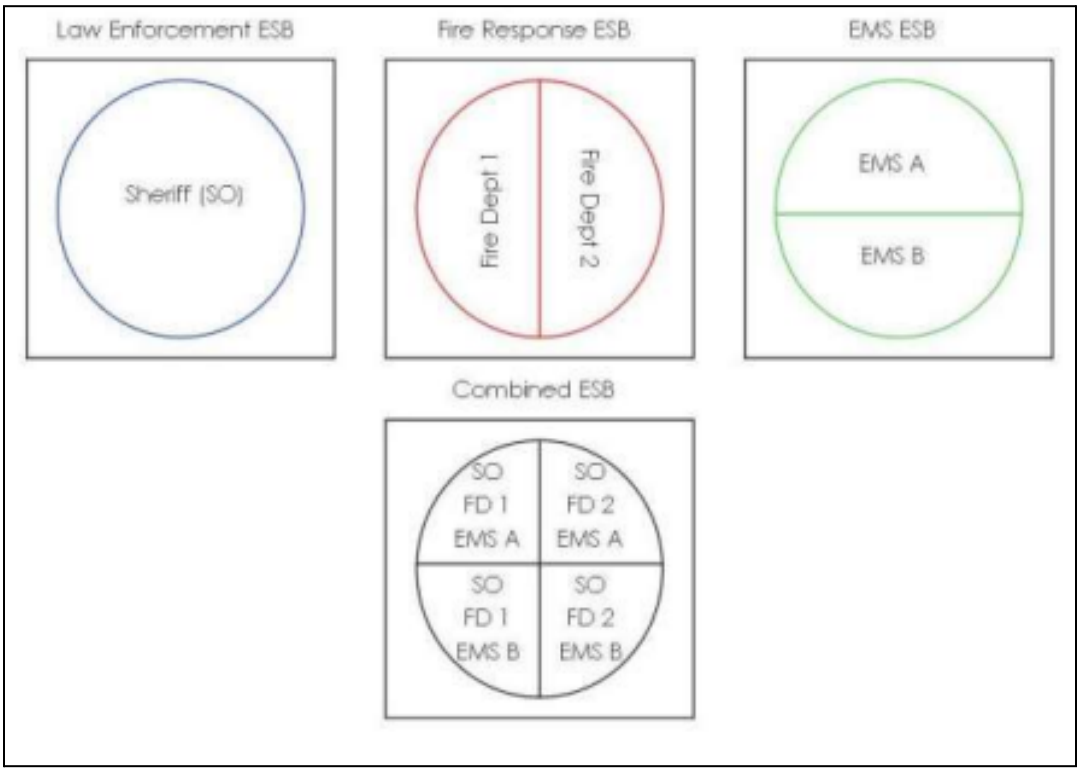
5.3 Layer Names

Emergency Service Boundary layers must be named as follows:

- Combined ESB layer: ESB
- Sheriff/Police Department Boundary layer: ESB_LAW
- EMS Department boundary layer: ESB_EMS

- Fire Department boundary layer: ESB_FIRE
- Optional Rescue Department boundary layer: ESB_RESCUE
- Other optional ESB layers may be named as the Data Steward wishes. Only the “ESB_” prefix is required

5.4 Examples of Separate and Combined ESBs



6 Emergency Service Zone Boundaries

Emergency Service Zone (ESZ) Boundaries are polygons representing a unique combination of emergency service agencies (Law Enforcement, Fire and Emergency Medical Services) designated to serve a specific range of addresses. Each ESZ has a three to five digit identifier called an Emergency Service Number or ESN. The Emergency Service Zone Boundary layer shall completely fill the Authoritative Boundary layer with no gaps and no overlaps.

Is this the same as NENA Section 4 Service Boundaries?

Note: Although ESZs are not used in NG9-1-1 call routing, the transition to full NG9-1-1 deployment will take time. The ESZ Boundaries are required in this data model to support legacy call routing for as long as it remains in use.

6.1 Attribute Table

Attribute				
Field Name	Descriptive Name	Type	Width	M/C/O

DiscrpAgID	Data Steward	A	100	M
DateUpdate	Date updated	D	26	M
Effective	Effective Date	D	26	M
Expire	Expiration Date	D	26	C
NGESZID	Unique identifier in the local dataset	A	38	M
State	State	A	2	M
Agency_ID	LCPA PSAP Code followed by ".wy.us"	A	100	M
ESN	Emergency Service Number	A	5	M
UPDATEBY	Person that last updated the record	A	50	M
SUBMIT	For Submission to Master Repository	A	1	M
NOTES	Notes	A	255	O

6.2 Attribute Descriptions

- **[DiscrpAgID] –** The GNIS/INCITS code for the agency responsible for maintenance of the data.
- **[DateUpdate] –** The date of the last update of the record
- **[Effective] –** The date the record is or was scheduled to take effect. For agencies not recording this information previously, the date of January 1, 2014 (20140101) can be used for all currently effective records
- **[Expire] –** The date the record is scheduled to expire. This field shall only be populated if there is a defined end date.
- **[ESZID] –** An identifier used for tracking Emergency Service Boundaries in the local dataset.
- **[State] –** Two-character abbreviation for the state where the address point is located
- **[Agency_ID] –** Unique ID for the PSAP created by combining the LCPA PSAP Code from the Wyoming NG911 Strategic Plan 2014-2017 with ".wy.us" to create an identifier that will be unique even if combined with data from other states. This field shall be stored as lower case characters. Example: The LCPA PSAP Code for Dickinson County Emergency Communication is "dk". The [Agency_ID] for that PSAP is psap.dk.wy.us
- **[ESN] –** The Emergency Service Number assigned to the ESZ.
- **[UPDATEBY] –** The person who last updated the record. The format of this can be set by the data steward, but it should be sufficient to identify the specific individual. First and last name are recommended. The purpose of this field is to allow the data aggregator to contact the specific person who made a change if there is a question about the edit.
- **[SUBMIT] –** Status of the feature as a "Local Only" feature that is not intended for submission to the Master GIS Repository. Examples can include features outside the Authoritative Boundary or features that are not part of the standard but still desired in the local data. Valid values for this attribute are:
    - **Y –** For Submission to the Master GIS Repository
    - **N –** Local Only, not to be used in the Master GIS Repository

- **[NOTES]** – Notes about the feature, primarily used for communication between the Local Data Maintainer and the Data Aggregator

7 Other Data Layers

The following data layers may be included in the Wyoming NG911 Template Geodatabase at the discretion of the Data Steward. These data layers are intended primarily for map display and not for NG911 geospatial call routing. Some of the layers are recommended within the NENA NG911 GIS Data Model. Other layers are included primarily to standardize data for display in the Vesta Locate map included with the Wyoming 911 Coordinating Council's hosted call handling solution. Those layers that will be included in the centrally managed Vesta Locate maps are marked as such.
The attributes listed for these data layers represent the minimum necessary to include the layers in the Wyoming NG911 Template Geodatabase. Data Stewards may choose to add as many additional attributes as they deem appropriate. Only the ones from the tables below will be available in centrally managed Vesta Locate maps.

Optional Layers:

7.1 Hydrants – For Use in NG9-1-1 Call Handling Map Optional

Point features representing fire hydrants. This data layer will be included in the centrally managed Vesta Locate map for the Data Steward's PSAP and surrounding PSAPs.

Attribute Name	Description	Type	Width	M/C/O
DiscrpAgID	Data Steward	A	100	M
NGHYDID	Unique identifier in the local dataset	A	38	M
HYDTYPE	Hydrant Type	A	50	M
PROVIDER	Water Provider Name	A	100	O
HYDSTATUS	In or Out of Service	A	10	M
PRIVATE	Yes / No / Unknown	A	10	M
SUBMIT	For Submission to Master Repository	A	1	M
NOTES	Notes	A	255	O

7.1.1 Descriptions of Attributes Unique to Hydrants

- **[HYDTYPE] –** Type of hydrant. Valid values are:
- **FIRE HYDRANT –** Standard pressurized fire hydrant **DRAFTING HYDRANT –** Non-pressurized hydrant, also known as a dry hydrant or standpipe.
- **[PROVIDER] –** Name of entity providing water to the hydrant
- **[HYDSTATUS] –** Indicator of the current status of the hydrant. Valid values are: IN SERVICE, OUT OF SER, and UNKNOWN.

- **[PRIVATE] –** General ownership of the hydrant. Valid values are: YES, NO, UNKNOWN.

7.2 Parcel Boundaries – For Use in NG9-1-1 Call Handling Map

Polygon features representing land parcels. This data layer will be included in the centrally managed Vesta Locate for the Data Steward's PSAP and surrounding PSAPs.

Attribute Name	Description	Type	Width	M/C/O
DiscrpAgID	Data Steward	A	100	M
NGWYPID	Wyoming Parcel ID Number	A	19	M
SUBMIT	For Submission to Master Repository	A	1	M
NOTES	Notes	A	255	O

7.2.1 Descriptions of Attributes Unique to Parcel Boundaries

- **[WYPID] –** 19-digit parcel identification number as assigned by the County Appraiser, also known as the CAMA number, with no punctuation. Example: 0211150101018003000, not 021-115-0-10-18-003.00-0

7.3 Gates – For Use in NG9-1-1 Call Handling Map

Point location of a Gate/entrance to a gated facility in or along the roadway. Not for gates along the side of the road, but for gates that potentially separate public roadways from private roadways, such as found at gated communities, tolled facilities, public parks, apartment complex access roads, and public roads managed by state or federal agencies not under the authority of the Secretary of Transportation.

Attribute Name	Description	Type	Width	M/C/O
DiscrpAgID	Data Steward	A	100	M
NGGATEID	Unique identifier in the local dataset	A	38	M
GATE_TYPE	Type of gate	A	2	M
SIREN	Gate is opened by sirens	A	1	M
RF_OP	Gate is opened by radio signal	A	1	M
KNOXBOX	Gate is opened by Knox Box	A	1	M
KEYPAD	Gate is opened by keypad	A	1	M
MAN_OPEN	Gate is opened manually	A	1	M
GATEOPEN	Gate is kept open	A	1	M

G_OWNER	Administrative owner of the gate	A	50	O
SUBMIT	For Submission to Master Repository	A	1	M
NOTES	Notes	A	255	O

7.3.1 Descriptions of Attributes Unique to Gates

- **[GATE_TYPE] –** Type of gate chosen from the following domain: Steel Road Gate; Bollard; Right Angle Gate; Kissing; Width Limiter; Private Community Gate, Unknown
- **[SIREN] –** Gate is automatically opened by approaching sirens: Y(es); N(o); U(nknown)
- **[RF_OP] –** Gate is opened by radio signal: Y(es); N(o); U(nknown)
- **[KNOXBOX] –** Gate is opened by Knox Box: Y(es); N(o); U(nknown)
- **[KEYPAD] –** Gate is opened by keypad: Y(es); N(o); U(nknown)
- **[MAN_OPEN] –** Gate is opened manually: Y(es); N(o); U(nknown)
- **[GATEOPEN] –** Gate is kept open at all times: Y(es); N(o); U(nknown)
- **[G_OWNER] –** Administrative owner of the gate

7.4 Utility Service Areas – For Use in NG9-1-1 Call Handling Map

One Call (8-1-1) boundaries if available could be incorporated into GIS Layers in case of emergency. These could include any utilities that 8-1-1 locates for, Gas, Electric, Water, Wastewater, Fiber, Phone, and other related layers.

Polygon representation of the service area of utilities. Data Stewards may include any of the following layers: UT_ELECTRIC; UT_GAS; UT_SEWER; UT_WATER. These data layers will be included in the centrally managed Vesta Locate for the Data Steward's PSAP and surrounding PSAPs.

Attribute Name	Description	Type	Width	M/C/O
DiscrpAgID	Data Steward	A	100	M
NGUSERVID	Unique identifier in the local dataset	A	38	M
UTIL_NAME	Name of the utility	A	50	M
PHONENUM	Emergency contact number for utility	A	50	M
SUBMIT	For Submission to Master Repository	A	1	M
NOTES	Notes	A	255	O

7.4.1 Descriptions of Attributes Unique to Utility Service Areas

- **[UTIL_NAME] –** Common name of the utility serving the area
- **[PHONENUM] –** Emergency contact phone number for the utility, with any necessary extensions and notes.

7.5 Bridges – For Use in NG9-1-1 Call Handling Map

Point features representing bridges. This data layer will be included in the centrally managed Vesta Locate for the Data Steward's PSAP and surrounding PSAPs.

Attribute Name	Description	Type	Width	M/C/O
DiscrpAgID	Data Steward	A	100	M
NGBRIDGE	Unique Identifier in the local dataset	A	38	M
LPA_NAME	Local identifier for the bridge	A	75	O
STRUCT_NO	FHWA Structure number	A	15	O
WEIGHT_L	Weight limit	I		O
OVERUNDER	Over or Under bridge	A	5	O
STATUS	Open or Closed to traffic	A	10	O
SUBMIT	For Submission to Master Repository	A	1	M
NOTES	Notes	A	255	O

7.5.1 Descriptions of Attributes Unique to Bridges

- **[LPA_NAME]** – Local public agency identifier for the bridge. Examples can include assigned addresses, local index numbers, or federal identification numbers.
- **[STRUCT_NO] –** FHWA Structure Number for the bridge
- **[WEIGHT_L] –** Weight limit for the bridge
- **[OVERUNDER] –** Whether a bridge allows traffic to pass over or under a road, river, railway, etc. OVER, UNDER
- **[STATUS] –** Traffic allowed on the bridge. OPEN, CLOSED, EMERGENCY ONLY

7.6 Cell Sites – For Use in NG9-1-1 Call Handling Map

Point data representing cell tower sites

Attribute Name	Description	Type	Width	M/C/O
DiscrpAgID	Data Steward	A	100	M
DateUpdate	Date updated	D	26	M
NGCELLID	Unique identifier in the local dataset	A	38	M
Effective	Effective Date	D	26	M

Expire	Expiration Date	D	26	C
State	State	A	2	M
County	County	A	75	M
HEIGHT	Full height of tower and antennas	A	10	O
TWR_TYP	Antenna or tower type	A	50	O
UPDATEBY	Person that last updated the record	A	50	M
SUBMIT	For Submission to Master Repository	A	1	M
NOTES	Notes	A	255	O

7.6.1 Descriptions of Attributes Unique to Cell Site/Sector Centroids

- **[HGT]** - Full height of the tower and all antennas
- **[TWR_TYP]** – Indicator of the specific tower type. TOWER-MONOPOLE, TOWER LATTICE, TOWER-GUYED, TOWER-BROADCAST, TOWER-STEALTH, TOWER ROOFTOP, TOWER-WATER TOWER, TOWER-MICRO/MINI

7.7 Municipal Boundaries – NENA Recommended & – For Use in NG9-1-1 Call Handling Map

Attribute Name	Description	Type	Width	M/C/O
DiscrpAgID	Data Steward	A	100	M
DateUpdate	Date updated	D	26	M
Effective	Effective Date	D	26	M
Expire	Expiration Date	D	26	C
ES_NGUID	Unique identifier in the local dataset	A	38	M
State	State	A	2	M
County	County	A	75	M
MUNI	Municipality	A	100	M
UPDATEBY	Person that last updated the record	A	50	M
SUBMIT	For Submission to Master Repository	A	1	M
NOTES	Notes	A	255	O

7.8 County Boundaries – NENA Recommended

Attribute Name	Description	Type	Width	M/C/O
DiscrpAgID	Data Steward	A	100	M
DateUpdate	Date updated	D	26	M
NGCOUNTYID	Unique identifier in the local dataset	A	38	M
State	State	A	2	M
County	County	A	75	M
UPDATEBY	Person that last updated the record	A	50	M
SUBMIT	For Submission to Master Repository	A	1	M
NOTES	Notes	A	255	O

7.9 Cell Sector Centroids – NENA Recommended

Point data representing cell sector centroids

Attribute Name	Description	Type	Width	M/C/O
DiscrpAgID	Data Steward	A	100	M
DateUpdate	Date updated	D	26	M
NGCELLID	Unique identifier in the local dataset	A	38	M
Effective	Effective Date	D	26	M
Expire	Expiration Date	D	26	C
State	State	A	2	M
County	County	A	75	M
SITEID	Identifier assigned by cell company	A	10	C
SECTORID	Cell sector face or Omni	A	4	C
SWITCHID	Mobile Switch Center ID	A	10	C
MARKETID	Market ID of Mobile Switch Center	A	10	C
C_SITEID	Name of cell site	A	10	C
ESRD	ESRD of sector or the first number in the	N	10	C

	ESRK range			
LASTESRK	Last number in the ESRK range for the PSAP	N	10	C
SECORN	Antenna orientation	A	4	C
UPDATEBY	Person that last updated the record	A	50	M
SUBMIT	For Submission to Master Repository	A	1	M
NOTES	Notes	A	255	O

7.9.1 Descriptions of Attributes Unique to Cell Site/Sector Centroids

- **[SITEID] –** Some carriers have cell site identifications unique for that cell site within the entire carrier network.
- **[SECOTRID] –** The cell sector ID of the cell tower sector antenna face associated with the location
- **[SWITCHID] –** The wireless switch to which the site is homed or associated with, as given in the wireless routing spreadsheet.
- **[MARKETID] -** The mobile switch ID provided on the wireless routing spreadsheet • **[C_SITEID]** – Name provided by the wireless service provider on the wireless routing sheet, usually unique to the cell site.
- **[ESRD]** – Pseudo ALI or the beginning pseudo ALI range, for the Emergency Service Routing Digit (ESRD) or the Emergency Service Routing Key (ESRK) as provided on the wireless providers wireless routing spreadsheet.
- **[LASTESRK]** – The last 10-digit number in the Emergency Service Routing Key (ESRK) pseudo ALI range.
- **[SECORN]** - The orientation of the cell tower sector antenna face associated with the location.

8 Metadata

Every data layer in the Wyoming NG911 GIS Data Model shall have the FGDC mandatory fields as defined in the Content Standard for Digital Geospatial Metadata (CSDGM) Essential Metadata Elements document. When using the Wyoming NG911 Template Geodatabase in Esri ArcGIS Desktop software, many of these metadata elements are automatically populated. The following elements, described as they appear in ArcGIS Desktop software, must be populated by the Local Data Steward directly:

- Item Description Section
    - Abstract
    - Purpose
    - Tag, topic or theme keyword
- Citation Section
    - Publication Date
- Citation Contacts Section
    - Originator
- Contacts Section
    - At least one metadata contact
- Details Section

    - Status Code
- Extents Section
    - Temporal Extent
- Maintenance Section
    - Maintenance Frequency Code
- Lineage Section
    - Statement

9 Appendix A: Reference Documents

Wyoming NG911 Strategic Plan 2013-2017

NENA Draft GIS Data Model for NG9-1-1

NENA ADM 000.17 Master Glossary

NENA GIS Data Collection and Maintenance Standard 02-014 Version 1

NENA Informational Document on Synchronizing GIS Databases with MSAG and ALI 71-501, Version 1.1

Content Standard for Digital Geospatial Metadata (CSDGM) Essential Metadata Elements USPS Publication 28

RFC 4589 Location Types Registry

MAF/TIGER Feature Class Code Definitions

ANSI County and County Equivalents

NENA NG011 United States Civic Location Data Exchange Format (CLDXF) Standard 004.1.1- 2014

Wyoming Guidelines and Best Practices for GIS Road Centerlines

10 Appendix B: Frequently Asked Questions

1. **We assign addresses off of the driveway. Why should the primary address point be on the structure?**
    a. Assigning the address by the driveway or access point is perfectly appropriate. However, the placement of the address point on the structure itself offers several benefits. For landline calls, it is the best geographic representation of where the call is actually coming from. In disasters, the actual structure location allows for a more accurate determination of whether a building could be affected. It is important to remember that a duplicate point may be kept on the driveway or access point, as long as it is marked as “SECONDARY – ACCESS”.
2. **Where do I put an address point on an empty lot?**
    a. There is no specific location to place a point if there is no structure involved. Remember that the address represents something. If you can place the point on that thing, you should do so. If that thing is an empty lot or a public field or something similar, then any location on the property that seems most appropriate to you is fine.

3. **I keep roads and fire districts that are in a different county in my county's 911 GIS data. Do I have to remove them?**
    a. Each Local Data Steward is only allowed to submit for call routing those features (roads, fire district polygons, etc.) that are inside their Authoritative Boundary. If you are keeping features from a neighboring county in your data, you cannot submit those features for call routing. But you can keep them in your data. In Version 1.1 of this document, the SUBMIT field was added to all feature classes. If you want to keep a feature in your data that is outside your Authoritative Boundary, you can populate the SUBMIT field for that feature with an "N", which means that it is not intended for submission to the Master Repository for call routing. That way you can keep all the data you need in one database and still easily identify the features that will be submitted for call routing.
4. **We have addresses that do not relate to actual roads, do we need to add road centerline segments to match those addresses?**
    a. Not for NG911. One of the reasons you have address points is to represent addresses that do not have associated road segments, and NG911 call routing will not require address points to match to a specific centerline segment. However, you may have a local application, like your Computer Aided Dispatch application perhaps, which cannot understand address points. Many systems are built to geocode only on road centerlines. If you are supporting a system like that locally, then you may need to have a segment that matches up to every valid address.
5. **Are the fire districts for taxation the same as fire districts for response?**
    a. Not always. Not all fire departments levy taxes. Some get their budgets from cities or townships in their service area. And the fact that a fire department levies tax on a property doesn't necessarily mean they provide fire service to that property. It is much easier to change response areas than taxing districts. Taxing districts were often formed a long time ago, and response areas have adjusted since then to account for growth in the area or changes in the road system. A fire district map generated from taxing districts may not be applicable to emergency response. It is important to be sure that someone working directly in 911 reviews the fire district map closely.

11 Appendix C: Version History

Draft Version 1.0 Formatted 05/31/2023

- Based on *Kansas NG911 GIS Data Model V2.2*
- Adapted to incorporate the input from the NG911 GIS Workgroup

12 Appendix D: Attribute Domains

The current Attribute Domains are maintained in the Wyoming_ng911_gis_data_model_domains_v2_1.xlsx document

Add LInk, Domains need to be updated, example ESB ESZ Boundary, PSAP