NM911 Quarterly GIS-ALI-MSAG Data Comparison Report

SANJUAN – April, 2025

The Earth Data Analysis Center (EDAC) at the University of New Mexico (UNM) performs data acquisition and processing for the New Mexico 911 (NM911) Program. In Partnership with Geodata Providers, EDAC acquires geospatial data for Road Centerlines, Address Points, and Boundary data such as Administrative, ESN, ESZ, PSAP, etc. for their respective jurisdictions (city, county, or tribal). These data are processed and converted to NM911 State Schema, and then uploaded to the Public Safety Answering Points (PSAP) to assist dispatch operations.

As part of the GIS readiness for current emergency operations and future Next Generation 911 (NG911) transition, EDAC is required to perform a quarterly GIS to Master Street Address Guide (MSAG) and GIS to Automatic Location Identification (ALI) Data comparisons and validations, to ensure that all three datasets are synchronized. This process is essential to maintain data accuracy and integrity of GIS, MSAG, and ALI datasets, which improves the accuracy of GIS data for PSAP map display.

Traditionally GIS, MSAG, and ALI databases have been maintained separately; MSAG is tabular data with a street name with high and low address ranges, whereas GIS data has a spatial component, and segments broken at intersections having separate address ranges for each segment. ALI is tabular data with addresses for associated landline telephone numbers.

The comparison may not provide a 100% match rate and the resulting data discrepancies need to be corrected. Discrepancies between GIS, MSAG, and ALI data can cause call routing and dispatching problems leading to delayed or improper response. The NM911 Program recommends that PSAPs and GeoData providers within each PSAP response area work together to establish a workflow and data maintenance process to correct these discrepancies. The NM911 program will provide assistance to PSAPs and GeoData providers to synchronize these datasets as needed.

National Emergency Number Association (NENA) recommends a minimum match rate of 98% between the two datasets and the NM911 Program intends to follow those standards and guidelines.

The comparison is performed at the PSAP level and all data from the GeoData Provider’s within the PSAP response boundary are aggregated for this purpose.

Data Summary

The following table shows the ALI, MSAG, and GIS datasets used for the comparison, date uploaded, and the feature count.

Dataset	Date Uploaded	Record Count
SJCCNMX2.XLSX	2025-03	2776
San Juan County Road centerlines	2025-03	2751
San Juan County Address Points	2025-03	21153
City of Aztec Road centerlines	2025-03	494
City of Aztec Address Points	2025-03	3582
City of Bloomfield Road centerlines	2025-01	512
City of Bloomfield Address Points	2025-01	3635
City of Farmington Road centerlines	2025-03	3231
City of Farmington Address Points	2025-03	23141

None

GIS - MSAG Comparison Summary

MSAG to GIS Comparison

Criteria	Record Count	Percentage
Exact MSAG and road centerline match	2444	88.1%
Does not have a road centerline match	88	3.17%
Issues with corresponding road centerline ranges	242	8.72%
Total MSAG count	2774	100%

GIS to MSAG Comparison

Criteria	Record Count	Percentage
Exact MSAG and road centerline match	5852	83.74%
Does not have MSAG match	206	2.95%
Issues with corresponding MSAG ranges	930	13.31%
Total road centerline count	6988	100%

Please see the accompanying MSAG Comparison Report spreadsheet and the SANJUAN geodatabase for a complete match and error list.

ALI - MSAG Comparison Summary

ALI to GIS Comparison

Criteria	Record Count	Percentage
Exact ALI and address point match	6807	67.52%
ALI records matched to road centerlines	2398	23.79%
ALI records with no matches to address points or road centerlines	876	8.69%
Total ALI records	10081	100%

Please see the accompanying ALI Comparison Report spreadsheet and the SANJUAN geodatabase for a complete match and error list.

Comparison Process and Interpreting Results

GIS & MSAG Comparison Process

The comparison process creates a concatenation of the address columns, community, and emergency service number (ESN) for road centerline and MSAG datasets. The unique identifier is added to MSAG data under COMPARE column and Road Centerlines under COMPARE_L and COMPARE_R fields for each side of the segment.

For example a road segment with Road name = CENTRAL AVE, Community = ALBUQUERQUE, and ESN = 111, the concatenated string will be CENTRALAVE|ALBUQUERQUE|00111

The datasets were then compared to check if names exist in both files and identifies if they are missing in one or the other dataset. If names exist in both datasets, then the address ranges (highs and lows) are compared.

The MSAG comparison process flags:

- Segments in the MSAG that are not in the NM911 Road Centerlines
- Segments in the NM911 Road Centerlines that are not in the MSAG
- Any values or address ranges in either the MSAG or NM911 Road Centerline that are not in the other dataset.

The MSAG Comparison Report spreadsheet will contain a column **REPORT**, which displays the comparison result for that road/ data

record. Similarly, the Road Centerline GIS dataset will have **REPORT_L** and **REPORT_R** fields that display address issues on each side of the road.

Address range comparisons were performed on entire road segments and are reported as such. For example, consider a road segment CENTRALAVE|ALBUQUERQUE|00111. In the MSAG, this segment has a low of 100 and a high of 249. In the road centerline file, there are two segments, one with a low of 100 and a high of 149, and another with a low of 200 and a high of 299. In this case, the MSAG segment will report that it does not have the range 250-299. In the road centerline, both segments will report that they are missing the range 150-199.

Table	Comparison	Low	High	Report
MSAG_YYYYMMDD	CENTRALAVE|ALBUQUERQUE|00111	100	249	Not in MSAG- Range: 250-299
Road centerline	CENTRALAVE|ALBUQUERQUE|00111	100	149	Not in NM911 road- Range 150-199
Road centerline	CENTRALAVE|ALBUQUERQUE|00111	200	299	Not in NM911 road- Range 150-199

Interpreting the results

Criteria	Description
Exact MSAG match	All ranges between the MSAG and road centerline match for that segment.
Does not have an MSAG match	This segment does not appear in the MSAG extract.
Does not have a road centerline match	This segment does not appear in the road centerline.
Issue with corresponding road centerline range	This MSAG segment represents a larger range than the one in the road centerline. The corresponding road centerline segment(s) will have details regarding missing ranges.
Issue with corresponding MSAG range	This road centerline segment represents a larger range than the one in the MSAG file. The corresponding MSAG segment will have details regarding missing ranges.
Not in NM911 road- Rng XX/ Val XX	This road centerline segment's range does not match perfectly with the MSAG segment's range. The ranges identified are the ranges missing in the road centerline.
Not in MSAG- Rng XX/ Val XX	This MSAG segment's range does not match perfectly with the road centerline segment's range. The ranges identified are the ranges missing in the MSAG.

GIS & ALI Comparison Process

The comparison process checks the tabular ALI data records with GIS address point data uploaded by the GeoData Providers, to identify for each ALI record a corresponding valid address exists in GIS data.

The process compares Address Number, Road Name, Community, and ESN values for each ALI record for a corresponding match in the GIS data. If there is not an exact match found in address points, the unmatched ALI records are then compared with the road centerline data.

ALI comparison with road centerline data follow a similar process as that of MSAG to GIS comparison. The ALI address record is concatenated with road name columns (STR_DIR, STR_PRETYPE, STR_NAME, STR_SUFFIX, POST_DIR), Community and ESN columns to create a unique identifier. A similar unique record is created for the road centerlines. Both datasets were then compared to check if unique names exist. If names exist in both datasets, then the address number for the ALI record will be checked if it fits within the address range (highs and lows) of the corresponding road centerline.

The ALI Comparison Report Spreadsheet will contain a column REPORT, which displays the comparison result for that road/ data record.

Interpreting the results

Criteria	Description
Exact NM911 address point match	For each ALI record there is a corresponding record in the GIS address points.
No Match Found in NM911 address points	This segment does not appear in the MSAG extract.
Does not have a road centerline match	This ALI record does not have a match in the GIS address point data, but the address number fit within the road centerline address range.
No Match found in NM911 address points or road centerlines	This ALI record neither have a match in the GIS address point data nor can be matched using the road centerline address range.

Geodatabase Contents

The accompanying zip file contains a file geodatabase with spatial and non-spatial datasets used in the GIS-ALI-MSAG comparison process.

Source Geodatabase: SANJUAN.gdb
Contains two feature classes and six tables, as follows:

- AddressPoints – GIS data provided by the local agencies within the PSAP boundary area, imported into State Schema.
- ALI_April, 2025 (table) – ALI data extract received from Lumen (formerly CenturyLink).
- ALI_Comparison_Report (table) – The results of ALI & GIS comparison.
- ALI_ImportErrors (table) – ALI records with invalid data values for address numbers or street name in the source data.
- MSAG_April, 2025 (table) – MSAG data extract received from Intrado.
- MSAG_Comparison_Report (table) – The results of MSAG & GIS comparison.

- RoadCenterlines – GIS data provided by the local agencies within the PSAP boundary area, imported into State Schema.
- RoadCenterlines_MSAG_Ranges (table) – Intermediate data created for data comparison with road centerlines with address ranges.

Data Corrections

MSAG and ALI corrections must be done on the 9-1-1NET Portal. MSAG Coordinators at PSAPs shall have access to the 9-1-1NET managed by Intrado. Whereas GIS errors must be corrected on the local road centerline datasets managed by the GeoData Providers.

Contact Information

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