



GIS and 9-1-1 Data Management

Presented By:

Shirley Corbett - GIS Manager/President
&
Valerie Shine - GIS Specialist

9-1-1 Data vs. “Other” GIS Uses



- ❖ Business Needs (Other agencies, groups)
- ❖ Coordination
- ❖ State & Local Standards
- ❖ Accuracy Requirements
- ❖ Technical Requirements of 9-1-1 Software
- ❖ Data Sharing

Topics

- ❖ Map Projections
- ❖ Centerline Data
- ❖ Polygon Data
- ❖ QC
- ❖ The Future



Map Projections

Definition of map projection

a projection of the globe onto a flat map using a grid of lines of latitude and longitude



- ❖ Are your calls plotting in the Pacific?
- ❖ Most 9-1-1 mapping data needs to be in the same projection.

If the datasets have mismatched projections you may see something like this:



The mapping software and data need to have compatible projection settings!

Centerline Data



Geometry: Settings

Enabling the following settings can prevent errors in geometry.

Our recommendations:

- ❖ Snapping: 7 pixels
 - Snapping automatically “snaps” your end vertex to any vertex when you are within the above snapping tolerance.

- ❖ Snap Tips: Enabled
 - As you’re moving or creating vertices, if you hover over a vertex a snap tip will appear indicating which layer the vertex is being snapped to and whether it is snapping to a vertex, edge or end.

- ❖ Sticky Tolerance: 500 pixels
 - This will prevent vertex movement within the 500 pixels.
EX: Double clicking a vertex and accidentally moving it.

See “Tips and Tricks” handout for details

Centerline Data



Geometry: Digitizing

- Digitizing, what are your needs?

Discussion Points:

- ❖ Digitizing to the center of the parcel ROW vs. the center of the traveled way
- ❖ ROW issues
- ❖ Parcel accuracy
- ❖ Orthophotography accuracy
- ❖ Compare parcels to orthophotography
- ❖ Using Arcs



Centerline Data

Attributes: General

For 911 calls to plot on the map the centerline attributes must match the MSAG.

MSAG Attributes:

- ❖ Prefix
- ❖ Street Name
- ❖ Suffix
- ❖ Street Type
- ❖ Community
- ❖ ESN
- ❖ Address Ranges

More on this in our next presentation...



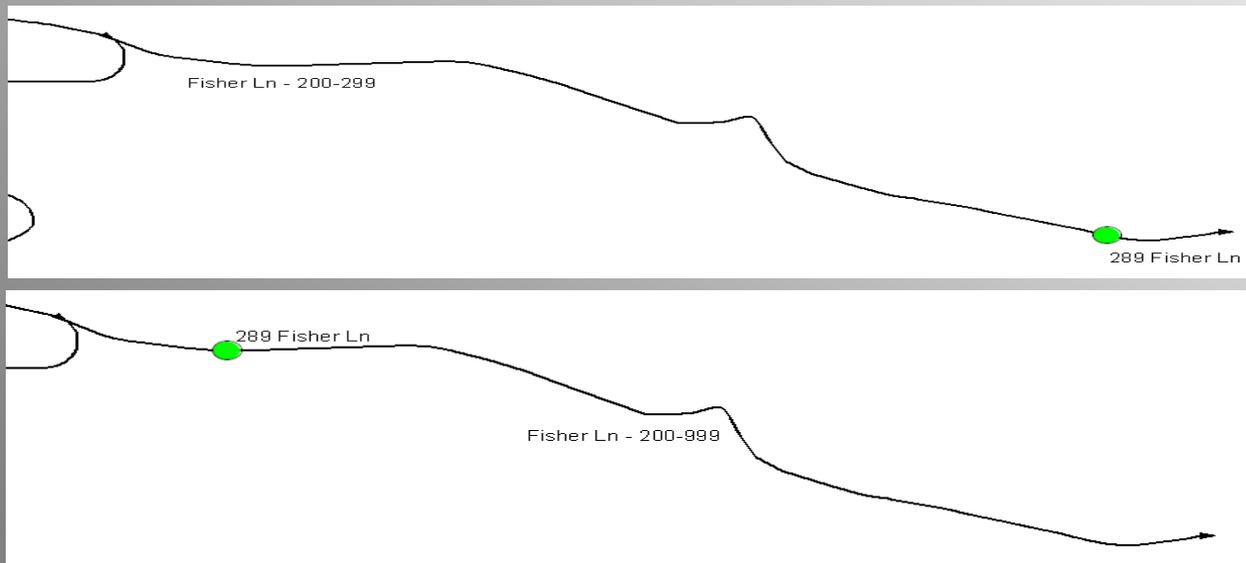
Centerline Data



Attributes: Address Ranges

Geocoding:

- ❖ The goal – plotting calls as close as possible to the physical address
- ❖ Considerations:
 - Ranges may need to be buffered, roads may need to be split and re-ranged
 - MSAG range needs to be covered or calls will NOT plot
 - No addressing beyond a specific point – coordinate with MSAG Coordinator
 - You may create an address that will not plot by assuming!



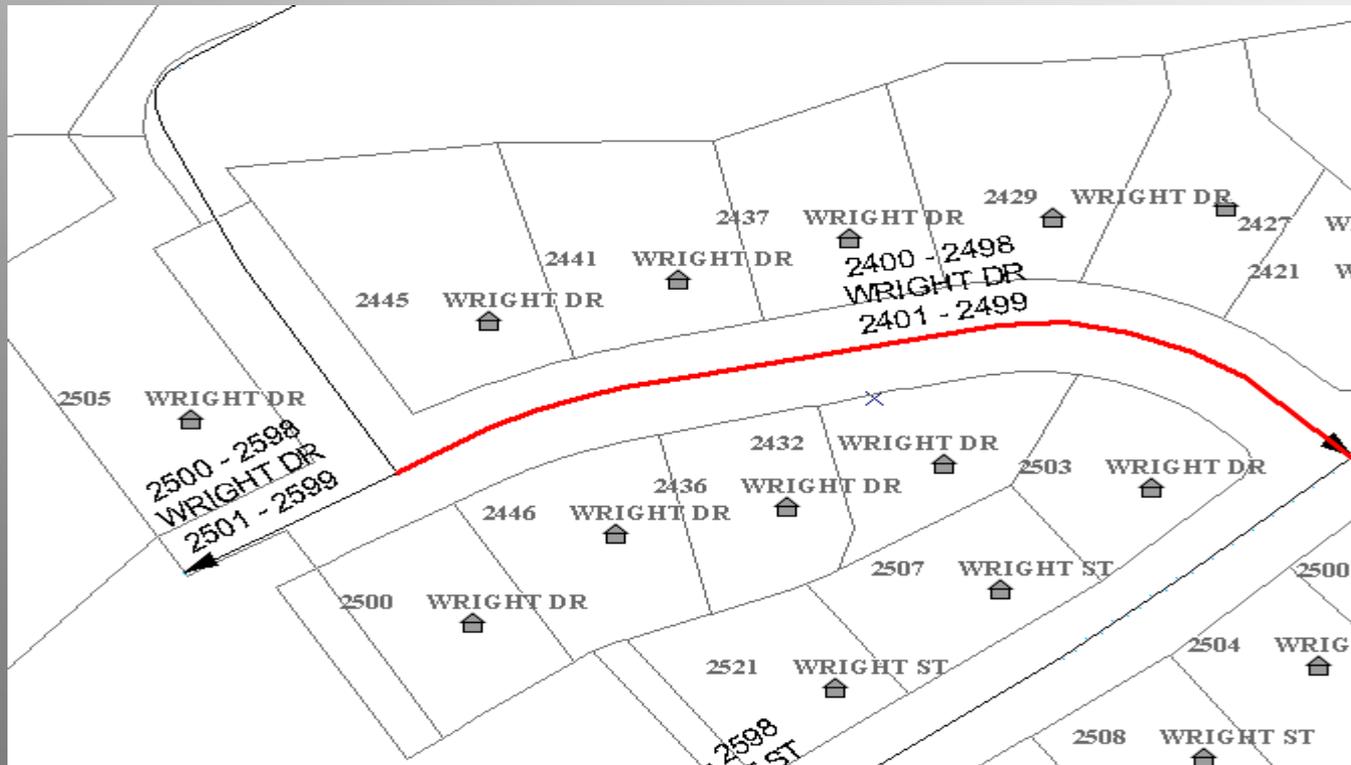
See "Tips and Tricks" handout for details

Centerline Data



Attributes: Address Ranges & Geometry

- ❖ Ranges must go from low to high
- ❖ Centerline geometry needs to match
- ❖ Flip direction if needed to match parcel information



See "Tips and Tricks" handout for details

Centerline Data



Attributes: Aliases

9-1-1 Aliases:

An alias should only be assigned to a road in the 9-1-1 center/data if it is an MSAG Alias.

- EX: SE Rosewood Rd and SW Rosewood Rd

These two road names refer to the addressing on either side of the same road

*** Must be coordinated with the software needs!**

“Other” local known road/street names:

Other aliases can be added BUT it should be coordinated with both the 9-1-1 group and the local needs. A potential panel discussion.....

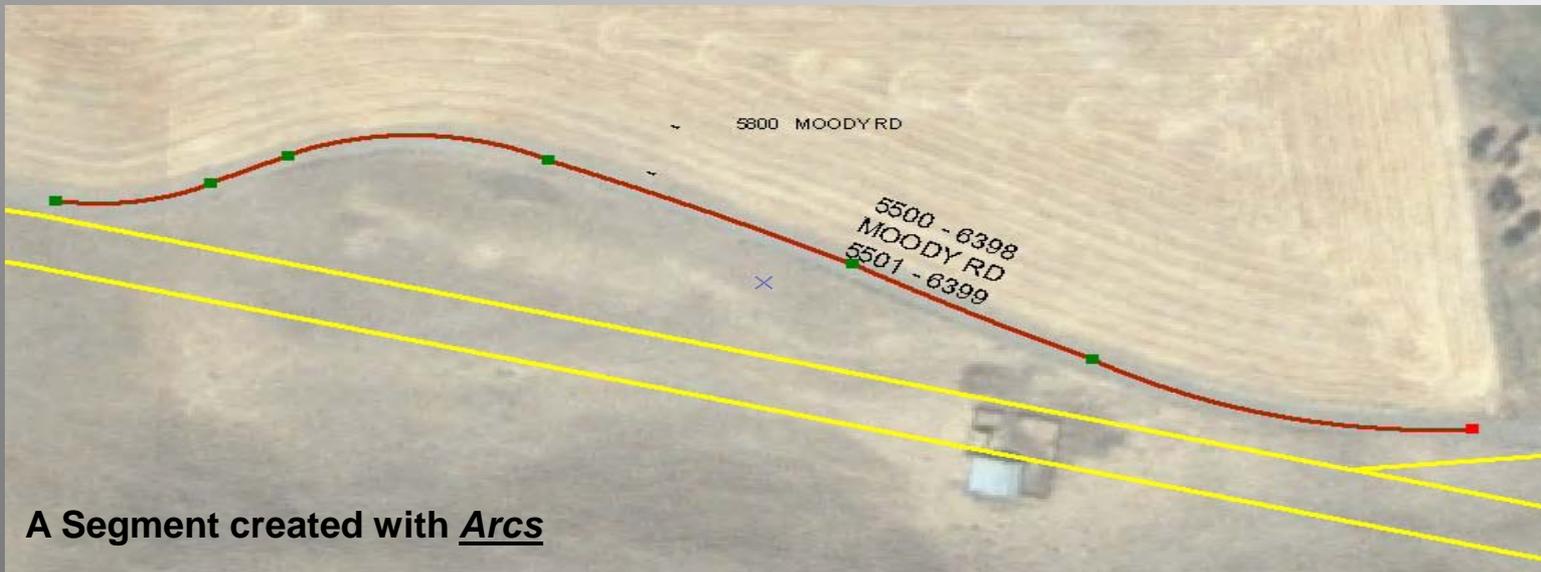
Potential items for discussion: Signed as, legal road name, local road names.....

Polygon Data



Tools That Can Cause Errors

- ❖ Arcs: These can create unnecessary vertices causing the time it takes to draw/redraw increase significantly.
- ❖ Clip and Intersect: These can drop vertices causing topology errors.
- ❖ Auto Complete: This can shift vertices causing topology errors.



A Segment created with Arcs

Polygon Data

Police, Fire & EMS – Other?

- ❖ Legal
- ❖ ARA
- ❖ Mutual Aid
- ❖ Shared Response Areas
- ❖ Etc.....



QC



❖ Sorting

- Sort your data by Shape_Length or Shape_Area.
- Values below 10 in your centerline file should be reviewed.
- Irregular values are indicators of possible errors.

❖ Select By Attributes

- Check for address range issues.
- Use the Get Unique Values button to check for variations in standard fields:
 - Street Type
 - Pre Direction
 - Suffix Direction
 - Community or City
 - ESN

This will allow you to see if there are any misspellings

See “Tips and Tricks” handout for details

QC



Topology

- ❖ Topology is a function of ArcGIS (ArcEditor or higher) that verifies the integrity of the geometry.
- ❖ By using this tool you can flag vertexes that are not snapped to a line, multi-part features, overlaps etc.
- ❖ There are many tools and ways of QC'ing and automating this process.
- ❖ It's just important to do it!

See “Topology” handout for details

QC



Multi-part features:

Multipart features are point, line or polygon features that are spatially separate but linked as one feature.

❖ Causes:

- Potential causes of this are missing vertices or accidental merges.

❖ Issues:

- Mapping software may not support Multi-part features in centerline data.

❖ Corrections:

- Explode the features



- Review the attributes for each line segment.
- Redo the attribute data as needed.

See “Topology” handout for details

QC



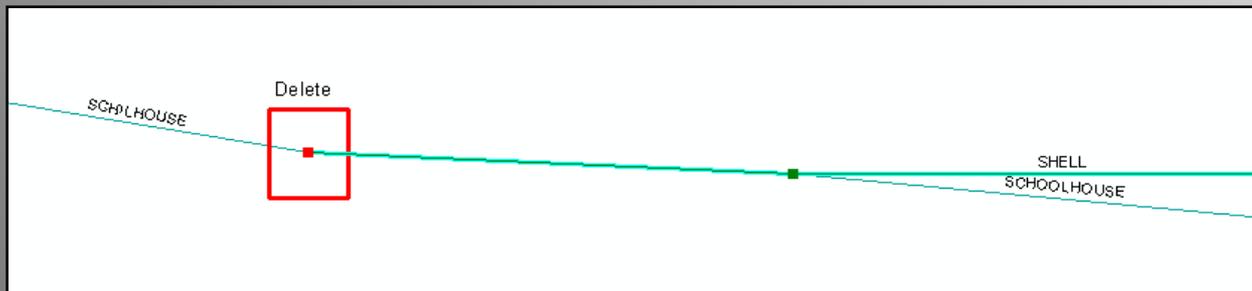
Overlaps:

Overlaps generally occur when more than one vertex snaps to an intersecting street.

Example:

In the example below Shell Rd and Schoolhouse St overlap.

You should be able to tell which road is overlapping the other by looking at the vertices and the Aerial Photography.



See “Topology” handout for details

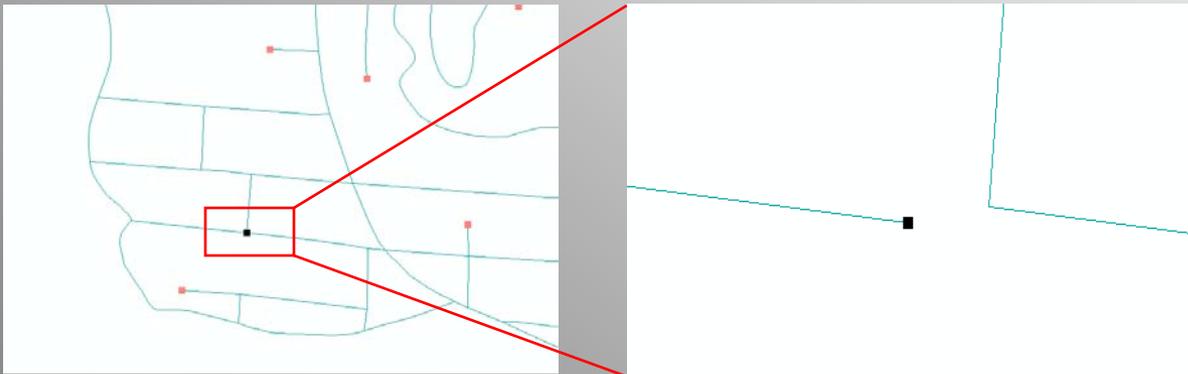
QC



Dangles:

Most dangles are not errors. They're usually the ends of streets. However; when you zoom to a dangle and it looks as if the street continues or intersects with another street there may be a missing vertex or a snapping error.

Once your snapping is on - you can snap the end of this street to the vertex at the intersection.



Dangles like this present connectivity issues may limit a software's ability to provide accurate directions for routing.

See “Topology” handout for details

The Future



- ❖ Stitching data together
- ❖ Agreement points
- ❖ Data sharing
- ❖ Out of county responder areas
- ❖ Shared or borrowed dispatchers
- ❖ Other data sets
- ❖ Pre planning the Pre-Plans
- ❖ State standards – at least trying
 - Road attributes
 - Addressing items
 - Think of the “other” business needs
- ❖ Shared MSAG issues (county to county)

Questions





The End

Thank You