Design & Implementation of the Mono County Enhanced 911 System
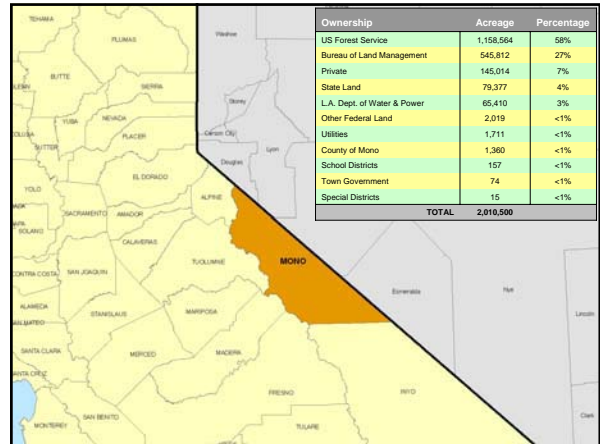
August, 2008

Presentation by
Nate Greenberg, GIS Coordinator

Ownership	Acreage	Percentage
US Forest Service	1,158,564	58%
Bureau of Land Management	545,812	27%
Private	145,014	7%
State Land	79,377	4%
L.A. Dept. of Water & Power	65,410	3%
Other Federal Land	2,019	<1%
Utilities	1,711	<1%
County of Mono	1,360	<1%
School Districts	157	<1%
Town Government	74	<1%
Special Districts	15	<1%
TOTAL	2,010,500	

PARTICIPATING AGENCIES

- Mono County (County)
  - Public Works Department has legal addressing authority
  - IT / GIS is handling integration and QC

- Town of Mammoth Lakes (Town)
  - Public Works Department has legal addressing authority
  - Data passed to Mono County for integration into data model

- Mono County Sheriff Department (MCSD)
  - Manage the 911 dispatch system for Mono County & Town of Mammoth
  - All data is integrated into their Computer Automated Dispatch system

- Town and County Emergency Responders (Law Enforcement, Fire, Medics)

- Mammoth Community Water District (MCWD)
  - Performed initial field review and data collection for Mammoth
  - Data handed off to Town for QC review in 2005
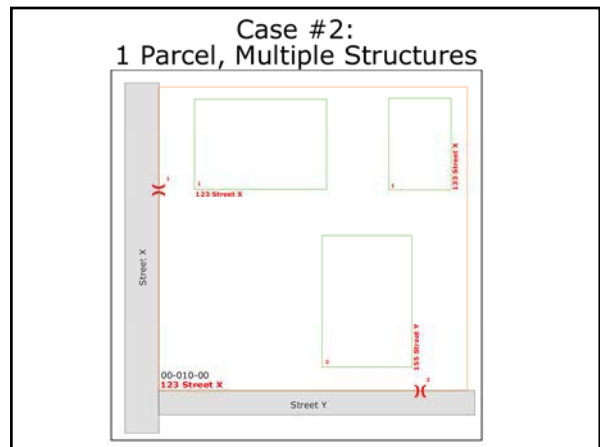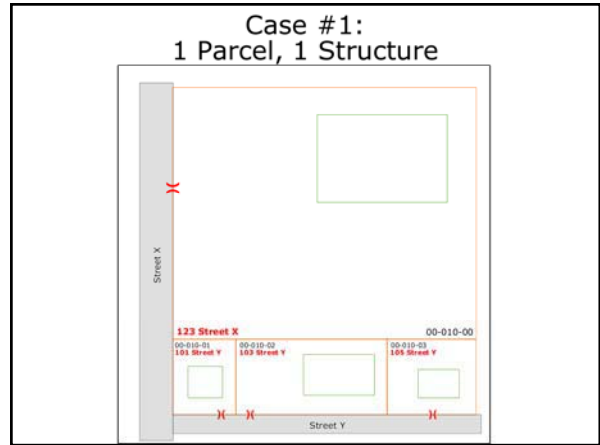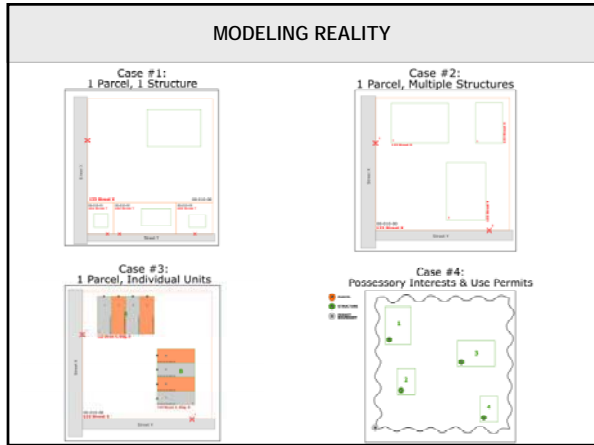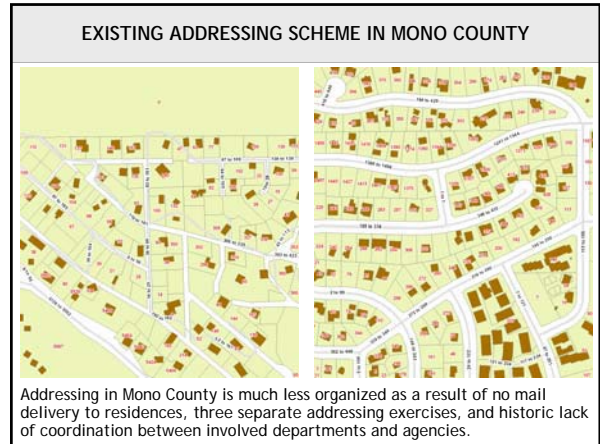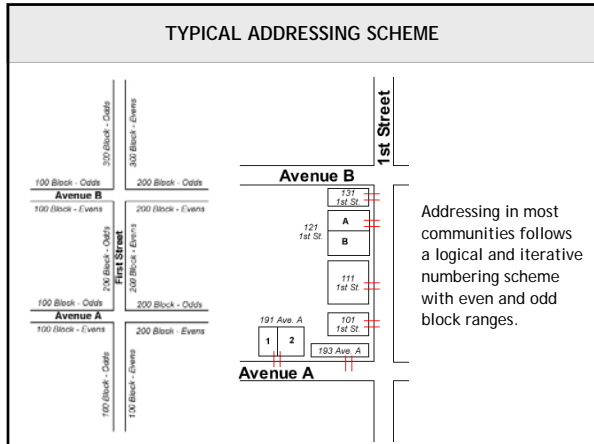

BRIEF HISTORY

Pre-2002:
- Mono County Dispatch relied on Verizon's standard phone record database with names, addresses and phone numbers (ANI/ALI)
- EMS and interested agencies began talking about improving dispatch system

2002-2003:
- MCWD responds to own interests and those of local EMS entities and began collecting posted addresses as part of their summer GPSing projects
- County contractor Talon Associates, LLC approached about the addressing problem

2004:
- Conversations between MCSD, Mono County I.T. and Talon Associates began regarding the use of grant money to improve 911 dispatch system
- Interagency GIS cooperation was established between County, Town and MCWD and an in-house GIS Coordinator was hired on by Town and County
- RIMS by Sun Ridge Systems implemented by Mono County Sheriff for dispatch and record management

2005 - 2007
- Development of GIS data, addressing data model and project scope
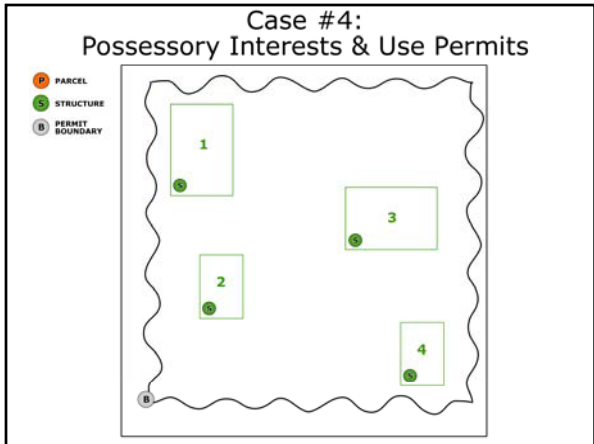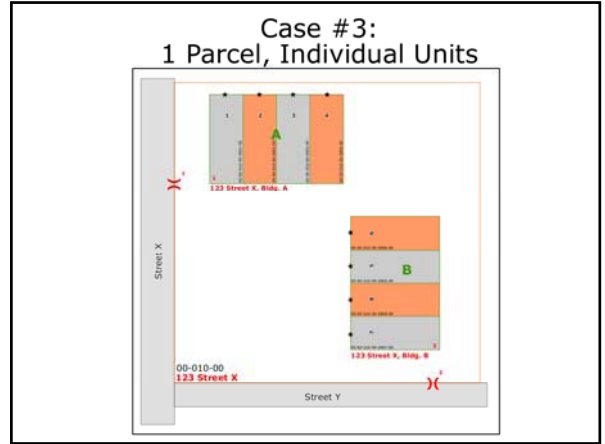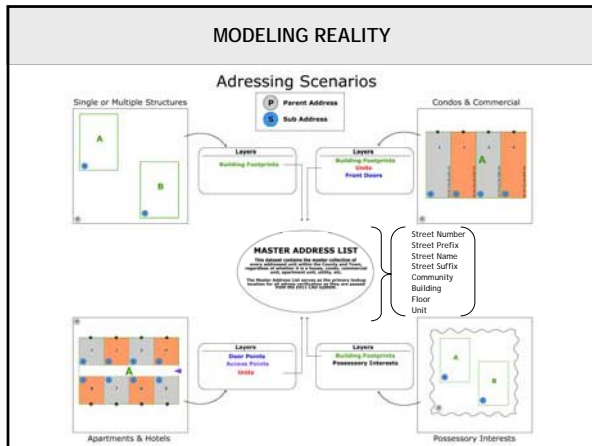- Early address maps and other digital products become available

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PROJECT FOCUS

The 911 Project consists of four major focus areas:

1. Capture existing and develop new data to represent 'as-built' conditions in all populated areas of the County

2. Data Verification Process
   (a) Perform field checks
   (b) Verify presence/accuracy of posted addresses
   (c) Update Addressing Ordinances to meet new addressing standards

3. Produce paper map products, both large and small formats, for use in offices and in vehicles

4. Implement Enhanced 911 (E-911) System and Computer Automated Dispatch

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FOCUS AREA #1
Capturing and Managing Address Data

- Data was compiled from records within Mono County and Town's Public Works Departments and converted into database format

- Addresses were associated to specific parcels, structures and units based on Assessor Parcel Numbers with GIS

- Analyses were performed and maps created to check the accuracy of the associations

- Updates and revisions are continuous based on information gathered in the field, from permit applications, new development proposals, etc.

- Data updates happen daily between the County Assessor's Office, County/Town Departments and Mono County Sheriff Dispatch

TYPICAL ADDRESSING SCHEME

Addressing in most communities follows a logical and iterative numbering scheme with even and odd block ranges.

EXISTING ADDRESSING SCHEME IN MONO COUNTY

Addressing in Mono County is much less organized as a result of no mail delivery to residences, three separate addressing exercises, and historic lack of coordination between involved departments and agencies.

MODELING REALITY

Case #1: 1 Parcel, 1 Structure

Case #2: 1 Parcel, Multiple Structures

Case #3:
1 Parcel, Individual Units

Case #4:
Possessory Interests & Use Permits

MODELING REALITY

Adressing Scenarios

Single or Multiple Structures

P Parent Address
S Sub Address

Condos & Commercial

MASTER ADDRESS LIST

Street Number
Street Prefix
Street Name
Street Suffix
Community
Building
Floor
Unit

Apartments & Hotels

Possessory Interests

DATA MODEL

- ArcSDE Personal Data Model on Microsoft SQL database

- Replication between two remote locations (Mammoth and Bridgeport)

- Multiple editors with different focuses

- Implementing Survey Analyst Cadastral Editor for parcel data management

- Extensive use of Python scripts for data exports and migration to various servers for 911, ArcIMS, Desktop Users, etc.

FOCUS AREA #2
Field Check and Updating Posted Addresses

- Field maps were created for each community from GIS showing assigned addresses for each property

- Each developed property was evaluated and given a Field Check Status Code, as follows:

    1. Address Posted Correctly

    2. No Address Posted

    3. Address Posted Incorrectly

    4. Re-Address

Sample Field Check map for June Lake
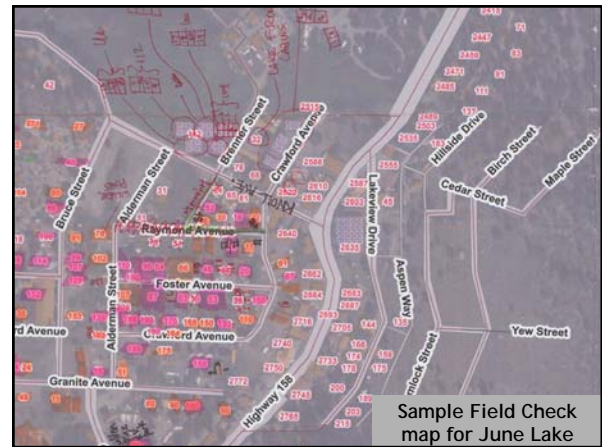
FOCUS AREA #2
Interpreting Collected Field Data

- Field status maps are created for each community or focus area based on information collected

- Each property is updated in GIS with the appropriate Field Check Status Code

- A list of properties is created for each of the four categories

    - Properties that fall into Categories 2 and 3 receive correction letters based on authority present in current addressing ordinances

    - Properties that fall into Category 4 are re-addressed upon the adoption of the new Addressing Ordinances
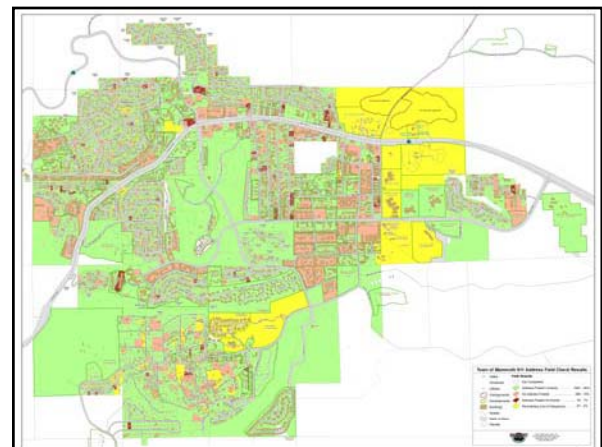
FOCUS AREA #2
Ensuring Accuracy of Posted Addresses

Current Addressing Ordinances provide entities with avenue for enforcing the posting of accurate addresses

In the Town of Mammoth Lakes, address correction letters were sent to nearly 450 homeowners who either had the wrong address posted or no address posted at all

- Homeowners are required to comply with current standards and are held accountable via fines
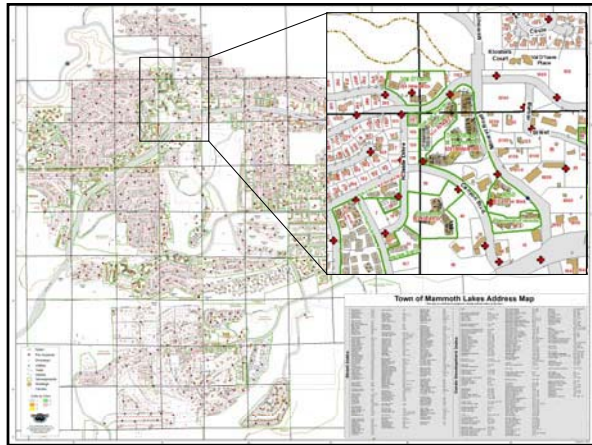

FOCUS AREA #3
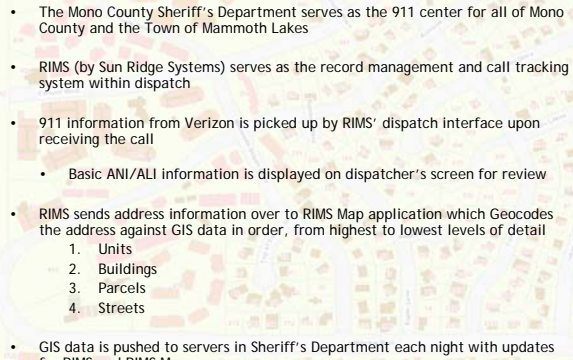### Map Production

- Large format (34" x 44") wall maps are being produced from the GIS data for each of the community areas in the County

  - Maps are routinely updated based on feedback from the local service providers who correct information and add more detail

- Small Format (11" x 17") 'run books' are being produced based on an Address Map Grid that divides the entire County into smaller blocks

  - Using ESRI Production Line Toolset (PLTS) MPS Atlas extension for mapbook creation

  - Grid is based on full, quarter and one-eighth section blocks

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Town of Mammoth Lakes Address Map
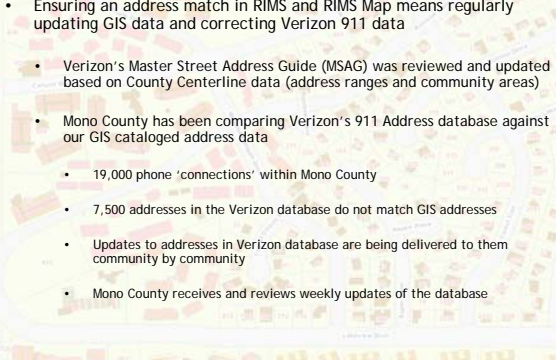

FOCUS AREA #4
Implementation of Dispatch System

- The Mono County Sheriff's Department serves as the 911 center for all of Mono County and the Town of Mammoth Lakes

- RIMS (by Sun Ridge Systems) serves as the record management and call tracking system within dispatch

- 911 information from Verizon is picked up by RIMS' dispatch interface upon receiving the call

  - Basic ANI/ALI information is displayed on dispatcher's screen for review

- RIMS sends address information over to RIMS Map application which Geocodes the address against GIS data in order, from highest to lowest levels of detail
  1. Units
  2. Buildings
  3. Parcels
  4. Streets

- GIS data is pushed to servers in Sheriff's Department each night with updates for RIMS and RIMS Map

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FOCUS AREA #4
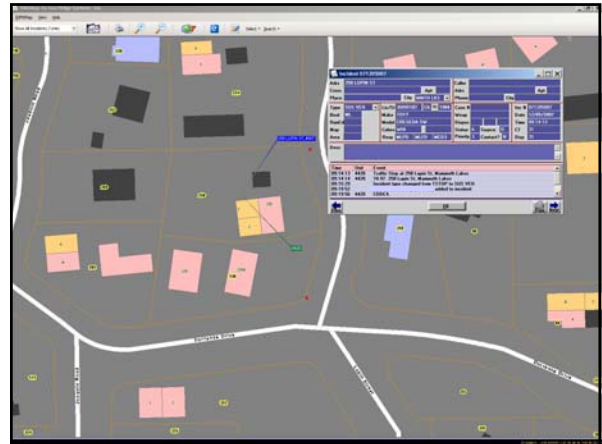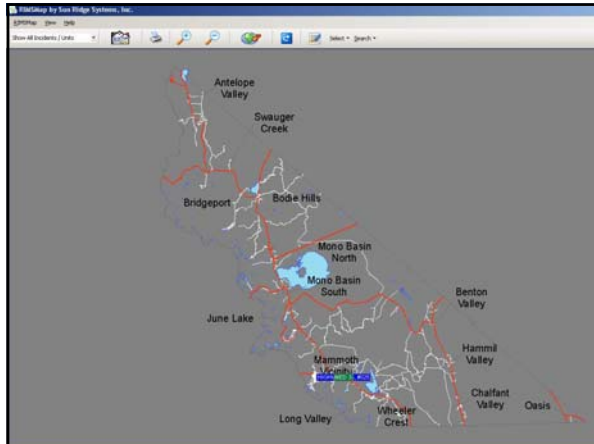### Maintenance of Dispatch System

- Ensuring an address match in RIMS and RIMS Map means regularly updating GIS data and correcting Verizon 911 data

  - Verizon's Master Street Address Guide (MSAG) was reviewed and updated based on County Centerline data (address ranges and community areas)

  - Mono County has been comparing Verizon's 911 Address database against our GIS cataloged address data

    - 19,000 phone 'connections' within Mono County

    - 7,500 addresses in the Verizon database do not match GIS addresses

    - Updates to addresses in Verizon database are being delivered to them community by community

    - Mono County receives and reviews weekly updates of the database

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FOCUS AREA #4
Updating Verizon 911 Data

Correcting addresses in Verizon's database required researching customer names and in some cases having dispatch perform Reverse 911 calls to better determine customer locations

SUMMARY / LESSONS LEARNED

- Realize time required to complete each of the tasks will be more than anticipated

- Have flexibility in your data model in order to accurately describe existing conditions

- Use one community as a pilot to understand needs and create a benchmark for further implementation

- Use personnel and local knowledge in other agencies whenever possible

- Use non-technical staff for data gathering and quality control processes

- Get it right the second time:
  - Build good data sets
  - Work with service providers and other involved departments early on
  - Provide feedback and streamline workflows for departments and service providers
  - Update Ordinances and Workflows to reflect current standards and cut down on future data errors

THANKS FOR COMING!

Questions / Comments?

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