



**MAGIP Spring Meeting 2013**  
**Miles City, MT**  
**Presentation Abstracts & Presenter Biographies**

**Address Data Best Practices: Building a Multi-Use Address Database**

*Michael Fashoway, Addressing & Structures Framework Coordinator, Montana State Library  
Geographic Information*

The Montana State Library (MSL) has been coordinating with local governments to create a statewide address database. By incorporating the best available address data from local governments and adopting a standards-compatible database structure, MSL is creating a single address database that can be used for many different purposes. Learn about best practices in address data management and the benefits for local addressing authorities in implementing best practices. Several examples of how MSL is using the statewide address database will also be discussed.

*Michael is the Addressing & Structures Framework Coordinator with the Montana State Library  
Geographic Information.*

**Census/Montana Census Pilot Project: Working with the Census Bureau to create a seamless  
boundaries dataset**

*Erin Fashoway, Administrative Boundaries Framework Coordinator, Montana State Library  
Geographic Information*

Montana is one of 4 states participating in a pilot project to improve boundaries. This presentation will discuss how the project is being implemented and how tribal and local governments can participate with the State in ensuring accurate administrative boundaries across multiple agencies: local, state, tribal, federal

*Erin is the Administrative Boundaries Framework Coordinator for the Montana State Library  
Geographic Information.*

## **Creating a Value-Added Wetlands Layer: Enhancing the Utility of Montana's Wetlands Framework Theme**

*Karen Newlon, Ecologist/Project Manager, Montana Natural Heritage Program*

The Montana Natural Heritage Program (MTNHP) is the theme steward for the Montana Spatial Data Infrastructure Wetlands Framework Theme. The MTNHP creates the Wetlands Theme following the Wetland Mapping Standard endorsed by the Federal Geographic Data Committee. A key recommendation in this standard is to enhance the current wetland classification by incorporating descriptors that describe wetland characteristics not currently addressed under the existing classification. These descriptors are added to each wetland polygon to describe the landscape position, landform, water flow path, and waterbody type (LLWW) associated with each wetland. The addition of these descriptors can provide a more comprehensive picture of wetland type and potential wetland function. Wetland functional information can then be summarized across watersheds, counties, or other geographic areas, providing essential information to natural resource managers, city and county planning offices, and watershed councils. The MTNHP has developed spatial and attribute queries within a GIS to create a semi-automated procedure for the assignment of LLWW descriptors to wetland data within the MSDI Framework, which are subsequently incorporated into the National Wetlands Inventory of the U.S. Fish and Wildlife Service. We will discuss the background, challenges, recommendations, and future directions of this approach.

*Karen Newlon has been an Ecologist with the Montana Natural Heritage Program since May 2008. She and other ecologists with the Natural Heritage Program are working to create a statewide digital wetlands layer. They are also developing GIS-based wetland assessments techniques and field-based wetland assessment methodologies with the goal of establishing a statewide wetland assessment and monitoring program.*

## **Gallatin County's Large Predator Policy and the GIS Mapping and Data Collection Resulting from the Local Action**

*Allen Armstrong, GIS Manager, Gallatin County*

The Gallatin County Commission hosted several public hearings for public involvement concerning large predators and large game management issues facing southwest Montana. These meetings produced an outpouring of State of Montana, public, and special interest input. Documentation, statistics, and historical data, both in favor of, and in opposition to, wolves and other large predators, in the region surrounding Yellowstone National Park has been received.

Gallatin County GIS, took a purely geographic approach to analyzing the data presented from various members of the public, Montana Fish, Wildlife, and Parks, and forwarded to us from wildlife experts. GIS produced Wolf Pack Location maps, Elk/Wolf Ratio Maps, and Elk Density

Maps for public review and comment. Prior researchers in this field have not traditionally presented data in a GIS format, or in a visual context that relates to the publics' concern.

Goals of the Large Predator Policy will be presented, along with the GIS data collection and analysis that can be explored with the data available. Partnerships and local involvement in state policy will be discussed as an example for other communities to consider.

*Allen Armstrong is a GIS Professional with a background in GIS consulting, project planning and implementation, project partnership development, and data intensive multi-disciplined GPS/GIS and AM/FM projects. He graduated from the Montana College of Mineral Science and Technology in Butte, Montana with a degree in Engineering and has worked in the GIS profession since 1985. Allen presently is the GIS Manager for Gallatin County, Montana and is responsible for overall GIS management, development and promotion of geospatial technology, and enterprise geographic applications throughout all county departments.*

### **Geocoding: Using the Montana State Library Geocoding Web Service**

*Michael Fashoway, Addressing & Structures Framework Coordinator, Montana State Library Geographic Information*

The Montana State Library hosts an ArcGIS Server geocoding web service. The web service is based on the Montana Structures & Addresses Framework, which is a statewide database of structure and address points based mostly on local government address datasets. Learn how to use the geocoding web service in ArcMap to create a GIS point layer from a list of addresses.

*Michael is the Addressing & Structures Framework Coordinator with the Montana State Library Geographic Information.*

### **Implementing ArcGIS Online at the Montana State Library: From Personal Accounts to Subscription Accounts**

*Erin Fashoway, Administrative Boundaries Framework Coordinator, Montana State Library Geographic Information*

The ArcGIS Online Community is growing rapidly. Access to online web mapping is becoming easier every day. This presentation will focus on how the use of ArcGIS Online has evolved at the Montana State Library. We will discuss how we manage and maintain our accounts; how to use existing services; how to create new services; how to create new services within ArcGIS Online; and how to make a simple web mapping application. With ArcGIS Online the possibilities seem endless, which also can strike fear into the GIS profession. We will also discuss how we plan on managing this for the other professionals.

*Erin is the Administrative Boundaries Framework Coordinator for the Montana State Library Geographic Information.*

### **LiDAR Data Support**

*TJ Abbenhaus, Solution Engineer, Esri*

This session will be a recap of the pre-conference seminar where we will discuss and demonstrate managing and using lidar point cloud data with ArcGIS 10.1. Participants will learn how to manage lidar data, use ArcGIS for 2D/3D visualization and analysis, and share their lidar data through web services. Attendees will learn about a complete lidar data management strategy, including: how to catalog their data; when to use LAS Datasets, terrain Datasets, and Mosaic Datasets; what analytical options are available for lidar; how to fuse lidar data with other spatial and operational layers; and techniques for making lidar data more accessible.

*TJ Abbenhaus is a Solution Engineer with Esri, supporting the Northwest Region. TJ has been working in Geography on GIS application development in the areas of Natural Resources, County, State and local governments. TJ has specialized in the Imagery Solutions provided by Esri, and our business partners. Before coming to Esri he was a GIS Programmer Analyst for Kitsap county Washington developing customized applications with ArcIMS, ArcGIS and Enterprise ArcGIS Server. TJ received his M.A. in Geography/Internet Cartography in 2003 from the University of Montana.*

### **MAGIP GIS Mentoring: Peer-to-Peer or Career**

*Leslie Zolman, Montana Department of Commerce, Census & Economic Information Center and MAGIP Professional Development Committee Chair*

GIS tasks can be as challenging as they are rewarding. Fortunately, Montana has consistently hosted an open, helpful, and interconnected GIS community. But, what if you are new to the state or a “Lone Mapper”? What if you’ve been assigned GIS tasks as a side duty and need a bit of guidance along the way? Spend a bit of time with a MAGIP representative and explore MAGIP’s “virtual mentor” resources online. We’ll also talk about “live” mentoring, including using the website’s “Skills” checkboxes to look for MAGIP members (as peers or as classic mentors) who can help you troubleshoot a task, an entire project, or offer guidance with career development.

*Leslie Zolman holds a GISP certification and is the GIS Coordinator for the Montana Department of Commerce, Census and Economic Information Center. She received her Master of Geographic Information Systems in 2010 from Pennsylvania State University. Leslie is the current MAGIP Professional Development Committee Chair.*

## **Partnerships for Research, Collection, and Data Management of Agricultural Irrigation Waterways**

*Allen Armstrong, GIS Manager, Gallatin County*

The network of agricultural irrigation canals throughout the Gallatin Valley, MT has a deep history that often conflicts with recent subdivisions, golf courses, industrial complexes, urban neighborhoods, and modern municipal developments. Researching the location and responsibility of these waterways has revealed a serious insufficiency in records and documentation on the actual location of the routes. GIS can be an integral resource for answering questions concerning water ownership, canal and ditch water origin, and managing agency contacts for the water that is passing nearby or under individual property.

Gallatin County GIS, together with the Association of Gallatin Agricultural Irrigators (AGAI), formed a partnership with the Montana State University, Department of Land Resources and Environmental Sciences to bring together the historical perspective, technical expertise and manpower necessary to collect waterway features. Utilizing the student assistance from upper level MSU GPS/GIS classes, there is now a process established to progressively collect previously unmapped waterway features and build the overall GIS waterways database. This is one step to assuring the continued, uninterrupted distribution of agricultural water in the midst of development.

Partnerships, project specifics, and GIS database development will be presented and discussed as an example for other communities to consider.

Allen Armstrong is a GIS Professional with a background in GIS consulting, project planning and implementation, project partnership development, and data intensive multi-disciplined GPS/GIS and AM/FM projects. He graduated from the Montana College of Mineral Science and Technology in Butte, Montana with a degree in Engineering and has worked in the GIS profession since 1985. Allen presently is the GIS Manager for Gallatin County, Montana and is responsible for overall GIS management, development and promotion of geospatial technology, and enterprise geographic applications throughout all county departments.

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## **Possibilities with Your Parcel Data**

*Mike Powell, GIS Analyst, Yellowstone County*

Parcels are the foundation for about 90% of all layers that Yellowstone County maintains. Its accuracy, both tabular and spatially, are critical. Yellowstone County maintains over 50 separate layers. We will look into some of these layers, how Yellowstone County deals with them and uses them to assist Federal/State/County departments, outside businesses, and the public. There will be a discussion about the GCDB; its usefulness, problems, and some methodologies for improvement.

*Mike has worked for Yellowstone County for 11 years and before that worked for a private company out of Appleton, Wisconsin for 6 years.*

## **The American Community Survey: What it is & How it Compares to the 2000 Census Long Form**

Joe Ramler, Economist, Montana Department of Commerce, Census & Economic Information Center

The American Community Survey (ACS) is an ongoing US Census Bureau survey that provides data every year – giving communities the current information they need to plan investments and services. Information from the survey generates data that helps determine how more than \$400 billion in federal and state funds are distributed each year. To help communities, state governments, and federal programs, the ACS asks about characteristics such as age, income and benefits, health insurance, education, where you work and how you get there, etc. All the detailed information from the ACS is combined into estimates that are used to help decide everything from school lunch programs to new hospitals.

*Joe is the Senior Economist for the Montana Department of Commerce, Census and Economic Information Center. Joe received his M.A. in Economics from the University of Montana in 2011.*

## **The ArcGIS Platform: to Rapidly Map, Store and Analyze Geographic Information Associated with Events**

*TJ Abbenhaus, Solution Engineer, Esri*

Esri has been rapidly developing and inventing many new functions and capabilities for ArcGIS online, during this session we will briefly recap ArcGIS online and delve into the current and planned development of GIS and web mapping using ArcGIS online. Using the ArcGIS platform during this seminar will show how esri has provided many recent and modern solutions that can be quickly adapted to meet the needs small and rural governments using GIS to document

and analyze events. The ArcGIS Local Government Information Model will be used to rapidly establish focused and essential information that will provide local governments the ability to adapt and prepare for the increased opportunities and pressures new populations of people provide.

*TJ Abbenhaus is a Solution Engineer with Esri, supporting the Northwest Region. TJ has been working in Geography on GIS application development in the areas of Natural Resources, County, State and local governments. TJ has specialized in the Imagery Solutions provided by Esri, and our business partners. Before coming to Esri he was a GIS Programmer Analyst for Kitsap county Washington developing customized applications with ArcIMS, ArcGIS and Enterprise ArcGIS Server. TJ received his M.A. in Geography/Internet Cartography in 2003 from the University of Montana.*

## **Understanding Water Use in Montana – an Experiment in Geospatially Enabling the DNRC Water Right Database**

*Jim Robinson, Water Resources Planner - Montana DNRC, Water Resources Division*

*Other authors: Troy Blandford, and Elizabeth Murray Montana DNRC, Water Resources Division; and Evan Hammer and Duane Lund - Montana State Library.*

The DNRC Water Rights Database (WRDB) contains a variety of water use information associated with individual water rights (e.g. means of diversion, purpose, flow rate, volume, priority date, period of use, etc.), including geographic information such Point of Diversion (POD) and Point of Use (POU). These data are vital to water resource managers, but POD and POU data have a major limitation – they are spatially represented as centroids of the legal land description maintained in the WRDB. This representation is suitable for generalized visual reference on a map, but it cannot serve as a parameter for in-depth modeling or spatial analysis. Geospatial enabling of the WRDB involves mapping PODs to the National Hydrography Dataset (also referred to as the POD2NHD project). The goal is to provide water use information with sufficient accuracy to allow meaningful geographic queries of PODs and POUs within a given basin.

After preliminarily testing several basins, Pumpkin Creek, in the lower Tongue River Basin, was selected for further development. The initial editing process involves examining individual PODs in the context of a variety of datasets: CIR photography from 2005 and 2009 NAIP; USGS Topographic Quads in DRG format; Water Rights Mapper data generated by the DNRC water rights adjudication process; source name match (GNIS); and synthetic drainage and hillshade layers generated using IFSAR elevation data supplied by Intermap Technologies, and either taking “No Action”, manually snapping the point to the appropriate point on the NHD

“Manually Place to NHD”, or manually connecting the point to the NHD via a connector feature class, “Placed on Proposed NHD”.

*Jim Robinson is a Water Planner with the Montana Department of Natural Resources and Conservation (DNRC). Jim received his undergraduate degree in geology from the University of California at Berkeley in 1983, his masters in geology from the University of California at Santa Cruz in 1988. He has worked for the State of Montana for the past 19 years; most recently serving as a technical advisor to the Yellowstone River Conservation Districts Council regarding geospatial data acquisition and management. His current responsibilities include development of the Yellowstone River Basin Plan for the 2015 Montana Water Supply Initiative.*

### **What You Need to Know about Map Projections**

*Gerry Daumiller, GIS Analyst, Montana State Library*

This presentation provides a quick refresher on what map projections are and why they are necessary. The concepts of map datums and coordinate systems will also be explained.

The main focus of the talk is to make you aware of the effect that these things have on the accuracy of measurements you make when you are using GIS. You should come out of the talk being able to recognize situations where your GIS software or a web mapping application can give you wildly inaccurate numbers for distances and areas, and have an idea of what to do to make them better.

*Gerry Daumiller has been a GIS specialist at the Montana State Library since 1988. Originally from Kalispell, he studied geography and cartography as an undergraduate and graduate student at the University of Montana and the University of Wisconsin- Madison in the 1980s.*



## **Hands-on Workshops**

### **Esri ArcGIS Fundamentals I**

*Rudy Prosser, Esri Instructor*

This four hour hands-on workshop is designed for individuals who are new to GIS (no prior GIS education or workplace experience with GIS). This workshop will be based on Esri's web class: Getting started with GIS (For ArcGIS 10.1). Participants will use online resources to quickly create a GIS map; describe two common data models used to represent real-world objects and phenomena in a GIS; evaluate geographic data for use in a GIS mapping project; explore a GIS map and access information about map features; visually analyze feature relationships and patterns on a GIS map; create queries to find and select features that meet specific criteria; and prepare a GIS map to share information and present analysis results.

### **Esri ArcGIS Fundamentals II**

*Rudy Prosser, Esri Instructor*

This four hour hands-on workshop will expand on concepts taught in ArcGIS Fundamental I and will help users gain a deeper understanding of ArcGIS editing and analysis. This workshop will be based on Esri's web classes: Editing in ArcGIS Desktop 10 and Solving Spatial Problems using ArcGIS 10.1. Participants will edit with feature templates; work within the snapping environment and learn to follow new editing workflows. Participants will also learn to follow steps in the geographic approach to solve a spatial problem; evaluate and prepare data for an analysis project; select appropriate tools to combine data and obtain new output data needed for an analysis; solve a site-selection problem by finding optimal locations based on a set of spatial criteria; share your analysis results with other ArcGIS users.

### **Esri 3D GIS Mapping**

*TJ Abbenhaus, Solution Engineer, Esri*

The hands-on Esri 3D GIS Mapping Lab will introduce users to modern workflows for managing, producing, and sharing of 3D information using onsite enterprise architecture or cloud architecture.

Attendees will learn how to bring GIS workflows that extend 2D data into 3D data incorporating remote sensing, lidar and aerial imagery. Using all of these sources of information you will be shown how ArcGIS is used for accurate 3D visualization and spatial analysis.

Lastly attendees will learn how to reach a wide audience with 3D information using the internet based ArcGIS web scenes and ArcGIS online. It will be shown how the derived information can be distributed as a support tool for critical decisions.

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### **Esri LiDAR Workshop**

*TJ Abbenhaus, Solution Engineer, Esri*

This seminar will cover managing and using lidar point cloud data with ArcGIS 10.1. By attending these sessions GIS users will be able to learn how to manage Lidar data, use ArcGIS for 2D/3D visualization and analysis, as well as share their Lidar data through webservice.

Attendees will learn a complete Lidar data management strategy, including: how to catalog their data; when to use LAS Datasets, terrain Datasets, and Mosaic Datasets; what analytical options are available for Lidar; how to fuse Lidar data with other spatial and operational layers; and techniques for making Lidar data more accessible.

By utilizing the ArcGIS platform, organizations will be better able to support informed decision making by providing simple and timely access to your Lidar and Imagery.

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### **Using ArcGIS Mobile and Trimble Positions with ArcGIS 10.1**

*Jackson Beighle, Electronic Data Solutions*

Ensure your GIS is populated with only the best quality data. When you work with Esri ArcGIS for Windows Mobile® 3.1 or Esri ArcPad, you can depend on Trimble® handheld GNSS and Trimble Positions™ software to deliver the accuracy you need and a streamlined workflow to make the total solution fast and seamless.

Extend your GIS beyond the office to deploy intuitive and productive mobile data collection for accurate, up-to-date data across your organization. With the release of the Trimble® Positions™ Mobile extension you now have access to all the advantages of the Trimble Positions software within ArcGIS Mobile.

An extension for Esri ArcGIS Mobile field software, the Trimble Positions Mobile extension integrates ArcGIS Mobile workflows into the Positions software suite as an alternative to Trimble GPSCorrect™ extension / GPS Analyst™ extension workflows.

As part of the workshop, you will have access to a range of Trimble GPS handhelds loaded with Esri ArcGIS Mobile together with the Trimble Positions ArcGIS extension and sample data and receive a full demonstration of the workflow from field to office.