IDAHO GEOSPATIAL COUNCIL

1ST BIANNUAL MEETING OF 2015
THURSDAY, MAY 14TH

Parking

Veterans Affairs
PERSI
Assoc. of Counties
Garage 2
JRW
LBJ
Garage 1
State Capital Building
Borah Builing
Steunenberg Monument Park
Capitol Park
Capitol Annex
Public Utility Comm.
PTC
Blind Comm. Aging
Public Works
Supreme Court
Department of Lands
Alexander House
Sec. of State
Library
W Franklin St
W Washington St
W State St
W Jefferson St
W Idaho St
W Main St
W Hays St
W Fort St
W Bannock St
N 9th St
N 8th St
N 7th St
N 6th St
N 5th St
N 4th St
N 3rd St
N 2nd St
N Capitol Blvd

WELCOME / INTRODUCTIONS

Bill Farnsworth

Geospatial Information Officer

AWARDS:

SPECIAL ACHIEVEMENT IN GIS
SAG AWARD

2015

Department of Administration

Robert Smith & Bill Farnsworth

Stephen Cox – 2014
Robert Smith – 2010

All Roads Network of Linear-Referenced Data

MAPPING IDAHO'S ROADS

Overview

- What is ARNOLD?
- Why is ARNOLD Important?
- Who is Responsible for ARNOLD?
- How Will ITD Maintain This Effort?
- Questions?
- Contacts

What is ARNOLD?

ARNOLD is a National Roadway Layer

TFTN → HPMS →ARNOLD

All

Roads

Network

Of

Linear-Referenced

Data

Federal Highways Administration (FHWA) Sent a Memo Defining the Requirements

U.S. Department of Transportation
Federal Highway Administration

Memorandum

Subject: INFORMATION: Geospatial Network for All Public Roads

Date: AUG 07 2012

From: David R. Winter, P.E.
Director, Office of Highway Policy Information
James Cheatham
Director, Office of Planning, Environment, and Realty

Reply to Attn. of: HPPI-20

To: Division Administrators
Resource Center Directors

The *Highway Performance Monitoring System (HPMS) Field Manual* includes the requirement for States to submit their linear referencing system (LRS) network for all roads eligible for Federal Aid. The purpose of this memorandum is to announce that this requirement will be expanded to cover all public roads including dual carriageways on divided highways for the HPMS submittal of 2013 data due June 15, 2014. This is consistent with the updated HPMS information collection approval from the Office of Management and Budget (2125-0028). To ensure compliance, we are also asking for a plan on how each State will meet the requirement by June 15, 2013.

Based on existing requirements for bridge inspection and reporting, safety analysis, and certified public road mileage, it is expected that States have this information or are in the process of

MAP-21 Makes ARNOLD Mandatory and Gives It Meaning

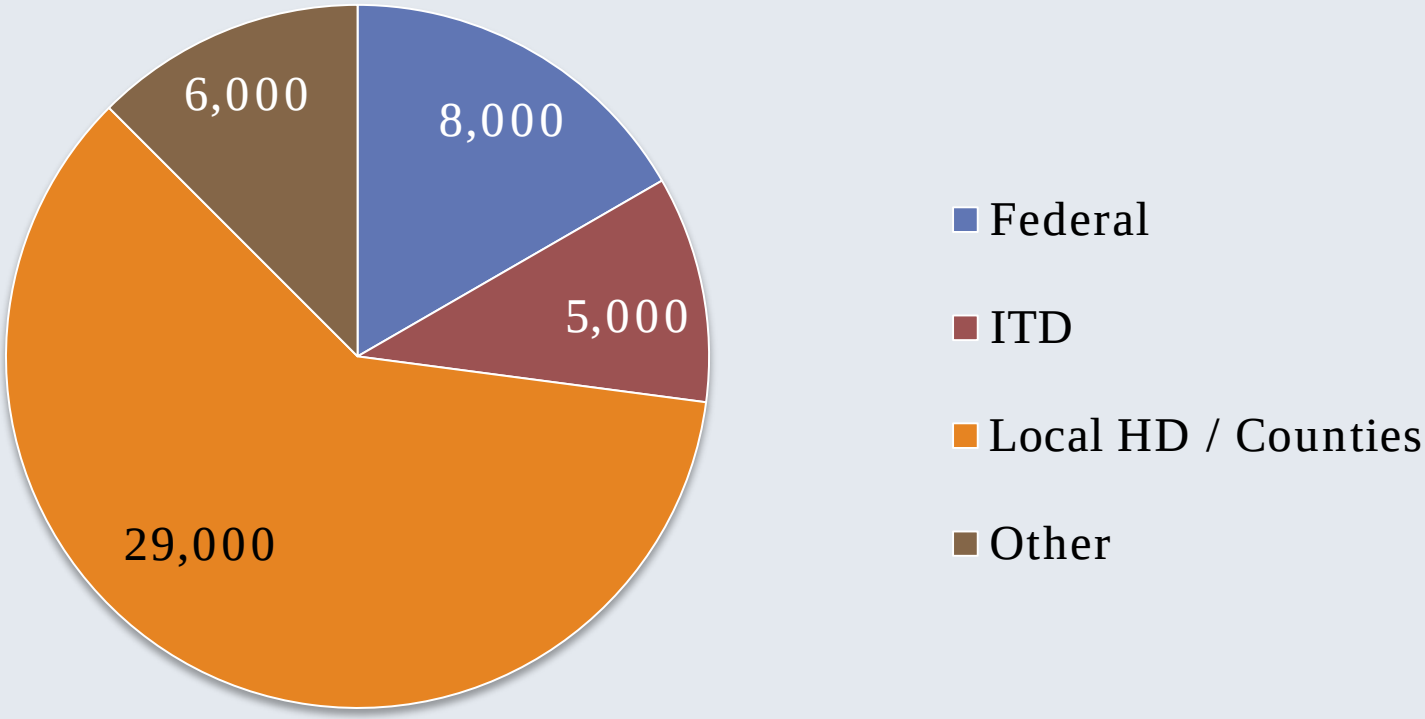
Moving Ahead for Progress in the

21st Century Act (MAP-21)

- Safety
- Accountability
- Mobility

Idaho Met the Challenge

Idaho's Centerline Miles (2013 Estimates)

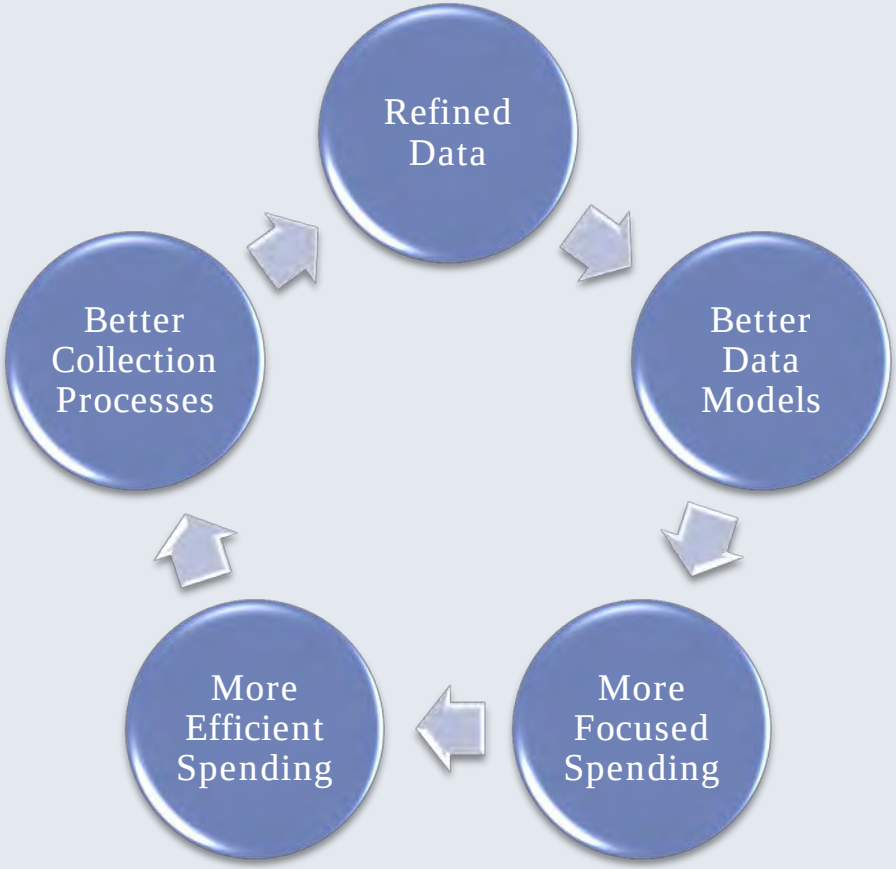


Why is ARNOLD Important?

ARNOLD Will Increase Safety

- Routable Geometry
- Address Ranges
- More Geometric and Attribute Data on Local Roads
- Better Data Models

ARNOLD Will Provide Accountability

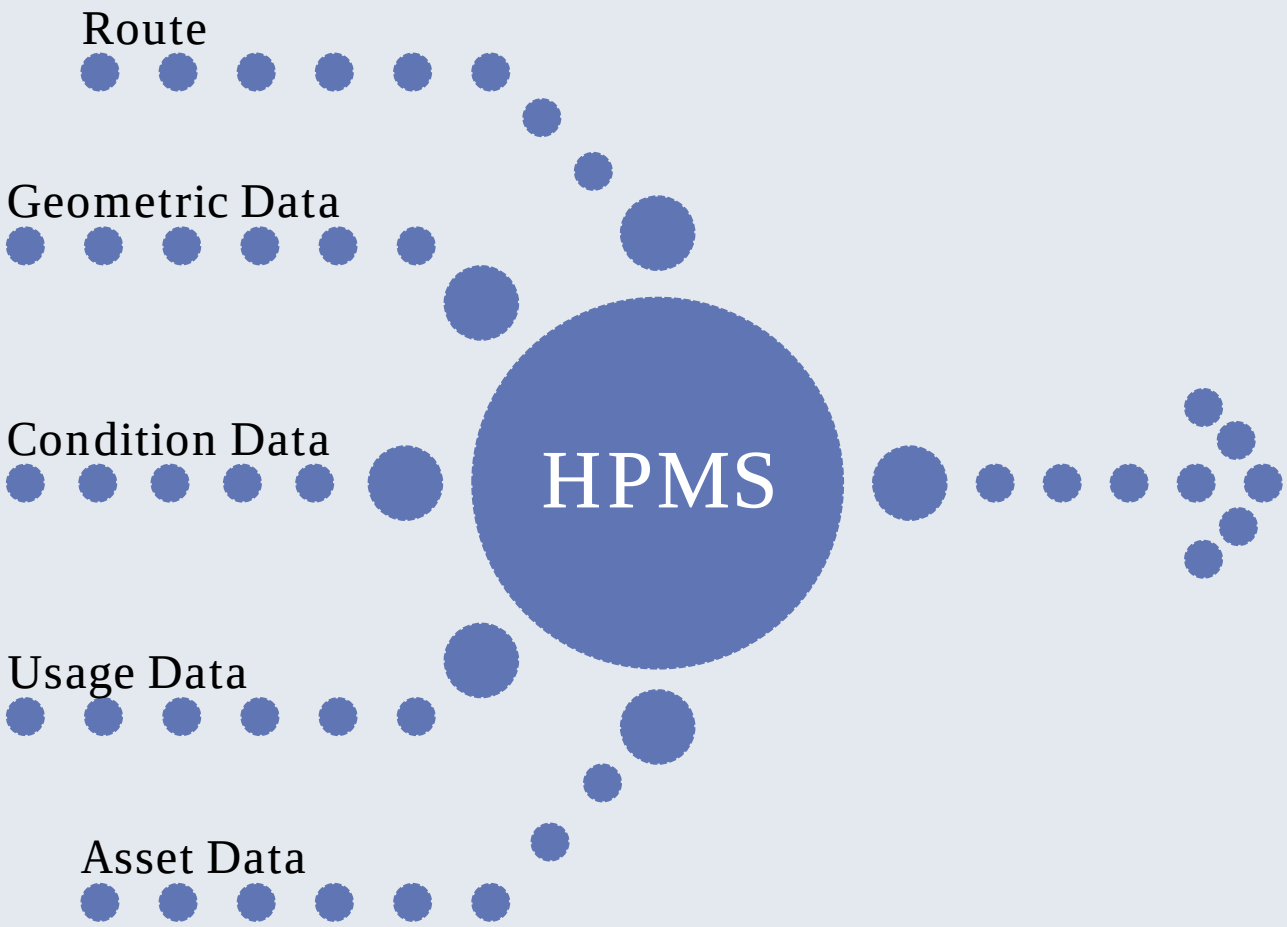


ARNOLD Will Reduce Redundancy Among Agencies

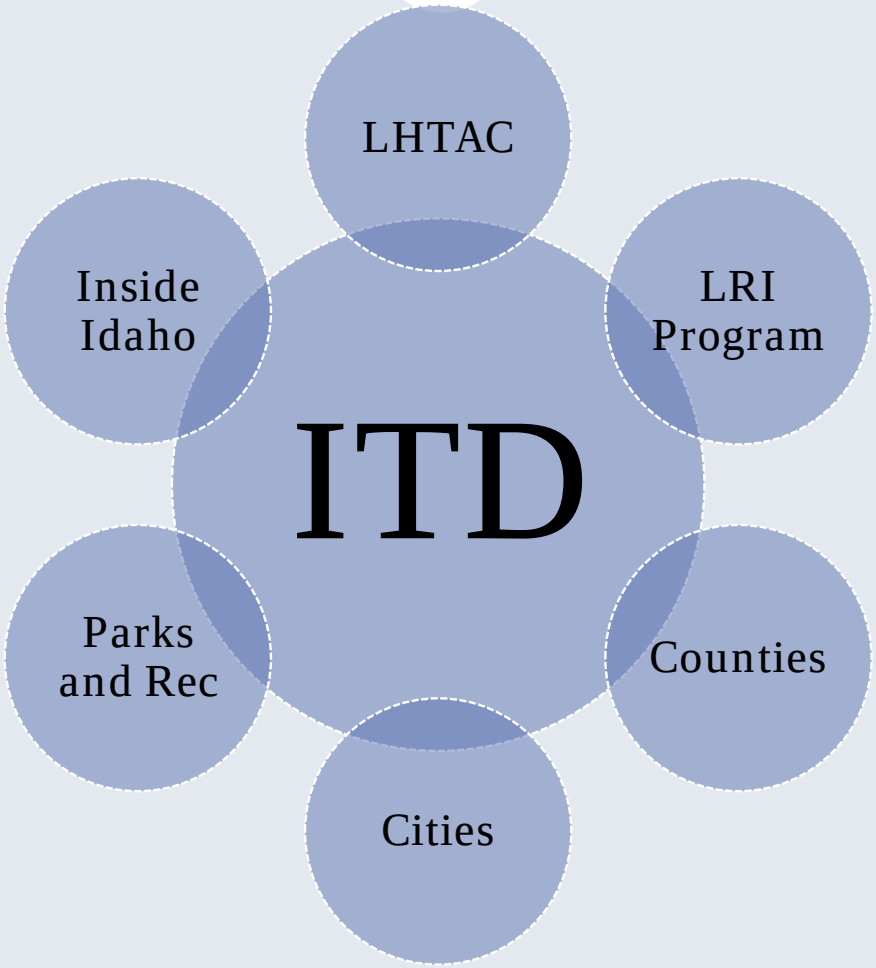
- Local Agencies
- State Agencies
- Federal Agencies

Who is Responsible for ARNOLD?

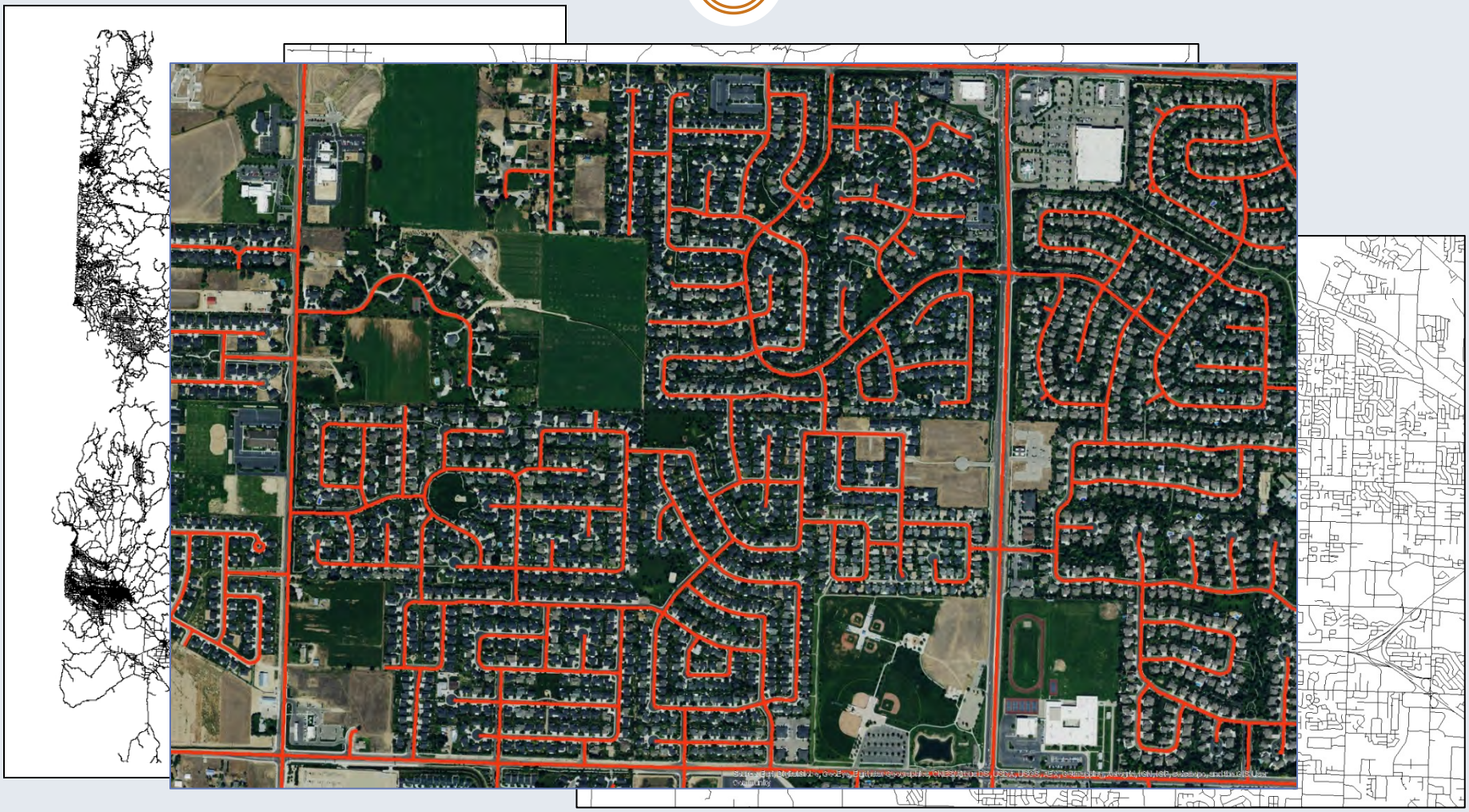
ITD is Responsible for Reporting to FHWA



Local Agencies Own Their Own Roads



ITD has a Comprehensive Network of Public Roads



How Will ITD Maintain This Effort?

ITD Already has a Comprehensive System

ITD Road Layers

- Local Road Inventory (Rural)
- Cities
- State Highway System
- State Lands

Mature and Collaborative Processes

- Maintaining the Local Road Inventory
- Maintaining the Federal Aid System

ITD has Many Efforts Underway

ITD Still Needs to Accomplish a Few Goals

- Long-Term Maintenance Plan
- Dual-Carriageway Information
- Future Plan for Addressing
- Core Definitions that Cross State and Local Agencies
- Unanswered Questions Need to be Answered

Questions?

ITD Contacts

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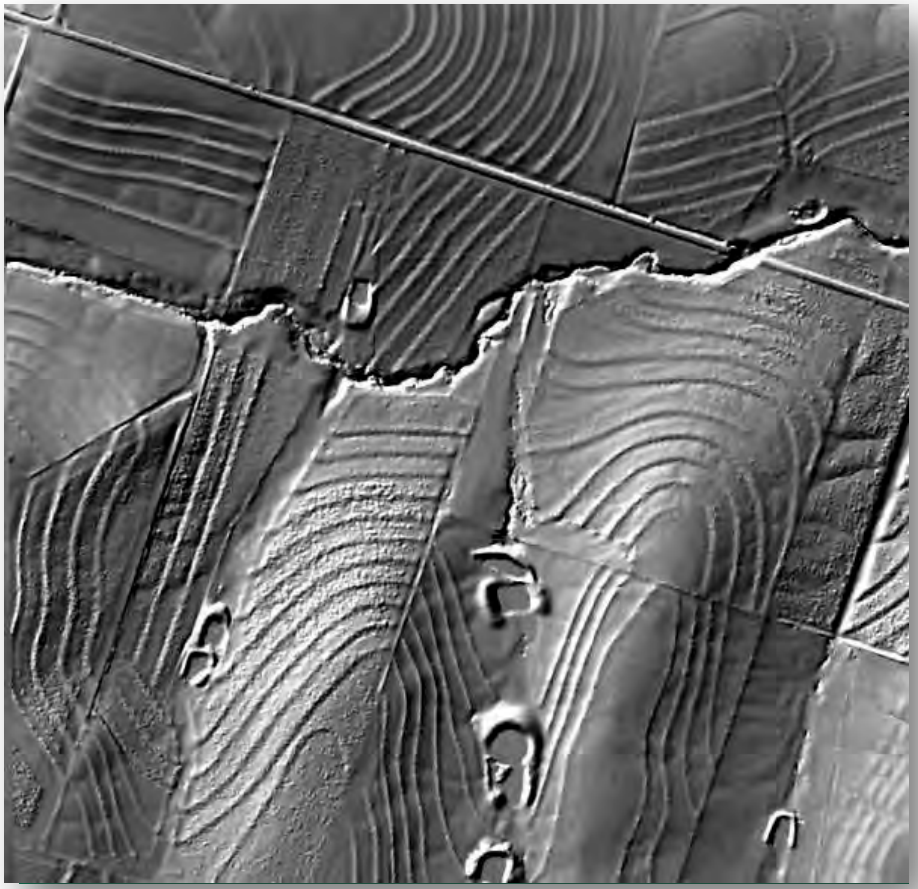
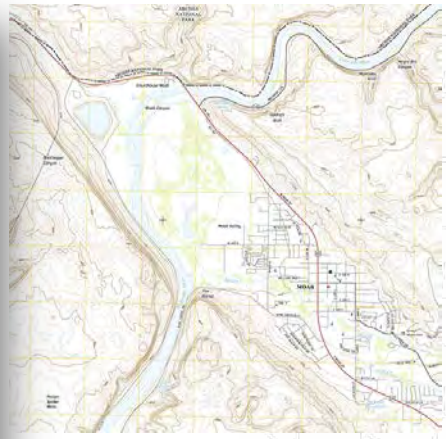
GIS ANALYST
(208) 334-8224
NICOLE.HANSON@ITD.IDAHO.GOV

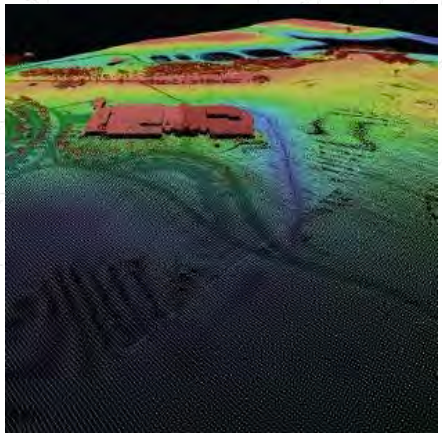
MARGARET PRIDMORE
HPMS COORDINATOR
(208) 334-8221
MARGARET.PRIDMORE@ITD.IDAHO.GOV

FEDERAL REPORT

Tom Carlson - USGS Liaison







USGS Updates: NHD, 3DEP, The National Map, US TOPO, Historic Quadrangles

USGS
science for a changing world

The National Map
Your Source for Topographic Information

Tom Carlson
USGS Geospatial Liaison for Washington, Oregon and Idaho

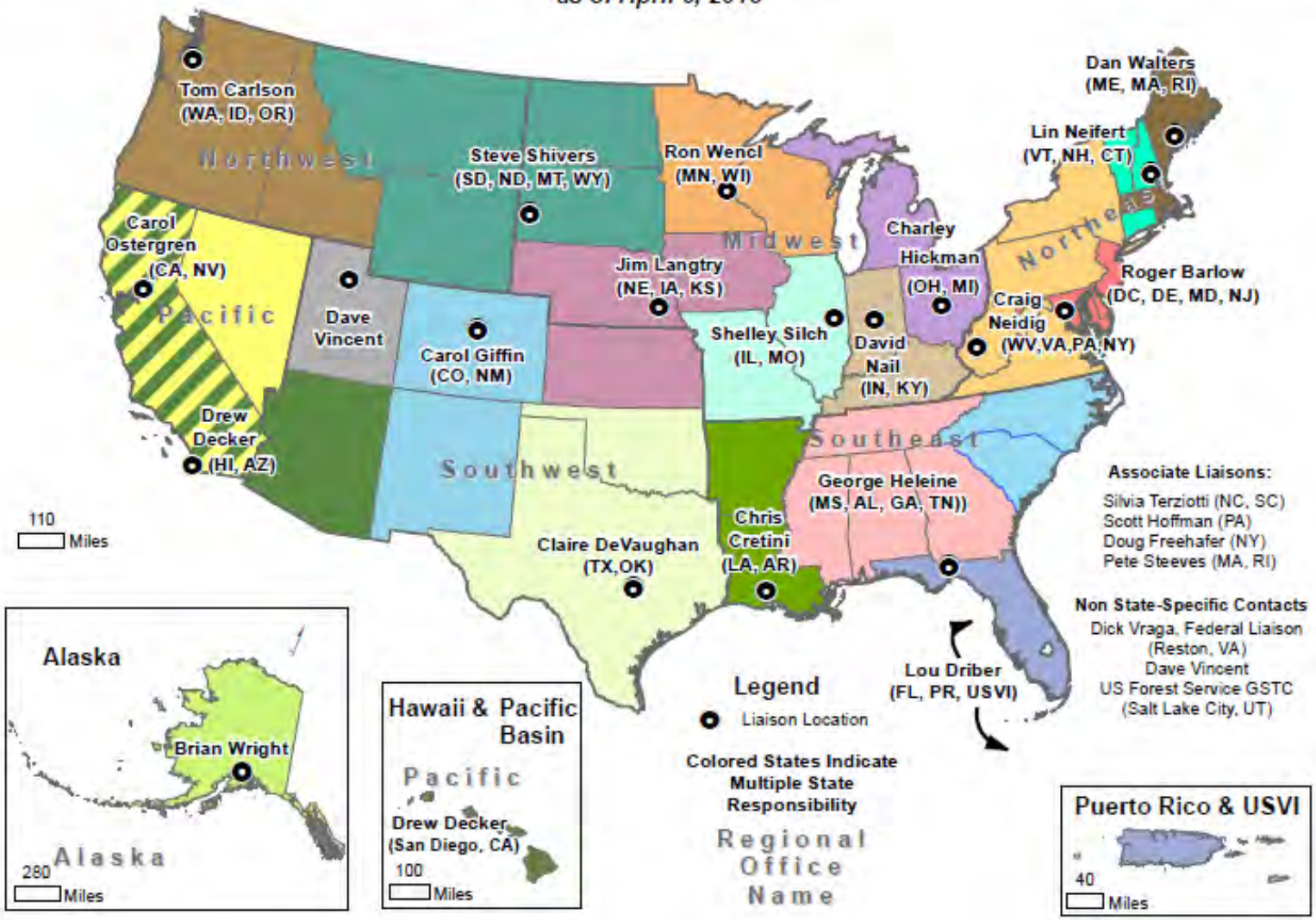
Outline

- Background
- Idaho NHD funding - 3 out of 5 projects!
- 3D Elevation Program (3DEP)
- The National Map
- US TOPO
- Historic Quadrangles

Some of the Liaison roles…

- Develop geospatial data collection and maintenance partnerships. *Some changes with 3DEP discussed later…*
- Facilitate growth of the National Map
- Link to Federal Geographic Data Committee (FGDC) activities
- Serve on state/regional geospatial bodies
- Support development of GIS layers
- Support data stewardship development
- Track geospatial activities in States
- Provide presentations and updates

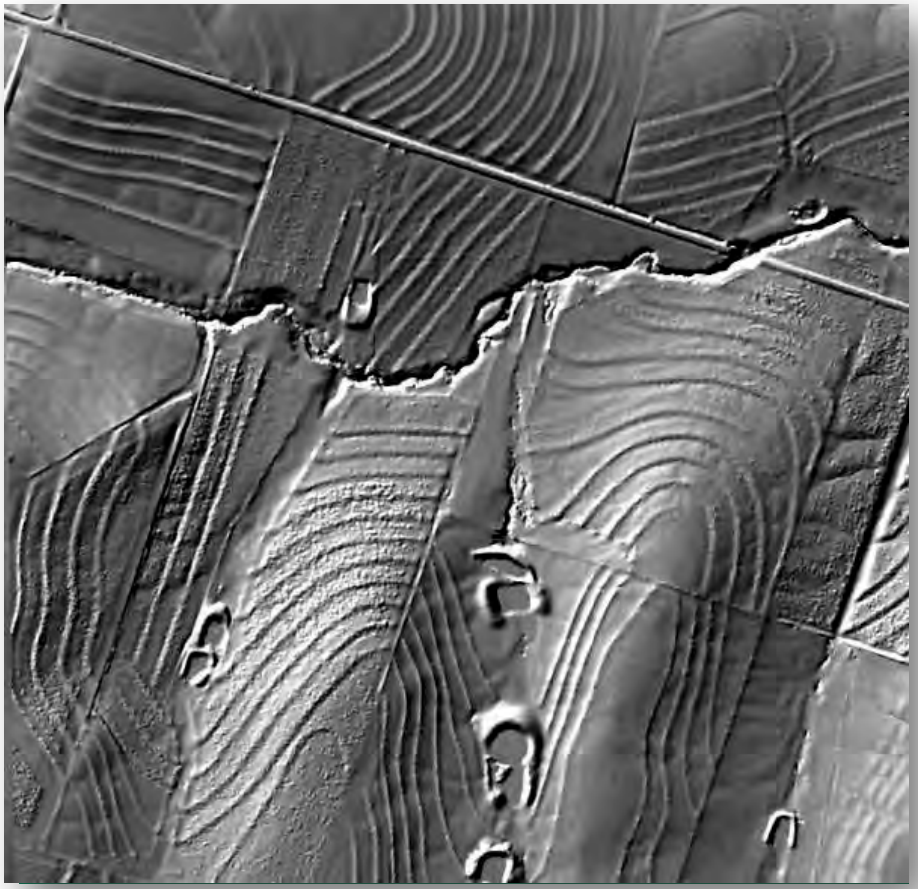
The National Map Liaisons
State Points of Contact
as of April 6, 2015

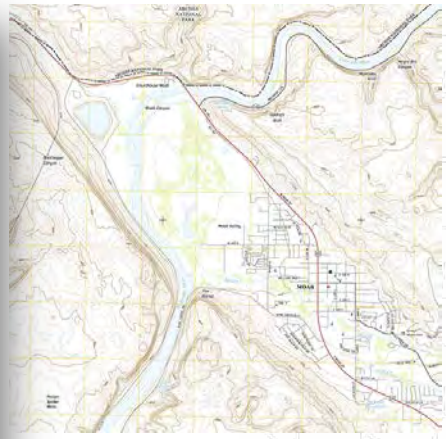


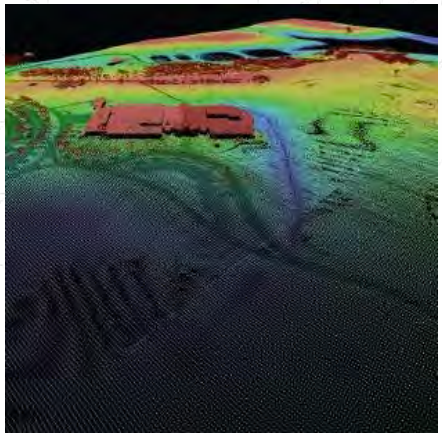
19 Liaisons, 4 associates

NHD proposals funded for Idaho

- Idaho submitted 5 NHD proposals this year for funding.
- Three have been funded.
- 37 NHD proposals were submitted, requesting a total of over $1.5 M,
- just over $809K in funds were available.
- resulting in the selection of 27 proposals in 19 states.
- Thanks to all that worked on those proposals!
- If you don’t submit proposals, you don’t get funding…







3D Elevation Program

http://nationalmap.gov/3DEP/

USGS
science for a changing world

The National Map
Your Source for Topographic Information

Room: Discovery C, Session E12, Wed 8:30-10am…

What is the 3D Elevation Program?

3DEP is a call for community action to…

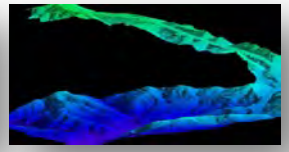
- Address the mission-critical requirements of 34 Federal agencies, 50 states, and a sampling of local governments, tribes, private and not-for profit organizations documented in the **National Enhanced Elevation Assessment**
- Return more than $690 million annually in new benefits, ROI = 5:1
- Leverage collaboration among Federal, states, local and tribal partners to systematically complete national 3D data coverage in 8 years
- Leverage the capability of private industry mapping firms, create jobs
- Achieve a 25% cost efficiency gain by collecting data in larger projects
- Completely refresh national elevation data holdings with new lidar and ifsar elevation data products and services

Natural Resource Conservation

Infrastructure Management

Flood Risk Mitigation

Precision Farming


Land Navigation and Safety

Geologic Resources and Hazards Mitigation

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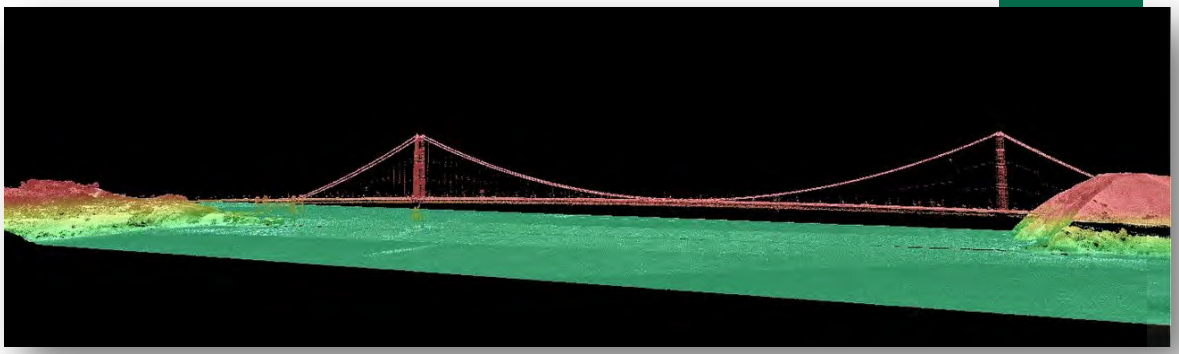
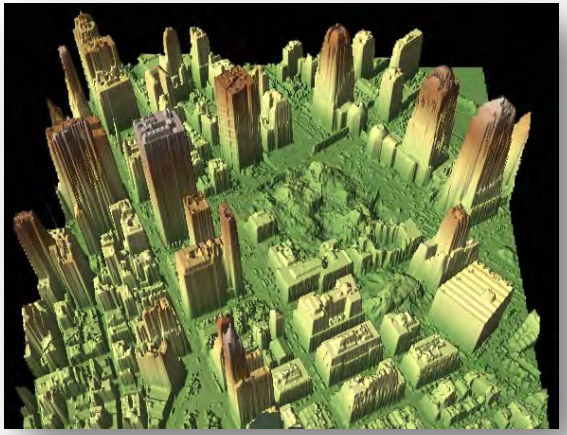
3D Elevation Program (3DEP)

Applies ground-breaking lidar technology to acquire and distribute 3D data

Addresses a broad range of critical applications of national significance





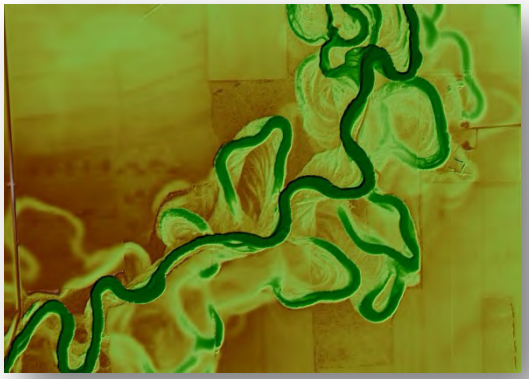
- 3D data include surface elevations and natural and constructed features
- 3DEP increases the quality level of lidar being acquired to enable more accurate understanding, modeling, and prediction
- Goal to acquire national coverage in 8 years

USGS science for a changing world

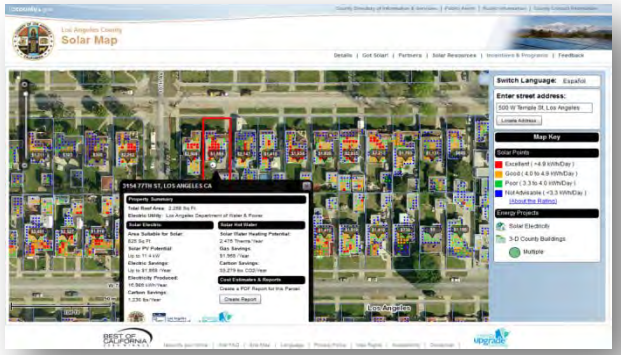
The National Map Your Source for Topographic Information

3D Elevation Program (3DEP)

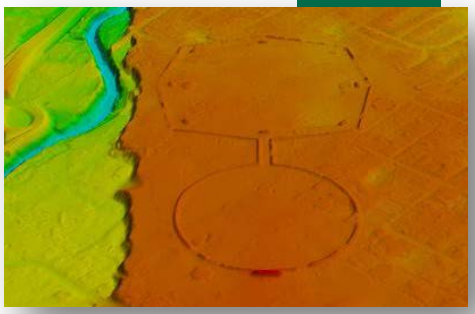
Mission Critical Applications



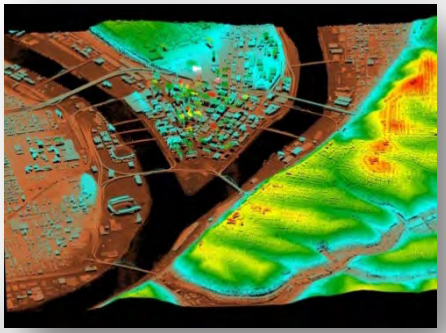
Flood Risk Management



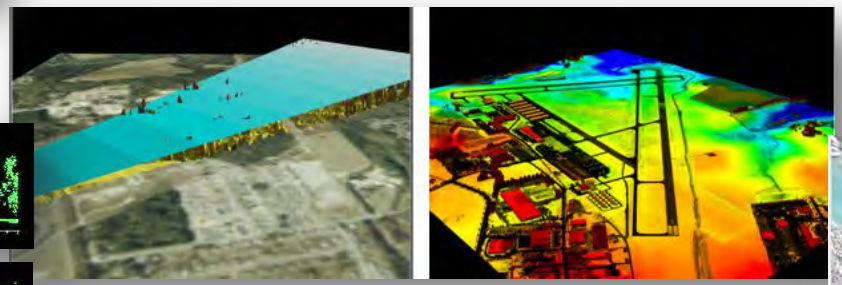
Alternative Energy



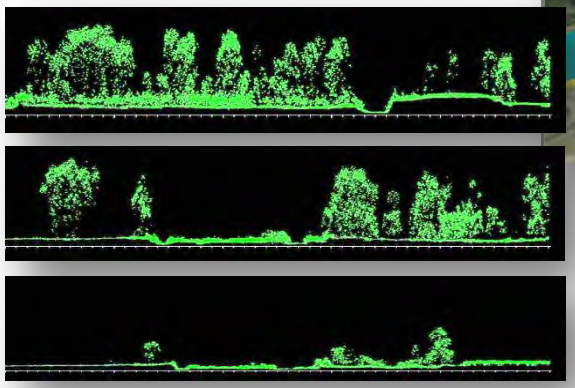
Archaeology



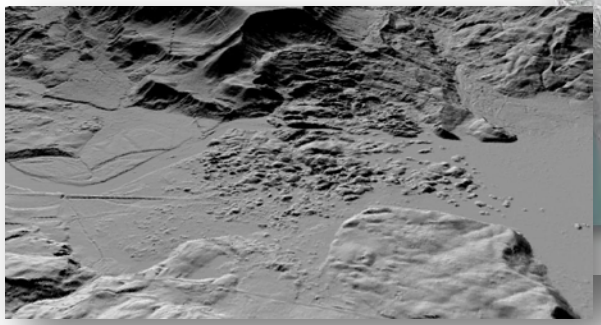
Infrastructure Management

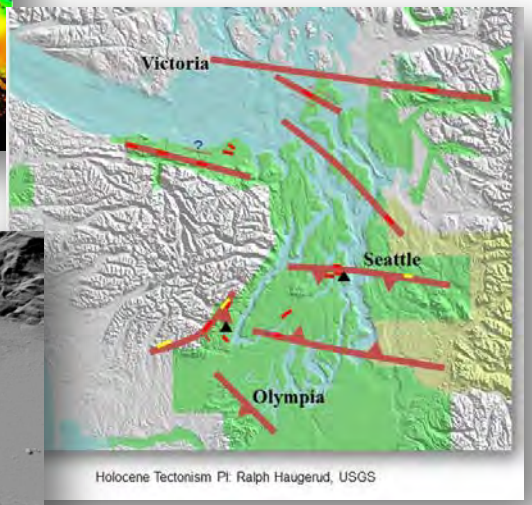


Aviation Safety



Precision Forestry





Geologic Hazards

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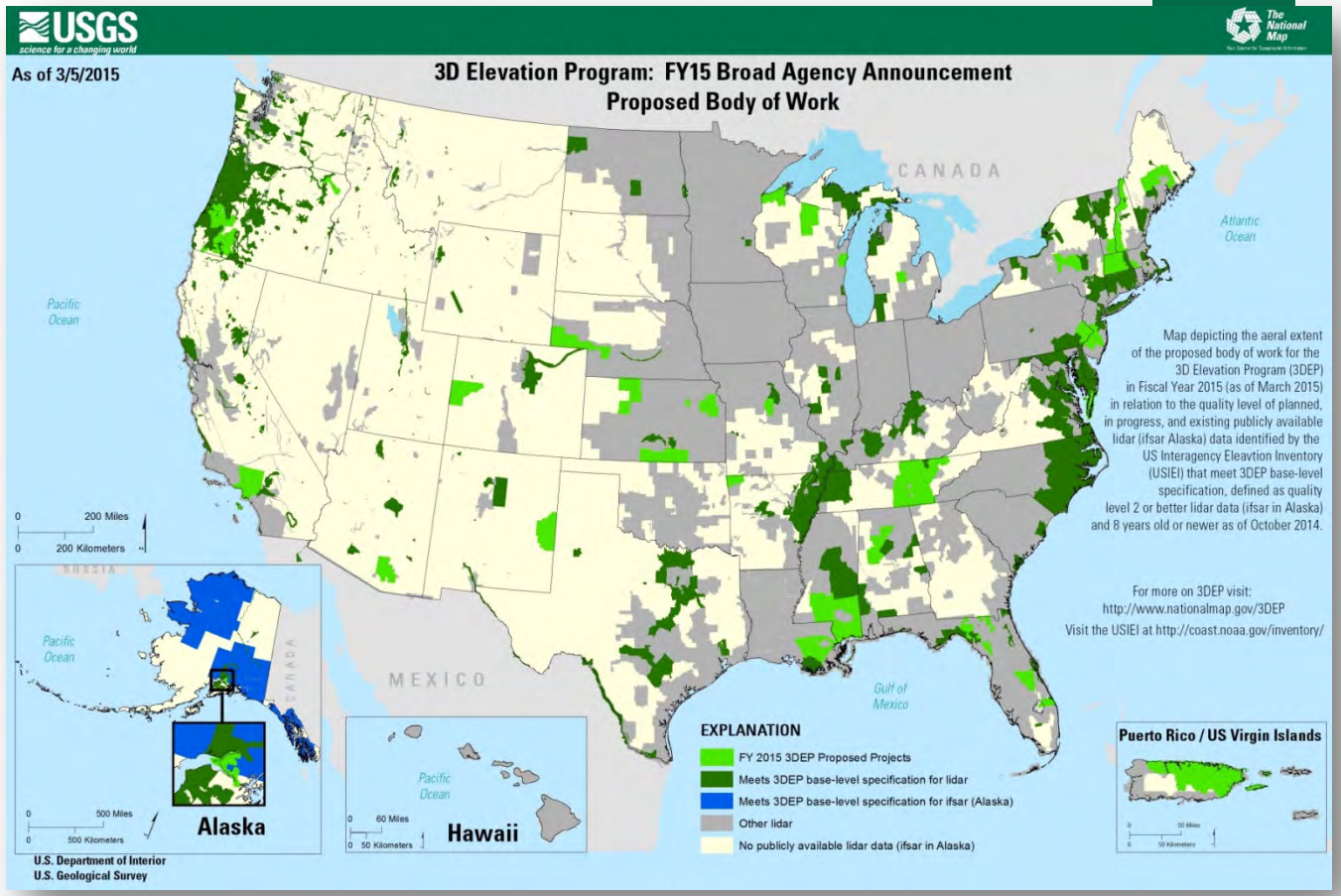
The National Map
Your Source for Topographic Information

Summary of Fiscal Year 2014 BAA Results

Awards Made in Fiscal Year 2015

- 72 pre-proposals submitted requesting funds over $50M
- 29 projects were funded
- USGS, FEMA, and NRCS committed $9.8M, with a total estimated value from partners of $26.5M



Results available at http://nationalmap.gov/3dep

Liaison role changes with 3DEP

3DEP BAA Background – National Map Liaison Roles

- Historically, National Map Liaisons have been directly engaged in project formulation activities for data acquisition
- Recent changes in government-wide acquisition policy require more open and competitive processes (resulting in our BAA process for data acquisition projects)
- National Map Liaisons can actively promote goals, objectives and accomplishments of 3DEP; we can promote these forums and the Seasketch viewer, however we are not able to assist with direct project formulation or partnership coordination prior to project awards. Potential partners are encouraged to continue to engage with others with shared geographic areas of interest.
- Once projects are selected, National Map Liaisons can assist with partnership agreements needed to support the acquisition process

3DEP website: http://nationalmap.gov/3DEP/

nationalmap.gov/3DEP/

Apps | IE Tab | 3DEP | The Diplomat Maga... | Federal Times |Fede... | Google | USGS Human Capita... | Idaho | Oregon | USGS | Hazards | UAS Unmanned Airc... | GIS | Archaeology and cu... | Health | colleges

USGS science for a changing world | The National Map | USGS Home | Contact USGS | Search USGS

3D Elevation Program (3DEP)

The National Map Home >> 3D Elevation Program (3DEP)

3DEP Resources

3DEP Plan - The 3D Elevation Program Initiative - A Call for Action (USGS Circular 1399)

The 3DEP Elevation Program - Summary of Program Direction (USGS Fact Sheet 2012-3089)

National Enhanced Elevation Assessment (NEEA)

3DEP Executive Forum

Alaska Mapping Roundtable

3DEP *'In the News'*

Alaska's outdated maps make flying a peril, but a high-tech fix is slowly gaining ground

How Lasers and 3-D Maps Can Help the U.S. Prepare for Climate Change

Safer Communities, Stronger Economies - in 3D

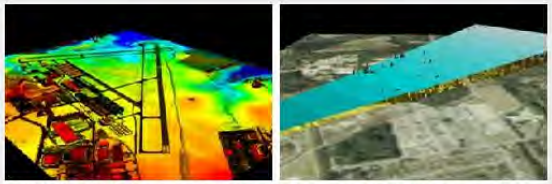
Obama launches climate tools including 3-D maps

More 3DEP in the News

3DEP State Fact Sheets

Alabama
Alaska
Arizona
Arkansas
California
Colorado
Florida
Georgia
Hawaii
Idaho
Illinois
Indiana
Iowa
Kansas
Kentucky
Louisiana

Introduction and Goals



Lidar is used to detect potential obstacles that present hazards to air navigation.

The 3D Elevation Program (3DEP) initiative is being developed to respond to growing needs for high-quality topographic data and for a wide range of other three-dimensional representations of the Nation's natural and constructed features. The primary goal of 3DEP is to systematically collect enhanced elevation data in the form of high-quality light detection and ranging (lidar) data over the conterminous United States, Hawaii, and the U.S. territories, with data acquired over an 8-year period. Interferometric synthetic aperture radar (ifsar) data will be collected over Alaska, where cloud cover and remote locations preclude the use of lidar over much of the State. The 3DEP initiative is based on the results of the National Enhanced Elevation Assessment.

Announcing Awards for 3DEP Partnerships

NEW! - FY15 BAA / FY16 Awards

Planning for the next 3DEP BAA cycle is underway. To increase awareness and enable stakeholders to prepare in advance for the BAA opportunity, NGP is conducting a series of public webinars and workshops. For information about the upcoming FY15 opportunity which will issue awards in FY16 visit: https://www.geoplatform.gov/elevation/3DEP.

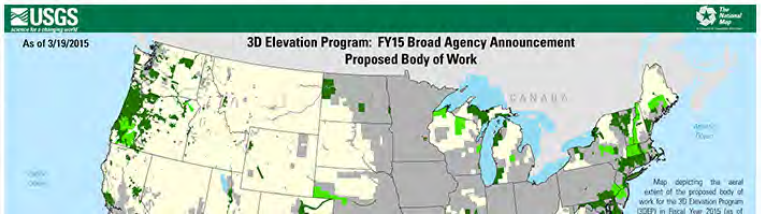
FY14 BAA / FY15 Awards

As outlined in the White House FACT SHEET: Taking Action to Support State, Local, and Tribal Leaders as They Prepare Communities for the Impacts of Climate Change (July 16, 2014), The Department of the Interior's U.S. Geological Survey and other Federal agencies are launching a 3D Elevation Program (3DEP) partnership designed to bring Federal agencies, academia, corporate entities, states, tribes, and communities together to develop advanced 3-dimensional mapping data of the United States. These data and related tools will be used in the areas of flood risk management, water resource planning, mitigation of coastal erosion and storm surge impacts, and identification of landslide hazards as an essential component of supporting action on climate resilience. 3DEP data are critical to many more applications, as documented in The National Enhanced Elevation Assessment.

As a follow-up, on July 18, 2014, the USGS issued a Broad Agency Announcement (BAA) that provides detailed information on how to partner with the USGS and other Federal agencies to acquire high-quality 3D data. The BAA was last modified on Dec. 3, 2014 (Amendment 8). Information and contacts are now available at Fed Biz Opps and Grants.gov (Search for Reference Number: G14PS00574). Offerors may contribute funds toward a USGS lidar data acquisition activity via the Geospatial Products and Services Contracts or they may request 3DEP funds toward a lidar data acquisition activity where the requesting partner is the acquiring authority.

Federal agencies, state and local governments, tribes, academic institutions and the private sector are eligible to submit pre-proposals. Reference materials associated with the Broad Agency Announcement are available on this website.

The first round of awards resulting from the USGS Broad Area Announcement (BAA) for the 3D Elevation Program (3DEP) offered partnership funding to 29 proposals in 26 States and Territories. The FY15 body of



To upload a project…use the project collector tool

https://www.geoplatform.gov/elevation/3DEP/Propose3DEPAOI

GEOPLATFORM.gov

fgdc Federal Geographic Data Committee

Search

Overview | Data | Maps | Communities/Agencies | Resources | Marketplace | Dashboards | Sign In | Help

NGDA Elevation Theme Community

Home NGDA Datasets

Sharing Proposed 3DEP Areas of Interest

Click here to learn how to view all areas of interest

Background

The USGS is implementing the 3D Elevation Program to acquire new 3D elevation data for the Nation. Beginning last year the USGS offered funding for lidar collection projects through the *USGS Broad Agency Announcement for 3D Elevation Program* (BAA), a competitive solicitation for partnerships to acquire lidar data. Last year's BAA issued 29 awards which will provide over 95,000 square miles of new, publicly accessible lidar data and support a multitude of applications. Details of the FY14 BAA projects are displayed on the 3DEP Web Pages: http://nationalmap.gov/3DEP/.

The USGS anticipates funding another round of projects beginning this summer. The Federal agencies that partner on the 3DEP have compiled their priorities for lidar acquisition and published them on an interactive online map. Overlap with these Federal priorities will be one of the key evaluation criteria. Interested parties are encouraged to share their potential projects through this system in order to assist in finding additional partners for projects. During May and June USGS will be hosting meetings around the country that are also intended to help identify potential partnerships. If you would like to present your project at one of these meetings which are geographically focused, you should post your project in advance through this system.

Instructions

1. Submit your project through the 3DEP Pre BAA - Public Areas of Interest Project Collector Tool (http://survey.geoplatform.us/index.php/329362/lang-en). Provide basic information about you and the geographic extent of the area(s) of interest. It will usually take three business days for your project to appear online.

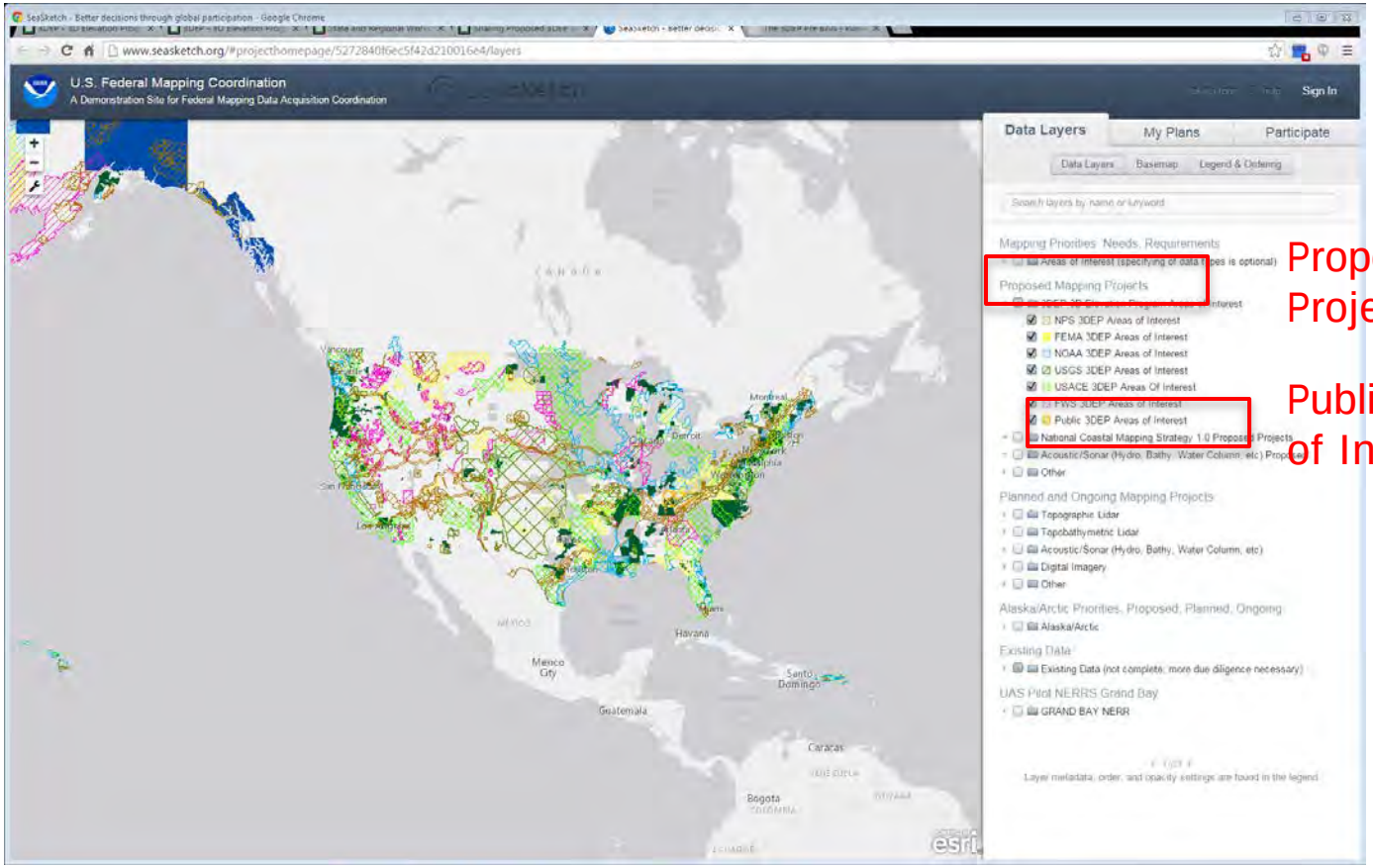
2. View **Federal agency, and other stakeholder Areas of Interest**. The draft Federal areas of interest for the next BAA cycle and public areas of interest are available at the NOAA sponsored Seasketch site: U.S. Federal Mapping Coordination, *A Demonstration Site for Federal Mapping Data Acquisition* (http://seasket.ch/hwpR3E-MxO). All Federal agency and stakeholder areas of interest will be made available for viewing through this site to enable comparison and facilitate discussion with other 3DEP stakeholders. Basic tutorials on how to use the SeaSketch system are available.

3. Participate in national and state/regional public meetings. USGS will host a series of public meetings (in-person or virtual) in May and June, led by The National Map Liaisons, to discuss project areas of mutual interest with other stakeholders. Dates and locations of these public meetings will be shared as they are determined. The meetings are designed as a forum for all interested stakeholders to discuss project areas, identify common areas of interest and refine the set of area of interest.

3DEP FY15 BAA / FY16 Awards

Project Viewer – Seasketch

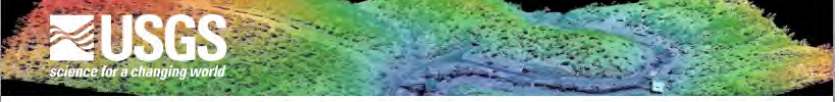
http://seasket.ch/hwpR3E-MxO



Proposed Mapping Projects

Public 3DEP Areas of Interest

3DEP Factsheets available for all states: http://nationalmap.gov/3DEP/



The 3D Elevation Program—Summary for Washington

Introduction

Elevation data are essential to a broad range of applications, including forest resources management, wildlife and habitat management, national security, recreation, and many others. For the State of Washington, elevation data are critical for natural resources conservation, agriculture and precision farming, infrastructure and construction management, flood risk management, geologic resource assessment and hazards mitigation, and other business uses. Today, high-density light detection and ranging (lidar) data are the primary sources for deriving elevation models and other datasets. Federal, State, Tribal, and local agencies work in partnership to (1) replace data that are older and of lower quality and (2) provide coverage where publicly accessible data do not exist. A joint goal of State and Federal partners is to acquire consistent, statewide coverage to support existing and emerging applications enabled by lidar data.

The National Enhanced Elevation Assessment (NEEA; Dewberry, 2011) evaluated multiple elevation data acquisition options to determine the optimal data quality and data replacement cycle relative to cost to meet the identified requirements of the user community. The evaluation demonstrated that lidar acquisition at quality level 2 (table 1) for the conterminous United States and quality level 5 interferometric synthetic aperture radar (ifsar) data (table 1) for Alaska with a 6- to 10-year acquisition cycle provided the highest benefit/cost ratios. The 3D Elevation Program (3DEP) initiative (Snyder, 2012a,b) selected an 8-year acquisition cycle for the respective quality levels. 3DEP, managed by the U.S. Geological Survey (USGS), the Office of Management and Budget Circular A–16 lead agency for terrestrial

3DEP in Washington by the Numbers

Expected annual benefits	$9.46 million
Estimated total cost	$22.55 million
Payback	2.4 years
Quality level 1 buy-up estimate	$14.35 million

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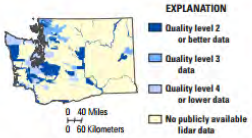

Figure 1. Map of Washington showing the extent of existing and planned publicly available lidar data. Information source: United States Interag Elevation Inventory, June 201 annually. Quality level 2 or be meet 3DEP requiements. See quality level information.

elevation data, responds to t need for high-quality topogr and a wide range of other 3I sentations of the Nation's na constructed features.

3D Elevation Program B for Washington

The top 10 Washington uses for 3D elevation data, v based on the estimated annu tive benefits of the 3DEP ini shown in table 2. The NEEA respondents in the State of W estimated that the national 3 tive would result in at least $ in new benefits annually to t cost for such a program in W approximately $22.5 million a payback period of 2.4 year efit/cost ratio of 3.1 to 1 ove period. Because monetary es not provided for all reported total benefits of the 3DEP to are likely much higher. On t the NEEA survey results, all government and many orgar Washington could benefit fr statewide high-resolution el

For Washington, appro 69 percent of the identified l use requirements will be me resources conservation, agri precision farming, infrastruc construction management, a management uses, as shown

3D Elevation Program

3DEP is a national program managed by the USGS to acquire high-resolution elevation data. The initiative is backed by a comprehensive assessment of requirements (Dewberry, 2011) and is in the early stages of implementation. 3DEP will improve data accuracy and provide more current data than is available in the National Elevation Dataset (NED). The goal of this high-priority cooperative program is to be

The 3D Elevation Program—Summary for Oregon

Introduction

Elevation data are essential to a broad range of business uses, including forest resources management, wildlife and habitat management, national security, recreation, and many others. In the State of Oregon, elevation data are critical for river and stream resource management; forest resources management; water supply and quality; infrastructure and construction management; wildfire management, planning and response; natural resources conservation; and other business uses. Today, high-density light detection and ranging (lidar) data are the primary source for deriving elevation models and other datasets. The Oregon Lidar Consortium (OLC), led by the Oregon Department of Geology and Mineral Industries (DOGAMI), has developed partnerships with Federal, State, Tribal, and local agencies to acquire quality level 1 data in areas of shared interest. The goal of OLC partners is to acquire consistent, high-resolution and high-quality statewide coverage to support existing and emerging applications enabled by lidar data.

The National Enhanced Elevation Assessment (NEEA; Dewberry, 2011) evaluated multiple elevation data acquisition options to determine the optimal data quality and data replacement cycle relative to cost to meet the identified requirements of the user community. The evaluation demonstrated that lidar acquisition at quality level 2 (table 1) for the conterminous United States and quality level 5 ifsar data (table 1) for Alaska with a 6- to 10-year acquisition cycle provided the highest benefit/cost ratios. The 3D Elevation Program (3DEP) initiative (Snyder, 2012a,b) selected an 8-year acquisition cycle for the respective quality levels. 3DEP, managed by the U.S. Geological Survey (USGS), the

3DEP in Oregon by the Numbers

Expected annual benefits (quality level 2)	$45.73 million
Estimated total cost (quality level 2)	$32.41 million
Payback	0.7 years
Quality level 1 buy-up estimate	$20.62 million

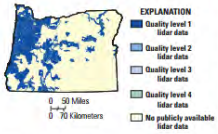

Figure 1. Map of Oregon showing the extent of existing and planned publicly available lidar data. Information source: United States Interagency Elevation Inventory, August 2013, updated annually. Quality level 2 or better data meet 3DEP requirements. See table 1 for quality level information.

Office of Management and Budget Circular A–16 lead agency for terrestrial elevation data, responds to the growing need for high-quality topographic data and a wide range of other 3D representations of the Nation's natural and constructed features.

3D Elevation Program Benefits for Oregon

The top 10 Oregon business uses for 3D elevation data, which are based on the estimated annual conservative benefits of the 3DEP initiative, are shown in table 2. The NEEA survey respondents in the State of Oregon estimated that the national 3DEP initiative would result in at least $45.7 million in new benefits annually to the State. The cost for such a program in Oregon is approximately $32 million, resulting in a payback period of 0.7 years and a benefit/cost ratio of 11.3 to 1 over an 8-year period. Because monetary estimates were not provided for all reported benefits, the total benefits of 3DEP to Oregon are likely much higher. On the basis of the NEEA survey results, all levels of government and many organizations in Oregon could benefit from access to statewide high-resolution elevation data.

For Oregon, approximately 72 percent of the identified business use requirements will be met in river and stream resource management, forest resources management, and water supply and quality uses, as shown in table 2. The status of publicly available lidar data in Oregon is shown in figure 1, with

3D Elevation Program

3DEP is a national program managed by the USGS to acquire high-resolution elevation data. The initiative is backed by a comprehensive assessment of requirements (Dewberry, 2011) and is in the early stages of implementation. 3DEP will improve data accuracy and provide more current data than is available in the National Elevation Dataset (NED). The goal of this high-priority cooperative program is to be operational by January 2015, and to have complete coverage of the United States by the end of 2022, depending on funding and partnerships. 3DEP can conservatively provide new benefits of $1.2 billion/year and has the potential to generate $13 billion/year in new benefits through improved government services, reductions in crop and homeowner losses resulting from floods, more efficient routing of vehicles, and a host of other government, corporate, and citizen activities (Dewberry, 2011). A shared, common elevation dataset would foster cooperation and improve decision-making among all levels of government and other stakeholders.

Benefits of a Funded National Program

- Economy of scale—Acquisition of data covering larger areas reduces costs by 25 percent.
- A systematic plan—Acquisition of data at a higher quality level reduces the cost of "buying up" to the highest levels needed by State and local governments.
- Higher quality data and national coverage—Ensure consistency for applications that span State and watershed boundaries and meet more needs, which results in increased benefits to citizens.
- Increase in Federal agency contributions—Reduces State and local partner contributions.
- Acquisition assistance—Provided through readily available contracts and published acquisition specifications.

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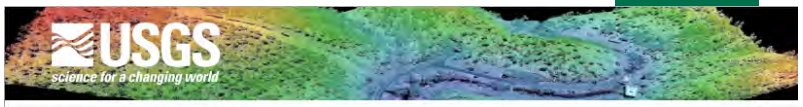
Fact Sheet 2014–3014
March 2014



The 3D Elevation Program—Summary for Idaho

Introduction

ion data are essential to a of applications, including rces management, wildlife and agement, national security, and many others. For the ho, elevation data are criti- culture and precision farming, urces conservation, infra- d construction management, source assessment and hazard flood risk management, forest nagement, and other business , high-quality light detection (lidar) data are the sources for vation models and other eleva- s. Federal, State, and local ork in partnership to (1) replace ational basis, that are (on years old and of lower quality vide coverage where publicly lata do not exist. A joint goal l Federal partners is to acquire statewide coverage to sup- g and emerging applications lidar data. The new 3D Eleva- m (3DEP) initiative (Snyder, anaged by the U.S. Geological GS), responds to the growing gh-quality topographic data and e of other three-dimensional ons of the Nation's natural and features. The Idaho LiDAR provides statewide collabora- a sharing mechanisms that can resource by State and Federal plementing the 3DEP initiative.

ion Program Benefits

p 10 Idaho business uses for n data, which are based on the

in Idaho by the Numbers

nual benefits	$6.12 million
otal cost	$27.89 million
	4.6 years
el 1 buy-up	$17.75 million

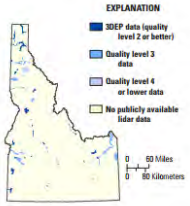


Figure 1. Map of Idaho showing the areal extent and quality level of planned and existing publicly available light detection and ranging (lidar) data in November 2012. See table 2 for quality levels.

estimated annual benefits of the 3DEP initiative, are shown in table 1. The National Enhanced Elevation Assessment (NEEA; Dewberry, 2011) survey respondents in the State of Idaho estimated that the national 3DEP initiative would result in at least $6 million in new benefits annually to the State. The cost for such a program in Idaho is approximately $28 million, resulting in a payback period of 4.6 years and a benefit-to-cost ratio of 1.8 to 1 over an 8-year period. Because monetary estimates were not provided for all reported benefits, the total benefits of the 3DEP to Idaho are likely much higher. On the basis of the NEEA survey results, all levels of government and many organizations in Idaho could benefit from access to statewide high-resolution elevation data.

The NEEA evaluated multiple data collection programs to determine the optimal data quality and data replacement cycle relative to cost to meet the stated needs. For Idaho, approximately 71 percent of the total benefits are realized in agriculture and precision farming, natural resources conservation, and infrastructure and construction management uses alone, as shown in table 1. The status of publicly available lidar data in Idaho is shown in figure 1. By enhancing coordination between the 3DEP and the various

3D Elevation Program

3DEP is a national program managed by the USGS to acquire high-resolution elevation data. The initiative is backed by a comprehensive assessment of requirements (Dewberry, 2011) and is in the early stages of implementation. 3DEP will improve data accuracy and provide more current data than is available in the National Elevation Dataset (NED). The goal of this high-priority cooperative program is to be operational by January 2015 and to have complete coverage of the United States by 2022, depending on funding and partnerships. The new program has the potential to generate $13 billion/year in new benefits through improved government services, reductions in crop and homeowner losses resulting from floods, more efficient routing of vehicles, and a host of other government, corporate, and citizen activities (Dewberry, 2011).

Benefits of a Funded National Program

- Economy of scale—Acquisition of data covering larger areas reduces costs by 25 percent.
- A systematic plan—Acquisition of data at a higher quality level reduces the cost of "buying up" to the highest levels needed by State and local governments.
- Higher quality data and national coverage—Ensure consistency for applications that span State and watershed boundaries and meet more needs, which results in increased benefits to citizens.
- Increase in Federal agency contributions—Reduces State and local partner contributions.
- Acquisition assistance—Provided through readily available contracts and published acquisition specifications.

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Fact Sheet 2013–3053
August 2013

3D Elevation Program (3DEP)

Resources

3D Elevation Program (3DEP) FY15/16 Broad Agency Announcement (BAA) Information Sharing Site
https://www.geoplatform.gov/elevation/3DEP

The 3D Elevation Program Initiative – A call for Action
http://pubs.usgs.gov/circ/1399/

USGS NGP Lidar Base Specification V1.2
http://pubs.usgs.gov/tm/11b4/pdf/tm11-B4.pdf

For Further Information Contact: 3D Elevation Program:
gs_baa@usgs.gov

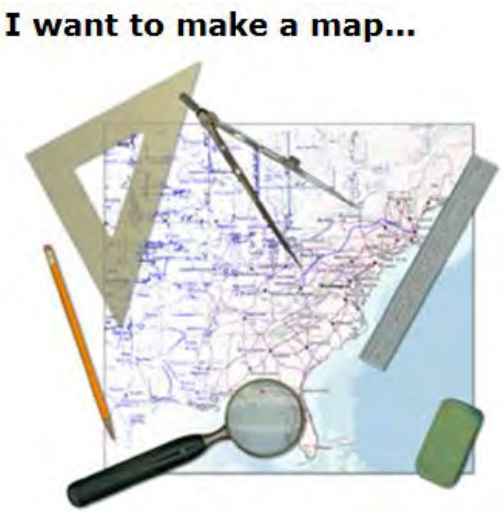
+ *The National Map*

The National Map is a collaborative effort to improve and deliver topographic information for the nation

The goal of *The National Map* is to become the nation's source for trusted, nationally consistent, integrated and current topographic information available online for a broad-range of uses

TNM: where we get GIS data

http://nationalmap.gov/



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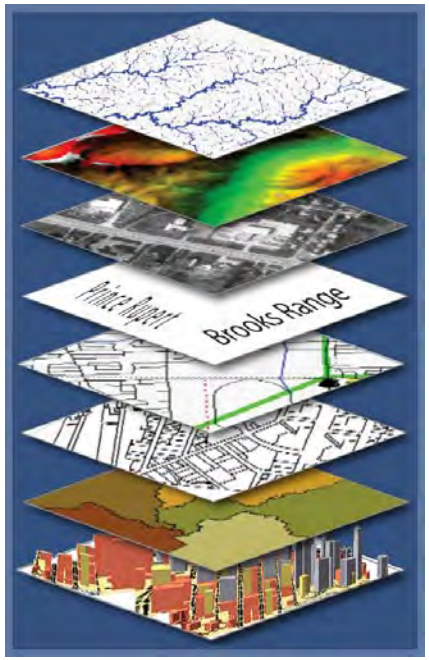
The National Map
Your Source for Topographic Information

+ *The National Map*

- The National Map is the 21st century follow up to the familiar USGS topographic map series
- The National Map includes eight data layers: *hydrography, elevation, orthoimagery, geographic names, boundaries, transportation, land cover, and structures*
- Public domain data will support
  - topographic maps at 1:24,000-scale
  - products and services at multiple scales and resolutions
  - analysis, modeling, and other applications at multiple scales and resolutions



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The U.S. Geological Survey (USGS) offers several mapping products.

The National Map is now offering a collection of small-scale datasets, originally developed for the 1997-2014 Edition of the National Atlas of the United States, available to users.

If you want the most up-to-date edition of our famous topographic quadrangle map that contains the latest digital improvements to include an image layer, try the US Topo.

To search for, view, and download any of the more than 200,000 USGS Topographic Maps dating back to 1884, go to the Historical Topographic Map Collection.

To preview and download data that is available in the public domain, more experienced map makers and professional geographic information users should try *The National Map* Viewer.

News you can use about USGS Mapping Products

April 2, 2015

US Topo Map and Historical Topographic Map Collection News:

- **Golden State Quads Add Trails:** Newly released US Topo maps for California now feature selected trails and other substantial updates. Several of the 2,798 new US Topo quadrangles for the state now display public trails along with segments of the Pacific Crest National Scenic Trail. Also the new maps now show improved data layers such as public land survey information, map symbol redesign, enhanced railroad information and new road source data. Some of the data for the trails is provided to the USGS through a nationwide "crowdsourcing" project managed by the International Mountain Biking Association (IMBA). http://on.doi.gov/1GL6Gbg
- **More Than 18 Million Served:** The USGS, through the National Geospatial Program, has delivered more than 18 million US Topo quadrangles and Historic Topographic maps in the past six years. Can you guess the top download locations? Hints: The most accessed digital US Topo map features a city with many monuments, and the most popular historical scan is in the west, dating back to 1909. For the answers to those questions, and how to download your own maps, for free, go to the most recent USGS Top Story: http://on.doi.gov/1OvyHqA
- **Show Me New Data for Show-Me State Maps:** Several of the 1,196 new US Topo quadrangles for the state of Missouri will display selected trails along with other improved data layers and PLSS. The trail data is provided through a partnership with the International Mountain Biking Association (IMBA) and MTB Project. During the past two years, the IMBA has been building a detailed national database of mountain bike trails with the aid and support of the MTB Project. This "crowdsourced" activity allows local IMBA chapters, IMBA members, and the public to provide trail data and descriptions through their website. http://on.doi.gov/1G2eseC

3DEP Moving Forward:

Latest 3DEP State Fact Sheets: During the past month, the 3D Elevation Program, known as 3DEP has added two more states to its rapidly growing selection of state-specific fact sheets that features the applications, benefits, and examples of 3DEP. Iowa, Pennsylvania, West Virginia, and Nevada join the mounting list of 47 state Fact Sheets. All are available for viewing and download from The National Map or 3DEP websites.

- **First Round of Lidar BAA Awards Released:** The USGS National Geospatial Program has announced the first round of awards resulting

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The National Map Viewer and Download Platform allows visualization and download of our most current topographic base map data and products for free. Managed by the USGS National Geospatial Program (NGP), users can access data from all eight primary data themes of *The National Map*, and products, such as US Topo, Historical Topographic Maps, and Map Indices. The viewer platform was initially extended upon the National Geospatial Intelligence Agency's (NGA) Palanterra x3 viewer.

Beta applications are in development to replace functionality of older viewer technology and include: Bulk Download Client, Download Manager, topoView, Bulk Point Query, and Mobile Download Client. Additional applications may be added in the future.

Available downloadable data themes are: Elevation, Orthoimagery, Land Cover, Hydrography, Geographic Names, Boundaries, Transportation, Structures, while maps include: US Topo and Historical Topo. *The National Map* viewer also allows visualization and identification queries (but not downloads) of Other Featured Data, such as Scanned Topo Maps, Ecosystems, Protected Areas, Gap Analysis Program Land Cover, Wetlands, Public Land Survey System, and National Park Service Boundaries. In addition, a Natural Hazards panel is included to view hazards-related information, such as for earthquakes, floods, wildfires, and weather, along with the U.S. National Grid for emergency response.

To research and download historical USGS data, such as Digital Orthophoto Quadrangles or older high resolution orthoimagery and Digital Line Graphs, go to Earth Explorer.

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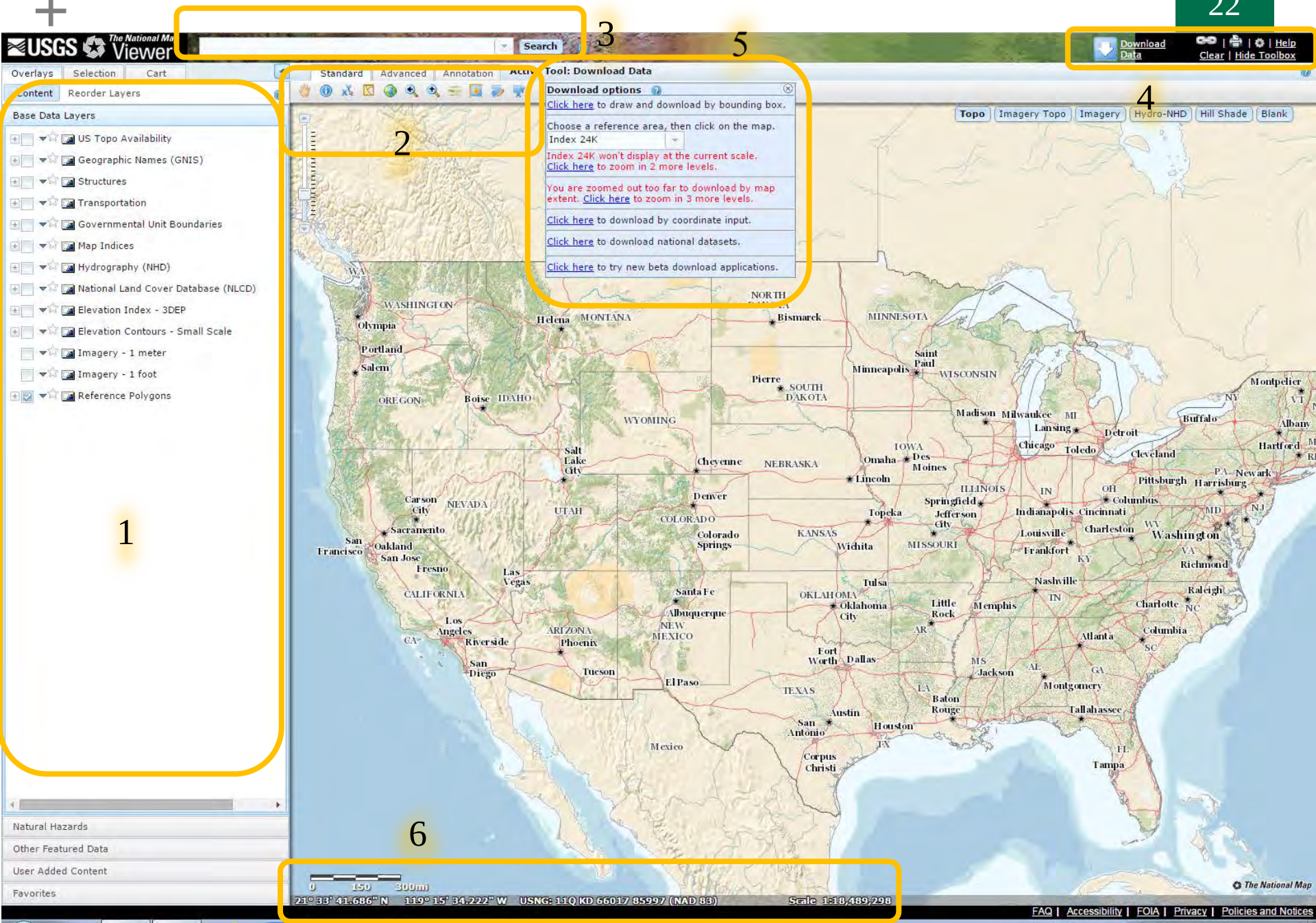
How to download digital elevation model (DEM) data using *The National Map* Viewer

http://nationalmap.gov/viewer.html

TNM components



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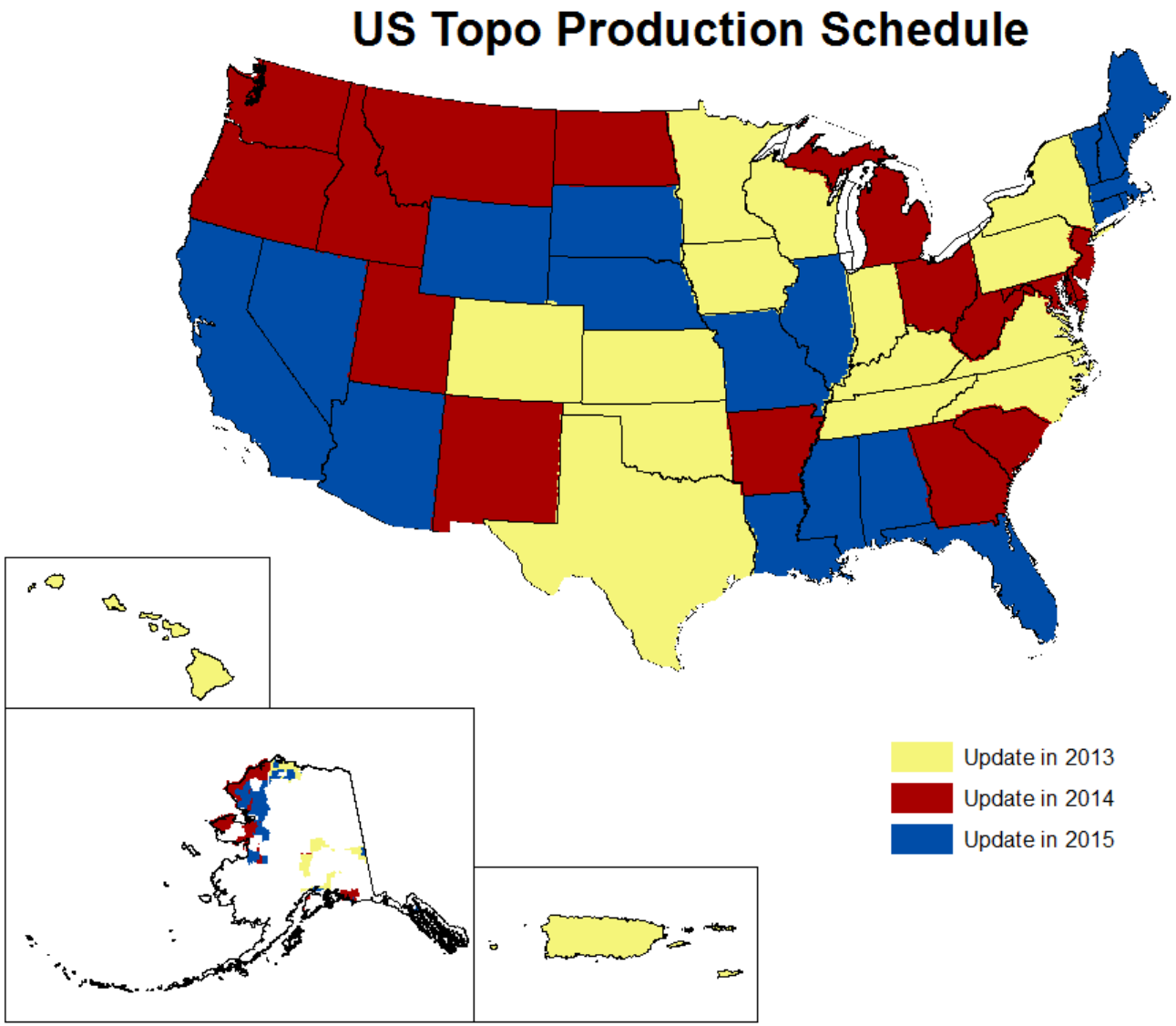
How US TOPO maps Differ from Traditional USGS Topographic Maps

- Mass-produced from national GIS databases; no field inspection or other primary data collection.
- Computer generated; no manual drafting, very limited editing.
- A rapid (3 year) publication cycle, with continuous product improvement, 3 year updates as opposed to many years!
- Published as digital documents, not as paper maps.
- Basic GIS functionality – turn layers on or off
- Use several current spatial reference systems.
- Feature content is comparable to traditional maps, but with some significant additions.

+ Update cycle – three years – follows NAIP schedule



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US Topo Quadrangles — Maps for America

US Topo topographic maps are produced by the National Geospatial Program of the U.S. Geological Survey (USGS). The project was launched in late 2009, and the term "US Topo" refers specifically to quadrangle topographic maps published in 2009 and later. These maps are modeled on the familiar 7.5-minute quadrangle maps of the period 1947-1992, but are mass-produced from national GIS databases on a repeating cycle. US Topo maps repackage geographic information system (GIS) data in traditional map form; this benefits non-specialist map users, as well as applications that need traditional maps.

US Topo maps can be downloaded free of charge from several USGS interfaces. The maps are published in Portable Document Format (PDF) with geospatial extensions (GeoPDF®). They can be viewed and printed with Adobe Reader or comparable PDF viewing software. The geospatial extensions provide limited GIS functionality, such as displaying ground coordinates and measuring distances and areas.

Layered PDF files allow users to turn data layers on and off. The maps include layers not present on most traditional topographic maps, such as aerial photo and shaded relief images. The US Topo median file size is 22 megabytes.

US Topo maps are produced by the USGS National Geospatial Technical Operations Center. The first 3-year production cycle for the conterminous 48 states was completed on schedule in September 2012. The second cycle will be completed in September 2015. Hawaii, Puerto Rico, and US Virgin Islands also have US Topo coverage. Alaska has been started, and should be complete by 2018.

More information about US Topo maps:

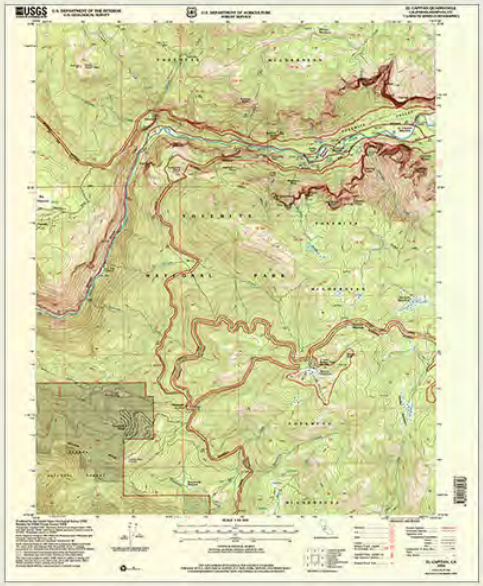
- Background articles
- Frequently Asked Questions (FAQ)
- US Topo Users Guide (PDF, 1 MB)

Exploring US Topo GeoPDFs — Short "how-to" video about accessing, using and enhancing USGS US Topo map products. http://gallery.usgs.gov/videos/663

Introduction to US Topo — a video The National Geospatial Program has released an informative and entertaining video to demonstrate the advantages, capabilities and opportunities provided by US Topo electronic maps. http://gallery.usgs.gov/videos/568

Coverage

US Topo three-year work plan



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- A rapid (3 year) publication cycle, with continuous product improvement.
- Published as digital documents, not as paper maps.
- Basic GIS functionality with no-cost software.

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Search: Boise, ID | Address or Place | Go | [Search Help] or Find a place on the map [Navigation Help]

v4.0.3

NAVIGATE:
Double click to re-center, click and drag to pull the map around, zoom in and out.

MARK POINTS:
Click on a place to add a marker.

NOTES:
Switch between Navigate and Mark Points at any time.

The following map footprints appear when you are in the Mark Points mode and zoomed in:

7.5 and 15 Minute

SELECT AND GET YOUR MAPS:

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View Download Cart 2 item(s).

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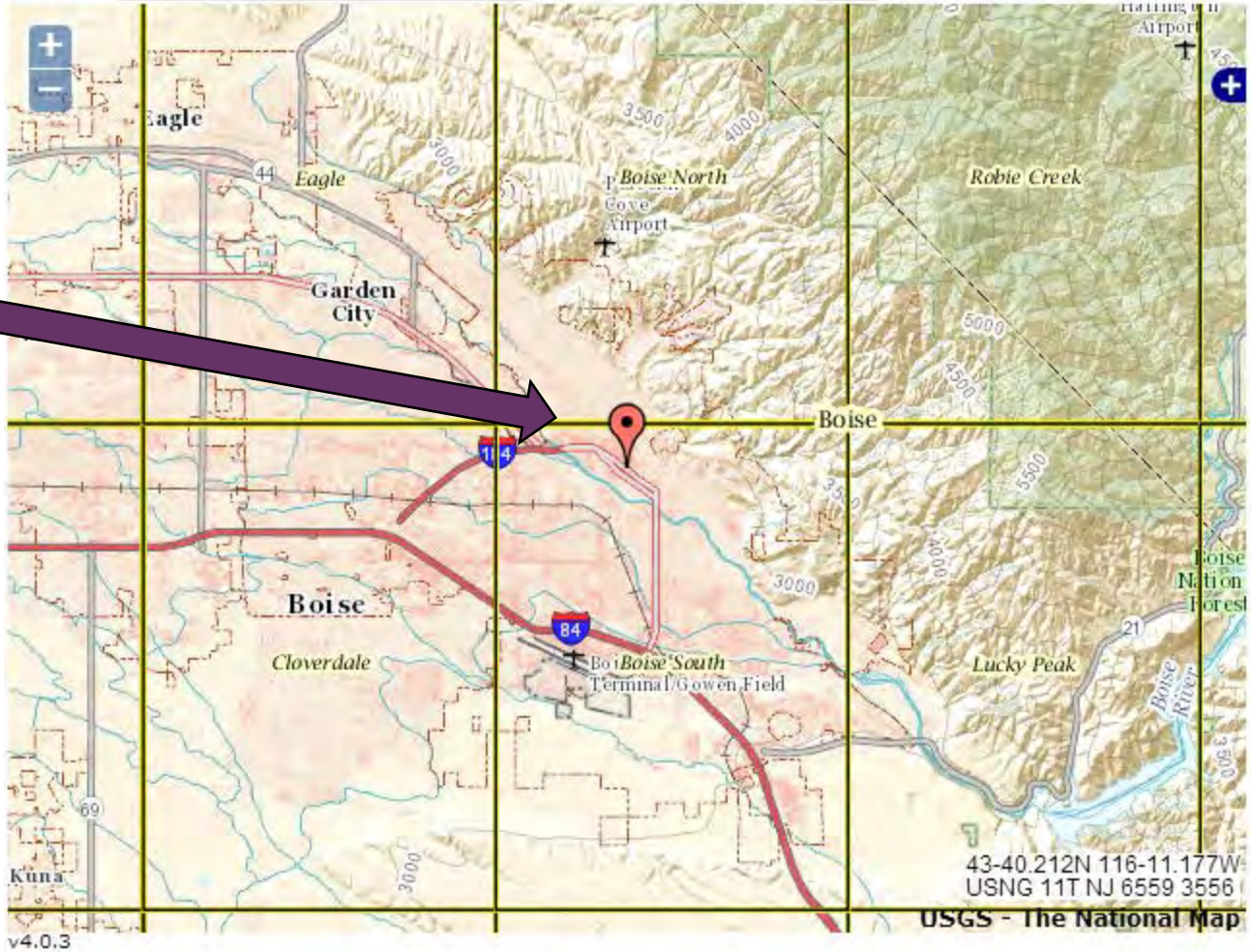
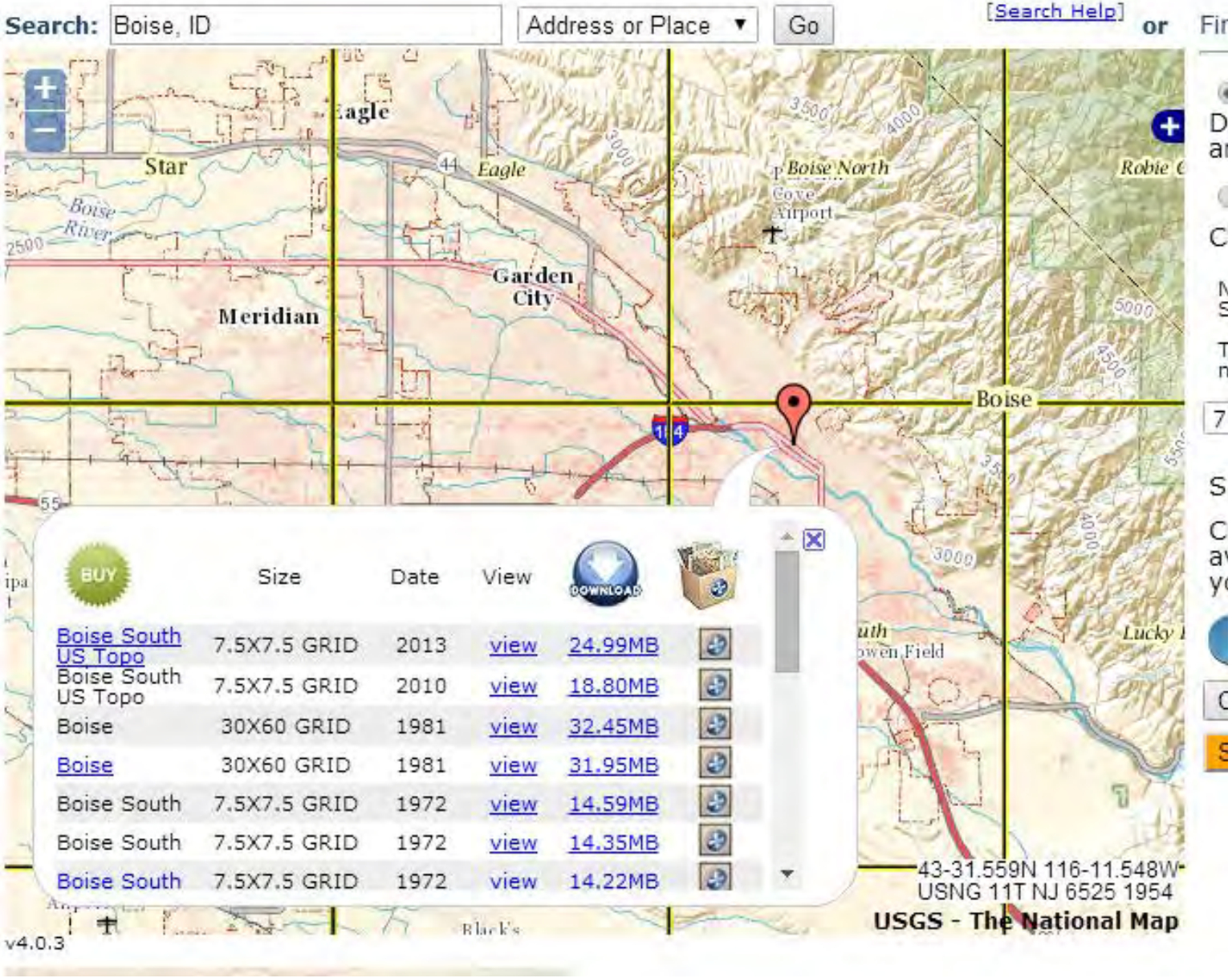
Search: Boise, ID | Address or Place | Go | [Search Help] or



v4.0.3



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ID_Boise_South_20131217_TM_geo.pdf - Adobe Acrobat Pro

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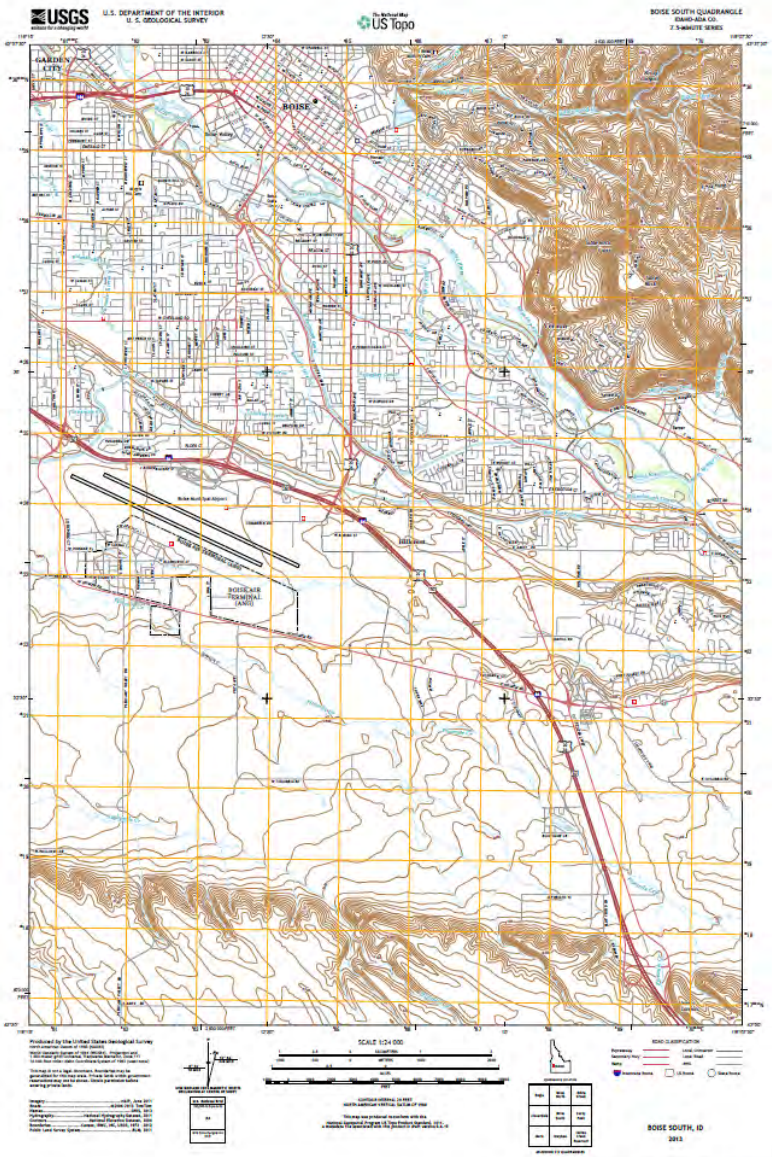
Create

1 / 1 32.4%

Tools Comment

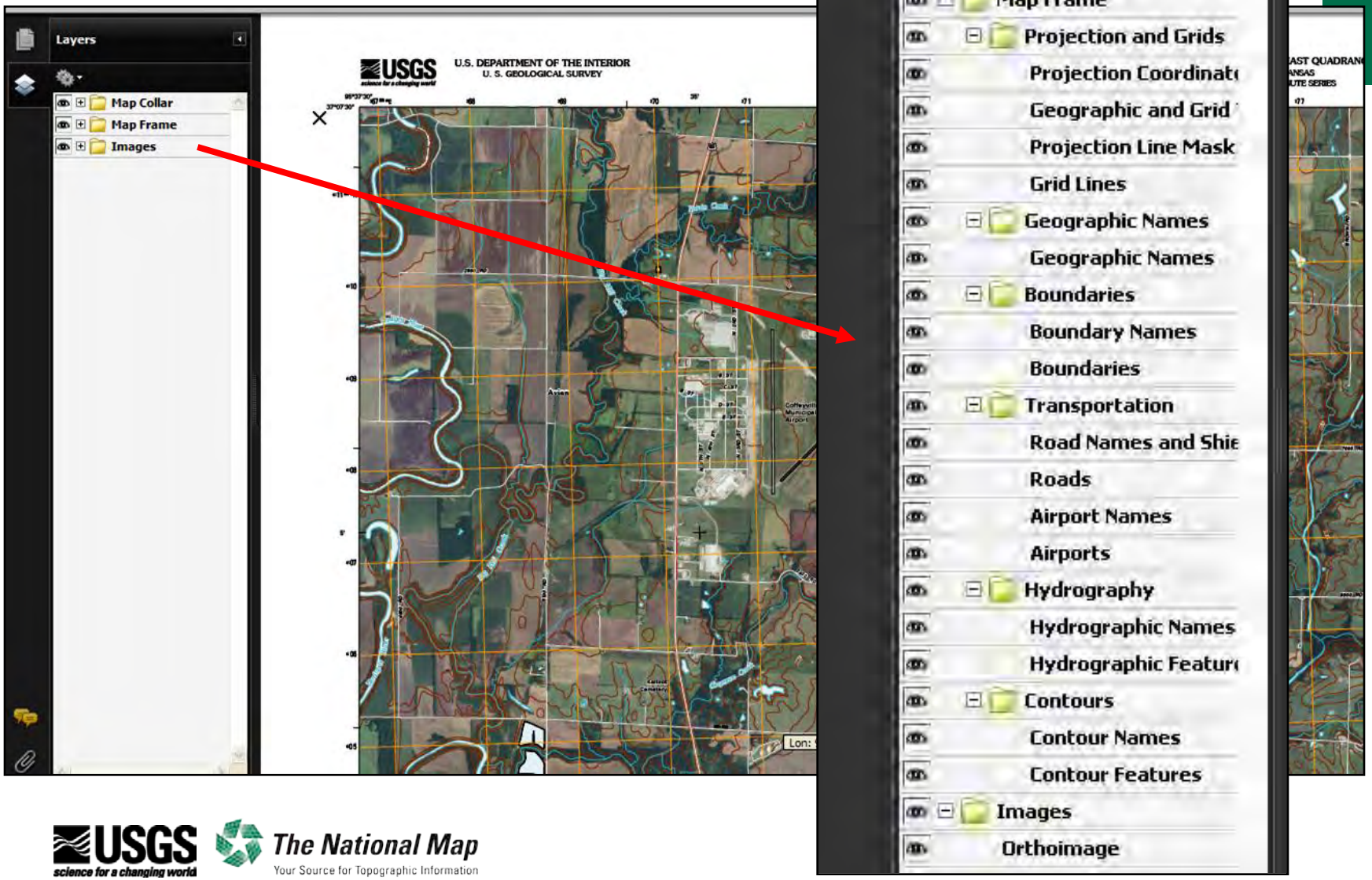
Layers

- Map Collar
  - Map Elements
- Map Frame
  - Projection and Grids
  - Geographic Names
  - Structures
  - Transportation
    - Road Names and Shields
    - Road Features
    - Trails
    - Railroads
    - Airports
  - PLSS
  - Hydrography
  - Terrain
    - Contours
    - Shaded Relief
  - Woodland
  - Boundaries
    - Jurisdictional Boundaries
      - International
      - State or Territory
      - County or Equivalent
    - Federal Administered Lands
      - National Park Service
      - Department of Defense
      - Forest Service
- Images
  - Orthoimage



Lon: 116 12.971 W Lat: 43 32.677 N USNG: 11T NJ 63320 21594

Downloaded Map Layer List (expanded)

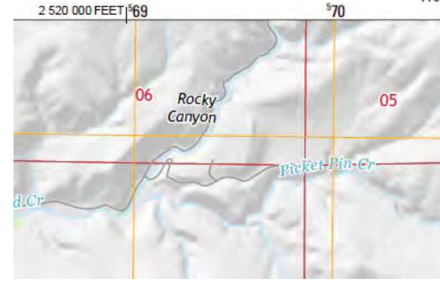


U.S. DEPARTMENT OF THE INTERIOR
U. S. GEOLOGICAL SURVEY

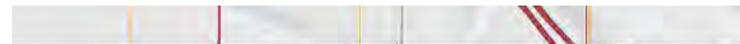
BOISE SOUTH QUADRANGLE
IDAHO-ADA CO.
7.5-MINUTE SERIES

116°15' 43°37'30" ⁵61⁰⁰⁰ᵐE ⁵62 ⁵63 12'30" ⁵64

2 520 000 FEET ⁵69 ⁵70 116°07'30" 43°37'30"



⁴⁸30 710 000 FEET



⁵68 ⁵69 ⁵70⁰⁰⁰ᵐE 43°30' 116°07'30"

QUADRANGLE LOCATION

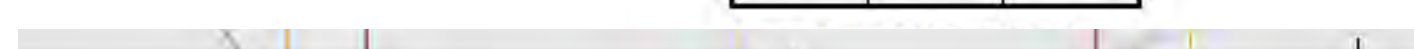
Eagle	Boise North	Robie Creek
Cloverdale	Boise South	Lucky Peak
Mora	Owyhee	Indian Creek Reservoir

ROAD CLASSIFICATION

Expressway — Local Connector
Secondary Hwy — Local Road
Ramp — 4WD
Interstate Route — US Route — State Route

BOISE SOUTH, ID
2013

43°30' 116°15' ⁵61 ⁵62 ⁵63 2 500 000 FEET

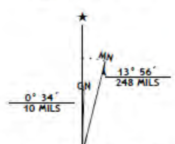


⁵65 ⁵66 ⁵67 10'

Produced by the United States Geological Survey
North American Datum of 1983 (NAD83)
World Geodetic System of 1984 (WGS84). Projection and
1 000-meter grid: Universal Transverse Mercator, Zone 11T
10 000-foot ticks: Idaho Coordinate System of 1983 (west zone)

This map is not a legal document. Boundaries may be generalized for this map scale. Private lands within government reservations may not be shown. Obtain permission before entering private lands.

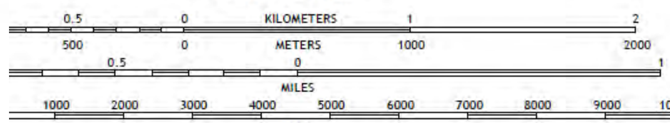
Imagery....NAIP, June 2011
Roads....©2006-2013 TomTom
Names....GNIS, 2013
Hydrography....National Hydrography Dataset, 2011
Contours....National Elevation Dataset, 2000
Boundaries....Census, IBWC, IBC, USGS, 1972 - 2012
Public Land Survey System....BLM, 2011



UTM GRID AND 2013 MAGNETIC NORTH DECLINATION AT CENTER OF SHEET

U.S. National Grid
100,000-m Square ID
NJ
Grid Zone Designation 11T

SCALE 1:24 000



CONTOUR INTERVAL 20 FEET
NORTH AMERICAN VERTICAL DATUM OF 1988

This map was produced to conform with the
National Geospatial Program US Topo Product Standard, 2011.
A metadata file associated with this product is draft version 0.6.15

NJ
Grid Zone Designation
11T

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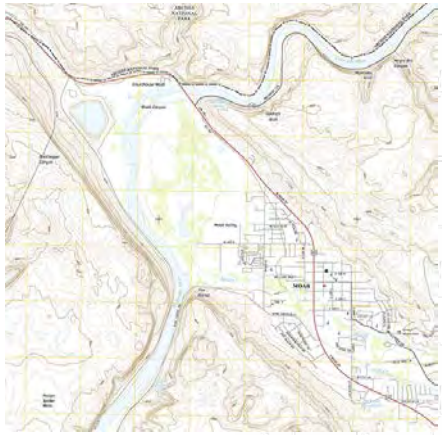
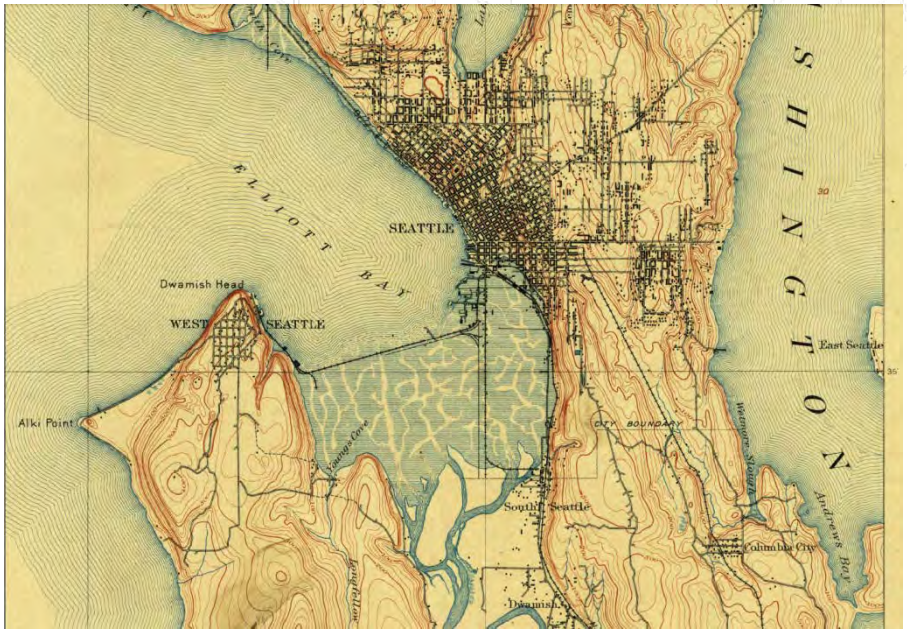
Historical USGS Topographic Map Collection





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Historical USGS Quadrangle Scanning

- Many of the published topographic maps are no longer available in printed form.

- Need for a single, definitive source of historical USGS maps.

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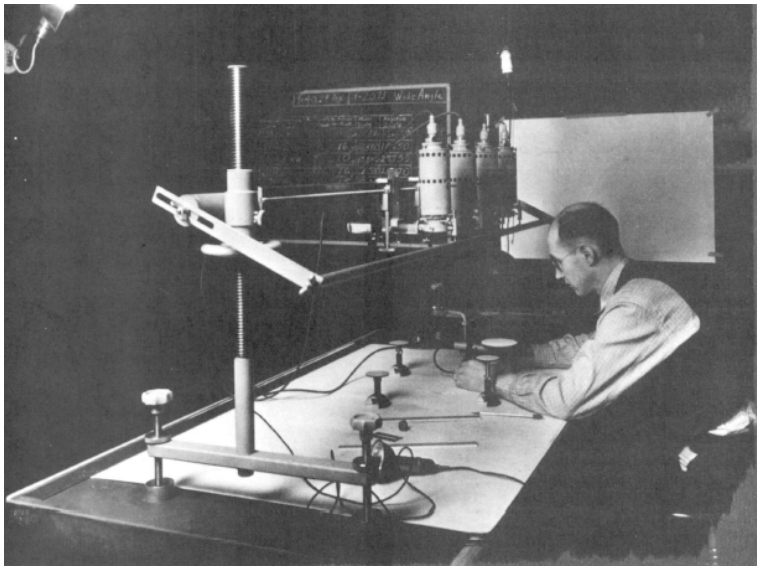
Number counts, by scale

1:12,000	3,080
1:15,840	1,792
1:20,000	748
1:24,000	181,124
1:25,000	2,375
1:31,680	5,799
1:48,000	3,151
1:62,500	32,462
1:63,360	13,494
1:50,000	14,965



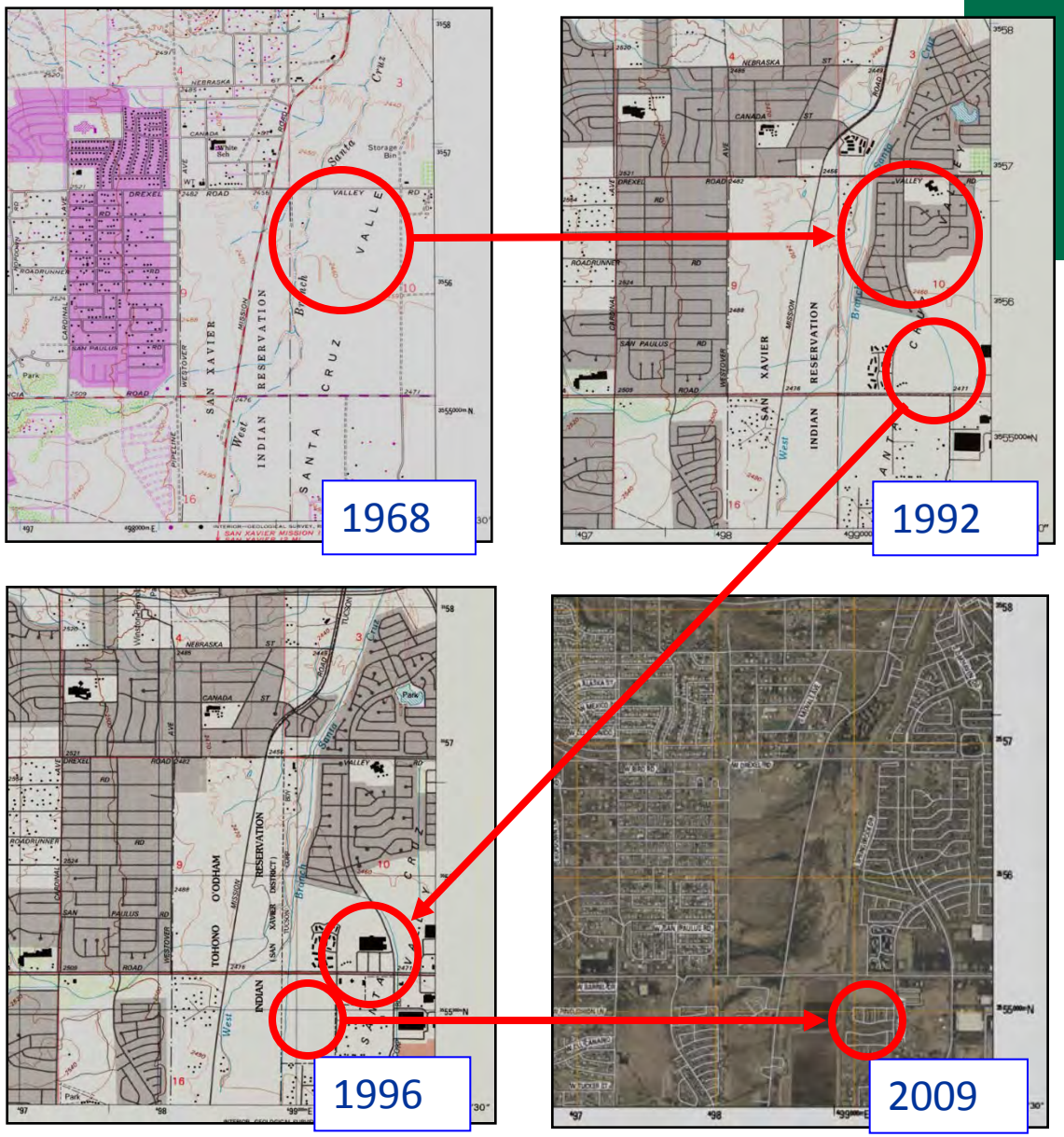
Number counts, by scale cont.

1:96,000	1,253
1:100,000	7,669
1:125,000	6,080
1:126,720	3,836
1:250,000	8,521
1:500,000	1,036
1:250,000	8,521
1:500,000	1,036
1:1,000,000	800

Total of some 297,742 map sheets, plus thousands of other miscellaneous scales!

Map time series

An historical perspective of the Nation's landscape change



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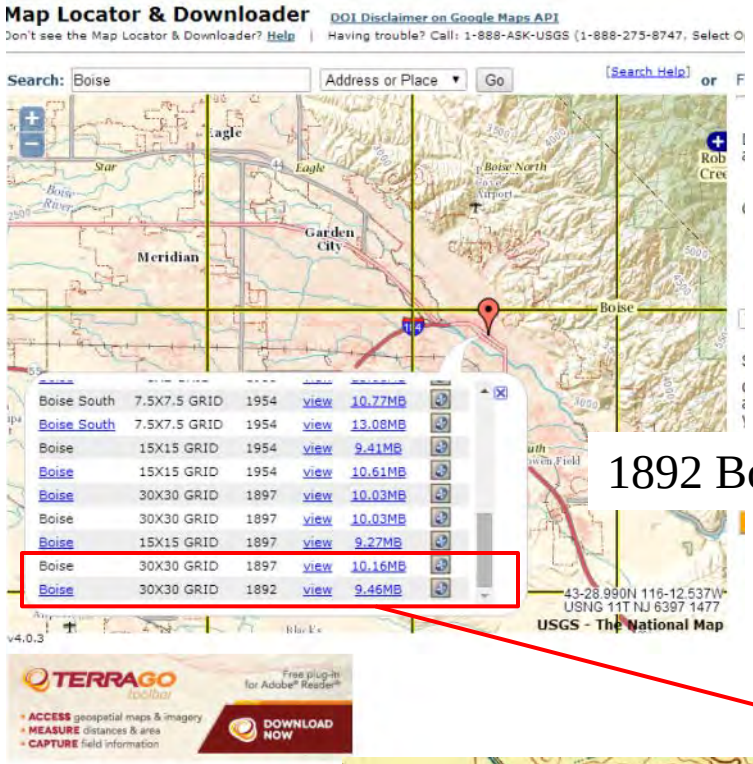
Historic Quadrangle, Boise



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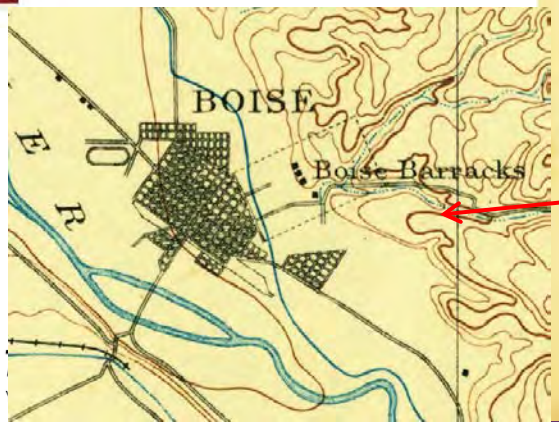
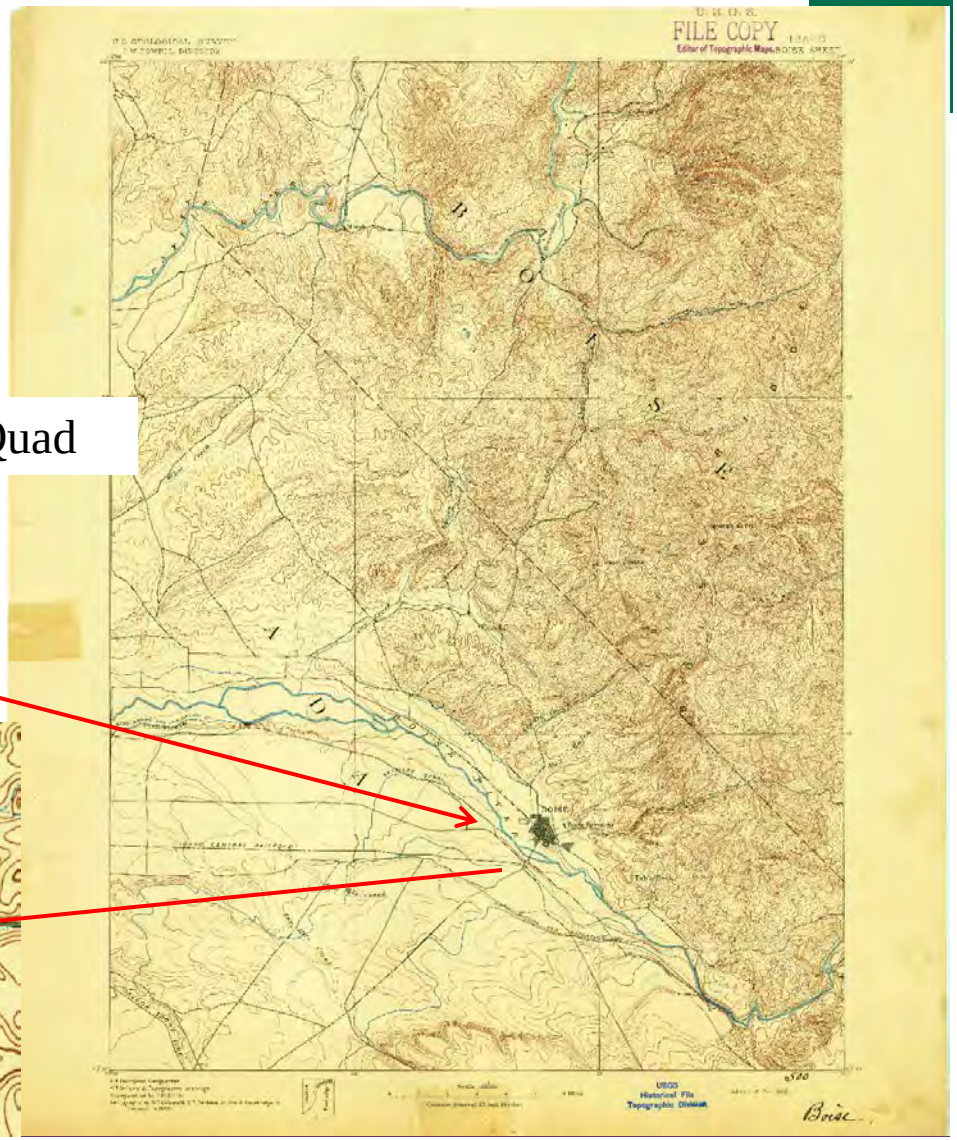
1892 Boise Quad





Scanned at 600 dpi

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Thank you!

Tom Carlson, PhD, GISP
Geographer - Geospatial Liaison NW Region
US Geological Survey
934 Broadway, Suite 300
Tacoma, WA 98402
253.552.1682 Office
253.302.1287 Cell
253.552.1581 Fax
tcarlson@usgs.gov

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BREAK

GIO UPDATE – LOOKING AHEAD

Bill Farnsworth

GIO UPDATE – LOOKING AHEAD

ArcGIS Online

Maps to Citizens

Maps in the Senate

Geospatial Data Act of 2014

Agency Support

State Strategic Plan

GIO UPDATE – LOOKING AHEAD

ArcGIS Online

36 Agencies -121 Users

15 or 16 Training Sessions Completed

1 advanced Training Scheduled - (June 2, 9-10:30)

Almost $80,000 in saving!

Doing an enterprise system, instead of individually by agency

GIO UPDATE – LOOKING AHEAD

ArcGIS Online:
https://idaho.maps.arcgis.com/home/index.html

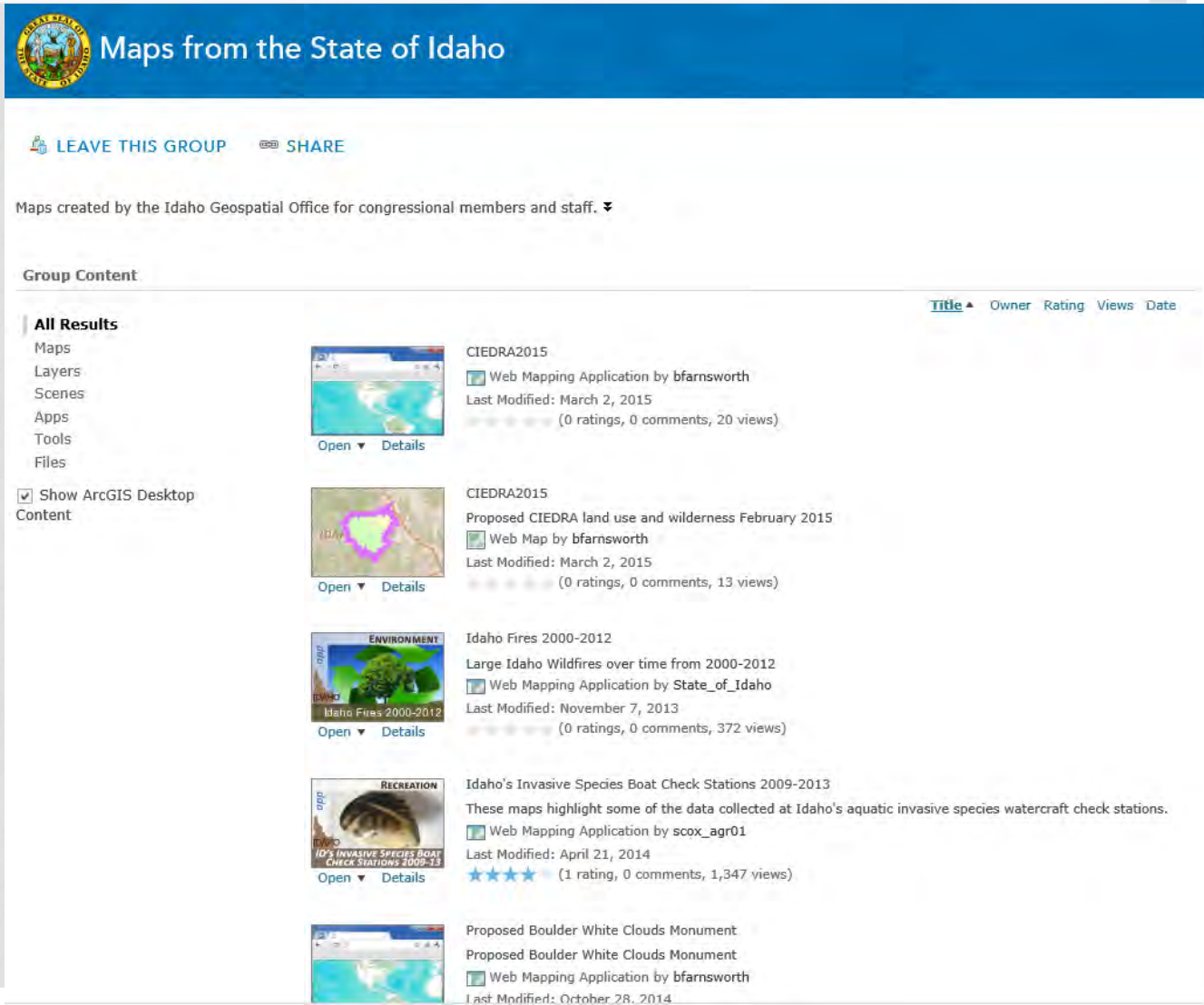
GIO UPDATE – LOOKING AHEAD

Maps to Citizens

www.Maps.Idaho.gov

GIO UPDATE – LOOKING AHEAD

Maps in the Senate



GIO UPDATE – LOOKING AHEAD

Geospatial Data Act of ~~2014~~ 2015

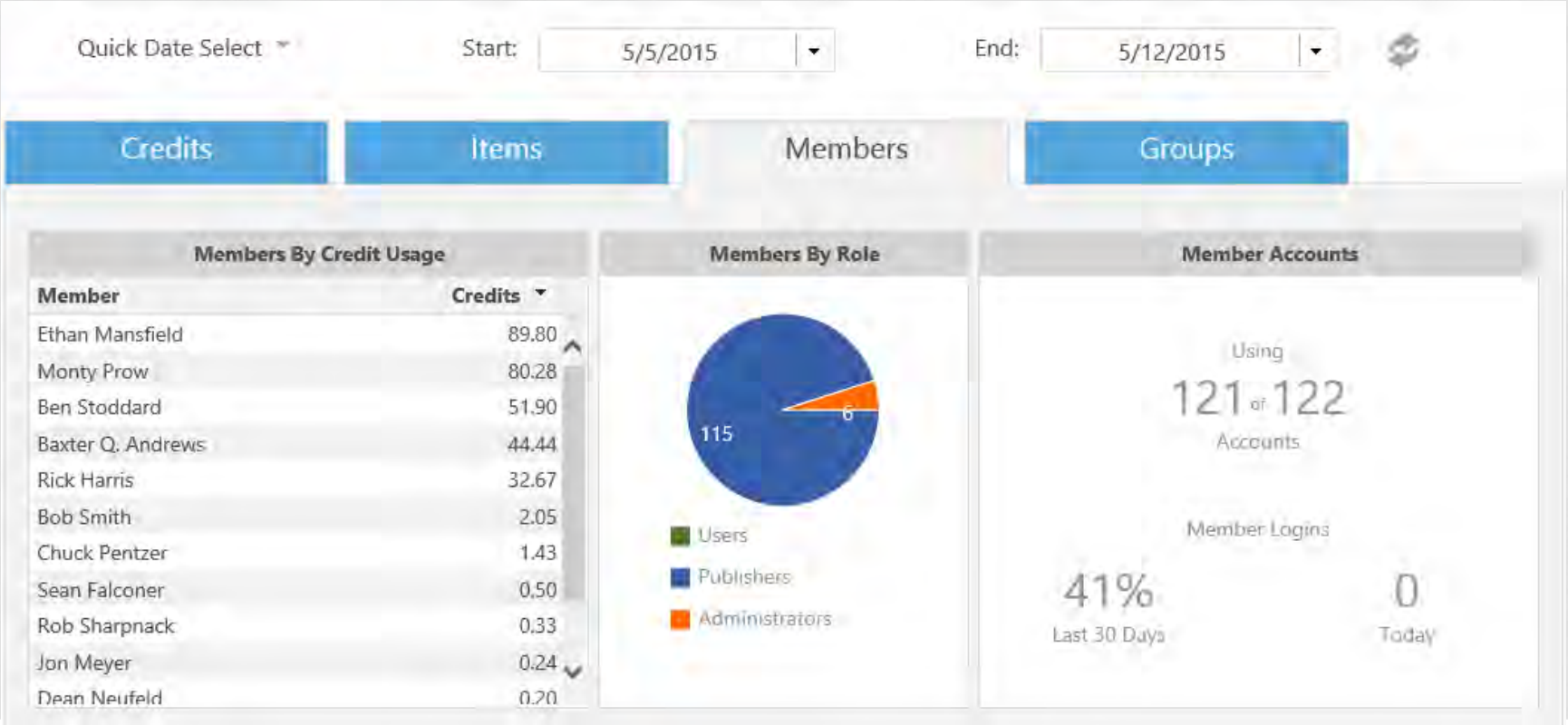
Major Actions (1)

Date	
03/16/2015	Introduced in Senate

Cosponsor	Date Cosponsored
Sen. Warner, Mark R. [D-VA]*	03/16/2015
Sen. Heller, Dean [R-NV]	05/11/2015
Sen. Wyden, Ron [D-OR]	05/11/2015

GIO UPDATE – LOOKING AHEAD

Agency Support:
GIS Professionals & AGOL Users



GIO UPDATE – LOOKING AHEAD

State Strategic Plan

ESRI UPDATE

TBD

LUNCH

HYDROGRAPHY DATA EXCHANGE STANDARD

Danielle Favreau

TWG UPDATES

- **Hydrography**
- **Elevation**
- **Imagery**
- **Geodetic Control**
- Parcels
- Cadastral Reference
- Transportation
- Government Boundaries
- Public Safety
- Utilities
- Land Use Land Cover Theme

HYDROGRAPHY

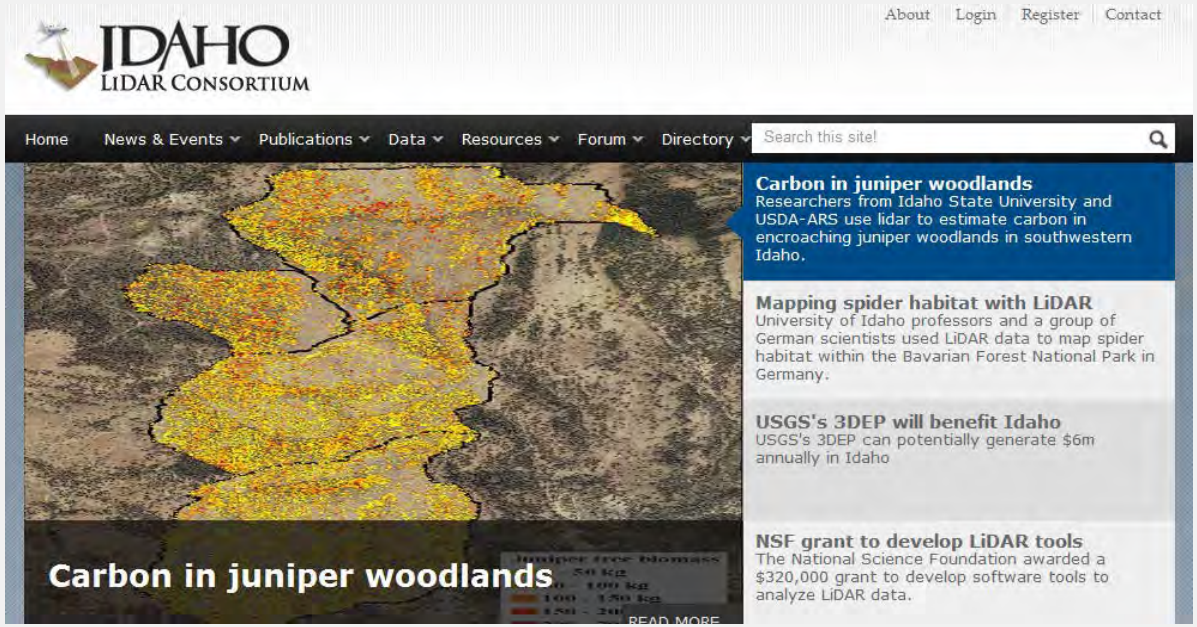
CHAIR: Linda Davis

- Stewardship
- Data Integration
- Resources and Tools

Elevation Working Group

CHAIR: Nancy Glenn, Boise State University

Coordination of lidar and other elevation products. New for 2015: multi-year acquisition planning.



Activities:

1. Submitted pre-proposal to the USGS 3DEP program in August 2014 (not funded)
2. Several working group meetings to coordinate lidar acquisitions
3. Updates to Idaho Lidar Consortium (idaholidar.org) website (to be complete in June 2015)
4. Subcommittee on multi-year acquisition plan
5. Apply for USGS 3DEP funding (July 2015)
6. Several members attended USGS 3DEP Northwest Public Coordination Meeting (May 11) and national webinars. Reference material listed here:

   https://www.geoplatform.gov/elevation/3DEP/PublicMeetings

Feedback? Please contact Nancy
nancyglenn@boisestate.edu

IMAGERY

CHAIR: Margie Wilkins

- Leadership
- Image Services
- Imagery Resources and Miscellaneous Tools

NAIP Access and Download Statistics from INSIDE Idaho

COLLECTION	TYPE	YEAR	TOTAL PAGE VIEWS	AVG. PAGE VIEWS/DAY	TOTAL VISITORS	AVERAGE VISITORS/DAY	TOTAL UNIQUE IPS	VISITOR BANDWIDTH (GB)
NAIP 2009	Web Service	2010	461,449	1,533	12,053	40	1,509	38
NAIP 2009	Web Service	2011	1,295,137	3,548	36,977	101	5,031	121
NAIP 2009	Web Service	2012	1,228,156	3,355	39,553	108	15,554	69
NAIP 2009	Web Service	2013	2,768,501	7,584	44,266	121	22,668	55
NAIP 2009	Web Service	2014	1,182,227	3,238	29,644	81	9,474	21
NAIP 2009	Download	2010	20,631	72	2,076	7	691	5,367
NAIP 2009	Download	2011	11,680	32	4,065	11	1,561	1,820
NAIP 2009	Download	2012	4,641	12	937	2	376	226
NAIP 2009	Download	2013	10,093	27	319	-	7	40.01 MB
NAIP 2009	Download	2014	8,235	22	304	-	5	32.60 MB
NAIP 2011	Web Service	2012	257,224	767	14,191	42	5,422	70
NAIP 2011	Web Service	2013	2,608,980	7,147	39,083	107	6,229	507
NAIP 2011	Web Service	2014	2,594,789	7,109	27,462	75	3,017	429
NAIP 2011	Download	2012	29,498	87	3,254	9	1,314	6,998
NAIP 2011	Download	2013	4,679	12	1,870	5	869	1,654
NAIP 2011	Download	2014	2,823	7	1,827	5	1,163	635
NAIP 2013	Web Service	2014	1,840,155	5,974	18,960	61	4,586	331
NAIP 2013	Download	2014	17,927	57	1,671	5	575	10,572

2015 NAIP

- Official announcement/approval has not happened yet
- NAIP is currently on a 2-year cycle (dependent on funding)
- Collection: Statewide, 1.0 meter resolution, 4-bands.
- Idaho collection scheduled for: June 10 - August 15.
- DOQQs (4-band Geotiffs) estimated availability beginning Sept 14.
- CCMs (3-band MrSIDs) estimated availability beginning Sept 29.
- USDA's Geospatial Data Gateway will provide CCM data download.
- NAIP Collection status maps available thru ArcGIS Online option.
- Data available for purchase directly through APFO/USDA/FSA.
  Data is essentially free and APFO only charges for production costs.
  GIO plans to purchase disks/data.
- APFO accepts feedback regarding the NAIP imagery.
  Use the NAIP Imagery Feedback map
  or send an email to NAIP.Problem.Tracking@slc.usda.gov

The USDA-FSA Aerial Photography Field office asks to be credited in derived products.

There are various ways to access NAIP data (Layer file, KMZ, OGC, etc) and/or to add the GIS Servers in ArcGIS Desktop.
Info may be found at these pages:

https://gis.northwestknowledge.net/arcgis/rest/services/aerial-imagery/ortho_2013_idaho/ImageServer

http://naip.giscenter.isu.edu/arcgis/rest/services/NAIP2013_ImageService/ImageServer

http://gis.apfo.usda.gov/arcgis/rest/services/NAIP/Idaho_2013_05m/ImageServer

Downloading of source rasters is enabled for the service at the gis.northwestknowledge.net link

The USDA-FSA Aerial Photography Field office asks to be credited in derived products.

Imagery Technical Working Group

Meets on a quarterly basis

First Wednesday of the month

NEXT MEETING: JUNE 3RD

Idaho Water Center

322 East Front Street

Contact: margie.wilkins@idwr.idaho.gov

208.287.4884

The USDA-FSA Aerial Photography Field office asks to be credited in derived products.

Geodetic Control TWG

ISU GIS Training and Research Center

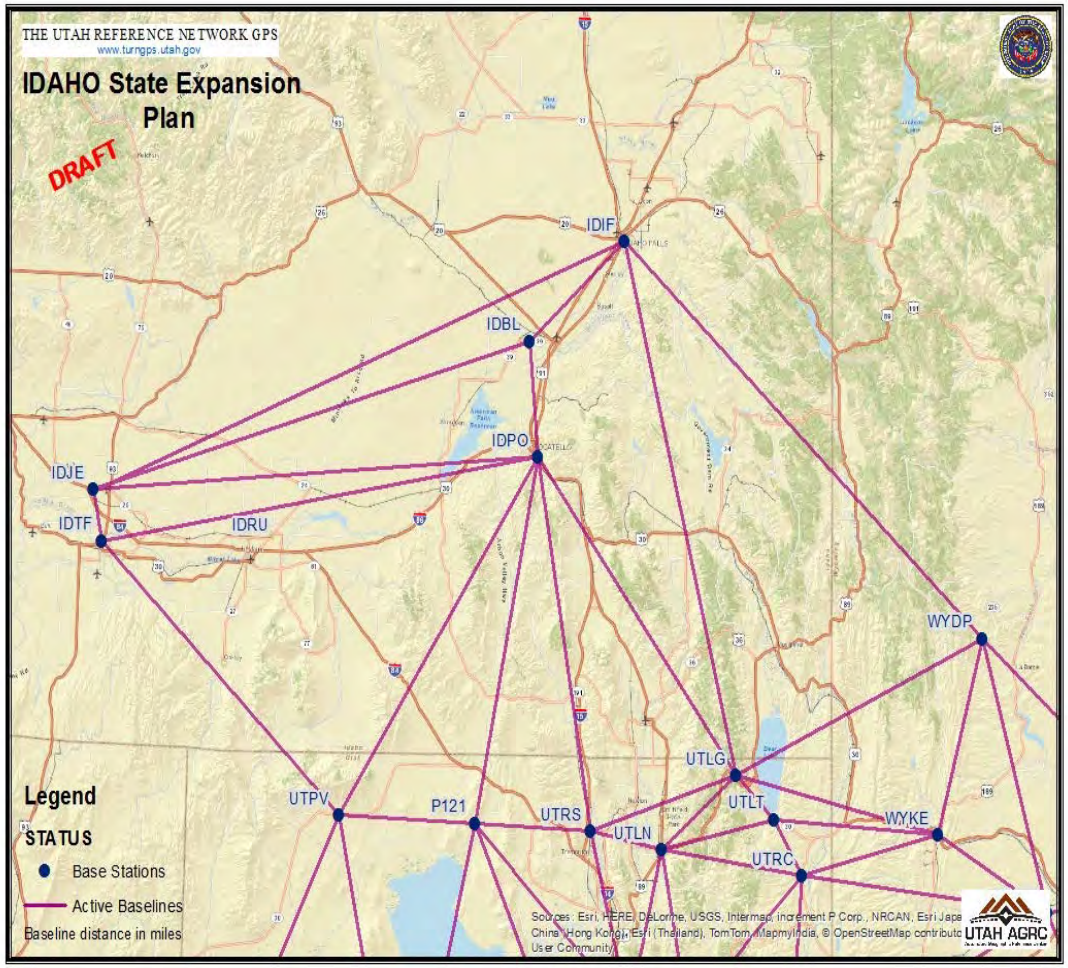
Keith T. Weber, GISP

Dr. Kazi Arifuzzaman

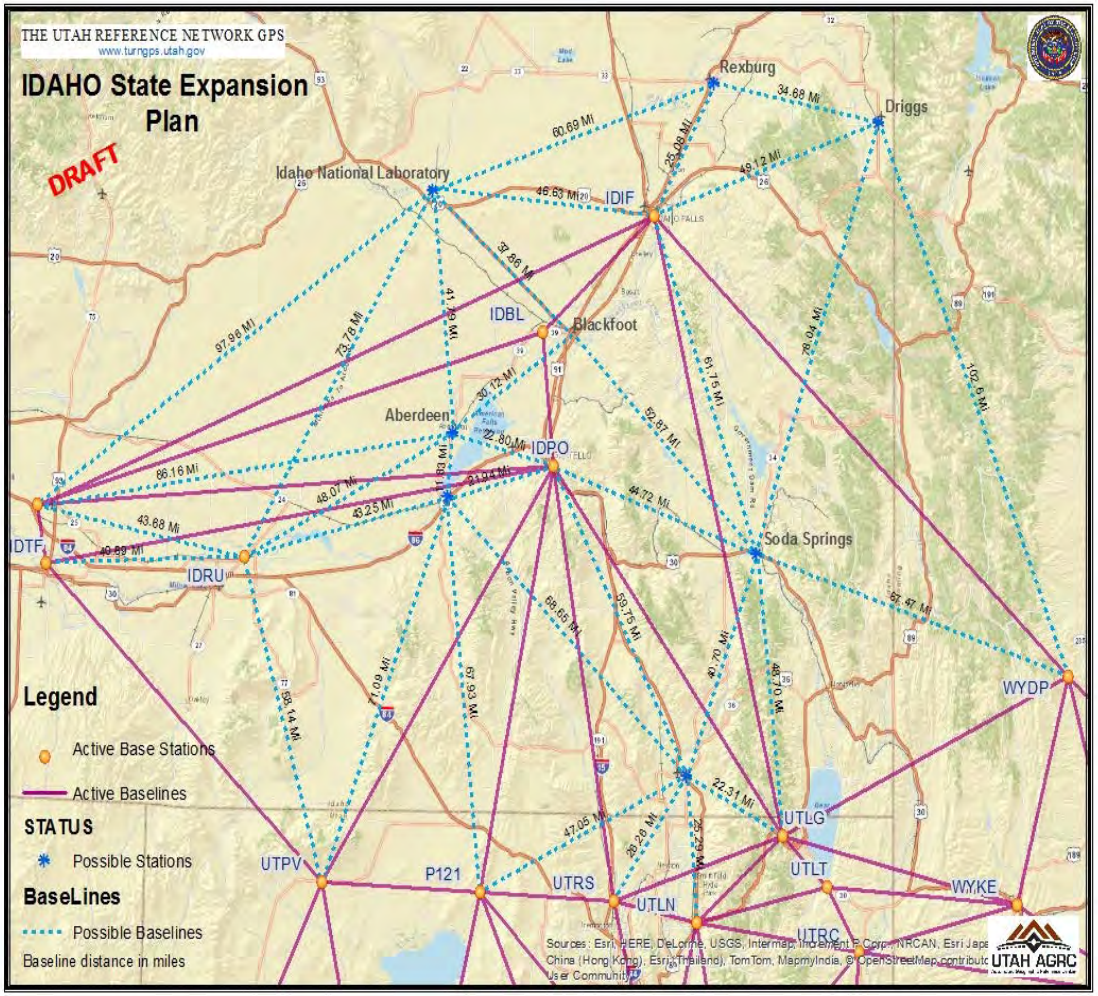
Real-Time Network

- A decade of effort
- Current collaborations
  - Utah AGRC TURN
  - EDS and Monsen
  - ISU GIS TReC

Current Design



Future Design



Idaho RTN

- Using the RTN
  - Limitations
  - Equipment needed
- Idaho RTN Demo Days
  - May 20-22
  - http://eepurl.com/blAZ7X
  - giscenter@isu.edu

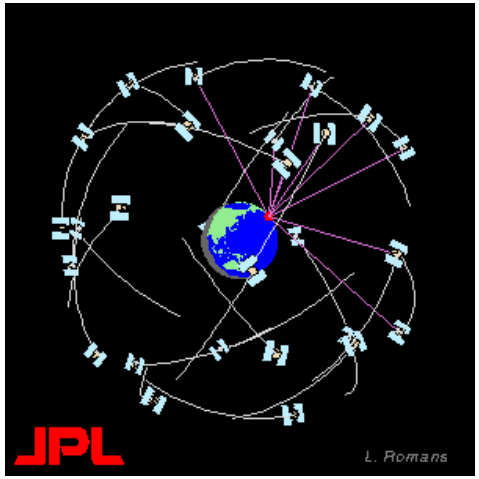
MCPD

- Multi-state Control Point Database
- Accessible via FLEX web map or Esri map service
- Current updates…
  - Normalized and web optimized GDB
  - Mobile *MCPD-Lite* coming this summer!

Questions?

Control Points

- GIS made GPS so invaluable
- Before GIS maps compiled in local coordinate system
- GIS provided economic impetus to create maps compiled in global coordinate system
- Because such maps will edge match, or overlay each other



Control Points

- GIS data layers are abstractions of real world
- Contain measurement errors and lack detail of real-world counterparts

Goodchild, 1994

Parcel Area	1% Error	10% Error
100 sq m	1:100	1:1,000
1000 sq m	1:300	1:3,000
1 ha	1:1,000	1:10,000

Control Points

- Reliability of the decisions to be based on spatial data, or quality of various layers of data combined!
- Spatial data quality is the core of GIS, and
- Positional accuracy is the basic component
- NSSDA provides US National Map Accuracy Standards (NMAS)

Control Points

- RMSE to estimate positional accuracy (FGDC 1998, Part 3)

$$RMSE_r = sqrt[\sum((x_{data,i} - x_{check,i})^2 + (y_{data,i} - y_{check,i})^2)/n]$$
$$= sqrt[RMSE_x^2 + RMSE_y^2]$$

$$RMSE_z = sqrt[\sum(z_{data\,i} - z_{check\,i})^2/n]$$

ASPRS accuracy standard, **1991**

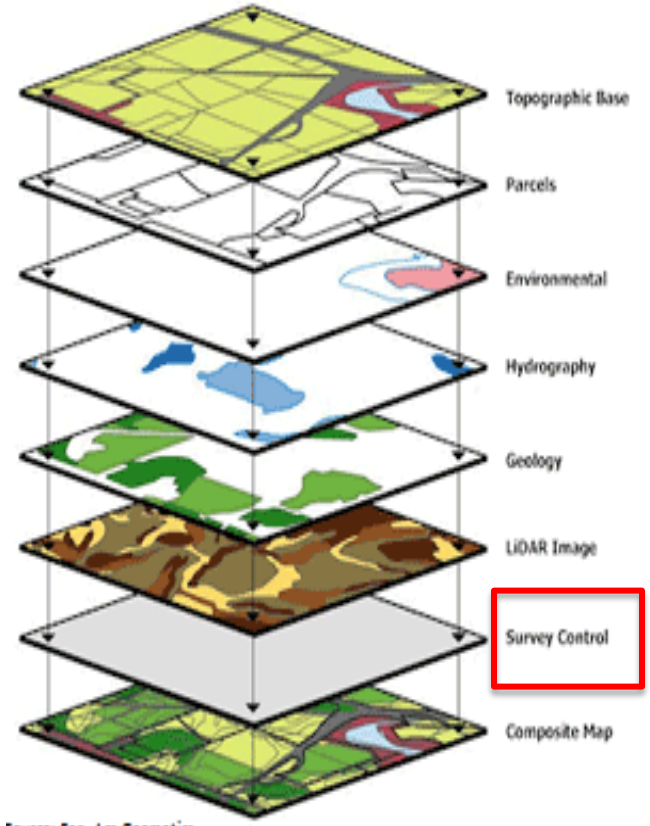
Table 1E. — Planimetric Coordinate Accuracy Requirement (Ground X or Y in feet) for Well-defined Points - Class 1. Maps

PLANIMETRIC (X or Y) ACCURACY[3] (limiting rms error, feet)	TYPICAL MAP SCALE
1.0	1:1,200
2.0	1:2,400
4.0	1:4,800
5.0	1:6,000
8.0	1:9,600
10.0	1:12,000
16.7	1:20,000

- Minimum 3rd order benchmarks to be used for Vertical Accuracy
- RMS to be 1/20 of any contour interval

Control Points

- Survey Control as Fiducial Marks
- Data layers that overlap but some do not agree
- Without control source of the problem is unclear
- Creating a data layer holding controls in the mapping area can solve this problem



Source: Can Am Geomatics

Control Points

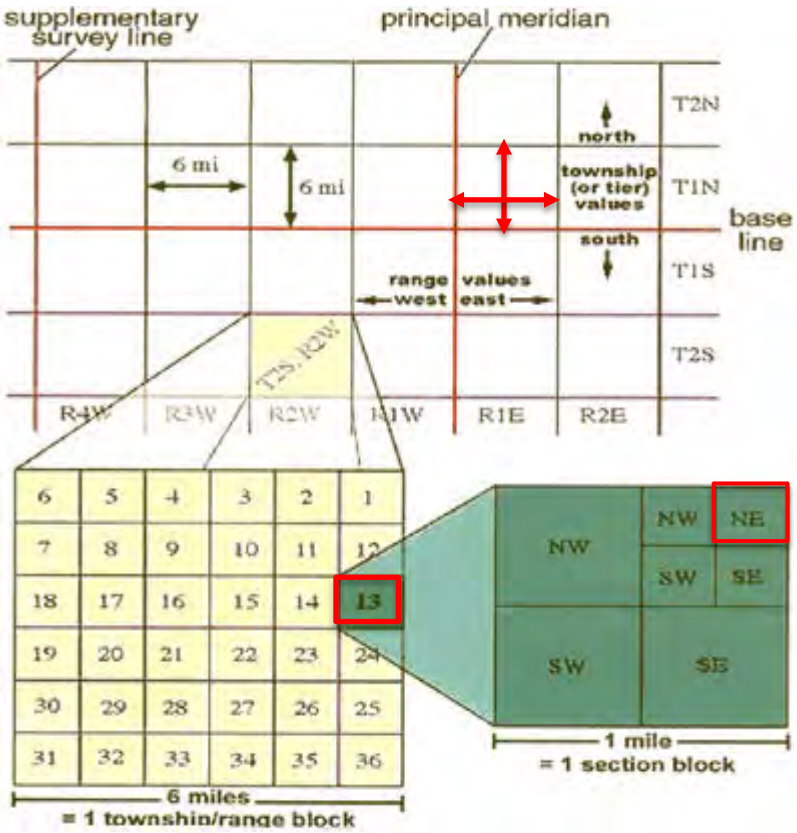
- Not all survey control markers are created with the same accuracy
- Network of controls that define national spatial coordinate system (NSRS) are surveyed with highest accuracy, Survey markers, and CORS
- Data layers are created from control of differing quality
- When layers do not agree, knowledge of accuracy level decides which layer is considered more authoritative (Order:1st, 2nd,3rd ; Class: 1, 2 etc)

Control Points

- Spatial PLSS is the abstraction of data of official cadastral survey records
- the corners are established as the proper corners of sections, or of the subdivisions of the sections
- Corners tied up to NSRS. GCDB

PLSS subdivisions

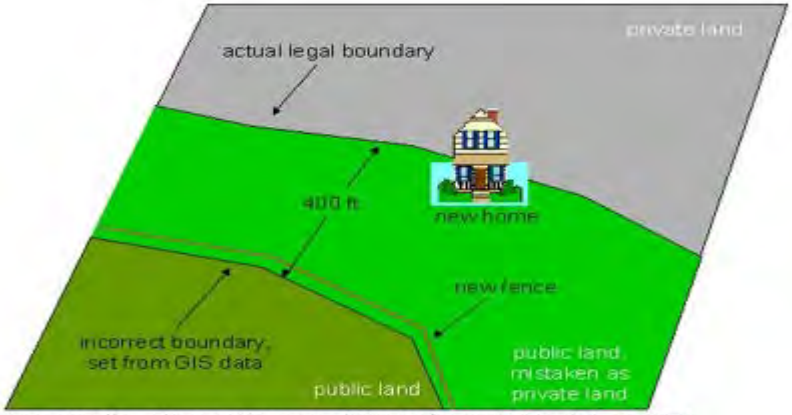
	dimensions (miles)	(mile^2)	area (acres)
Township	6 by 6	36	23,040
Section	1 by 1	1	640
Half-section	1 by ½	½	320
Quarter-section	½ by ½	¼	160
Half of quarter-section	½ by ¼	⅛	80
Quarter of quarter-section	¼ by ¼	1/16	40



Control Points

- Responsibility of maintaining GIS data in its correct datum

- Regional vs geocentric datum, UTM NAD 27 vs UTM NAD 83 – 100s of meters



Source: http://www.fairview-industries.com/gismodule/PartTwoMisplacedBoundary.html

- Geocentric datums: NAD83, WGS84, ITRF, difference about 1 meter or more

Realization of Reference frames at different epoch

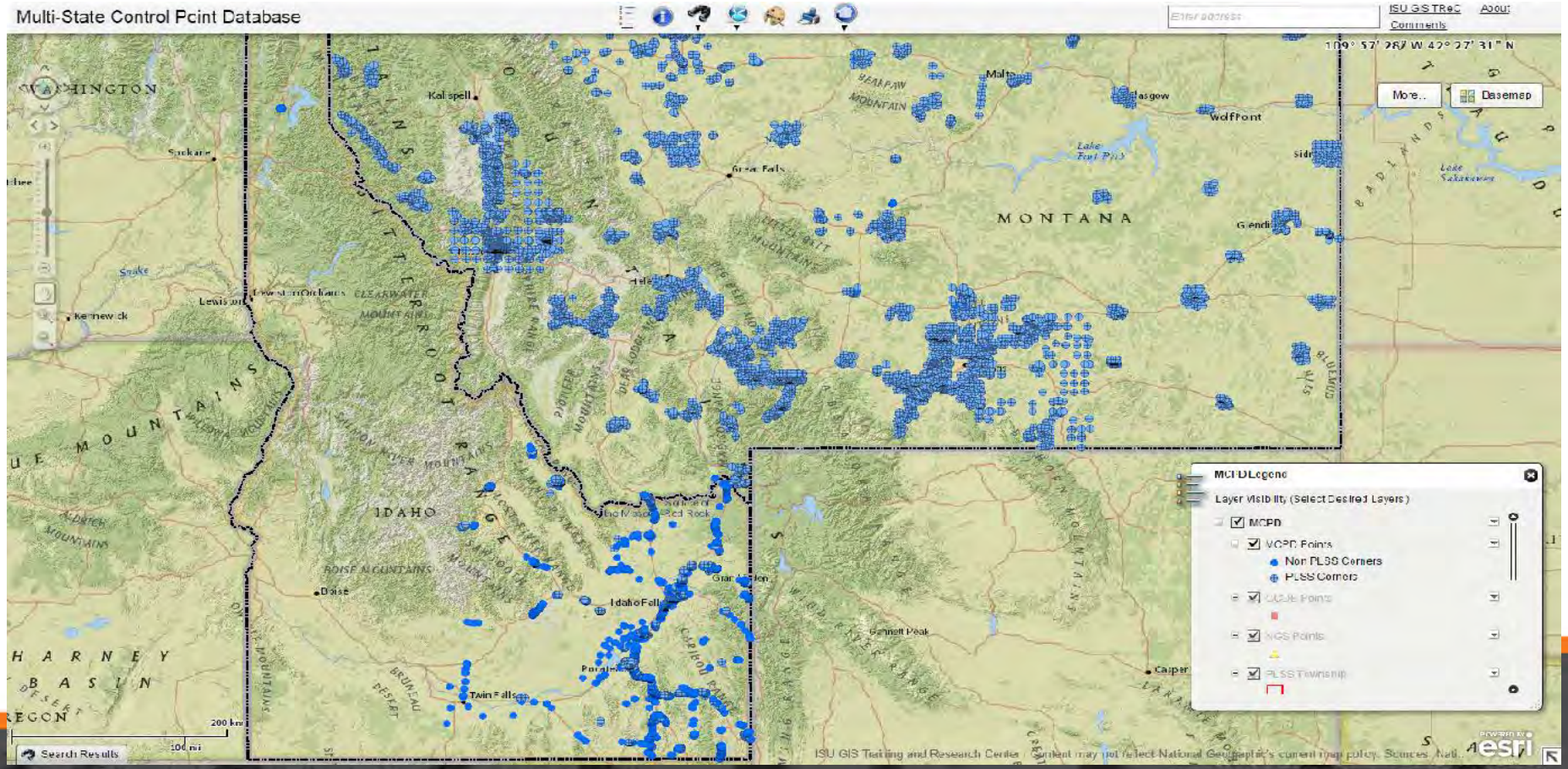
NAD83(2011), epoch 2010.0	WGS84 (G1674)	ITRF2008, 2005.0
NAD83(CORS96), epoch 2002.0	WGS84 (G1150)	ITRF2000, 1997.0

- Horizontal Time-Dependent Positioning (HTDP)

Control Points

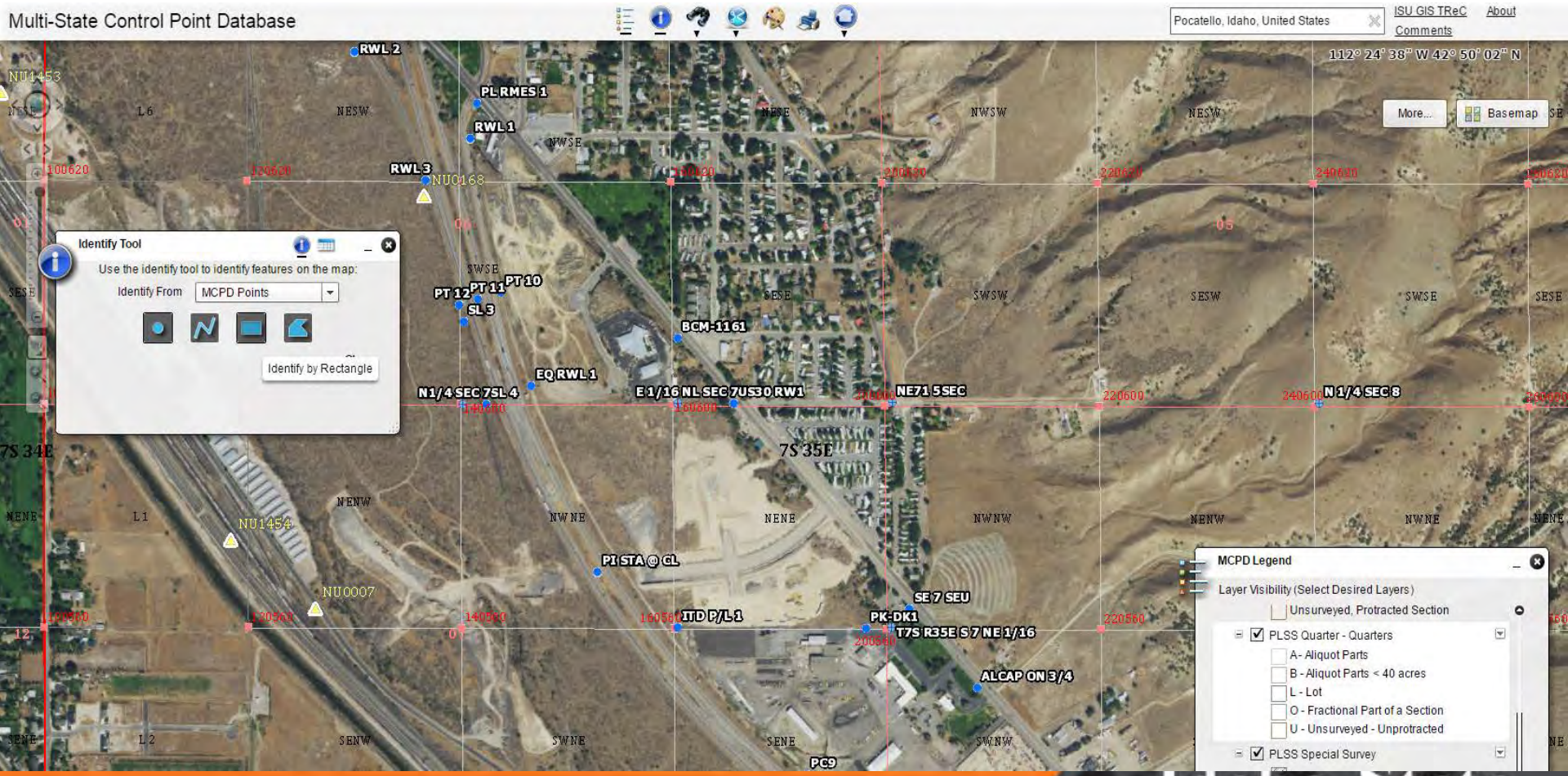
- GIS'ers may be aware of spatial data quality issues but may not have at their disposal resources such as control points for data quality assurance

- Multi-State Control Point Database (MCPD)



Control Points

- Tools: address, identify, search, extraction (ESRI/CAD, csv, txt), draw and measure, print, link to websites, legend, scale-dependent control points



Control Points

- MCPD provides opportunities for,

- Higher accuracy at larger scale of GIS analyses and maintenance
- Higher accuracy of Lidar, airborne and Remote sensing data
- A great convenience for land surveyors to locate control coordinates of section corners or aliquot part or fractional part corners
- Accuracy and maintenance of any geospatial needs

Thanks

Spatial Data Infrastructure (SDI)

Jeff May

Cody Feldman

Keith T. Weber, GISP

Spatial Data Infrastructure (SDI)

"to provide accurate and reliable data for decisions regarding the security, health and welfare, and prosperity of our citizens."

Background

- Research project during fall semester 2014
- Curriculum gap
  - Students are not exposed to the politics, policies, and standards of geospatial data
- Project explored what a college-level course on SDI would cover

Background

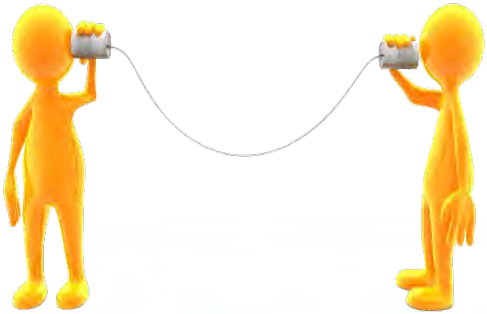
Objectives….

- Organizational structure at various levels (national, state, and regional)
- Pay special attention to standards
- Attend technical working group meetings

Findings

Implementing SDI….

- Complex political environment
- Expense
- Communication



Findings

FGDC

- US federal committee (Chaired by DOI)
- Implement NSDI
- Defines base framework requirements
- Support from NGAC
- National needs focused

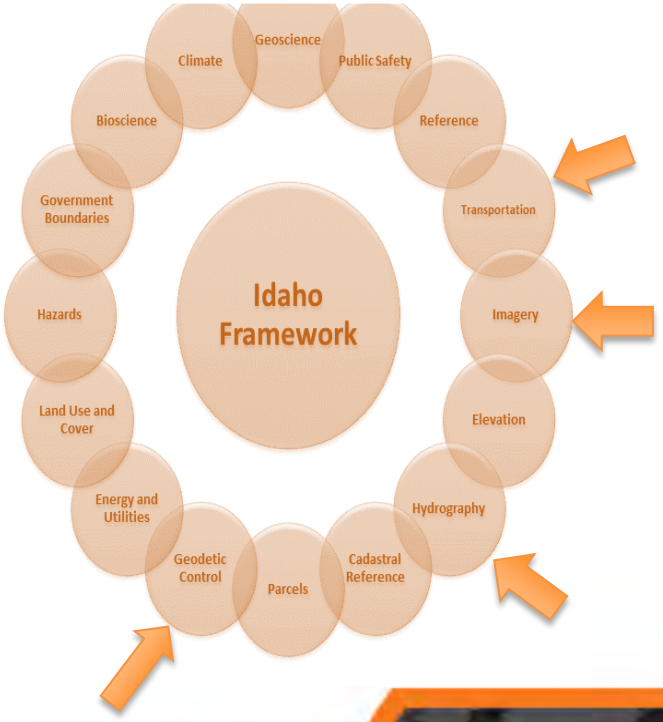
State SDI

- Implementation of state's SDI by state geospatial offices
- Define framework layers in addition to base framework
- Support from NSGIC at the federal level
- Individual State needs

Findings

In Idaho

- Active TWGs during fall 2014



Findings

In Idaho

- Business and Strategic plans outdated
- Standards documentation unavailable for most data layers
- Data dissemination based on pre-web service GIS architecture
- Lack of support from federal level
- Cooperation from all GISers in all counties

Recommendations

Adopt standards and develop data for the seven base framework layers defined by FGDC	Encourage involvement from GIS'ers statewide	Update Idaho SDI business and strategic plans
• Cadastral • Elevation • Geodetic Control Governmental units • Orthoimagery • Transportation • Hydrography • Administrative Units	• Increased awareness • Student interns??? • Poster sessions at IGC bi-annual conference.	• Update leadership and contact info • Embrace web-centric GIS environment

National Spatial Data Infrastructure

Recent NSDI Evaluations

Coalition of Geospatial Organizations (COGO)

- NSDI Report Card
- Published February 16, 2015

Government Accountability Office (GAO)

- NSDI Report to Congress
- Published March 16, 2015

Coalition of Geospatial Organizations (COGO)

- Advisory body representing geospatial practitioners

"…whose primary purpose is the advancement of professional activities related to the creation, collection, dissemination, management, or application of geographical information…"

- Provide input on geospatial data and policy issues

COGO Fall 2014 NSDI Report Card

- Published NSDI report card on February 16, 2015

Focus on the seven FGDC "framework" data layers

- Geodetic Control -- NGS
- Cadastral -- BLM
- Orthoimagery -- USGS
- Elevation -- USGS
- Hydrography -- USGS
- Administrative units -- US Census
- Transportation -- DOT

COGO Fall 2014 NSDI Report Card

GRADE REPORT OF: National Spatial Data Infrastructure (NSDI) **SEMESTER:** Fall 2014

Subject	Dept.	Grade	Subject	Dept.	Grade
CADASTRAL DATA	DOI	D+	CAPACITY	FGDC	C
GEODETIC CONTROL	DOC	B+	CONDITION	FGDC	D
ELEVATION DATA	DOI	C+	FUNDING	Various	D
HYDROGRAPHY DATA	DOI	C	FUTURE NEED	FGDC	D
ORTHOIMAGERY DATA	DOI & USDA	C+	OPERATION & MAINTENANCE	FGDC	C
GOVERNMENT UNITS DATA	DOC	C	PUBLIC USE	FGDC	C
TRANSPORTATION DATA	DOT	D	RESILIENCE	FGDC	C
OVERALL DATA GRADE		C	COMPREHENSIVE GRADE		C-

TO: Federal Geographic Data Committee
590 National Center
Reston, Virginia 20192

FROM: Coalition of Geospatial Organizations (COGO)
http://www.cogo.pro
See the full report for an explanation of each grade.

Government Accountability Office (GAO) 2015 report

Study to…

- Describe federal agency and state use and cost of geospatial data
- Assess NSDI programs
- Determined duplicative investment in geospatial data by federal agencies and states

Government Accountability Office (GAO) 2015 report

Found that…

- Agencies and State gov. use a variety of geospatial datasets to support their missions
- Cost estimates are routinely understated.
- FGDC coordination w/ state gov. is low
- OMB does not maintain priority oversight over FGDC programs

Government Accountability Office (GAO) 2015 report

Recommends…

- Congressional input towards a national addressing database
- OMB and associated federal agencies fully implement NSDI activities
  - More OMB oversight
  - Establish schedules and collect performance measures

The BIG Take away

- "…without the proper guidance, authority, or resourcing to do this important work, the Federal government has not been able to envision the NSDI Framework concepts that were first laid out in Executive Order 12906."
- The federal government is no longer the dominant data producer and a new model for Framework data must acknowledge local partners.
- States are dissatisfied with coordination efforts by the FGDC
- Federal government recommended to implement additional oversight

Going forward in 2015

- Geospatial Data Act
- Addresses for the nation
- Digital Coast Act
- 3DEP
- Transportation for the nation

Questions

RECOVER: A Geotechnical Approach

NASA RECOVER

Keith T. Weber, GISP

Jeff May

What is RECOVER?

- RECOVER: Rehabilitation Capability Convergence for Ecosystem Recovery
- NASA Applied Sciences Program sponsored project

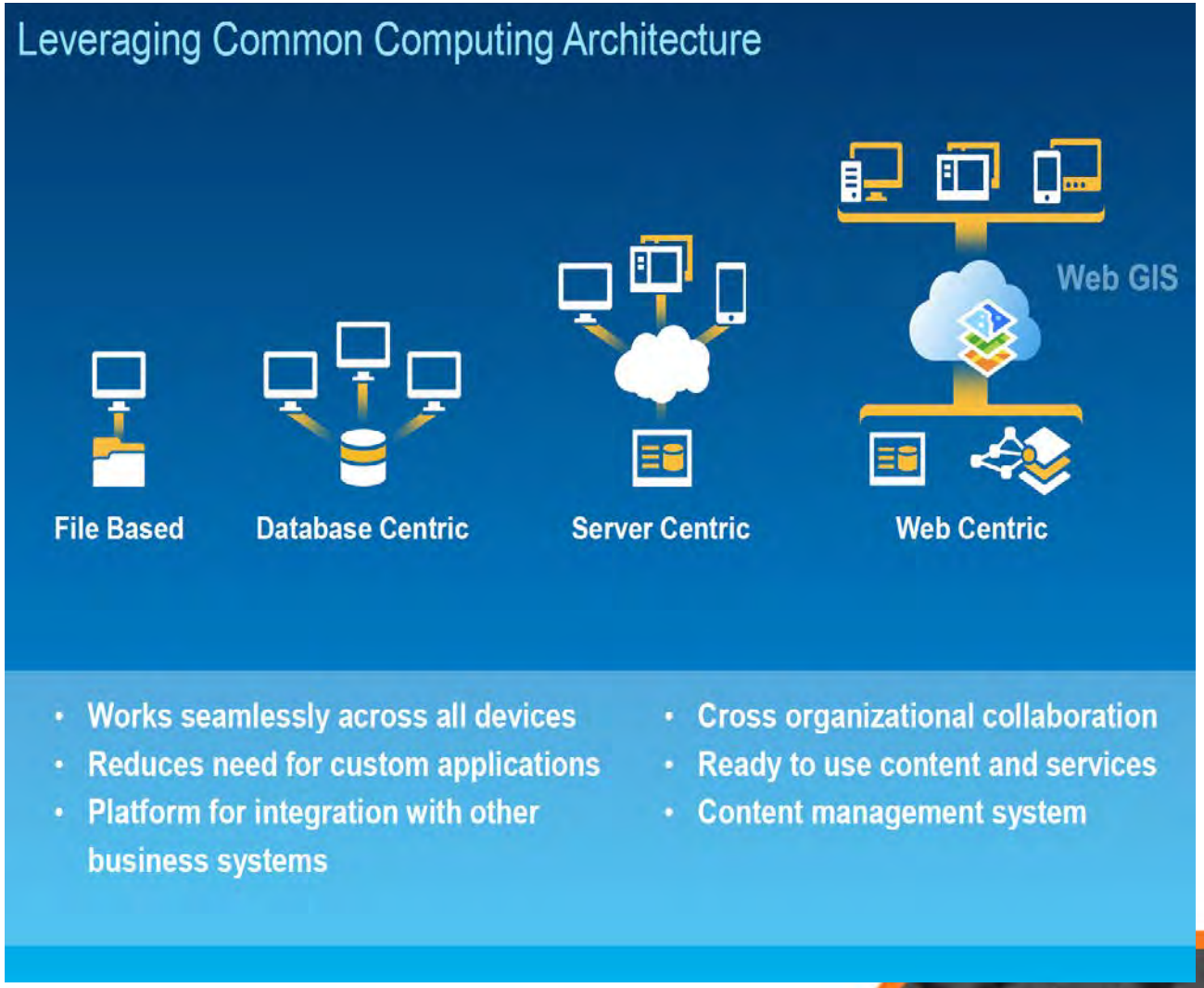
RECOVER is a NASA Applied Sciences sponsored project. K. T. Weber (PI), J. Schnase (Co-PI) and M. Carroll (Co-PI), Goddard Space Flight Center

What is RECOVER?

- Customer-driven, Customer-centric*
- Decision Support System (DSS)
  - Rapid assembly of site-specific data
  - Delivered in customized GIS analysis environment
  - Wildfire focus

* Our “customer” is the USDI BLM, Idaho Dept. of Lands, and other wildfire management agencies (National Park Service, USFS, etc.)

Benefits of RECOVER



How Does it Work?

That's Nice, but How does it do it?

- Three servers with "ArcGIS for Server" as their singular functional role
- Our newest server, is dedicated strictly to RECOVER

Let’s Look Under the Hood

Under the Hood

- Dell PowerEdge R720 server
  - Windows Server 2012 R2
  - Two (2) 8-core Xeon E5 Processors (16 cores total)
  - 112 GB RAM
  - 3.5 TB Hard drive space
  - Dual redundant, hot swappable power supplies
  - Hardware RAID 5 fault tolerance
- Gigabit Ethernet

Data Architecture

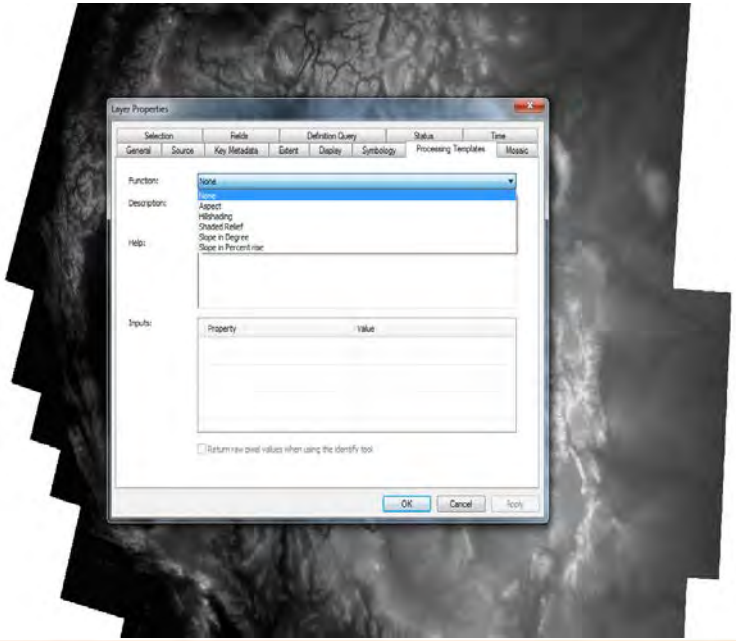
- RECOVER covers the Western US
- Esri ArcGIS 10.3
  - File Geodatabase
  - Vector and raster data
  - Map Services and WFS
  - Image Services and WCS

Contents | Preview | Description

Name	Type	Size
Elevation	Mosaic Dataset	
fPAR	Mosaic Dataset	
Geology	File Geodatabase Feature Class	83.16 MB
Habitat	File Geodatabase Feature Class	8.36 MB
LandslidePotential	File Geodatabase Feature Class	688.46 KB
NDVI	Mosaic Dataset	
NHD	File Geodatabase Feature Class	2.17 GB
PLSS	File Geodatabase Feature Class	275.44 MB
SMA	File Geodatabase Feature Class	89.79 MB
Soils_SSURGO	File Geodatabase Feature Class	4.30 GB
Soils_STATSGO	File Geodatabase Feature Class	58.14 MB
WBD	File Geodatabase Feature Class	44.74 MB
WesternStates	File Geodatabase Feature Class	26.27 KB
WesternUS	File Geodatabase Feature Class	18.82 KB
Wetlands	File Geodatabase Feature Class	2.34 GB

Leveraging Best Available Solutions

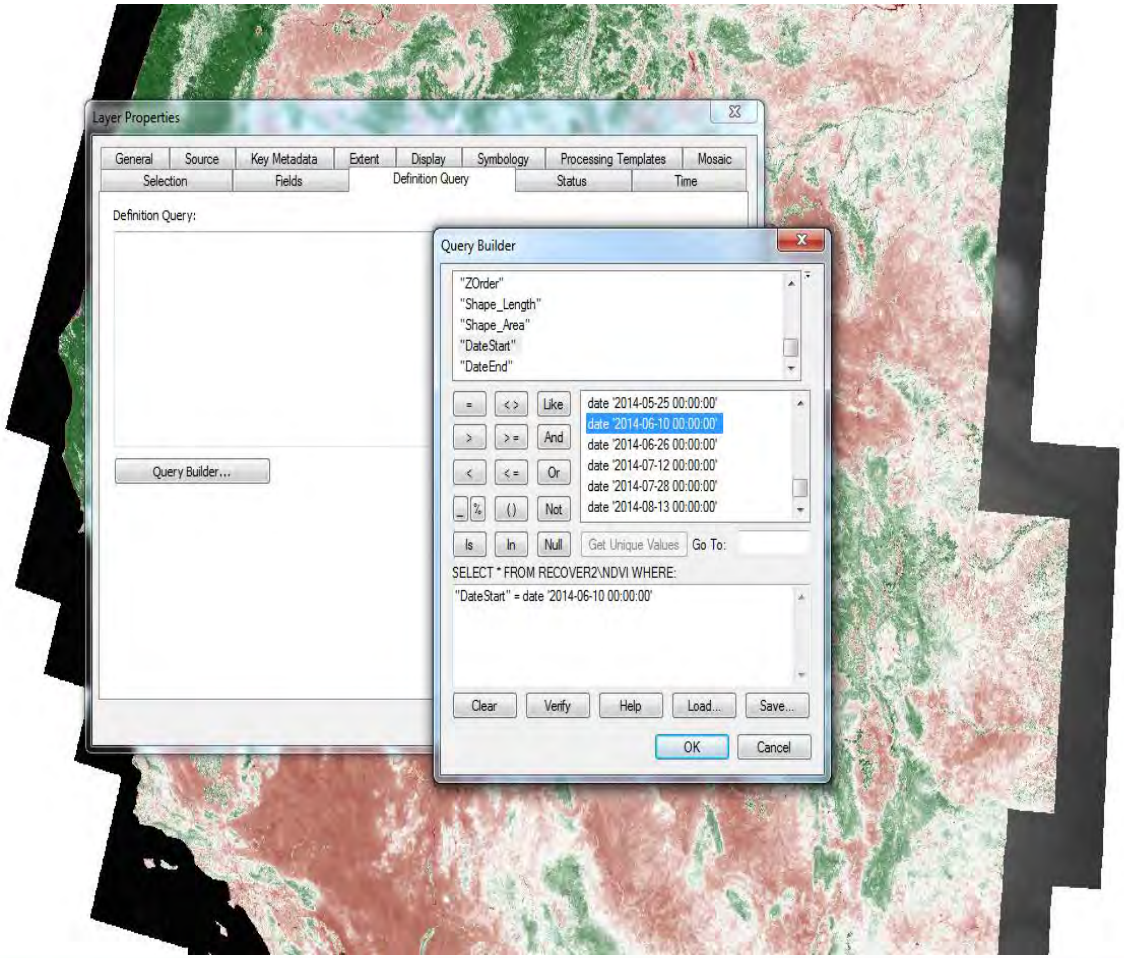
- Mosaic dataset (MD) tips and tricks
  - Raster Server Functions (function chains)
  - Applied to elevation data (10m pixels)



Leveraging Best Available Solutions

- MD data cubes
  - 325 scenes for the Western US describing photosynthetic activity with NDVI (2001-present)
  - Stored in one MD
  - Served as one service (not 325 image services)
- This approach is used for NDVI and fPAR

Accessed through *Definition Query*



Leveraging Best Available Solutions

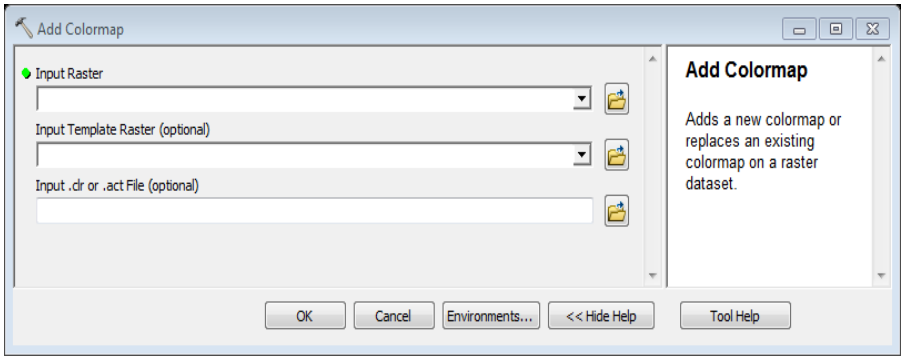
- Web Optimize the source data
  - Raster data types (32-bit vs 16-bit)
    - Hundreds of GB vs. tens of GB
  - Vector attribute tables
    - Apply coded value attribute domains
    - Short integer instead of Text

Why?

- Each service carries overhead
  - Minimizing the number of services running (active) increases performance
  - Speed is critical

Transform Data into Information

- Help your data speak to the user
  - Authoritative source data
  - Common sense Colormaps (raster)



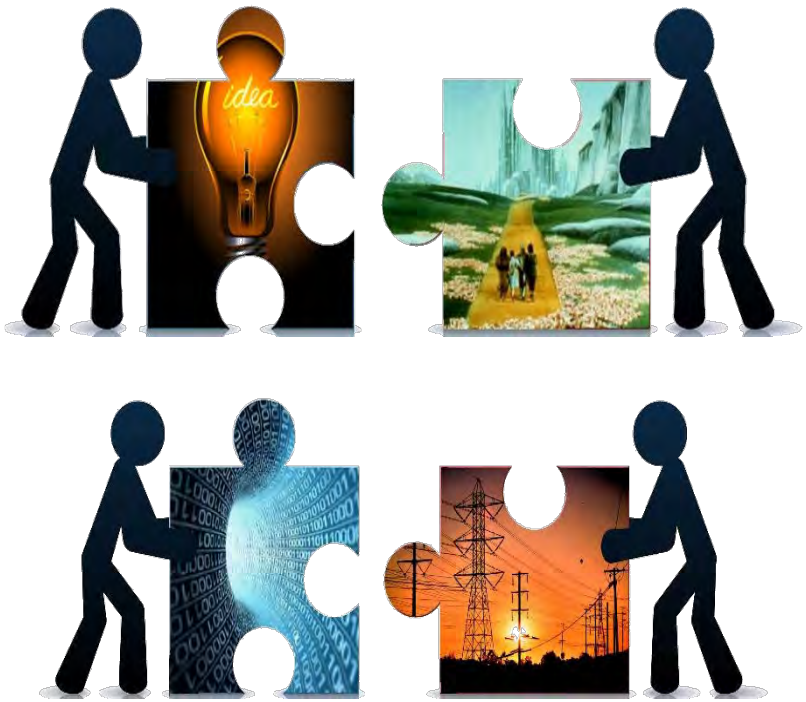
  - Accepted color schemes (Map services and Layer files)

Listen to the Customer

- "Make it mobile"
- "High-resolution is nice, but fast is critical"
  - NIFC
- "Drowning in Data, but still thirsting for Information"
  - RSAC

Assemble a Great Team

- Idea
- Plan
- Infrastructure
- Data
- **People**



Questions?

RECOVER is a NASA Applied Sciences sponsored project. K. T. Weber (PI), J. Schnase (Co-PI) and M. Carroll (Co-PI), Goddard Space Flight Center

BREAK!

MULTI-STATES CONTROL POINT DATABASE (MCPD)

Stewart Ward

Multi-State Control Point Database (MCPD)

Idaho Geospatial Council

May 14, 2015

DIOPTRA

A Company of Geomatics Professionals

History of MCPD

- Montana
  - 2000 Work Group
    - Share Control Data
    - Reduce Project Cost
  - 2010 Online Database
  - 2011 FGDC (Federal Geographic Data Committee) Grant
    - Idaho
  - 2013 ISU GIS center
    - Data Host
- Idaho
  - 2011 FGDC Grant
    - Montana
  - 2012 First Data Entered
  - 2012 Geodetic Control TWG
  - 2013 ISU GIS center
    - Data Host
  - 2014 Idaho Geodetic Coordinator
  - Currently ±4000 Points in Idaho

Why MCPD?

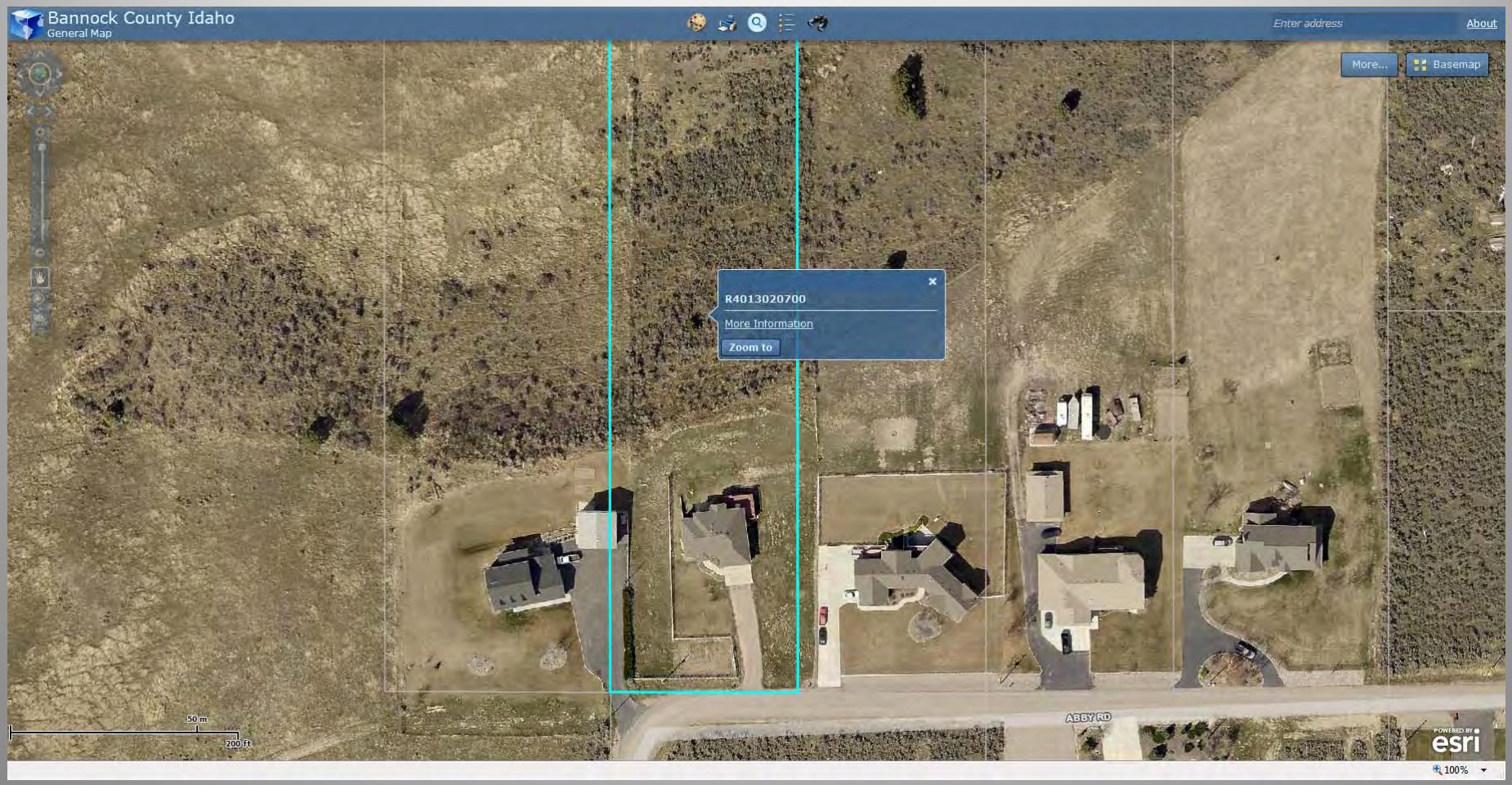
- Surveyors
  - Share Survey Control
  - Establish Common Database
  - Provide Accurate Data
  - Assist GIS Users
  - Resolve Mapping Issues
    - Parcels
    - Zoning
    - Tax Boundaries
- GIS
  - Obtain Accurate Control
  - Share Results with Surveyors
  - Better
    - Parcel Mapping
    - Tax Parcels
  - Agency Coordination
    - Cost Savings

Survey Control Issues

- GCDB (Geographic Coordinate Database)
  - Based on original surveys (GLO)
  - Limited future updates

- GCDB does not match Imagery
- GCDB does not match Surveyed lines
- Deed Issues
  - Gaps and Overlaps

Imagery


Bannock County Idaho
General Map
Enter address
About
More...
Basemap
R4013020700
More Information
Zoom to
ABBY RD
50 m
200 ft
esri
100%

Survey v. GCDB

MCPD Goals

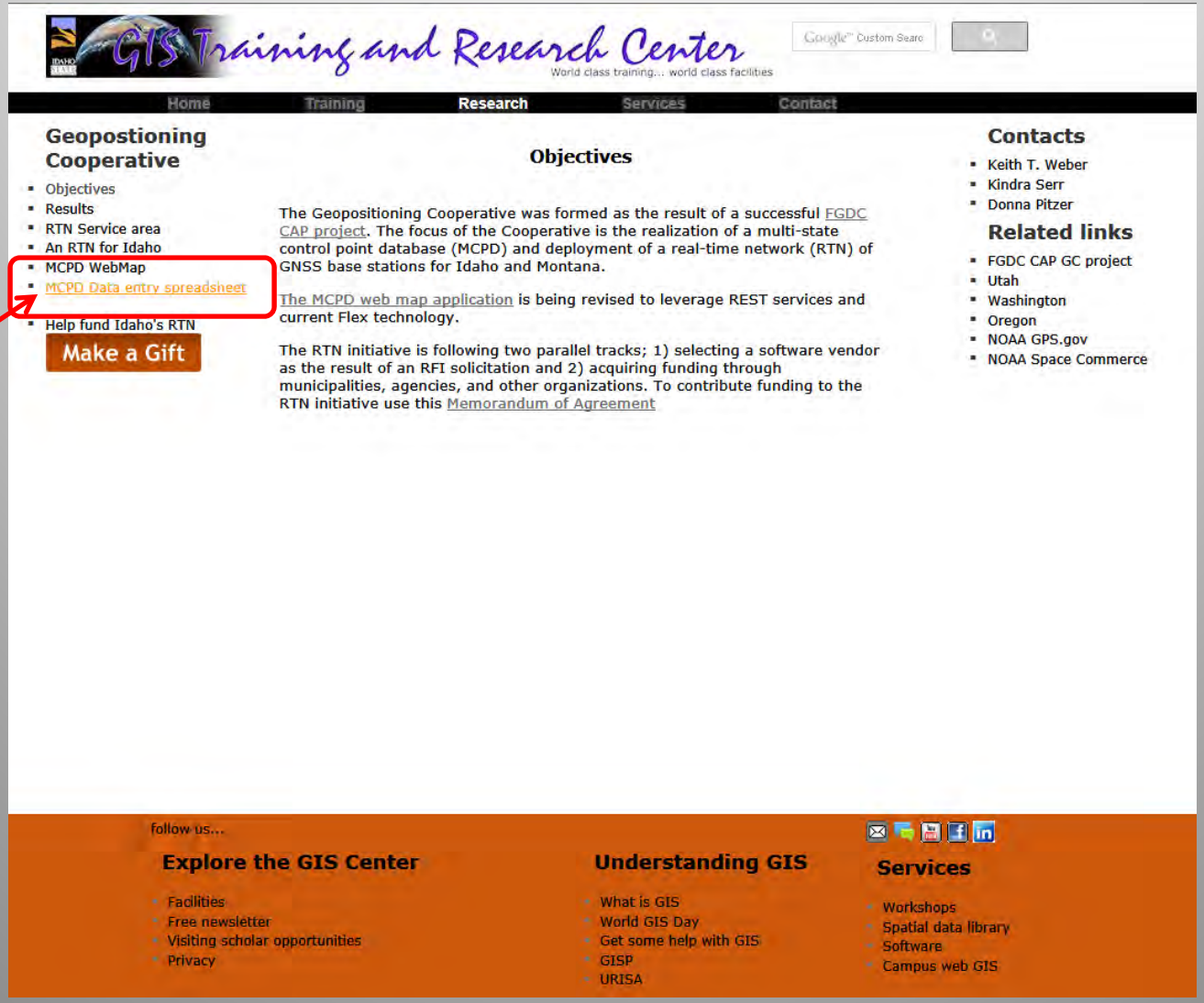
- Increase
  - Availability of Survey Grade Control
  - Reliability of Survey Grade Control
- Increase GIS Mapping Accuracies
- Provide Central Repository for Survey Control

Issues and Constraints

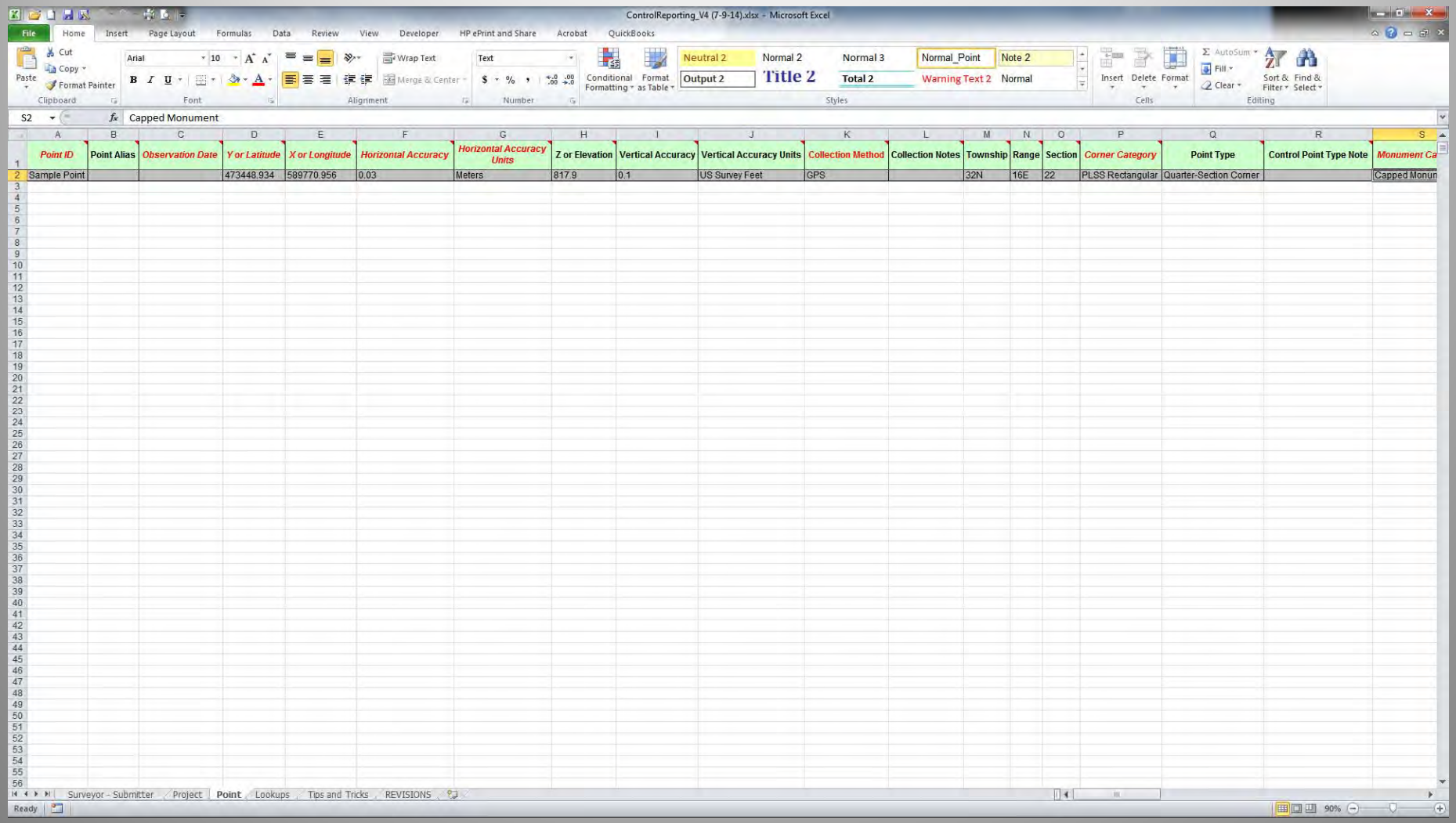
- 1) All Data must be submitted by PLS
  - Quality Assurance
  - Survey grade is not required
- 2) Administrators DO NOT
  - Modify, adjust, re-project coordinate values
  - Revise codes, descriptors, other attributes
- 3) Duplicate Data may exist
  - Multiple submittals for a single point may exist
- 4) Graphical representation is approximate
  - Only use database information for survey control

ISU Website Link

- ISU Link http://giscenter.isu.edu/research/Techpg/GC/index.htm



The MCPD Template



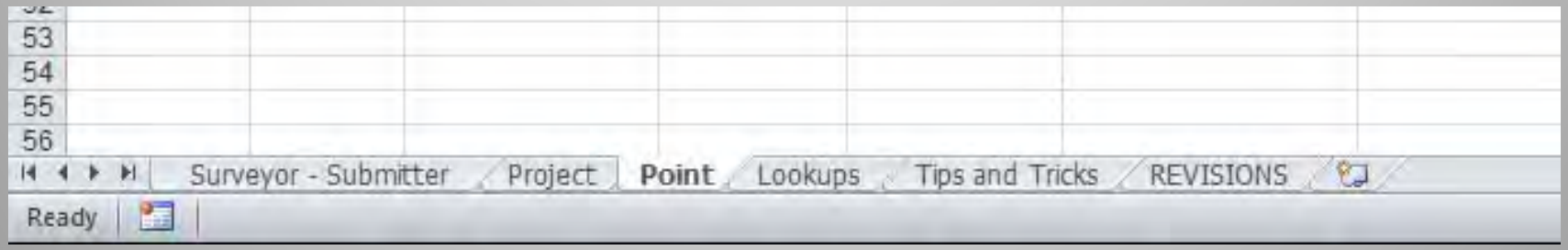
ControlReporting_V4 (7-9-14).xlsx - Microsoft Excel

S2: Capped Monument

Point ID	Point Alias	Observation Date	Y or Latitude	X or Longitude	Horizontal Accuracy	Horizontal Accuracy Units	Z or Elevation	Vertical Accuracy	Vertical Accuracy Units	Collection Method	Collection Notes	Township	Range	Section	Corner Category	Point Type	Control Point Type Note	Monument Ca
Sample Point			473448.934	589770.956	0.03	Meters	817.9	0.1	US Survey Feet	GPS		32N	16E	22	PLSS Rectangular	Quarter-Section Corner		Capped Monun

Surveyor - Submitter | Project | Point | Lookups | Tips and Tricks | REVISIONS

Template Tabs



Surveyor Tab

A	B	C	D	E	F
First Name	***Last Name***	***License Number***	**Phone**	**Agency or Business Name**	**Email**
Sample	Surveyor	999999	012-345-6789	Sample Engineering & Land Surveying	BobPlumb@nowhereonline.com

:
Name of the surveyor who performed the survey

Surveyor's license number: You may omit the letter designations (ex.: 01234)

:
Surveyor's current place of employment

:
Surveyor's current email address

:
Surveyor's current phone number

1. **Please enter only one project per spreadsheet.**
2. **The required worksheet columns are listed in *RED, BOLD, ITALIC***
3. **Fields listed as black are optional.**
4. **The first line (row 2) on each sheet shows an example.**
5. **The Lookups page should not be edited.**

Template Revision Date *5/5/2014*

Project Tab

A	B	C	D	E	F	G	H
Project Name	*Reported Date*	*Reported Coordinate Format*	*Horizontal Datum*	Projection	Vertical Datum	Vertical Units	Vertica
Sample Project Data	39183	Geographic	NAD83 (1986)		NAVD88	International Feet	Orthometri

1. Please enter only one project per spreadsheet.
2. The required worksheet columns are listed in *RED, BOLD, ITALIC*
3. Fields listed as black are optional.
4. The first line (row 2) on each sheet shows an
5. The Lookups page should not be edited.

Template Revision Date *5/5/2014*

The date assigned to the coordinate value report

The projection is only needed for local coordinate systems. The SPC and UTM have defined projections

Select the vertical datum for this project's c
data.
Note: This assumes that all points entered
worksheet are in the same vertical datum

:
Surveyor's name for the project.

:
Select the coordinate system for this project's coordinate data.
Note: This assumes that all points entered in the Point worksheet are in the same coordinate system

:
Select the horizontal datum for this project's coordinate data.
Note: This assumes that all points entered in the Point worksheet are in the same horizontal datum

E	F	G	H	I
Projection	Vertical Datum	Vertical Units	Vertical Basis	Project Notes or Comments
	NAVD88	International Feet	Orthometric	SAMPLE DATA USE THE LINE BELOW FOR DATA ENTRY

The projection is only needed for local coordinate systems. The SPC and UTM have defined projections

Select the vertical datum for this project's coordinate data.
Note: This assumes that all points entered in the Point worksheet are in the same vertical datum

:
Enter any additional project related comments or metadata that would help data users to understand the project and data.

:
Select the horizontal datum for this project's coordinate data.
Note: This assumes that all points entered in the Point worksheet are in the same horizontal datum

Points Tab

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
Point ID	**Point Alias**	***Observation Date***	***Y or Latitude***	***X or Longitude***	***Horizontal Accuracy***	***Horizontal Accuracy Units***	**Z or Elevation**	**Vertical Accuracy**	**Vertical Accuracy Units**	**Collection Method**	**Collection Notes**	**Township**	**Range**	**Section**	***Corner Category***
Sample Point			473448.934	589770.956	0.03	Meters	817.9	0.1	US Survey Feet	GPS		32N	16E	22	PLSS Rectangular

1. Please enter only one project per spreadsheet.
2. The required worksheet columns are listed in *RED, BOLD, ITALIC*
3. Fields listed as black are optional.
4. The first line (row 2) on each sheet shows an example.
5. The Lookups page should not be edited.
6. ORANGE COLUMNS contain pull-down menus; only use options contains in these menus
Template Revision Date *5/5/2014*

P	Q	R	S	T	U	V	W	X	Y	Z	AA	AB
Corner Category	**Point Type**	**Control Point Type Note**	***Monument Category***	**Monument Type**	**Monument or Access Note**	**Reference Documents**	**Reference Document URL**	**Monument Photo**	**Context Photo**	**Alternative Y or Latitude**	**Alternative X or Longitude**	**Alternative Horizontal Units**
PLSS Rectangular	Quarter-Section Corner		Capped Monument	Iron Pipe	SET STONE							

AB	AC	AD	AE	AF
Alternative Horizontal Units	**Alternative Coordinate System**	**Alternative Horizontal Accuracy**	**Alternative Horizontal Accuracy Units**	**Alternative Coordinate Comments**

Submission is limited to a maximum of 1000 points

Points Tab

Horizontal Required Fields

A	B	C	D	E	F	G	
Point ID	Point Alias	*Observation Date*	*Y or Latitude*	*X or Longitude*	*Horizontal Accuracy*	*Horizontal Accuracy Units*	Z or El
Sample Point			473448.934	589770.956	0.03	Meters	817.9

Surveyor's name for the point.

This is the date of the field observation

Y (feet or meters)
Latitude (feet, meters or decimal degrees)

Longitude (feet, meters, or decimal degrees)
X (feet, meters, or decimal degrees)

Select the type of units for the horizontal accuracy statement.

Enter the estimated horizontal accuracy for the horizontal coordinates. If this is an elevation point only you must still provide horizontal coordinates (eg. Scaled), so horizontal accuracy is always required.

1. Please enter only one project per spreadsheet.
2. The required worksheet columns are listed in *RED, BOLD, ITALIC*
3. Fields listed as black are optional.
4. The first line (row 2) on each sheet shows an example.
5. The Lookups page should not be edited.
6. ORANGE COLUMNS contain pull-down menus; only use options contains in these menus

Template Revision Date *5/5/2014*

Vertical Accuracy Units	Collection Method	Collection Notes	Township	Range	Section	*Corner Category*	
US Survey Feet	GPS		32N	16E	22	PLSS Rectangular	C

Select the method used to generate the coordinate.

What category of point is this? Does this point represent a PLSS corner?

R	S	T	
Control Point Type Note	*Monument Category*	Monument Type	
	Capped Monument	Iron Pipe	S

Points Tab

Optional Fields

Point Alias	Observation Date	Y or Latitude	X or Longitude	Horizontal Accuracy	Horizontal Accuracy Units	Z or Elevation	Vertical Accuracy	Vertical Accuracy Units	Collection Method	Collection Notes	Township
		473448.934	589770.956	0.03	Meters	817.9	0.1	US Survey Feet	GPS		32N

Enter any other name that the point may have.

Elevation or Orthometric Height

Enter the estimated vertical accuracy for the coordinate.

Select from the list the units of the vertical accuracy statement.

These are any additional notes about the collection method or process such as if the collection is a mix of GPS and line of sight or the source materials if a coordinate value is collected from digitizing

Township in which the monument falls. If more than one, enter the township that was the focus of the survey, or the lowest numberd township

Township	Range	Section	Corner Category	Point Type	Control Point Type Note	Monument Category	Monument Type	Monument or Access Note	Reference Documents	Reference Document URL	Monument Photo
32N	16E	22	PLSS Rectangular	Quarter-Section Corner		Capped Monument	Iron Pipe	SET STONE			

Section in which the monument falls. If more than one, enter the Section that was the focus of the survey, or the LOWEST number Section.
Enter only 1 number

Special notes to correctly identify the control point such as a witness point, corner accessory or on the corner

Document Reference such as COS #, or Corner Record ID for this point.

URL to website or hyperlink to specific document.

File name for photo of monumtent

Select the type of material of which the monument is made.

Range in which the monument falls. If more than one, enter the Range that was the focus of the survey, or the lowest number Range
Enter only 1 number

Select the type of point that this coordinate represents.

Monument Photo	Context Photo	Alternative Y or Latitude	Alternative X or Longitude	Alternative Horizontal Units	Alternative Coordinate System	Alternative Horizontal Accuracy	Alternative Horizontal Accuracy Units	Alternative Coordinate Comments

File name for Photo of monument context (location view photo)

Traditional Export Example

7	STK301	412542.708	473132.706	4363.899	Found	
8	STK302	412663.103	473326.23	4357.924	Found	
9	STK303	413071.998	473984.293	4397.186	Found	
10	STK304	415682.622	478185.533	4376.758	Found	
11	STK305	412185.587	472982.766	4394.198	Found	
12	STK306	412277.978	473302.183	4377.7	Found	
13	STK307	412235.64	473344.477	4378.081	Found	
14	STK308	412289.819	473389.579	4373.714	Found	
15	STK310	412321.233	473516.949	4371.379	Found	
16	STK312	412366.417	473671.07	4371.646	Found	
17	STK313	412401.277	473759.567	4372.583	Found	
18	STK313A	412400.519	473774.298	4372.89	Found	
19	STK313B	412398.449	473784.072	4373.407	Found	
20	STK314	412398.549	473862.271	4373.133	Found	
21	STK315	412374.453	473962.376	4373.504	Found	
22	STK316	412317.284	474047.896	4374.026	Found	
23	STK317	412265.587	474105.39	4374.655	Found	
24	STK318	412225.137	474151.333	4376.697	Found	
25	STK319	412209.111	474207.529	4378.285	Found	
26	STK320	412751.305	474212.881	4403.504	Found	
27	STK322	412868.487	474157.838	4400.675	Found	
28	STK323	412876.846	474128.219	4401.156	Found	
29	STK324	412922.509	474077.274	4400.987	Found	
30	STK326	415633.063	478258.192	4387.982	Found	
31	STK327	415683.813	475634.504	4360.608	Found	
32	STK328	413068.142	472961.688	4390.468	Found	
33	STK3109	412314.623	473463.739	4371.565	Found	
34						
35						

Missing Required Info for MCPD:

- Minimum: Horizontal Units, Horizontal Accuracy, Horizontal Accuracy Units, Horizontal Accuracy Convention, Horizontal Method, Point Type, PLSS Corner
- Vertical Units, Vertical Accuracy, Vertical Accuracy Units, Vertical Accuracy Convention, Vertical Method

- Accuracies and methods will be based on the collection process
- Monument data will come from other sources; field books, CP&Fs, maps, etc.

Tips and Tricks

- Data Input
  - Copy/Paste (Values only)
    - Remove duplicate points
    - Watch for formulas (do not overwrite)
    - Use existing lookups – Menu selections
- Data Collection
  - Feature Code Library
    - Attribute values completed during collection
- Data Submittal
  - Shapefile, Geodatabase
- Suggested Point Naming
  - Township, Range, Index Number (634G9)

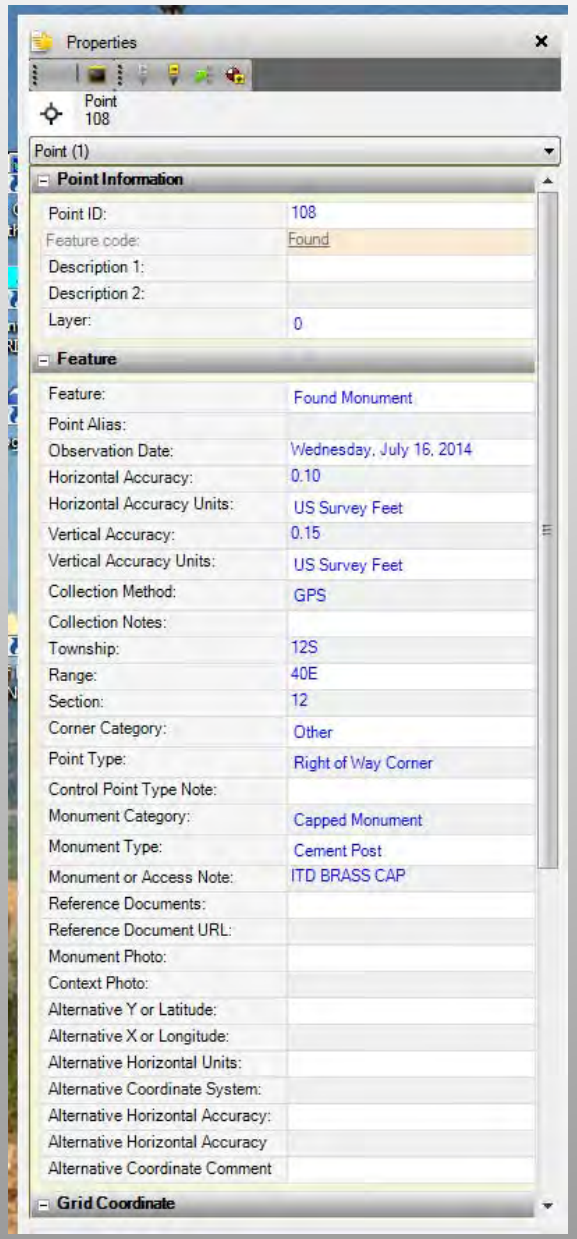
Feature Code Library

Category: Point

Feature Name : MCPD Monument	
Feature Type	Point
Feature Code	MCPD

Attributes	
Type	**Name**
Text	Point Alias
Date	Observation Date
Number	Horizontal Accuracy
List	Horizontal Accuracy Units
Number	Vertical Accuracy
List	Vertical Accuracy Units
List	Collection Method
Text	Collection Notes
Text	Township
Text	Range
Text	Section
List	Corner Category
List	Point Type
Text	Control Point Type Note
List	Monument Category
List	Monument Type
Text	Monument or Access Note
Text	Reference Documents
Text	Reference Document URL
Text	Monument Photo
Text	Context Photo
Text	Alternative Y or Latitude
Text	Alternative X or Longitude
Text	Alternative Horizontal Units
Text	Alternative Coordinate System
Text	Alternative Horizontal Accuracy
Text	Alternative Horizontal Accuracy Units
Text	Alternative Coordinate Comments

Feature Code Library Export Example



Feature Code Library Export Example

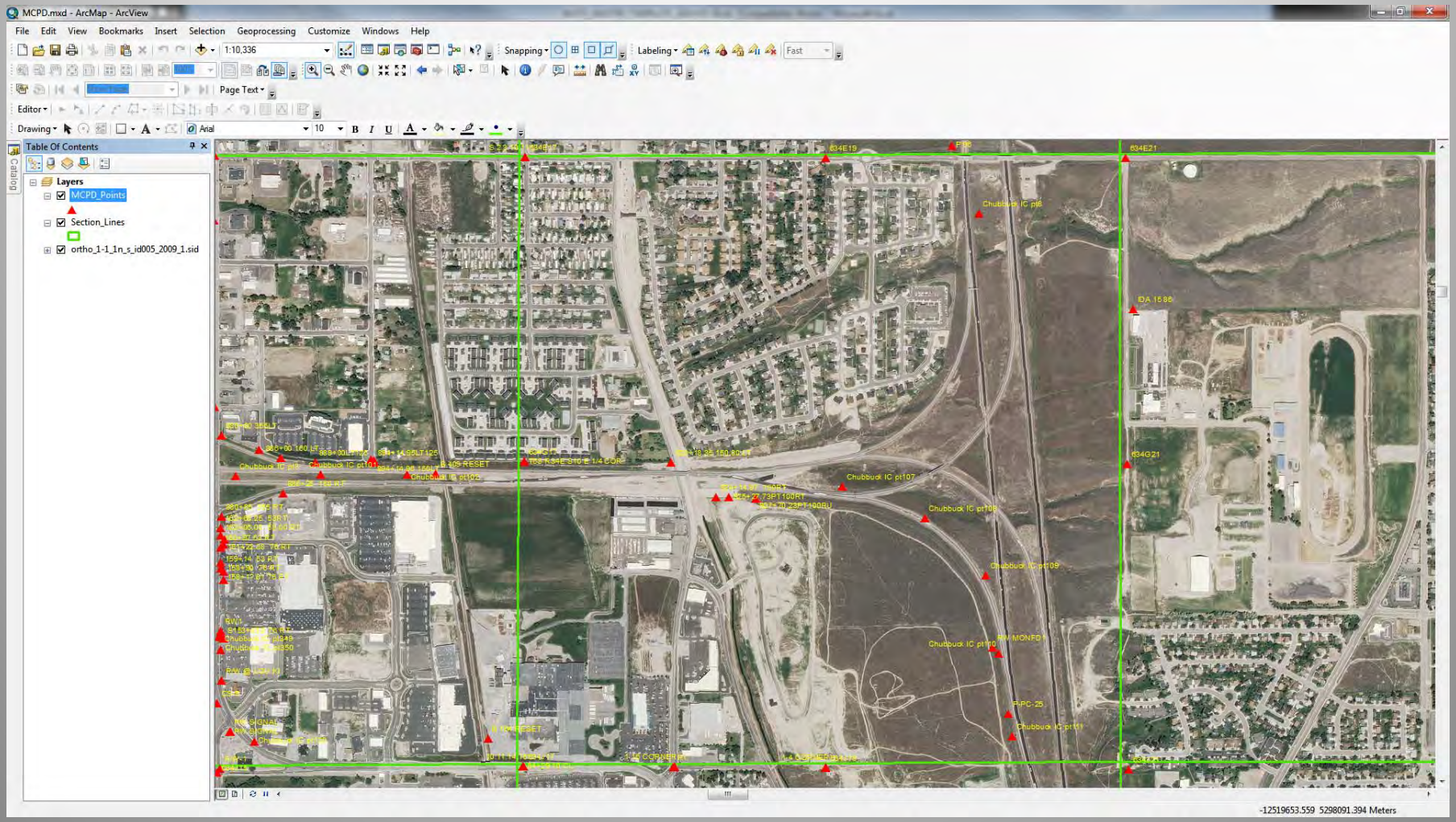
Point ID	Northing	Easting	Elevation	Latitude (Global)	Longitude (Global)	Ellipsoid Height (Global)						
12S40E_1	245097.94	774609.56	4969.75	42.33845786	-111.7285893	4926.121						
100	243499.19	772699.81	4984.32	42.33409889	-111.7356806	4940.624	0.1	US Survey Feet	0.2	US Survey Feet	GPS	
101	243612.98	772661.97	4983.8	42.33441156	-111.7358184	4940.105	0.1	US Survey Feet	0.2	US Survey Feet	GPS	
102	243646.13	772745.7	4983.3	42.33450134	-111.7355082	4939.612	0.1	US Survey Feet	0.2	US Survey Feet	GPS	
103	243703.69	772892.12	4980.68	42.3346572	-111.7349658	4936.992	0.1	US Survey Feet	0.2	US Survey Feet	GPS	
104	243962.55	773405.26	4972.96	42.33536016	-111.7330636	4929.288	0.1	US Survey Feet	0.2	US Survey Feet	GPS	
105	244008.52	773492.04	4970.9	42.33548504	-111.7327419	4927.23	0.1	US Survey Feet	0.2	US Survey Feet	GPS	
106	244240.53	773783.86	4965.28	42.33611742	-111.7316586	4921.616	0.1	US Survey Feet	0.2	US Survey Feet	GPS	
107	244277.42	773825.04	4964.35	42.33621804	-111.7315056	4920.696	0.1	US Survey Feet	0.2	US Survey Feet	GPS	
108	244521.55	774058.58	4962.85	42.33688446	-111.7306375	4919.198	0.1	US Survey Feet	0.2	US Survey Feet	GPS	
109	244440.91	774146.83	4960.93	42.336662	-111.7303127	4917.28	0.1	US Survey Feet	0.2	US Survey Feet	GPS	
110	244276.37	773995.76	4960.95	42.33621277	-111.7308744	4917.299	0.3	US Survey Feet	0.2	US Survey Feet	GPS	

0.2	US Survey Feet	GPS		12S	40E	36	Other	Right of Way Corner		Capped Monument	Cement Post	ITD BRASS CAP
0.2	US Survey Feet	GPS		12S	40E	36	Other	Right of Way Corner		Capped Monument	Cement Post	ITD BRASS CAP
0.2	US Survey Feet	GPS		12S	40E	36	Land Survey Corner	Property Corner		Capped Monument	Rebar	PLS 7381 2" ACM
0.2	US Survey Feet	GPS		12S	40E	36	Other	Right of Way Corner		Capped Monument	Cement Post	ITD BRAS CAP
0.2	US Survey Feet	GPS		12S	40E	36	Other	Right of Way Corner		Capped Monument	Cement Post	ITD BRASS CAP
0.2	US Survey Feet	GPS		12S	40E	36	Other	Right of Way Corner		Capped Monument	Cement Post	ITD BRASS CAP
0.2	US Survey Feet	GPS		12S	40E	36	Land Survey Corner	Property Corner		Capped Monument	Rebar	5/8 REBAR W/ PLASTIC CAP PLS9163
0.2	US Survey Feet	GPS		12S	40E	36	Unknown	Unkown Point Type		Other	Rebar	1/2 REBAR NO CAP
0.2	US Survey Feet	GPS		12S	40E	12	Other	Right of Way Corner		Capped Monument	Cement Post	ITD BRASS CAP
0.2	US Survey Feet	GPS		12S	40E	36	Other	Right of Way Corner		Capped Monument	Cement Post	ITD BRASS CAP
0.2	US Survey Feet	GPS		12S	40E	36	Land Survey Corner	Property Corner		Capped Monument	Rebar	2" ACM PLS4735

Data Submittal

- Submit:
  - completed template
  - Shapefile or geodatabase file(s)
    - .dbf, .prj, .sbn, .sbx, .shp and .shx files
- To State Geodetic Coordinator (Kazi Arifuzzaman)
  - Performs data format check
  - Graphical verification

Data Verification

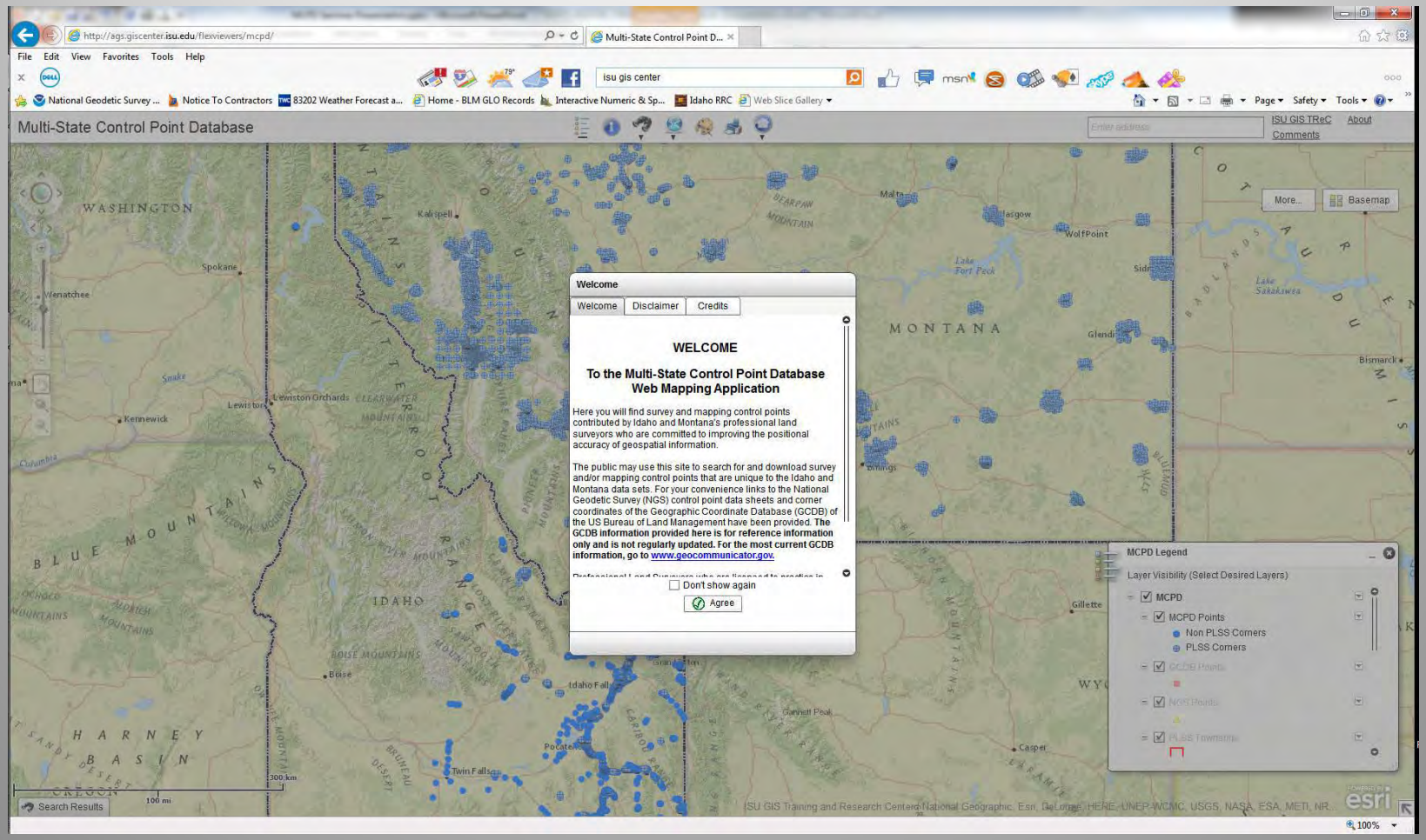


MCPD Website

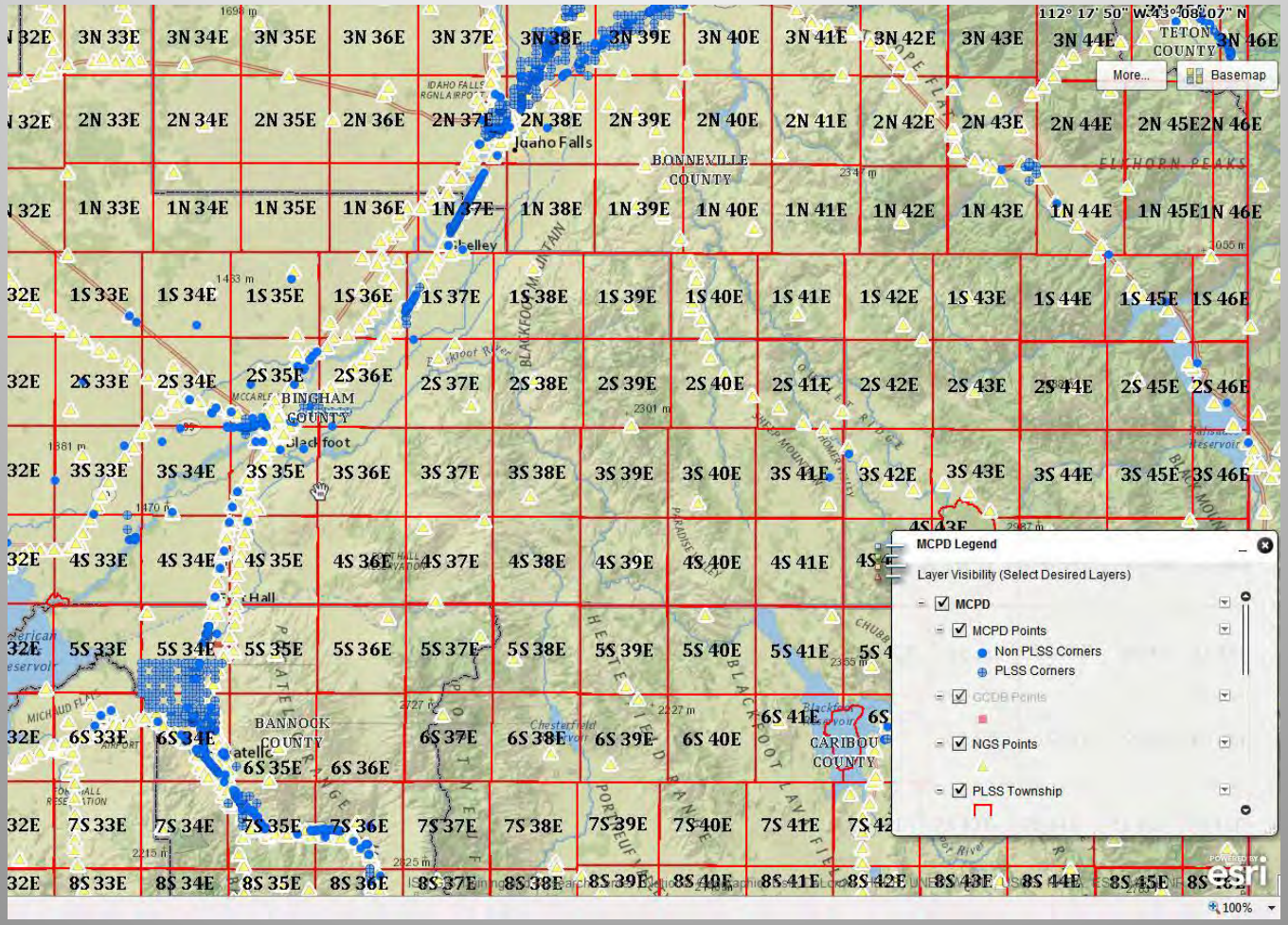
- http://ags.giscenter.isu.edu/flexviewers/mcpd/

- Interface / Navigation
- Identify Tools
- Search Tools
- Extraction Tools
- Misc. Tools
  - NGS Datasheets
  - GCDB Point Numbering

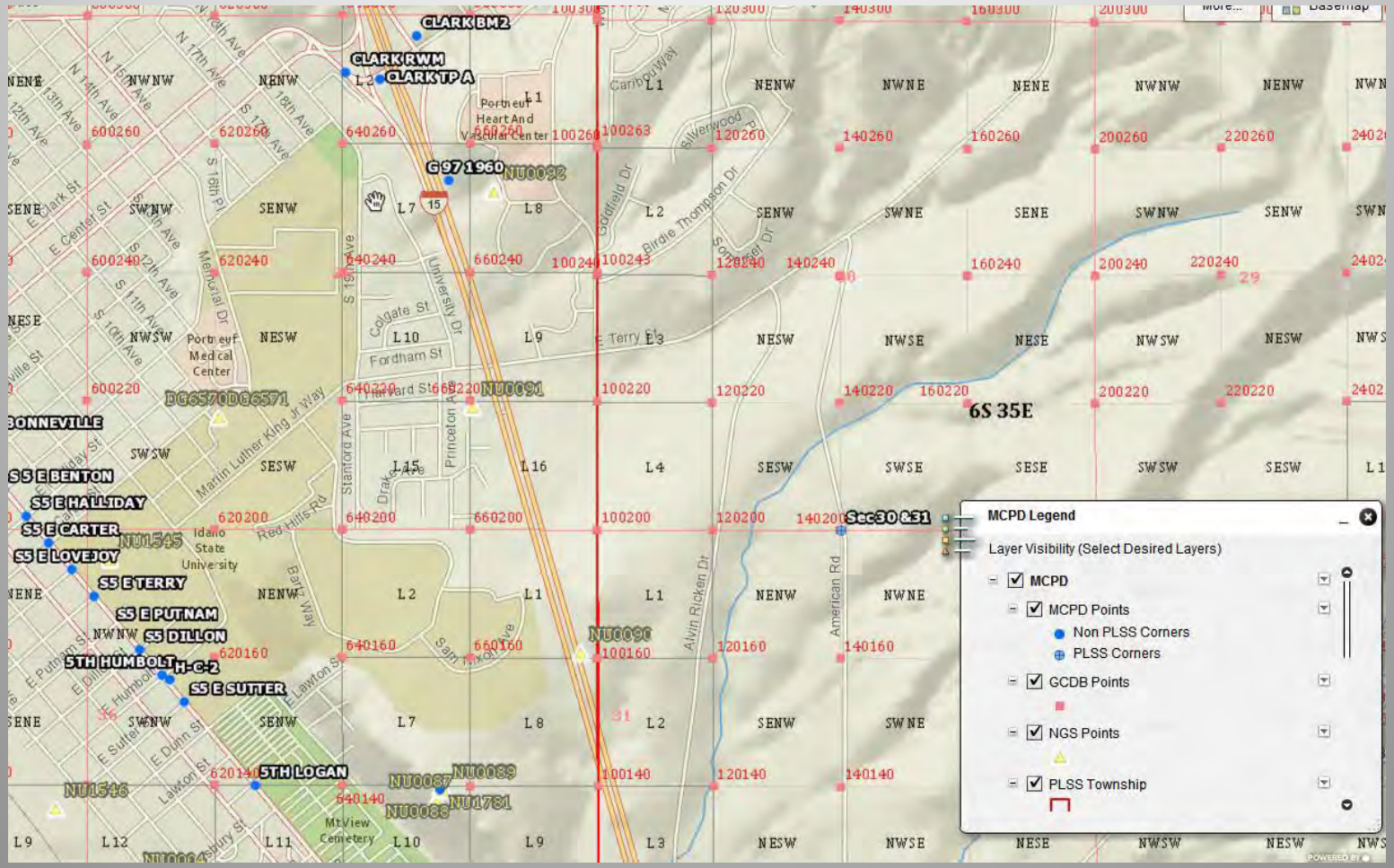
Interface/Navigation



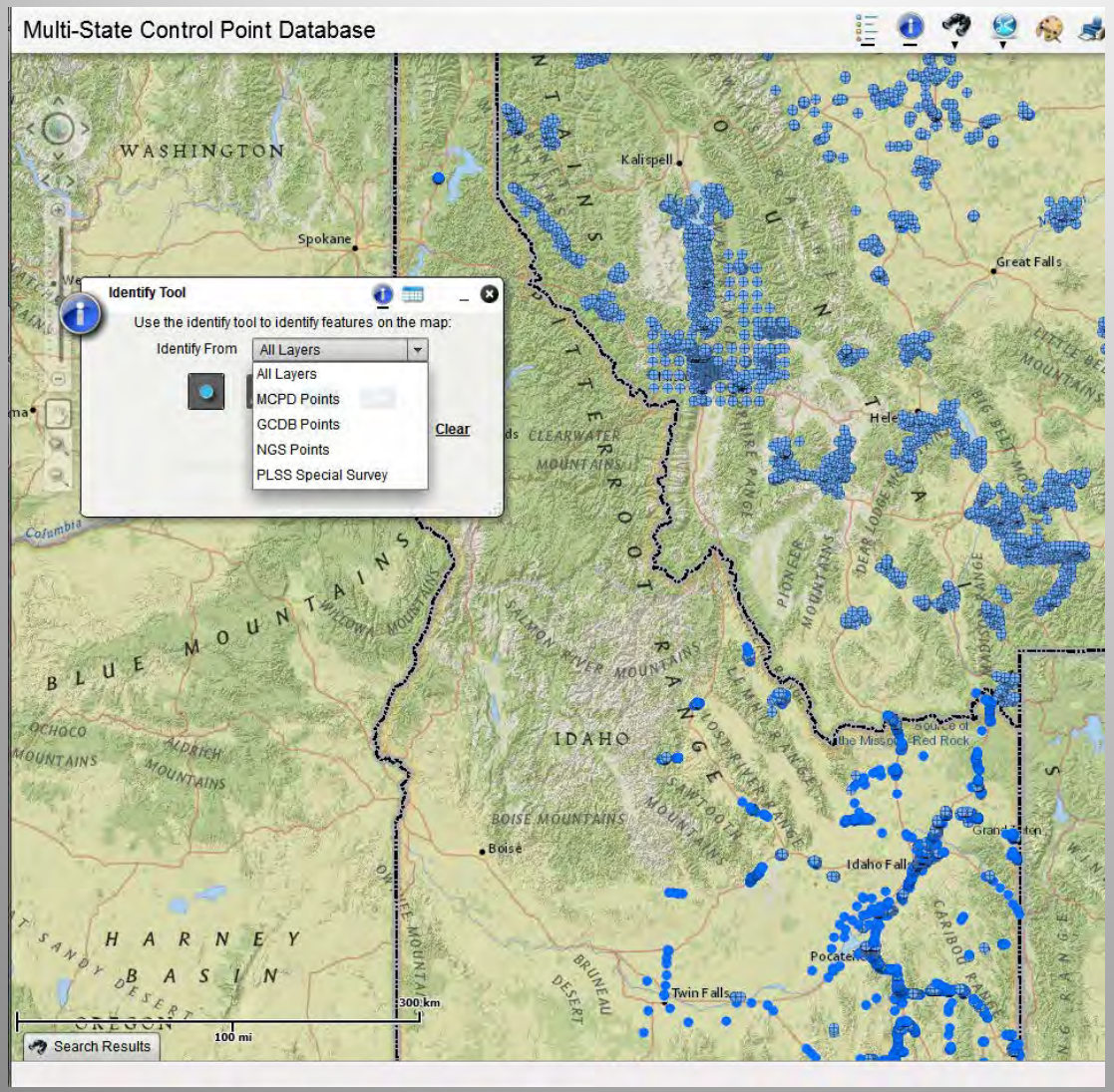
NGS Monuments w/ Links to Datasheets

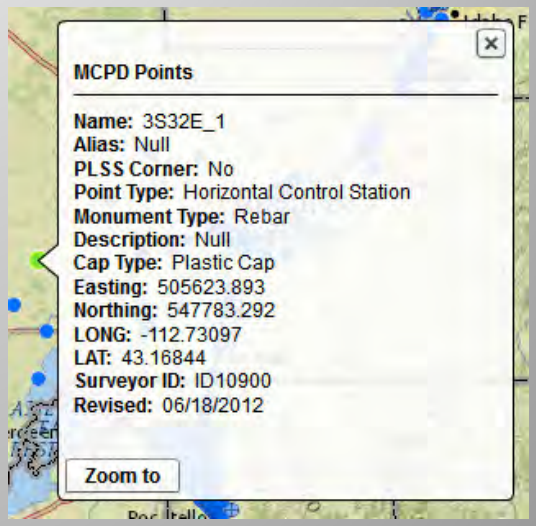


GCDB Point Numbers

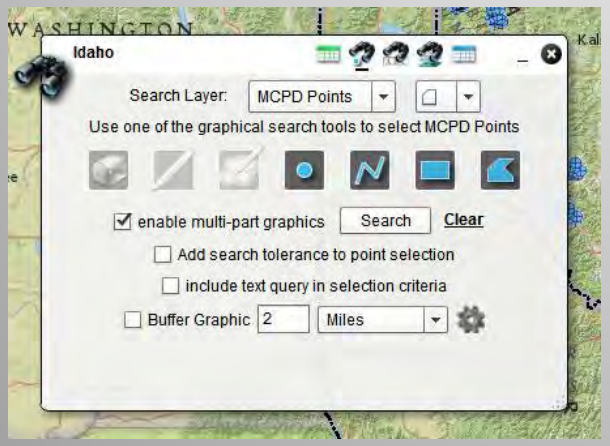


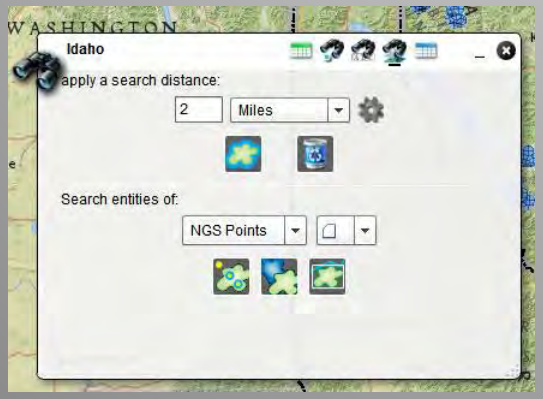
Identify Tools

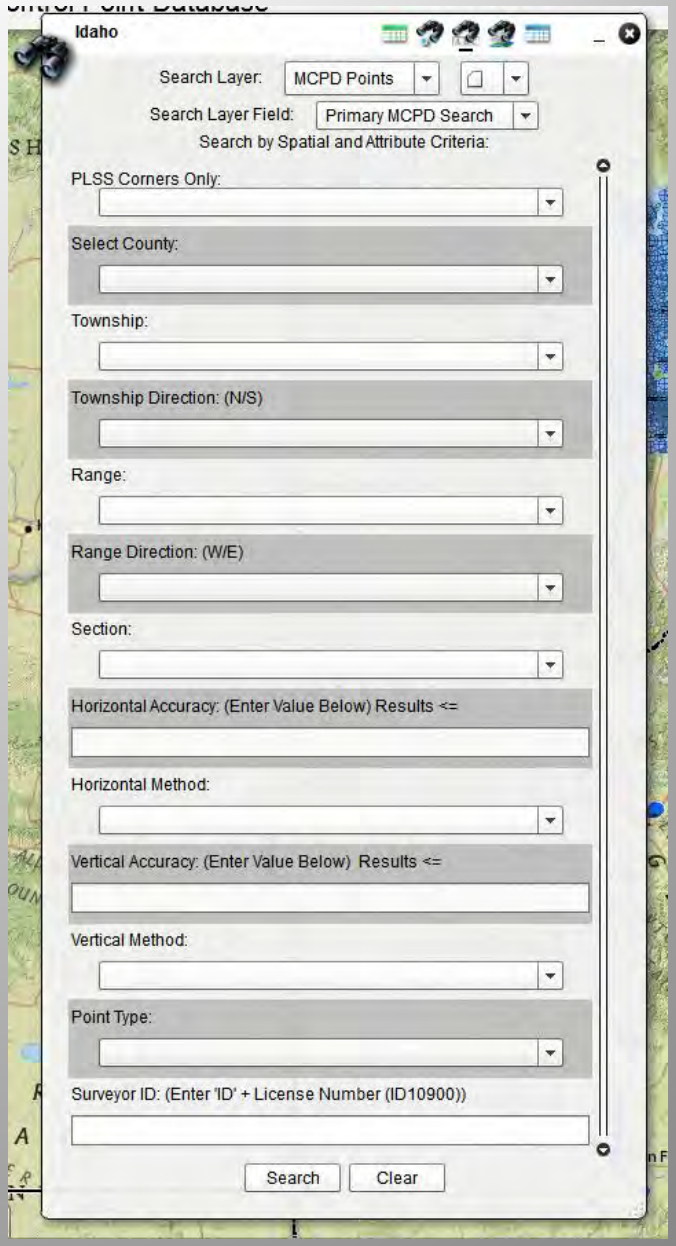




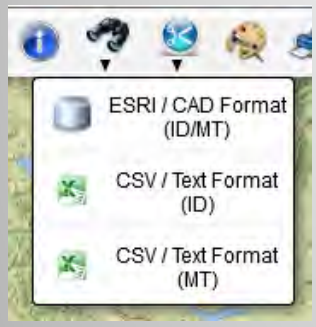
Search Tools

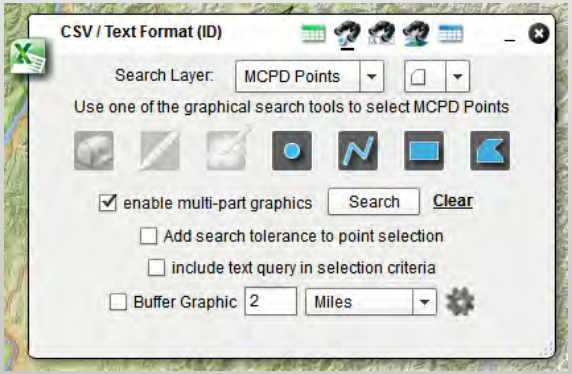


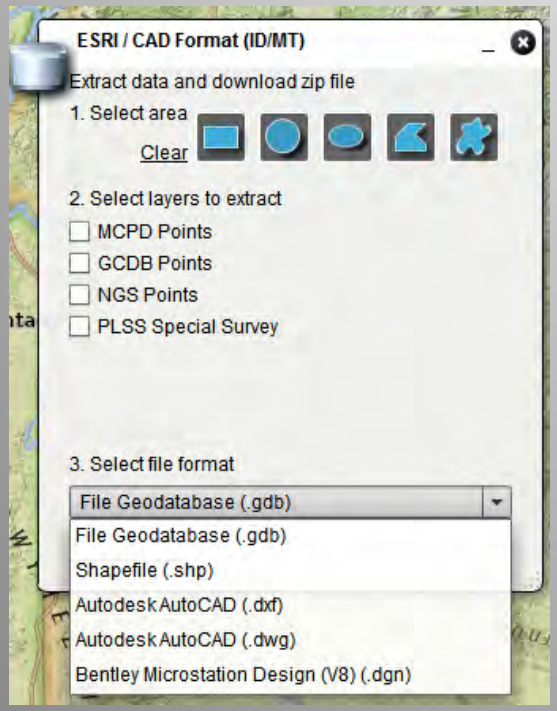


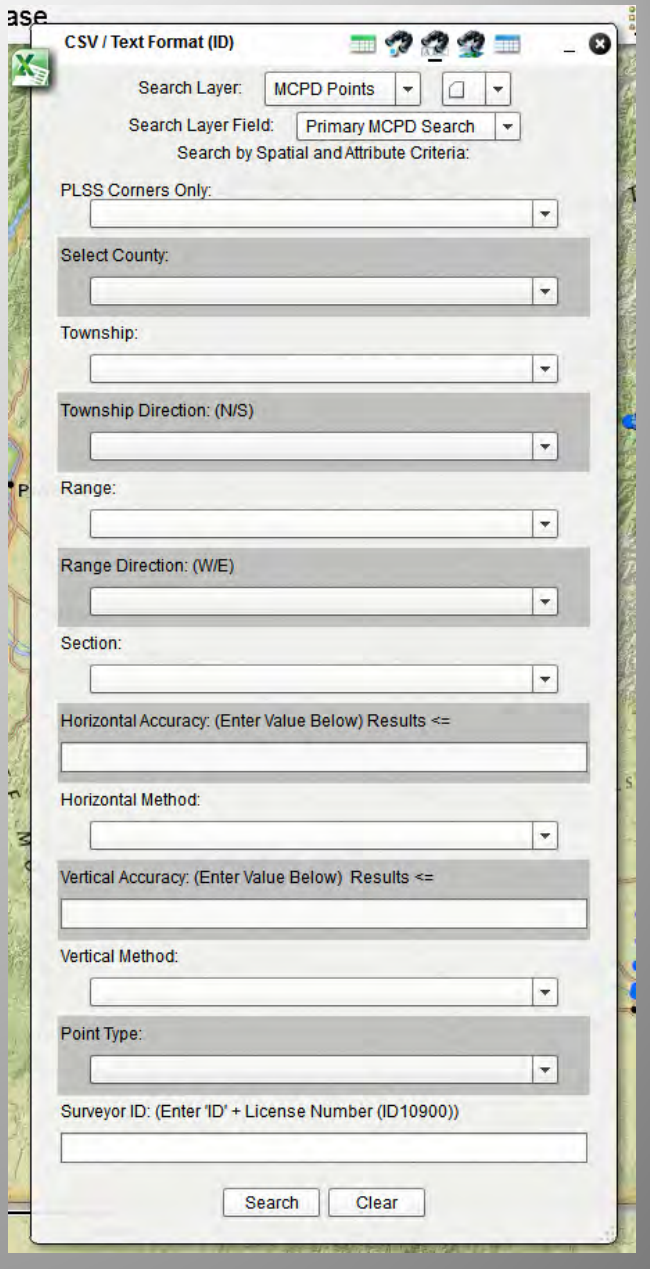


Extraction Tools

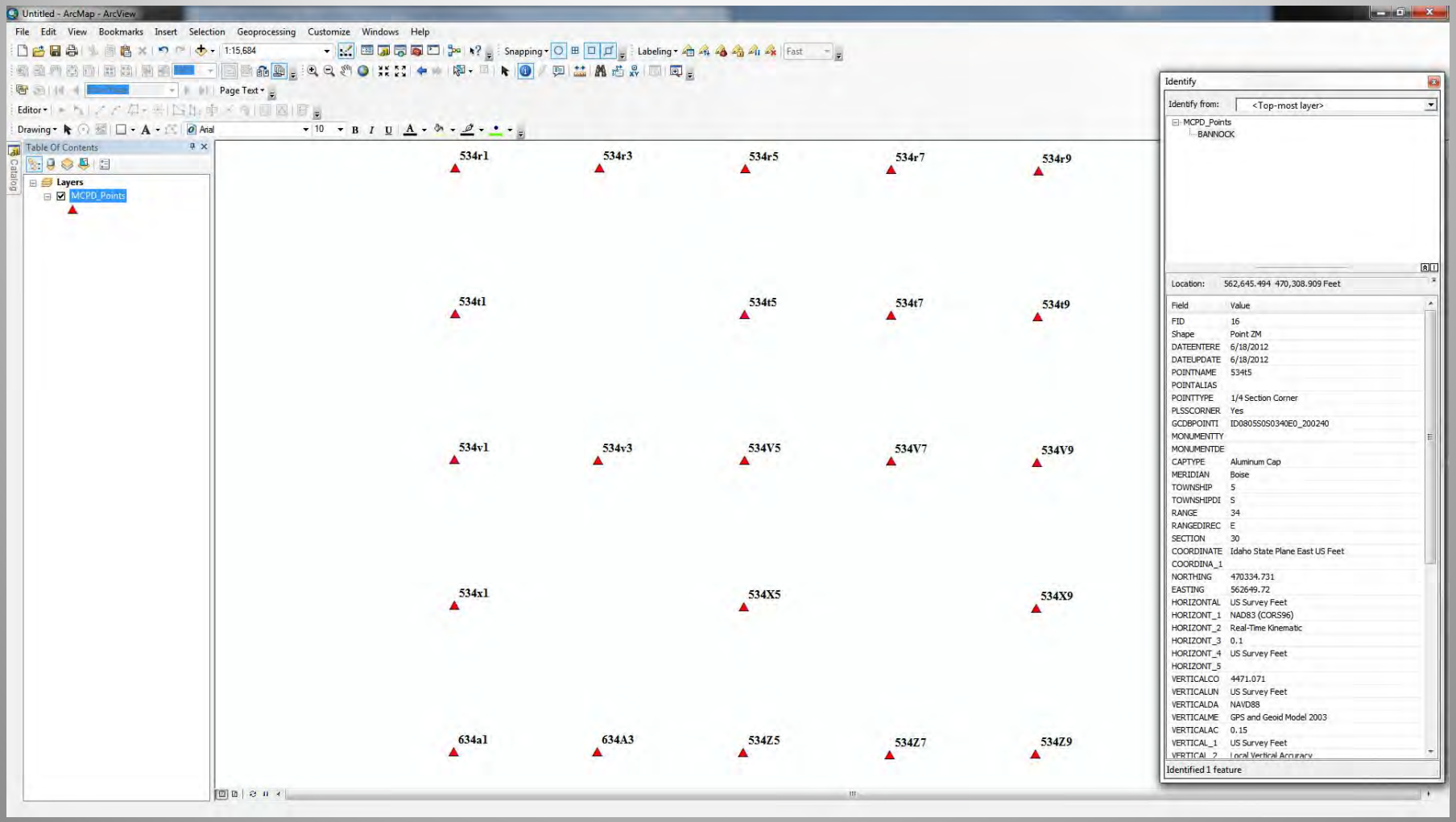




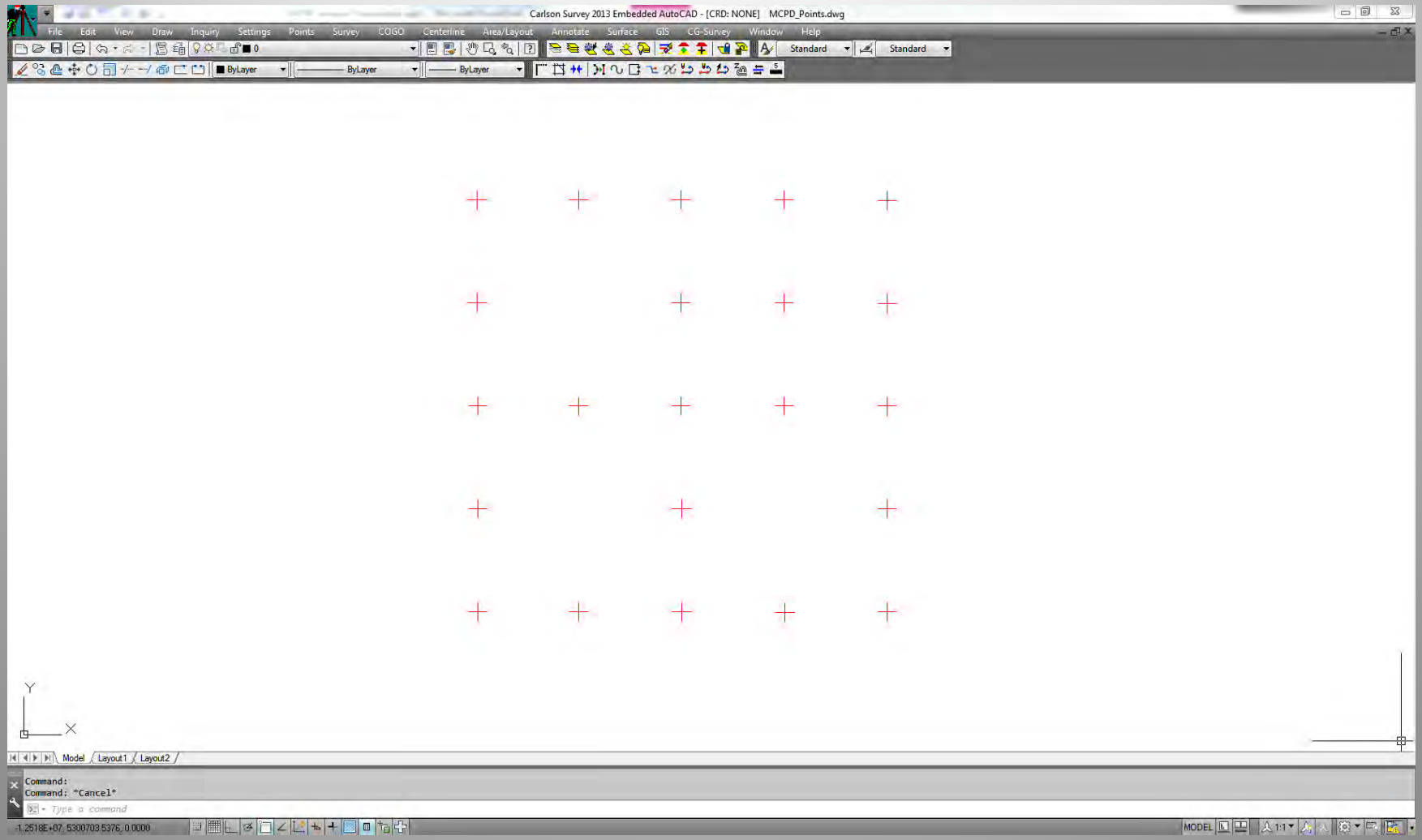




Extraction Tools - GIS



Extraction Tools - DWG



Point is displayed as node only, point attributes are not included.

Extraction Tools - CSV

	A	B	C	D	E	F	G	H	I	J	K	L	M
1	DATE ENTERED	DATE UPDATED	NAME	ALIAS	POINT TYPE	PLSS CORNER	GCDB POINT ID	MONUMENT TYPE	MONUMENT DESCRIPTION	CAP TYPE	MERIDIAN	TOWNSHIP	TOWNSHIP DIRE
2	6/9/2014	6/9/2014	STK365		1/4 Corner	Yes	ID080070S0360E0_400340	Rebar		Brass Cap	Boise	7	S
3	6/9/2014	6/9/2014	SG206		1/4 Corner	Yes	ID080070S0360E0_440300	Rebar	S1/4	Aluminum Cap	Boise	7	S
4	6/9/2014	6/9/2014	SK101		Center Quarter-Section	Yes	ID080070S0360E0_340340	Rebar		Aluminum Cap	Boise	7	S

M	N	O	P	Q	R	S	T	U	V	W	X
TOWNSHIP DIRECTION	RANGE	RANGE DIRECTION	SECTION	COORD SYSTEM	COORD SYS ZONE	NORTHING	EASTING	HORIZONTAL UNITS	HORIZONTAL DATUM	HORIZONTAL METHOD	HORIZONTAL ACCURACY
S	36	E	21	Idaho State Plane East US Feet		412373.844	635951.258	US Survey Feet	NAD83 (2011)	Real-Time Kinematic	0.1
S	36	E	22	Idaho State Plane East US Feet		409735.008	638679.012	US Survey Feet	NAD83 (2011)	Real-Time Kinematic	0.1
S	36	E	21	Idaho State Plane East US Feet		412348.102	633298.051	US Survey Feet	NAD83 (2011)	Real-Time Kinematic	0.1

Y	Z	AA	AB	AC	AD	AE	AF	AG	AH	AI	AJ
H ACCURACY UNITS	H ACCURACY CONVENTION	VERTICAL COORD	VERTICAL UNITS	VERTICAL DATUM	VERTICAL METHOD	VERTICAL ACCURACY	H ACCURACY UNITS	H ACCURACY CONVENTION	REFERENCE DOCUMENT	STATUS ID	SURVEYOR ID
US Survey Feet	Local Horizontal Accuracy	4566.072	US Survey Feet	NAVD88	GPS and Geoid Model 2012A	0.15	US Survey Feet	Local Vertical Accuracy		Public	ID15295
US Survey Feet	Local Horizontal Accuracy	4658.141	US Survey Feet	NAVD88	GPS and Geoid Model 2012A	0.15	US Survey Feet	Local Vertical Accuracy		Public	ID15295
US Survey Feet	Local Horizontal Accuracy	4560.944	US Survey Feet	NAVD88	GPS and Geoid Model 2012A	0.15	US Survey Feet	Local Vertical Accuracy		Public	ID15295

AI	AJ	AK	AL	AM	AN	AO	AP	AQ	AR	AS	AT	AU	AV	AW
STATUS ID	SURVEYOR ID	LAT	LONG	ALT HORIZONTAL UNITS	ALT COORD SYS	ALT HORIZONTAL ACCURACY	ALT COORD COMMENTS	CORNER DESIGNATION	GCDB POINT LAB	REF DOC URL	MONUMENT PHOTO	CONTEXT PHOTO	STATE	ALTHORIZONTALACCURACYUNITS
Public	ID15295	42.797972	-112.242632	Decimal Degrees		0		W 1/4	300340				ID	
Public	ID15295	42.790739	-112.232463	Decimal Degrees		0		S 1/4	440300				ID	
Public	ID15295	42.797894	-112.252515	Decimal Degrees		0		C 1/4	340340				ID	

The Future of MCPD

- Contributors
  - Training to every surveyor
  - Every surveyor contributes data
- Users
  - GIS/Mappers will use survey quality data for mapping
  - Datasheets
- Administration
  - Geodetic Coordinator – Kazi Arifuzzaman
  - Obtain continuous State funding

Datasheets

CONTROL POINT DATASHEET

Multi-state Control Point Database - Date extracted on: 3/27/2012

CONTROL POINT INFORMATION

Point Name:	6460	General Location	
Point Alias:	NA	Meridian:	NA
Is this a PLSS Corner:	NA	Township:	NA
GCDB Point ID:	MT20T0240n0040W400700	Range:	NA
Monument Type:	NA	Section:	NA
Monument Description:			

HORIZONTAL COORDINATE INFORMATION

Northing:	405427.297 m	Easting:	404657.577 m
Horizontal Accuracy:	0.03 m	Horizontal Method:	Geodetic GPS
Horizontal Coordinate System:	Montana State Plane Meters	Horizontal Datum:	NAD83 (CORS96)

VERTICAL COORDINATE INFORMATION

Elevation:	1160.33 m		
Vertical Datum:	NAVD88	Vertical Accuracy:	0.1 m
Vertical Method:	GPS and Geoid Model		

PROJECT INFORMATION

Project Name:	GCDB Enhancement -Highline		
Project ID	DJA-5247	Project Date:	3/16/2007
Comments:			

SURVEYOR CONTACT INFORMATION

Surveyor:	Kurt A. Luebke	License:	MT13237
Phone:	406-721-4320	Business:	DJ&A, P.C.
Business Address:	3203 Russell St.	Address 2:	NA
City:	Missoula	State:	MT
Zip Code:	59801	Email:	kurtl@djanda.com

MCPD ID: MT13237.CPT.2112

Datasheets cont.

Salt Lake County Surveyor's Monument Reference Sheet

Point Name
1S1W1001

Address
1330 S 1335 W

Monument Type
SECTION CORNER

Monument Description
FLAT BRASS

Monument Status
FOUND IN PLACE

Monument Notes
SLCITY FB MON

Section	Township/Range
10	**1S1W**

Horizontal Datum:
State Plane, Utah Central Zone, NAD83 Meters

Northing **2267334.699**
Easting: **463725.516**

Latitude (Dec. Degrees) **40.74044607**
Longitude(Dec. Degrees)
-111.92945638

Last Observed Date
11/06/1997

Vertical Datum:
NAVD 88 Meters

Elevation
Differential **N/A**
RTK **N/A**

Elevation Date:
N/A
Control Used:
N/A
Geoid Used:
N/A

Map Scale
1.00002376

Convergence
-0 16 30.3620

Combined Scale
N/A

Area Photograph

Monument Image

Reid J. Demman, P.L.S.
Salt Lake County Surveyor

Disclaimer: Salt Lake County makes no guarantees, representations, or warranties, of any kind, expressed or implied, as to the content, accuracy, timeliness, or completeness of any of the data. Unless otherwise noted all images are oriented north and are not to scale. The data is provided on an "as is, where is" basis. The County assumes no obligation or liablility for its use by any person.

Color Aerials provided by Google

Summary

- Upload can be accomplished by the template or shapefiles
- The website can be used as an additional research tool by surveyors and GIS users
- GIS/mappers will have access to survey grade control in their area
- Dioptra is available to help surveyors and GIS/mappers, agencies, individuals with questions or issues

Questions?

Contact:

Dioptra
Stewart Ward
stewart@dioptrageomatics.com
(208) 237-7373

ArcGIS ONLINE (AGOL) PORTAL Discussion

Bill Farnsworth

AGOL ENTERPRISE SERVICE

- *121 Users*
- *36 Agencies*
- *1000 ++ Maps*
- *$80,000 in Savings*

- *More Importantly Collaboration*

AGOL ENTERPRISE SERVICE

- **Collaboration**

- *Aging: "it would be nice to have Pharmacies on our map"*
- *Pharmacy: "we have the location of Pharmacies"*
  - *Done within ½ hour*

- *H&W EMS: "it would be nice to have mile posts on our map"*
- *ITD: "We have a map service for that"*
  - *Done within same day*

AGOL ENTERPRISE SERVICE

- **Collaboration**
- *ISP: "We need a printed map with imagery for an "issue" on a case"*
- *OCIO: "We can create a online searchable map that you can also print"*
  - *Done within minutes*
- *IDOC: "I work with sexual offenders and it would be nice if I had daycares on my map"*
- *H&W: "I work with the person that does daycare licenses and location"*
  - *They are going to discuss*

Maps for Citizens

Maps for Citizens – Idaho Statistics

ADJOURNMENT

See you in the fall !