THE MONTANA SPATIAL DATA INFRASTRUCTURE (MSDI)

FY14 WORKPLAN DRAFT

Produced by the Montana State Library in conjunction with the MSDI Theme Stewards and Leads

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ACRONYMS USED IN THIS DOCUMENT

1. BLM – U. S. Department of Interior's Bureau of Land Management
2. FME – Safe Software's feature manipulation engine
3. ETL – common for enhance, translate and load data transactions
4. GCDB – BLM's Geographic Coordinate Data Base
5. MAGIP - Montana Association of Geographic Information Professionals
6. MCPD – Multi-State Control Point Database
7. MDT – Montana Department of Transportation
8. MBMG – Montana Bureau of Mines and Geology
9. MTNHP – Montana Natural Heritage Program
10. MSDI – Montana Spatial Data Infrastructure
11. MSL – Montana State Library
12. NRCS – U. S. Department of Agriculture's Natural Resource Conservation Service
13. NRIS - Natural Resource Information System; part of the MSL Geographic Information Program
14. PLSS – Public Land Survey System
15. USGS – U.S. Department of Interior's United States Geologic Survey

MSDI DATA WORK PLAN

The Montana State Library (MSL), working with Montana Spatial Data Infrastructure (MSDI) theme stewards and theme leads, has compiled maintenance plans and enhancement priorities for each MSDI theme. It is based on the same template as the FY13 work plan and focuses on the three types of tasks that comprise MSDI stewardship:

1. MSDI education, outreach and coordination
2. MSDI maintenance
3. MSDI enhancement, research and development

While there are differences in the nature of data content associated with each theme, there also are many similarities. For each theme an Excel worksheet captured the tasks and estimated hours to accomplish a base work level for categories one and two that would keep each theme at today's levels in terms of content and access. We also estimated hours to complete projects to improve content and access. Each theme worksheet was aggregated into a master worksheet to estimate the total MSDI workload for FY13. Each individual theme's worksheet is not included in this plan however examples are used. This year's MSDI plan focuses more on the projects and vision for each theme rather than the process since the MLIAC reviewed and accepted the process for the FY13 plan. Theme stewards and leads have again provided their best estimates of the level of effort required to provide outstanding theme stewardship.

MSDI EDUCATION, OUTREACH AND COORDINATION

MSDI education, outreach and coordination are required for each and every theme and go far beyond what a state GIS coordinator can accomplish. Each theme steward/lead must conduct some basic coordination and outreach tasks to meet user needs. Those basic functions or common outreach include things like work plan development, user outreach, technical support to users, and updating a theme's web presence. A theme might have some specific outreach identified. For example the Structures and Addressing coordinator has identified a need for organizing a Montana Addressing Summit in FY14, bringing together major 911 vendors, local addressing coordinators, the U.S. Census Bureau, the State SITSD Public Safety Services Bureau and other stakeholders to discuss addressing methodology and common interests. Finally, there is cross theme coordination that is vital to maintaining and enhancing themes. For example Land Cover may be enhanced through interaction with Wetlands and Soils themes and such interaction is difficult if communication between theme stewards and leads doesn't take place. Similarly, Administrative Boundaries relies on updated Cadastral data which in turn relies on accuracy enhancements to the PLSS. Accuracy enhancements to the PLSS occur primarily when additional survey (Geodetic) control points are collected and submitted to the BLM's GCDB staff.

Example of Structures and Addressing Education, Outreach and Coordination Estimates:

MSDI Education, Outreach and Coordination	HOURS
ANNUAL WORKPLAN DEVELOPMENT	16
MONTANA GIS USER OUTREACH	100
TECHNICAL SUPPORT	24
UPDATE WEB PRESENCE	4
SUB-COMMON OUTREACH	144
TRIBAL & LOCAL GOVERNMENT VISITS	80
ADDRESSING SUMMIT	100
TOTAL	324

In addition to theme specific education, outreach and coordination MSDI as a whole requires similar coordination including the MSDI web presence, consistent and current metadata and archival procedures.

Example of General MSDI Education, Outreach and Coordination Estimates for FY13:

TASK	HOURS
CONFERENCE AND MEETING OUTREACH	80
METADATA AND ARCHIVAL COORDINATION	80
MSDI MARKETING	40
WEB MAINTENANCE/CONTENT MANAGEMENT	80
MSDI - GENERAL OUTREACH TOTALS	280

The total estimated FY14 time for MSDI education, outreach and coordination, which includes MSDI general, theme general and theme specific activities, is **4884** hours; virtually the same as the FY13 estimate of 4990 hours.

MSDI THEME MAINTENANCE

MSDI theme maintenance consists of the day to day tasks theme leads need to accomplish to keep the theme at present levels of accuracy, completeness and currency. Maintenance efforts are therefore subject to a theme's maturity as the authoritative source of statewide data and vary significantly. Even if all themes were at a base level of completeness, maintenance levels would still vary based on the nature of the data. It is only logical that maintenance of the cadastral layer requires significantly more

work than that of imagery. Theme stewards and leads attempted to break out common maintenance tasks into the following categories:

1. Data maintenance & updates (actual manipulating existing features and adding new ones)
2. Database maintenance (compressions, reconciles and posts, versioning, schema changes, etc.)
3. Application administration and maintenance
4. Web services administration
5. Metadata updates
6. Data archival

Maintenance of some themes takes up almost all the available time while others require almost no maintenance. For example maintaining and updating the structure/address points from almost 40 unique providers is estimated to take approximately 1,100 hours. On the other hand maintenance of the geographic names theme is estimated at 140 hours, ten percent of that required for structure/address points. Based on estimates from MSDI theme stewards and leads, MSL estimates the total MSDI maintenance work load to be **8628** hours, slightly above last year's estimate of 7918 hours.

FY 2013 PROJECT PRIORITIES – ENHANCMENT, RESEARCH AND DEVELOPMENT

In January the MSDI theme stewards and theme leads assembled to discuss priority projects for FY14. Similar to last year there were some general MSDI related projects that would enhance the overall usability of MSDI, as well as theme specific projects that enhance either the content or delivery of specific themes. Hour estimates for the most projects are contained in Appendix A although some smaller projects are not listed.   General MSDI projects include a second phase of web enhancements based on user and theme steward feedback of the FY13 web changes, a broadened scope of MSDI presence in the MSL ArcGIS Online Map Gallery, and replacement of the existing MSL data bundler. Short summaries of priority theme specific projects, or a simple update if no major projects are planned, follow and include:

Administrative Boundaries – Administrative Boundaries will receive considerable attention in FY14. Montana is one of four states participating in a national pilot project with the U.S Bureau of Census to research the feasibility of incorporating CadNSDI V2 for representing those non-visible, PLSS based boundary segments. Potentially this is a large step forward leading to alignment of Census geography with a state's SDI. This project correlates nicely with the need to adjust state, county, school districts, incorporated places and American Indian Areas to CadNSDI V2. MSL will also research the feasibility of partnering with the Secretary of State's Office and Montana counties to create digital statewide precinct mapping. A final project for FY14 would be to create a user group to study the feasibility of creating a statewide Water & Sewer District layer.

Cadastral – The cadastral database will require significant time to re-adjust to the BLM's CadNSDI V2 database. While it was anticipated that this would be completed in FY13, cadastral staff expended

significant unanticipated resources on CadNSDI V2, providing quality assurance to BLM and the BLM contractor. Subsequently, after extensive feedback CadNSDI V2 is undergoing significant final edits and is not expected to be delivered until May. A second priority project centers on providing additional attribution for public lands. MSL will work with the Department of Natural Resources and Conservation (DNRC) to explore a more common geography for state trust lands, with a goal to provide at least minimal attribution of state trust lands from the DNRC's trust land database.

Elevation – The USGS in conjunction with other stakeholders will update the Lidar Projects Inventory using the ArcGIS Online web map established in FY13.

Geodetic Control – Work on the partnership that established the Multi-State Control Point Database (MCPD) with Idaho State University will continue. Idaho will focus on the development of a Flex Viewer for the MCPD to replace the ageing ArcServer application. The Montana team will focus on addition to the database of both MDT control points and points collected by the BLM under the American Recovery and Reinvestment Act.

Geographic Names – Work on the Geographic Names theme will concentrate on modifying the work flow to allow more efficient updates and potential interaction with other MSDI themes like Hydrography (NHD) and Transportation.

Geology – The MBMG continues to concentrate on migrating 1:100,000 and1:250,000 geologic data into a Geodatabase format in preparation of hosting web mapping services. They anticipate web services to be available in FY14

Hydrography - FY14 work on the Hydrography framework, at this point fundamentally the same as the USGS National Hydrography Dataset or NHD, is tied closely with the Legislature's approval of the MSL Budget which includes one-time funding of a Water Information System Manager. Without approval the theme will stay in maintenance mode with some base coordination and outreach but with no priority projects planned. If approved there will be significant work to improve the quality of features in NHD, refine the current editing workflow, and develop a versioned model to buffer state business processes from interruption to changes in the base data.

Hydrologic Units – From a state perspective this theme requires minimal maintenance but could benefit from some outreach efforts to better communicate the HUC/NHD integration. On a federal level it has been fully incorporated into NHD, is updated quarterly, and some projects like border harmonization with Canada can have small impacts. At some point the Council could consider retirement of this as a MSDI theme.

Land Cover – Based on work conducted in FY13, MTNHP will publish Land Cover 2014 with revisions to perennial ice and snow, red and/or dead high elevation forests and areas burned in 2012 and 2013. In preparation for Land Cover 2015 MTNHP, working with stakeholders, will identify cover types needing the most revision and determine what classification units can/should be split out. They will also

determine which cover types lend themselves to developing training points from photointerpretation, determine which auxiliary imagery is useful and affordable and prepare data collection plan for underrepresented land cover types.

Imagery – The future of the USDA NAIP program is uncertain at this time because of Federal budget cuts. If NAIP 2013 is flown this summer as projected, the imagery will require processing for download and web services.

Soils- The focus for 2014 will be to update the web presence by providing access to the individual SSURGO surveys; the official NRCS sponsored websoilsurvey; and the the ESRI arcgisonline soils web services metadata updates and data archival. (*Note: NRCS does all of the update work and has several full-time employees working on soil mapping, digitizing, correlation, edge-matching, creating metadata etc. and these hours are difficult to estimate and not accounted for in the MSDI maintenance totals*)

Structures/Addresses - Structures and address points at a statewide level require intensive maintenance but no major enhancements once the data is integrated from local sources. Some maintenance issues will be resolved by development of new FME ETL routines to gain efficiencies. Additional enhancement efforts will concentrate on building or improving partnerships with the public safety, next generation 911 and situational awareness (emergency response) communities to garner increased support for statewide standardized addressing. Montana continues to actively engage with the U.S. Census Bureau on addressing and continues to be invited to participate in their national address summits.

Transportation – MSL and MDT are currently evaluating strengths, weaknesses and opportunities of the current Transportation framework. Assuming stewardship responsibilities remain essentially the same efforts will center on gaining efficiencies incorporating provider data with no enhancement projects currently planned.

Wetlands – MTNHP estimates they will map approximately 500 new 1:24,000 quadrangles under partner contracts. They also propose the attribution of existing wetlands mapping with hydrogeomorphic descriptors.

The total hours for all MSDI enhancement projects is estimated at approximately **21,000** hours although that is somewhat skewed in that 14,000 hours or 66% will be expended in new wetlands mapping. As noted above estimates for all the NRCS soil mapping activities is not included.

MSDI FY14 WORK PLAN – AVAILABLE RESOURCES

Through development of this work plan MSDI theme stewards and theme leads hope to convey the level of effort required for maintenance, enhancement and delivery and management of MSDI. For FY14 the total estimated hours to accomplish those tasks is approximately **34,500** hours.   Resources for MSDI tasks is broken down as follows:

1. The MSL Geographic Information staff is comprised of a manager and 8 GIS analysts. MSL is the theme steward for 8 or the 14 MSDI themes; Boundaries, Cadastral, Geodetic Control, Geographic Names, Hydrography, Imagery, Structures/Addressing and Transportation. Not all work under the NRIS program directly cross-walks with MSDI work so we estimate 6.5 analysts work primarily on MSDI. Based on an 80% "billable" rate and allowing an additional 800 hours of management resources MSL estimates 11,600 hours of available time for MSDI work. If the Water Information Systems Manager is approved by the legislature, MSL would conservatively estimate and additional 1000 hours.
2. MTNHP is the steward of the Land Cover and Wetlands themes. MTNHP does scientific research related to the plants, animals and ecology of Montana in addition to Land Cover and Wetlands mapping. They have estimated slightly over 17,100 hours available for MSDI related work in FY14.
3. The Montana Bureau of Mines and Geology is the steward of Geology. They have estimated they will expend approximately 4200 staff hours working on the theme this year.
4. NRCS is the steward to both Soils and Hydrologic Units. As mentioned in the projects section, Hydrologic units have been incorporated into NHD and take very little work. Soils has approximately 800 hours of maintenance and enhancement scheduled (beyond all the NRCS soil survey and mapping time that wasn't estimated), however some of that work will be done by MSL staff and fall under their time. For this work plan an estimate of 400 hours of additional federal time, primarily for outreach, education and coordination is probably accurate for both themes.
5. USGS is the steward for Elevation. This is another theme that doesn't require a lot of work and the level of effort is estimated at 100 hours.

The end result is that we have an estimated level of effort of 34,500 hours to accomplish MSDI stewardship and an estimated 33,400 hours of available resources. However if MSL's Water System Information Manager is approved (and that would consistent with the estimated Hydrography project load) MSL would conservatively add in an additional 1000 hours. With that addition the estimated level of effort and available resources for the FY14 MSDI work essentially balance.

APPENDIX A – FY13 STEWARD/LEAD PROPOSED PROJECTS

Theme	FY13 Proposed Project	Hours
General MSDI		
	MSDI ARCGIS MAP GALLERY	160
	WEB ENHANCEMENTS PHASE 2	160
	MSL DATA BUNDLER	120
Admin Boundaries		
	CENSUS PILOT/BOUNDARY ADJUST	200
	PRECINCT MAPPING	200
	WATER/SEWER DISTRICTS	200
Cadastral		
	ADJUST CADASTRAL & PUBLIC LANDS TO NEW GCDB	500
	STATE TRUST LAND COMMON OPERATING	200
	FEDERAL LAND ATTRIBUTIOIN	40
Elevation		
	UPDATE LIDAR PROJECT INVENTORY	40
Geographic Names		
	IMPROVE UPDATE, WEB SERVICES AND DISTRIBUTION	160
Geology		
	DEVELOPMENT & PRODUCTION OF GEODATABASES	1000
	COMPLETEGEOLOGY DATA SERVICE	500
Hydrography		
	DATA QUALITY IMPROVEMENTS	500
	TRANSPARENT EDITING AND MAITENANCE WORKFLOW	350
	FEATURE DELTA ANALYSIS	400
Land Cover		
	PUBLISH INITIAL 2014 LAND COVER WITH REVISIONS TO PERMANENT SNOW AND ICE COVER CLASSES, RED/DEAD AND 2012/13 BURNED AREAS; REVISE 2014 LAND COVER BASED ON MULTIPLE FACTORS	920
Imagery		
	PROCESS 2013 NAIP FOR DOWLOAD AND WEB SERVICES	80
Soils		
	UPDATE WEB PRESENCE WITH ACCESS STANDARD INTERPRETATIONS USING WEB SERVICES; DATA ARCHIVAL	200
Structures		
	NEW DATA AND ETL ROUTINES TO FRAMEWORK	640
Wetlands		
	NEW WETLANDS QUAD MAPPING – 500 QUADS	14000
	HYDROGEOMORPHIC DESCRIPTORS	187