APPLICATION FOR GRANT FUNDING

STEP 1 – Applicant and Partner Information

Primary Applicant (Required):
Name of principle individual: John K Mercer
Name of agency\entity: Swan Valley Elementary School, District 33, Missoula County
Street: 6423 Highway 83 North
City: Swan Valley/Condon
County: Missoula
State: Montana
Zip Code: 59826
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Organizational Unit N.A.
Department:
Division:

Date Submitted (Required): 2/15/13 **Date Received by State:**

Descriptive Title of Applicant's Project: Increasing the awareness and use of Geospatial data and technology in small rural schools and communities: Phase II

STEP 2 – Relevance and Public Benefit

There are 108 small elementary school districts in Montana with 50 or less students, similar to the Swan Valley Elementary School (SVES). In the Swan Valley, as in many rural Montana communities, there is very little local GIS expertise and infrastructure. Yet six different federal, state and county agencies and numerous private national organizations have multiple data layers for the Swan Valley. But, like so much of rural Montana, we cannot readily access this information for teaching, local planning efforts, and community projects. Nor can we use GIS resources to capture local place based data and submit it to the agencies making resource decisions and setting policies affecting our community.

This two year pilot project demonstrates one pathway for small rural communities to develop local GIS resources. It falls under Land Information Plan Grant Priority ***B2 – Local, Regional and Tribal GIS Support -*** *Investments that leverage local, regional, state and tribal matching funds and in-kind time and talent that builds toward a strong Montana GIS federated enterprise.* Our phase I MLIAC grant leveraged earlier work funded by a grant from Montana FWP to the Swan Valley Community Council (SVCC) and sponsored by Missoula County Rural Initiatives to develop Swan Valley GIS data layers. In phase II, we build on our earlier work and demonstrate the utility of using the rural school district in small Montana communities as a hub for introducing, disseminating and developing local GIS resources and community maps. We show how engaging with the larger Montana GIS community through applied community mapping projects benefits the community.

Montana Land Information Act (MLIA) objective B2.1 is: *Regional GIS consortiums that leverage a multi-jurisdictional approach to problem solving and GIS analysis can demonstrate the value of GIS to policy makers.* SVES through this project helps community members become users and consumers of geospatial data. More active participation in conversations with various state and federal agencies about making and implementing resource decisions and management policy in the Swan Valley is the result. For example, participants in this project work with the community council's Growth Policy Planning Committee, conservation groups and representatives from the USFS, DNRC, and USFWS, developing an interactive road layer to collect online input about accuracy of road locations.

MLIA Objective B2.2 is: *Localized GIS solutions that demonstrate the value of GIS in improving the quality of life for Montana citizens and build grass roots support for location based services.* SVES brings teachers, community leaders, and groups such as the Swan Valley Historical Society, Swan Ecosystem Center, and Northwest Connections together to increase the engagement of our children in spatial learning and introduce the vast amount of information that is available through GIS technology. This project demonstrates how using GIS resources and developing interactive community maps about cultural, historical and natural resources, local fire history and river channel changes increases the quality of life for residents and visitors in the valley by providing better access to information about the local community and furthering and deepening connections to the landscape.

STEP 3 – Scope of Work Narrative

There is a lot of interest and support for this project. Local conservation groups such as Northwest Connections and Swan Ecosystem Center support this effort. The Missoula County Superintendent of Schools is an enthusiastic supporter of this effort and interested in the technology transfer to other schools. The Swan Valley Fire Service Area (SVFSA) is a joint fire district containing portions of Lake and Missoula County providing 911-fire and emergency first response for the Valley. The SVFSA Board supports this project and is interested in working with GIS departments in Missoula and Lake Counties in the future to update the structures and road layers with accurate GPS locations. It currently lacks GIS resources to accomplish this. It is looking forward to the interactive community mapping tools such as the roads layer developed through this grant to help the district work with DNRC Fire Managers and the counties.

The project started with Phase I focused on building local capacity and capability through a core group of teachers and influential community members. SVES upgraded its hard and software and engaged with 14 teachers and influential community members who learned about GIS. These individuals planned and initiated numerous learning activities and different projects designed to raise community awareness and use of GIS information, resources and tools. Goals one through four were included in the phase I 2013 MLIAC grant request.

- ✓ Goal 1 - Develop onsite capacity to operate a geographical information system for teaching and community access.
- ✓ Goal 2 - Develop capabilities of teachers, and select community members to understand and transmit knowledge about geospatial tools and data.
- ✓ Goal 3. - Complete curriculum development incorporating geospatial reasoning and tools in the school and develop GIS applications to real life community problems.
- ✓ Goal 4 - Provide a model prototype process and make presentations on how small rural communities can use their local schools to develop better GIS resources, access and uses within the community.

We have substantially accomplished these goals and are on track to complete or exceed them by June 2013. (See Step 7 Renewable Grant Accountability Narrative for a detailed description of these goals and progress made in Phase one.)

The success of our first year exceeded our expectations. SVES received some additional funding in 2012 to complete a significant school wide technology upgrade that indirectly supported the GIS infrastructure. The teachers rapidly progressed to using GIS in the classroom; similarly many community members initiated projects ahead of schedule. As a result, we have no pressing hardware or software needs for next year and much less of a need for onsite classes and instruction in GIS technology. This allows us to substantially reduce our grant request from $37,206.50 in the first year to $9,675 in the second year.

While the initial effort brought GIS into the community, it does not answer the pertinent question of why a small community like ours would want or need to do this. This grant request for phase II focuses on answering that question. Only the fruition of projects initiated in phase I can practically answer that question by demonstrating that GIS resources, information and knowledge cooperatively used by a number of different groups and agencies benefits the rural community in real ways.

A. Goals and Objectives

We are seeking MLIAC support in Phase II to accomplish the final four goals of this project.

Goal 1 - Complete a full year of using GIS resources integrated into the curriculum of grades 5-8.

We will continue to use ArcGis in the 5-6 and 7-8 classrooms. Next year, the 5th and 6th grade will be studying American History Early Years. So we'll build maps, locating and pinning important locations and events. The 7th and 8th grade will be studying Montana history and will make use of local historical information in building, adding to and drawing from data collected through the community mapping projects. We also will continue our wildlife tracking fieldwork.

The students will develop a relationship with another school located in a very different environment and share GIS information, and community maps about their school and community using ESRI resources and shared maps.

It is important to show that as a result of this project, geospatial reasoning and information is now embedded in the instructional processes at SVES. Through this the students will begin to understand how the world and knowledge is linked spatially. They will become more facile with using GIS information and technology. The community benefits from this, as the students convey information about GIS resources into the community and expose family members and friends to the technology and its uses. The students' presentation of their work to the community in two open house events is the deliverable that demonstrates completion of this goal.

Objectives

a. Continue to integrate GIS tools and resources in the 5-8 grades throughout the school year
b. Develop a relationship with a sister school through the use of GIS tools and social media
c. Host two GIS open houses that showcase student GIS projects

Goal 2 – Select at least four community projects facilitated and supported by GIS tools and applications as case studies demonstrating relevance to small rural communities.

There are number of viable community oriented projects underway as a result of the initial MLIAC grant. We will continue to support all of these efforts. The selection of four completed projects with published community maps for use as case studies demonstrating how GIS resources benefit the local community is the deliverable demonstrating completion of this goal. The projects include:

- Developing cultural historical interactive community map for the historical society
- Developing extensive map resources about private land parcels for the planning committee
- Developing an interactive map that lets people observe fire history and trends from 1899 to date
- Developing an interactive map that depicts river channel changes from 1899 to date
- Using GIS tools and biophysical data to categorize private land suitability for development
- Completing metadata for a unique data layer depicting original homesteads in the Swan Valley
- Developing and using an interactive map with a comment feature layer to collect data on roads
- See **Step 7 Narrative** for a more detailed description of these projects and their current status.

Objectives

a. Continue to support student, teacher and cohort member projects by providing ongoing access to GIS expertise, consultation, and problem solving
b. Regular professional review and critique of project progress
c. Hold two open houses where projects are presented to the community
d. Our consultant selects projects best suited as case studies based on progress, quality, benefit to the community and community interest and response at the open house

Goal 3 - Describe how the selected case study projects use GIS tools and applications to improve the quality of life in a small rural community.

We accomplish this goal by developing case studies for each selected project noting progress and specific accomplishments. This includes a description of the project goals, methods and tools used, challenges encountered, resources, solutions and the final outcome. Participants will be encouraged to submit these case studies to ESRI for publication. The case studies will be combined into a booklet and a podcast about the benefits to the community of GIS resources, which is the deliverable for this goal.

Objectives

a. Document and develop the story describing at least two benefits from each case study that directly relates to GIS resources
b. Write booklet: Why small communities benefit from GIS tools and resources.
c. Develop a video webinar/podcast to accompany the booklet.

Goal 4. - Make outreach presentations to other small rural school districts and communities about the benefits of using GIS resources and how they can develop them.

There are over a hundred communities like the Swan Valley found all over the state with names like Bynum, Cardwell, Paradise, Lustre, and Helmville. They have similar small rural elementary schools with 50 or less students. This goal is to reach out to these schools and sharing what we have learned and the ways in which GIS resources are beneficial for small communities. The deliverables for this goal include digital outreach to the Montana education community and presentation at two conferences.

Objectives

a. Place the booklets and podcasts on the school website and digitally distribute the links to school districts, school boards and administrators across Montana.
b. Present the information at two education conferences in Montana.

B: Tasks and project schedule

Task	Task Description	Start Date	Complete Date
1	Continue to support student, teacher and cohort member projects by providing ongoing access to GIS expertise, consultation, and problem solving	7/1/13	6/30/14
2	Regularly review progress and critique project	7/1/13	6/30/14
3	Continue to integrate GIS in the 5^{th} – 8^{th} curriculum throughout the school year	9/15/13	5/30/14
4	Develop a relationship with a sister school using GIS tools and social media	11/1/13	5/30/14
5	Hold an open house in Jan for students and adults to present GIS projects and progress to the community	1/15/14	1/30/14
6	Select projects best suited as case studies based on progress, quality, benefit to the community and interest at the open house	2/1/14	2/7/14
7	Document and develop case study stories describing at least two benefits from each case study that directly relates to GIS resources	2/8/14	3/30/14
8	Write a booklet: Why Small Communities Benefit From GIS Tools and Resources	2/15/14	3/30/14
9	Develop a podcast to accompany the booklet	3/1/14	3/30/14
10	Place digital copies of the booklets and podcasts on the school website, and email links to rural school districts, school boards and administrators across Montana.	3/15/14	4/15/14
11	Present the information at two education conferences in Montana	3/30/14	5/30/14
12	Hold an open house in May for students and adults to present GIS projects and case studies to the community	5/1/14	5/15/14

STEP 4 – Project Management and Organizational Capability Narrative

The Swan Valley Elementary School has a long history of success in receiving and managing grants from a variety of sources including state, federal and private. In the late 1990s, SVES received a grant to promote computer literacy within the curriculum and the greater community. Computers and software were purchased, the system was networked, and the use of computers was brought into the curriculum. In addition, the school offered adult education classes and opportunities for the community to learn how to use computer tools.

The school has successfully leveraged a modest technology line in the general fund, by applying for and receiving a number of grants every year. For example, SVES recently received a private grant to purchase 4 smart boards, a grant for a new dedicated server for library, and a grant for a notebook computer. SVES is currently administering the phase one MLIAC grant of $36, 206.50 received for the 2012-13 school year.

SVES provides excellent K-8 educational services, activities and experiences as a small rural school serving 32 students. It recently received two awards from the state for being one of a very select group of schools in Montana that have consistently met and exceeded all of the educational testing benchmarks for Adequate Yearly Progress in both the Elementary School and Junior High since that testing program began.

Melanie Parker is Chair of the Swan Valley Elementary School Board, and Executive Director of Northwest Connections. She has an undergraduate degree in Education and a Master's in Environmental Science. She has used GIS software since the mid 1990's and is modestly proficient in using ArcGIS and making basic maps. Her organization, Northwest Connections, uses GIS for ecological monitoring projects.

John K Mercer is a school board member, and holds a BS and MS in Forestry with an emphasis on Forest Ecology and Education. He has 30 years experience coordinating projects and programs involving natural resources and experiential education. He was the executive director of a private school and administered an annual budget of 2.2 million and 29 employees for 18 years. He is a member of the Swan Valley Growth Policy Committee, and while co-chair of that committee worked with the SVCC, Missoula County Rural Initiatives and GeoData Services to develop the initial SVCC GIS data layers. He is Vice President of the Swan Valley Fire Service Area Board, and President of the Swan Valley Community Foundation. John will continue to champion and oversee the implementation of this project so that it meets its goals and objectives.

Chris Stout has a BA in Education, a Masters in Educational Leadership and is in his last semester of Doctoral work, defending his dissertation next December. In addition to his duties as Superintendent of Seeley Lake Elementary School, he serves as Principal of Swan Valley Elementary School. He is responsible for two school budgets and serves on the state commission for AdvancED (Formerly Northwest Accreditation). He is the grant administrator for over $200,000 in grants at Seeley Lake, ranging from an Outdoor Classroom to Preschool. He is also

the grant administrator for a RUSDLT grant involving 8 school districts for over $500,000. He serves as the chief financial officer (board member) for the Missoula Area Education Cooperative which serves 16 schools and has a budget well over a million dollars. He has GIS/GPS experience and has extensive guiding and navigating training from the National Outdoor Leadership School in Lander, Wyoming. He will continue to be involved in the project.

Karen Anderson is the School Board Clerk and Secretary and has 29 years experience managing school accounts, and finances including grants. She is responsible for accounting and tracking resources used in this project.

Mike Speckert has owned and managed two computer stores and has 21 years experience, designing, building, managing and maintaining computer systems, including networks, and data storage. Mike is the IT consultant for the school. Mike built the new server and workstations, installed additional ram and software and oversees the system. Mike will continue to mange the equipment and software for this project. He is particularly interested in learning more about how to install and configure GIS software for small enterprises. Mike is also the IT manager for the Swan Valley Emergency Services and Fire Service Area.

Angela Williams has been teaching grades 4th-8th for 5 1/2 years. She currently teaches Junior High and Special Education at SVES and is also fulfilling the role of supervising teacher. After attending the Google Institute through University of Montana, she implemented Google Apps for Education at SVES, which included creating a website and accounts for staff and students. She holds a Bachelor's degree in Elementary and Special Education through Montana State University-Billings and is currently enrolled in a Master's program for Education Technology. She is also undertaking a second Master's in Educational Leadership through MSU Bozeman. Angela endeavors to integrate technology into her classroom daily, and each of her students is comfortable with a variety of tools and applications from the web and software purchased by the school. In addition to incorporating GIS resources into her classroom work, she will continue working with her 7th and 8th graders in a wildlife field research project using GIS technology. Angela is also the Swan Valley Emergency Services Training Officer for the Quick Response Medical Unit.

Erika Pitman currently teaches grades 5-6. She has a Bachelors in Elementary Education and has been a classroom teacher for 6 years at SVES. She has participated in Blackfoot Educational Technology Workshops, PEAK, and is very familiar with and regularly uses the smart board and Google Tools in her classroom. She completed an online Google Tools course for university credit. Her students became very familiar with ArcGIS maps and mapping over the course of the 2012-13 school year. They recently finished creating Treasure maps of Montana and the Swan Valley. She has integrated GIS in her classroom as a teaching tool using it extensively for Social Studies. In the next year she will continue to expand its use across the curriculum.

John Keller and his wife Pamela moved to the Swan Valley in 1998 after 31 years in professional careers and international assignments, including Director of Information Technology for Eastman Kodak in the Far East. He had a lingering desire to someday transition to a quality "mountain living lifestyle", and after a lot of research, established his home in the Swan Valley.

He subsequently developed an interest in real estate, trends in public lands, ownership in the Rocky Mountain West, individual private property rights, and how these might evolve for those generations who follow in our footsteps. He has served on the Swan Valley Community Council's Growth Policy Planning Committee since 2009 and is leading the committee's research on private lands in the valley. He will continue to develop interactive maps and tools that help the committee model a variety of growth scenarios.

Steve Lamar recently retired from Northwest Connections, a Swan Valley conservation and education organization, where he worked as an instructor, as well as field assistant on grizzly bear DNA and whitebark pine research projects. He is also the owner of Rumble Peak GeoData, specializing in natural resource and historical data collection. Prior to that venture, Steve worked 17 seasons with the Forest Service as a forestry technician and backcountry ranger. He also worked as an outdoor instructor and guide for 12 seasons. Steve graduated from Murray State University with a degree in Outdoor Recreation. He and his wife, Sharon, have lived in Swan Valley since 1976. Their two children, Annie and Lucas, were both born in Swan Valley. A local history buff, Steve currently serves as the president of the Upper Swan Valley Historical Society. In 2008, he published, *Swan Valley Place Names: A Mosaic of History, Stories, and Local Lore.* Steve will continue developing a unique interactive data layer on cultural historical resources in the Swan Valley.

Anne Dahl is a founding member of Swan Ecosystem Center, a nonprofit citizens' group in the Swan Valley of northwestern Montana. She has been president since the organization's inception in 1996. Anne has been involved in several consensus-oriented community and conservation efforts since 1990. She was a successful micro-business owner, 1982-1996. She has a B.A. in English Literature from the University of Washington, 1967. An avid outdoorswoman, she has lived in the Swan Valley since 1982. Anne serves on the Missoula County Open Space Board. Anne will continue developing a unique set of interactive data layers that show the historical progression of wild fires and river channel changes in the Swan Valley over the last 80 years.

Joan McGuire is an Emeritus Professor, Department of Landscape Architecture, California State Polytechnic University Pomona. She is a local landowner & applied rural alternative energy expert living full time in the valley. She is an accomplished illustrator, a member of the Swan Ecosystem Center Board of Directors and an active member of the Swan Valley Community Council's Growth Policy Planning Committee since 2009. She developed a unique data layer depicting all of the original homesteads in the Swan Valley and will continue working on completing the metadata for this layer.

Joan is also working on a roads layer for the planning committee. She led an open house on roads in the fall of 2012. And she has worked with Allan Branine, Swan Unit Fire Supervisor, MT DNRC and Scott Eggeman, Private Lands Conservation Coordinator for SEC and a member of a team that includes the USFWS. This working group collected and analyzed various road layers from different agencies including the USFS for the Swan Valley. They worked with Ken Wall in developing an interactive community map that will be used in the next year to collect road information from residents and others online.

Adam Lieberg is the Conservation Program Coordinator and instructor for Northwest Connections. He works full time coordinating and conducting fieldwork and teaching classes. Adam also dedicates some of his time to Swan Valley Bear Resources. Adam has an Environmental Studies degree from the University of Montana. He has done research and monitoring fieldwork on everything from grizzly bears to montane voles. Adam also has spent a good deal of time working for the University of Montana's Division of Biological Studies as the lead field technician on a long-term predator, small mammal, and vegetation research project in the Blackfoot Valley. He will continue working with Angela Williams and the 7th and 8th grade students on using GIS tools related to wildlife research over the next year.

Erin Lipkind is the current Missoula County Superintendent of Schools. Erin is a graduate of the University of Montana with a BA degree (1997) in Anthropology and minor in Native American Studies, a M.Ed. in Curriculum and Instruction, and an Ed.D. in Curriculum and Instruction. The focus of her doctoral studies included Educational Leadership and Indian Education for All Implementation. She will continue functioning as an advisor for the curriculum development and outreach to public schools component of the project.

Jeff Crews is an adjunct professor of educational technology at the University of Montana, President of SpatialSci, Inc. and coordinator of the state educational site license from ESRI for ArcGIS Desktop 10.x Software. He is the former Assistant Director, UM Earth Observing System Education Project. Jeff has an M.Ed and an Ed.D in Technology and Curriculum Instruction. His major interests are the development of geospatial data sets for K-12 education and integration of technology in science education. He will continue assisting and advising on accessing and using resources provide by the state educational site license from ESRI.

Ken Wall, and GeoData Services, Inc. provide GIS services for federal, state, and local government agencies; industry; private organizations; and individuals. GeoData provides general and specialized GIS services, data acquisition and conversion, spatial analysis, image analysis, database development, Web-based mapping, and GPS and related services. GeoData developed the SVCC map layers and designed the information to be readily accessible through web-based tools. GeoData Services Inc. and Ken Wall provided training and support for the first year of the grant. He will continue providing technical support, consulting and guidance along with professional critique of the deliverables to ensure that the design and implementation of the project meet the goals and objectives. In addition he will ensure that data layers meet Montana Portal Metadata Standards.

STEP 5 – Budget Justification Narrative and Tables

Hardware/software

Total SVES in kind for Hardware/software $26,196
Total MLIAC Share $0

In kind contribution was calculated by estimating the cost of the existing equipment SVES is contributing to this effort. 18 student workstations $11,700; 4 SB D680 smart boards $8,996; Network, Ethernet and wireless 2,500; printers and 11x17 multifunction color laser; 3,000.

Contracted Professional Services

Professional services with GeoData Services, Inc.
Total SVES Share $0
Total MLIA Share $7,500

Provide technical support for ArcGIS software operation; maintain SVCC data layers integrity; provide technical support for onsite and offsite data management; provide technical support and problem solving for projects; review and critique projects select projects best suited for case studies, review and critique presentation materials, and general consulting services: $7,500

Supplies

Total SVES Share $0
Total MLIA Share $675

Presentation booklets copying costs etc.100 copies, 16 pages color, center staple brochure -- $675

Salaries and Wages

Total SVES Share $3,381.60, Fringe $1,343.77
Total In-kind Other $3,040.00
Total MLIA Share $0

We estimate that teachers will spend up to 80 hours working on this project during school hours resulting in an In-kind SVES contribution calculated as follows;
Angela Williams 80 hours @ 20.92 1,673.60; Ins 397.80, Fringe 271.30
Erika Pittman 80 hours @ 21.35 1,708.00; Ins 397.80, Fringe 276.87
We estimate that John K Mercer will spend 80 hours on this project. This time is valued at the rate he received as a school head, 80 Hours/$38/hour -- $3,040.

Travel stipends for conference attendees

Total SVES Share $0
Total MLIA Share = $1,500

3 days, 2 nights MCEL Conference fee, mileage and per diem for 2 attendees $500/person $1,000
1 days, Conference includes fee, mileage and per diem for 2 attendees $250/person $500.

Indirect Costs

Total SVES Share $776.16
Total MLIA Share $0

There are indirect costs associated with this project utilities, insurance, and Internet access. These were calculated based on prior years operating budget, totaled for the year and then divided by the SVES total square feet to give a square foot cost. That cost was then multiplied by the square feet estimated to be occupied by the computers, server, and smart boards. Insurance $11,100; Heat; $12,000; Electric $6,500 Total $29,600 /12,759 Sqft = $2.31/sqft20 computers – 240 sqft; 4 smart boards 64 sqft; new workstations and server 32 sqft. =336 sqft x 2.31 = $776.16

Long Term Funding Plan

At the end of the project, SVES is committed to continue supporting the use of GIS resources throughout its curriculum, maintaining the necessary hardware and software, its educational site license with ESRI, including an ArcGIS online for organizations subscription, through the state's ELA for schools. In addition, the Swan Valley Community Foundation is working to fund the purchase of a five-seat ArcGIS online subscription for community non-profit organizations starting in July of 2014. This approach provides long term resources for both student/teacher authored community maps, and those produced by the community groups involved in this effort. It ensures that the 31+ data layers developed for the Swan Valley though this and earlier grants will remain available and accessible. A number of these layers have unique data. For example, the Swan Valley Fire Service Area, which serves Missoula and Lake County, has 803 GPS locations partially developed for inclusion in the structures layer. These layers are an important resource for the school and community. They are designed to accompany the Swan Valley and Community Profile http://www.co.missoula.mt.us/rural/communitycouncils/SwanValley.htm.

Applicant budget summary

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Category	MLIA Share	Applicant Share	Other Share	Total
a. Personnel	$ - 0 -	$3,381.60	$3,040.00	$6,421.60
a.1 Fringe Benefits	$ - 0 -	$1,343.77	$ - 0 -	$1,343.77
b. Travel	$1,500	$ - 0 -	$ - 0 -	$1,500.00
c. Equipment New Existing -Match	$ - 0 -	$ - 0 - $26,196.00	$ - 0 - $ - 0 -	$ - 0 - $26,196.00
d. Supplies	$675	$ - 0 -	$ - 0 -	$675.00
e. Contractual	$7,500	$ - 0 -	$ - 0 -	$7,500.00
f. Other				
Indirect Costs	$ - 0 -	$776.16	$ - 0 -	$776.16
Totals	$9,675	$31,697.53	$3,040.00	$44,412.53

In this section applications will be evaluated on how well the proposal demonstrates that the project can be completed within the proposed budget, fully justifies all project expenditures, and explains long term funding plans. (100 points total weighted as 20% of the score).

STEP 6 – Statements of Support

N.A in Phase one

If the proposal proposes to support a particular MSDI framework layer(s), applicant must include a letter of support from the framework steward(s). See mandatory criteria # 3.

STEP 7 – Renewable Grant Accountability Narrative

Note: 2013 MLIAC grant accomplishments as of 2/11/13 are described in italics below.

Goal 1. Develop onsite capacity to operate a geographical information system for teaching and community access.

Objectives

a. Main computer server and system build out and upgrades *Complete*
b. Complete software upgrades and installation. *Complete*
c. Complete installation of SVCC data layers *Complete*
d. Final test the system *Complete.*
e. Provide onsite and offsite data access *Complete.*

Goal 2 – Develop capabilities of teachers, and select community members to understand and transmit knowledge about geospatial tools and data.

Objectives

a. Select a core group of up to 10 teachers and community leaders who are able to influence others. They will practice and advocate the use of GIS resources and tools in the school and the Swan Valley Community. *Complete*

b. Provide basic training in fundamental concepts, functions, tools and workflows of GIS and the SVCC data layers and other data sources. *Essentially Complete*.

We held a GIS training course in Missoula in late July. In addition we have had ongoing training sessions including monthly classes, WebEx's and 1-on-1 or small group project support. We have four more monthly meetings scheduled along with additional 1-on-1's and WebExs supporting curriculum and project development and implementation through the rest of the year.

On Tuesday January 15th we held a GIS open house/demonstration at Swan Valley Elementary School – where the students and cohort members shared their projects and knowledge with the broader community. Ken prepared and brought Fieldpapers.org mapping packages with imagery and openstreetmap base and talked about those briefly. He also showed the mapcoop site and the web maps. Each of the cohort gave their summaries to the group. Two student groups had set up "Treasure hunts" using ArcGIS Explorer Online. One was Montana wide one and the other was local to the Swan requiring a lot of local knowledge. Several students showed how they had used

the maps in studies and literature they are reading of Europe, World War II. One student did a Fieldpapers demonstration.

Goal 3 – Complete curriculum development incorporating geospatial reasoning and tools in the school and develop GIS applications to real life community problems.

Objectives

a. Completion of curriculum development and selected community projects supported by 32 hours of training, coaching and individual support.

The program learners have proposed and implemented a number of projects. The ones below are in process.

Mike Speckart, IT consultant at Swan Valley School and Swan Valley Emergency Services. Learning how to install and maintain GIS software on the school network, with the idea in mind of eventually getting a GIS system in place for the Swan Valley Emergency Services. With some support form Ken, Mike set up the ArcView instances on the school computers. He continues to monitor the technology.

Angie Williams, Junior High and assistant supervising teacher at SVES, and EMT Training Coordinator for Swan Valley Emergency Services: Using GIS tools and resources for student community mapping projects, which include documenting and mapping wildlife resources in the Swan Valley. Angela says: "The 5th-8th grade students at Swan Valley School have been using ArcGis throughout the school year. The teachers have integrated maps into different curricular areas such as social studies and reading. For example, the 7th and 8th graders built maps based on their history unit of World War II. Each student studied a different aspect of the war and put significant locations into the map. They also built maps based on books they read that were in different parts of the world. They would add descriptions of each location as it was described in the book. We've also begun fieldwork that involves wildlife tracks and GPS locations. We are going to learn how to put coordinates into a map. Next year we'll continue to expand our use of GIS with the 7th and 8th grade in studying Montana history. We will continue our wildlife tracking fieldwork"

Erica Pittman, 5/6 grade teacher at SVES: Using GIS resources as a learning too, with students creating "Treasure Maps as a learning tool and a way to develop geo-spatial reasoning skills. Erika says: "The 5th & 6th grade has used ArcGis for Social Studies. They've mapped Russia and some European countries, pinpointing important locations and adding information and pictures to the pins. They've also created treasure maps, creating base maps, adding pinned locations, and including questions for the user to answer and find. We will continue to use ArcGis in the 5-6 and 7-8 classrooms. Next year, the 5th & 6th grade will be studying American History Early Years. So we'll continue to build maps, locating & pinning important locations and events."

Steve Lamar, President of the Swan Valley Historical Society: Interested in developing a map with historical points of interest of the Swan Valley. He is tying photos, stories, and other pertinent information to this map. Some of the data include early roads, recent roads, section

lines and numbers, trails, homestead boundary lines, historical structures and points of interest. He says: "By 10/13, my goal is to complete additional field work and transfer all historical points of interest on to the base layer map. By 1/14, my goal is to include additional information for each point of interest. This additional information will include such things as the name of the site, its coordinates, photos, and historical information. By 4/14, my goal is to post a link of this project on our organization's website where the public as well as the local schools could access it to learn more of our area's history. By 6/14, my goal is to make it interactive with the viewing public where additional historical information and photos could be added to enhance the existing information of each individual site."

John Keller, Upper Swan Valley Growth Policy Planning Committee, a committee of the Swan Valley Community Council, and local Realtor. He is compiling a parcel layer for the planning committee. He says about his progress: "We now have accurate and complete Cadastral information for every private land parcel and Conservation Easement in the Swan Valley Study Area. And we now have accurate and complete CAMA data records for every residential dwelling in the Swan Study Area. In the next month or so we will tabulate, map, and visualize where and how growth has occurred over the last 100 years. This will allow us to paint a picture of growth by year or other suitable time period, organized by different characteristic of the parcels/dwellings. His plans for 2014 include: "engaging the community in a discussion about the issue of growth of residential dwellings in the Swan Valley, asking a number of questions: What is a desirable rate of growth for residential dwellings going forward? What is a feasible/sustainable rate of growth for residential dwellings going forward? This includes defining and mapping access issues and natural resource constraints, which could restrict or prohibit growth.

Anne Dahl, Director of the Swan Ecosystem Center and Missoula County Open Space Advisory Board Member: Develop a fire history data layer documenting fire control efforts along with photographs. She says: "In 2012 I used GIS to create the first draft of an interactive fire history map in a learn-as-I-go process. My Fire "History Map for the Swan Valley" is an interactive tool that allows people to easily compare conditions on the land from 1899 – present, using photos and text from the U.S. Geological Survey for the Lewis and Clark forest Reserve by H.B. Ayers (1899), 1934 aerial photography, and photos of recent fires, all overlaid on a fire history map, an ownership grid, and the most current satellite imagery for the valley. Residents can learn about the effects of wildfire over time on their private land, on adjoining public and private properties, and throughout the watershed." She says, "My second project involves similar techniques comparing movements of the Swan River and various tributaries through the same time period. This will give people a sense of stream dynamics. Both projects should help inform land use and growth policy planning by illustrating the range of natural conditions in the Swan Valley.

John K Mercer, Swan Valley Elementary School Board member, Vice president, Swan Valley Fire Service Area Board, President of the Swan Valley Community Foundation and past Co-Chair of the Swan Valley Planning Committee. Interested in working with the biophysical data layers. John helped develop the habitat type data layer for the community maps. He says, "In addition to writing the outreach materials, I'll continue to work with the bio physical data layers and John Keller using information about elevation, slope, vegetation, soils, habitat type, etc. to

help identify land parcel suitability for development or conservation purposes. I am very interested in determining which land types currently support the most human development in the Swan Valley."

Joan McGuire, landscape architect, has developed a historical data layer showing all of the homesteads in the Swan Valley. She says: "I will work on completing the metadata for the homesteads over the next year. She is also working with Scott Eggeman, Private Lands Conservation Coordinator for SEC and Allan Branine, Unit Fire Supervisor, Swan River State Forest on developing a roads data layer. This involves Ken Wall, the cohort, students and the planning committee on developing an accurate current roads data layer that combines data from USFS, DNRC, the Counties and Plum Creek. Joan hosted a roads open house in the fall that was well attended at the community hall. Scott assisted with compiling the road attributes from the many roads layers for the Swan. Melanie Parker and Scott obtained the USFS road layer and Scott sent the USFS layer, to Ken Wall who is adding it to the feature service.

One result of this road group's work is that an interactive roads layer has been developed to collect online input from local residents and others familiar with roads in the Swan Valley. Ken Wall posted a map service with a comment feature service layer on top of all the base layer options, and made calls to Plum Creek to get them to approve of the Swan group using their data. The group basically tried to assess the differences between all the different transportation data sets. The web map was published before the open house. The students are listed as mentors to assist community members who want to learn how to access the remaining road maps in the web service." Joan says: "I expect that people well be motivated to get on ArcGIS Online this summer and look at the roads in their neighborhoods as the planning committee begins to present neighbor hood maps."

Goal 4 – Provide a model prototype process and make presentations on how small rural communities can use their local schools to develop better GIS resources, access and uses within the community.

Objectives

a. Document the project and its steps through a journal using monthly entries

We are keeping a journal of the projects and participants are submitting regular updates. The participant statements quoted above came from their updates.

b. Write: "The small rural School's Guide for developing school and community GIS resources." Develop a video webinar/podcast to accompany the booklet.

We have developed an outline for both the booklet and the podcast. Writing will begin in March.

c. Present the information at 2 conferences; submit an article to the Montana School Board Association and the Montana Science Teacher's Association.

We are still researching appropriate conferences for this year on education.

The following timeline applies to Phase one of the project: *(Italics denote accomplishments as of February 11, 2013)*

Task	Task Description	Start Date	Completion Date
1	Document the project and its progress through a journal using monthly entries. ***Ongoing***	6/1/12	6/30/13
2	Select a core group of up to 10 teachers and community members. ***Complete***	6/1/12	6/30/12
3	Build out server, two additional workstations, upgrade ram for student workstations and install all hardware ***Complete***	7/1/12	7/30/12
4	Acquire all software and install on machines ***Complete***	7/1/12	1/10/13
5	Acquire and load SVCC data layers ***Complete.***	7/15/12	8/13/12
6	Final test the system, software, data integrity and connectivity ***Complete.***	8/6/12	8/27/12
7	Provide onsite data access to teachers and students ***Complete***.	8/6/12	8/30/12
8	Provide basic training in fundamental concepts, functions, tools and workflows of GIS and the SVCC data layers and other data sources. ***In process.*** *See narrative above for details.*	7/15/12	10/15/12
9	Provide offsite data access to the community ***Essentially complete***. *The public can access the SVCC data layers using ArcGIS online at* www.mapcoop.com.	8/30/12	12/30/12
10	Completion of curriculum development and selected community projects supported by 32 hours of training, coaching and individual support. ***In Process***. *See narrative above.*	10/16/12	Expected 5/15/12
11	Write "The Small Rural School's Guide for Developing School and Community GIS Resources." Develop a video webinar/podcast to accompany the booklet. ***In preparation***. *(In addition to keeping a rough journal with updates from program learners, we are developing an outline for the booklet and podcast.)*	4/15/12	Expected 6/30/13
12	Present the information at 2 conferences, submit an article to the Montana School Board Association and the Montana Science Teachers Association ***In preparation***.	4/15/12	Expected 6/30/13

Current Status of 2013 Budget, Compensation and Payment

MLIA Grant – BudgetSummary 2/7/13

Category	Budget	Expended	Balance
Personnel	$3,000.00	$1,500.04	$1,499.96
Fringe **Benefits**	$489.00	$246.82	$242.18
Travel	$3,600.00	$2,000.00	$1,600.00
Supplies	$675.00		$675.00
Equipment			
Server	$2,300.00	$2,300.00	$-0
Workstation	$1,300.00	$1,300.00	$-0
Workstation	$1,000.00	$1,000.00	$-0
RAM	$1,080.00	$1,080.00	$-0
Software	$1,000.00	$553.00	$447.00
Licenses	$1,012.50	$519.00	$493.50
Total	**$7,692.50**	$6,752.00	$940.50
Contractual			
Consulting Pro.services	$3,000.00	$500.00	$2,500.00
ESRI Course	$15,150.00	$12,087.30	$3,062.70
Follow up	$1,200.00		$1,200.00
Support	$2,400.00	$-	$2,400.00
Total	**$21,750.00**	$12,587.30	$9,162.70
TOTALS	**$37,206.50**	**$23,086.16**	**$14,120.34**

STEP 8 – Sign the Application

Authorizing Statement
I hereby certify that the information and all statements in this application are true, complete and accurate to the best of my knowledge and that the project or activity complies with all applicable state, local and federal laws and regulations.
I further certify that this project will comply with applicable statutory and regulatory standards.
I further certify that I am (by my signature) authorized to enter into a binding agreement with the Montana State Library to obtain a grant if this application receives approval.

___John K Mercer_____
Name (print or type)

__Board Trustee_____
Title (print or type

_____

Signature and Title of Authorized Representative(s) of Public Entity Applicant

Date__2/15/13