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): 2/15/12   **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

STEP 2 – Relevance and Public Benefit

The Swan Valley Elementary School prepares children for life in the 21st century. This means that we must teach them how to use technology that didn't exist when we were children. For example in 1998, many students and adults in the valley had limited exposure to computer technology and the Internet. The community needed access to the technology and to learn how to use it. SVES successfully addressed this through a grant from the Liz Claiborne-Art Ortenburg Foundation. We built technical capacity and provided access. We increased technical capability and provided learning opportunities for our students and adults. Computer and technology use in the Swan Valley began to increase as the community discovered the benefits it offered. The seeds planted through that effort continue bearing fruit. Today, all of our students have computers in their home connected to the Internet. And their parents use them daily. Many families have a second computer just for the children. Our fifth to eight grade students do most of their homework with Google Tools, and use web based technology everyday for research, writing, communication and organizing their work.

In 2012, we face another technology challenge. There are at least six different federal, state and county agencies and a number of private national organizations with well-developed GIS programs, and multiple data layers for the Swan. These organizations and agencies are heavily using and relying on GIS tools, data and modeling to develop and implement resource use and management policy decisions in the Swan Valley. The school and the community, has limited capability and capacity to access and use these GIS data layers. It is difficult to use the data for teaching, for our local planning efforts, for local economic SWOT analysis, and for private land management. Nor can we offer more accurate local information to sometimes glaring data errors. For example our Fire Service Area wants to update the structures and road layers with accurate gps data points and addresses but has no way to accomplish this.

This project will build technical capacity and capability, bringing spatial reasoning technology and information into the daily life of our students and community. This project leverages 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. This project meets the goal of the MLIA by promoting development and dissemination of those data layers on the natural and artificial characteristics of the Swan Valley. This project meets the objectives B2, B2.1 and B2.2 of the Montana Land Information Act. It increases the engagement of our children in spatial learning and introduces them to the vast amount of information that is available through GIS technology. Our community will become better prepared as consumers of geospatial data. This promotes more active participation in conversations about making and implementing policy about resource use and management in the Swan Valley. Becoming literate in geospatial technology and information will help us present data about our community in ways that are relevant to the decision making process. GIS tools and resources will be used in a variety of innovative ways by businesses, and community groups. Finally, we will document and share how we do this as a pilot project so that other communities can benefit as well.

STEP 3 – Scope of Work Narrative

A discussion of phase two provides context for phase one. Phase two will use the increased capacity and capability developed in phase one to address a number of community and regional issues. For instance, the Swan Valley Community Council (SVCC) is an elected advisory board to the Missoula County Commissioners. It is interested in developing greater interactive community mapping capacity for its two subcommittees. The Swan Valley Growth Policy subcommittee needs GIS resources in its ongoing community visioning process and in phase two, it will develop GIS scenarios for its land use planning efforts. The Swan Valley Economic Development Committee is interested in accessing GIS tools to help assess economic Strengths, Opportunities, Weaknesses, and Threats (SWOT) for the Swan Valley. The Swan Valley Community Foundation is interested in the use of the GIS data to help design a planned legacy gift campaign. 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. It works with Swan Valley Emergency Services to provide 911 emergency first response for the Valley. The SVFSA Board supports this proposal and is interested in working with GIS departments in Missoula and Lake Counties to update the structures and road layers with accurate GPS locations. It currently lacks GIS resources to accomplish this. In phase 2, the SVFSA will join the SVES as partner to acquire those resources.

A. Goals and Objectives

This two-year project will be implemented in two phases and this proposal requests funding for phase one. Upon its successful completion we will reapply for funding for phase two. Goals are described only for phase one.

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

Accomplishing this goal requires upgrades and additions to our current computer systems. SVES currently has 20 computers linked through an Ethernet network to a server and to the Internet with a high speed DSL through Blackfoot Co-op. In addition, we recently added four smart boards, which are linked to each teacher's computer. To develop the capacity to operate a GIS using ESRI software we need to increase the RAM in our student systems, build two additional workstations and add a new server. We need to acquire ESRI ArcGIS Desktop 10 software, ESRI ArcGIS for Server, ArcGis Explorer and MS Server 2008 and 2008 Server Client Access

Licenses. The server uses a RAID for data redundancy and security. Additionally, it will be backed up monthly on a third stand-alone drive and stored off site.

We have a set of 31 SVCC data layers developed by GeoData Services Inc. for the Swan Valley Community Council. These layers are currently stored temporarily as a courtesy by GeoData, Services Inc. at http://geodata.squarespace.com/svcc-web-maps/ These layers are an important resource for the school and community. They are designed to accompany the Swan Valley Growth Planning Committee's Swan Valley and Community Profile and support the community envisioning process http://www.co.missoula.mt.us/rural/communitycouncils/SwanValley.htm. They were produced through a grant from MT FWP sponsored by Missoula Rural Initiatives and provided to the community council.

A number of these layers have unique data. An important purpose of this grant is to make these layers available to SVCC, the planning committee, the students, the community, and agencies. These data layers also form the basis for future work with community and county organizations in Phase Two. 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. The Service Area would like to update the structures data layer. Doug Burreson of Missoula County GIS is interested in this data once it is developed. That data would flow to Missoula County and then on to the MSDI framework data layers. All other unique data layers would be registered with the Montana GIS Portal.

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

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

This goal requires that we develop a core group of teachers and influential community members who become our first GIS learners and ambassadors of geospatial reasoning and information systems. These individuals need instruction in fundamental GIS concepts, how and when to use GIS tools, and workflow design. They will receive an introduction to the SVCC data layers, and how to use them in the training sessions. Training will be a combination of in-class course work as designed by ESRI, and additional instruction via online courses, WebEx, group and individual coaching. In addition to training, we will provide each learner with a copy of ArcGIS for Home Use. Training services, coaching, and project design oversight will be provided by Ken Wall of GeoData Services, Inc. and delivered in Missoula at the School of Forestry GIS training lab and/or onsite at SVES.

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

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

This goal requires that learners receive coaching and directed support on project design and implementation. During this time, teachers will develop GIS lesson plans and resources. For grades 5-8 they will develop lesson plans in four subject areas using Spatial Reasoning and GIS resources as adjunct teaching tools supporting the school's curriculum. For grades K-4, they will develop general lesson plans and activities as adjunct teaching tools. Community learners will either help the teachers in curriculum development or will use GIS to address a specific community problem such as updating the structures layer for the Fire Service Area data points, or completing data layers or generating maps for the planning committee to display important information relevant to community concerns and issues generated through the visioning process.

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

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.

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 are alike in that they have small rural elementary schools with 50 or less students. They stand to benefit from developing GIS knowledge and tools in many of the ways we do in the Swan Valley.

Objectives
a. Document the project and its steps through a journal using monthly entries
b. Write: "The small rural School's Guide for developing school and community GIS resources." Develop a video webinar/podcast to accompany the booklet.
c. Present the information at 2 conferences, submit an article to the Montana School Board Association and the Montana Science Teacher's Association.

B: Tasks and project schedule

Task	Task Description	Start Date	Complete Date
1	Document the project and its progress through a journal using monthly entries.	6/1/12	6/30/13
2	Select a core group of up to 10 teachers and community members.	6/1/12	6/30/12
3	Build out server, two additional workstations, upgrade ram for student workstations and install all hardware	7/1/12	7/30/12
4	Acquire all software and install on machines	7/1/12	8/6/12
5	Acquire and load SVCC data layers	7/15/12	8/13/12
6	Final test the system, software, data integrity and connectivity	8/6/12	8/27/12
7	Provide onsite data access to teachers and students	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.	7/15/12	10/15/12
9	Provide offsite data access to the community	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.	10/16/12	4/15/12
11	Write "The small rural School's Guide for developing school and community GIS resources." Develop a video webinar/podcast to accompany the booklet.	4/15/12	6/30/12
12	Present the information at 2 conferences, submit an article to the Montana School Board Association and the Montana Science Teacher's Association	4/15/12	6/30/12

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 through out 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 provides excellent K-8 educational services, activities and experiences as a small rural school serving 32 students.

Melanie Parker is Chair of the Swan Valley Elementary School Board, and Executive Director of Northwest Connections. She has 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. Melanie will be advising on this project.

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 co-chair of the Swan Valley Growth Policy Committee, and 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 champion and oversee the implementation of this project so that it meets its goals and objectives.

Karen Anderson is the School Board Clerk and Secretary and has 28 years experience managing school accounts, and finances including grants. She will be responsible for accounting and tracking resources used in this project.

Mike Speckert, has owned and managed two computer stores and has 20 years experience, designing, building, managing and maintaining computer systems, including networks, and data storage. Mike volunteers as the technical consultant for the school. Mike will build the new server and workstations, install additional ram and software and oversee the system.

Angela Williams has been teaching grades 4th-8th for 4 1/2 years. She currently teaches Junior High and Special Education at SVES. After attending the Google Institute through MSU 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 and is currently enrolled in a Master's program for Education Technology. She intends to attend the Geoscience Alliance conference in March at Salish Kootenai College.

Erica Pitman currently teaches grades 5-6. She has a bachelors in elementary education and has been a classroom teacher for 5 years at SVES. She has participated in Blackfoot Educational Technology Workshops for 2 years, and is very familiar with and regularly uses the smart board and Google Tools in her classroom. She will be taking an online Google Tools course for university credit this June.

Susan Bracha currently teaches K-1. She graduated from Eastern Montana College in 1993 with a BS in elementary education/ early childhood endorsement. She has 13 years experience teaching K-8 and has been at SVES for 5 years. She is a member of Montana Council for Computers and Technology for Education (MCCE), and has attended Smart board training workshops.

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 is 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 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 be advising us on curriculum development and data sets for lesson plans.

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 maintains an ESRI Certified Trainer. GeoData developed the SVCC map layers and designed the information to be readily accessible through web-based tools. GeoData Services Inc. and Ken Wall will be providing training, technical support, consulting and guidance to ensure that the design and implementation of the project meet the goals and objectives. In addition he will ensure that data layers Montana Portal Metadata Standards.

STEP 5 – Budget Justification Narrative and Tables

Hardware/software
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.

Total SVES in kind for equipment = $26,196
Total cost of purchased equipment/software = $7,692.50 MLIA Share Equipment = $7,692.50

Server: ATX Tower, ASUSKCA-D8 Dual CPU Server, Opteron Server Six Core Processor, 2 – 2TB WD SATAIII 6GB/s HD's RAID, 16 GB (2x8GB) DDR3 Server Memory, MS Server 2008 Standard Edition -- $2,300

Workstation 1
GB FM1 Motherboard w/SATA III and USB 3.0, AMD FM1 3.0 Ghz Quad Core w/Radeon HD 6550D Video, 8 GB DDR3, 1 TB WD 7200 rpm 6 GB/s SATAIII, Case with front USB, DVD/CDRW, 27" LCD monitor, keyboard, mouse and speakers. Windows-7 64bit pro. -- $1,300

Workstation 2
GB FM1 Motherboard w/SATA III and USB 3.0, AMD FM1 3.0 Ghz Quad Core w/Radeon HD 6550D Video, 8 GB DDR3, 500 GB WD 7200 rpm 6 GB/s SATAIII, Case with front USB, DVD/CDRW, 19" LCD monitor, keyboard, mouse and speakers. Windows-7 64bit pro. -- $1,000

Additional RAM to bring student workstations up to 2 GB @ $60 per station 18x 60 -- $1,080

Software:
1 Copy of ArcGIS for Server, 6 copies of ArcGIS Desktop 10, 20 copies ArcGIS explorer Desktop provided through the GIS 4 Montana initiative is a State-wide K-12 license for ArcGIS, made available free of charge to Montana's public schools through an agreement between the SpatialSci Project, The University of Montana, Geo Essentials and ESRI. -- $0
10 copies of ArcGIS for Home Use @ 100 x 10 -- $1,000
30 2008 MS Server Client Access Licenses -- $1012.50

Contracted Professional Services $21,750 Total MLIA Share = $21,750
All professional Services will be contracted with GeoData Services, Inc.
We were able to negotiate a reduction in hourly rate from $125/hour to $75/hour

Consulting
Trouble shoot ArcGIS software installation; load SVCC data layers 8hrs; test the system, software, data integrity and connectivity 8hrs; assist in configuring system to provide onsite and offsite data 8hrs; GIS tech support and problem solving 8hrs; review presentation materials 8 hrs. 40 hours consulting services @ $75/hour -- $3,000

Professional Services: training
24 hour ESRI Course (ID 50121743_10.x) Desktop tools and functionality $1,515/student x 10 -- $15, 150
Introductory course follow up, training, webEx and project design support 16 hours @ 75/hour -- $1,200
Project support training coaching and oversight 32 hours @ 75/hour $2,400
Total Professional Services $21,750

Supplies for presentation booklets coping costs etc.
100 copies, 16 pages color, center staple brochure -- $675 MLIA Share = $675

Salaries and Wages

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 @ 19.16   1533.13; Ins 397.80, Fringe 250.36
Erika Pittman   80 hours @ 19.57   1565.53; Ins 397.80 Fringe 255.65
Susan Bracha   80 hours @ 22.81   1824.80; Ins 397.80 Fringe 297.98
SVES Share $4923.46, Insurance $1,193.4 Fringe $803.99

In addition, teachers will receive a training stipend for their efforts outside of school hours. That stipend is $1,000 per teacher -- $3000 Fringe $489.00

Total   MLIA Share = $3000 Salary; $489 Fringe

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 He is donating his time as an in kind contribution, other share.

Travel stipends for attendees

3 days, 2 nights Missoula, includes mileage for 10 attendees $300person -- $3,000
Presentation 2 days, 1 night 2 presenters include mileage & conference fee $600

MLIA Share = $3600

There are indirect costs associated with this project utilities, insurance, and internet access. These were calculated based on this years operating budget, totaled for the year and then divided by the The SVES total square feet to give a square foot cost. That cost was then multiplied buy 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/sqft
 20 computers – 240 sqft,; 4 smart boards 64 sqft; new work stations and server 32 sqft.
 =336 sqft x 2.31 = $776.16 indirect costs

SVES Share indirect costs 776.16

Applicant budget summary

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Category	MLIA Share	Applicant Share	Other Share	Total
a. Personnel	$3,000	4,923.46	$3,000	10,923.46
a.1 Fringe Benefits	$489	$1,997.39	0	$2486.39
b. Travel	$3,600	0		$3,600
c. Equipment New Existing -Match	$7,692.50 0	0 $26,196	0 0	$7,692.50 $26,196
d. Supplies	$675	0	0	$675
e. Contractual	$21,750	0		$21,750
f. Other				
Indirect Costs	0	$776.16		776.16
Totals	37, 206.5	$33,893	$3,000	$74,099

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

N.A.

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__2/15/12_____