

Preliminary Proposal: June 22, 2010

Project Title: ***The Small Museum Enhancement Program***

Solicitation: NSF 10565-ISE

Principle Investigator: David V. Black

This proposal is for a Pathways project to preserve the history of rural mining towns, including the mining and refining processes used, through enhancing the exhibits and collections, online presence and marketing, and community involvement of local museums.

***Project Rationale and Need:***

Rural mining towns in the western United States are in danger of losing their history and heritage. Time and the elements are gradually erasing the historic structures of former mining boom towns; buildings, headframes, mills, smelters, railroad grades, residences, businesses, and artifacts such as ore cars, skips, hoists, drills, etc. are rusting away or being stolen by collectors or destroyed by vandals. In many of these towns, where any population remains, small museums have been created by local historical societies to try to preserve whatever history can be saved, but these museums are almost always understaffed, underfunded, inadequately housed and displayed, make little use of modern audio video technologies, and are poorly advertised or visited. Many of the volunteers who run these museums are elderly; their tours consist of personal recollections and stories of the items on display, since most of the items are poorly documented or explained (signage in these museums is frequently faded and hard to read). Their stories have never been properly documented, and when they die, their expertise will be lost.

The Tintic Mining Museum in Eureka, Utah is a pertinent example of the challenges faced by a small-town museum and a community in trying to preserve local history. In 1869, rich silver, lead, gold, copper, and zinc ore was discovered in a nearby gulch and within a few years, thousands of prospectors and mining companies were scouring the nearby canyons for any sign of minerals. The Tintic District, named after a local Paiute chief who lived in the area, became the third largest mineral producer in Utah and in some years led the nation in silver production. The town of Eureka sprang up as the commercial and cultural center of the district, and had a population of 4000 at its peak in the 1920s. Rich deposits of silver ore were discovered in five mineral zones, including the richest stope that was located right under the middle of town. Soon, tailings piles and mill wastes filled surrounding gullies and encroached into the town itself, with large headframes and hoist plants, as well as reduction mills, surrounding a busy commercial district. The Great Depression and groundwater flooding the mines started a long decline in the 1930s, with periodic revivals as new ore bodies were discovered several miles east of town. Mining has continued sporadically to the present, but all of the mines directly surrounding Eureka have been closed since the 1950s. Population is now around 800; Eureka is not yet a ghost town. In 1979, the area was placed on the National Register of Historic Places, and a local Tintic Historical Society was formed to set up a museum and to preserve historic artifacts and documents. The upper floor of the old City Hall building and the former railroad depot building have been converted into a museum, which today is open only by appointment. The museum is not advertised and does not have a website; the Utah Museum Association has a contact number, and that is its only online presence except for the blog entries of a few visitors.

The town's historic structures are disappearing. Because of the close proximity of the mine dumps to residences, water and wind erosion have carried lead, arsenic, and other contaminants into the topsoil and drinking water, and the town was placed on the EPA Superfund list. For the last ten years, contractors have been replacing the topsoil, covering up the mine dumps with limestone rip rap, and redirecting the runoff patterns to mitigate the contamination. Although this is necessary to preserve health in the community, it has changed the historic appearance of the town and has destroyed many structures as well. Of the Big Four headframes that could be seen along the Gemini ore body just west of town ten years ago, only the Bullion Beck and Champion headframe still stands. Several years ago, vibration from the construction trucks and bulldozers weakened the gallows frame at the Gemini mine to where the sheave wheels broke through the frame and crashed into the shaft below. The rest of the frame soon followed. The headframes at the Eureka Hill and Centennial Eureka mines have suffered similar fates. Several historic buildings along Main Street have collapsed, and others are in danger of being torn down for safety reasons.

In addition to the EPA reclamation efforts, the Utah State Division of Oil, Gas, and Mining has initiated an aggressive campaign of closing abandoned mine entrances throughout the state, including those in the Tintic District. Each year, someone without experience or proper equipment gets hurt or killed trying to explore one of these mines, and public outcry has led the state to systematically close these mines off, either by placing locked gates over the entrances or in many cases by simply using a backhoe to fill up the entrance. An archeologist has been hired to document the surface features around the mines, and reports are prepared before the sites are reclaimed, but these reports have not been made public due to fears of looting or vandalism. These mines often have underground structures as well, such as winches, ore cars, square-set timbers, or other historic artifacts that are not being documented before the mines are closed, except by dedicated amateur historians that don't have the funds or resources to reach all of the mines in time.

Often the contractors hired to close these mines are careless or wantonly destructive; there is no economic incentive to preserve structures as that takes time and money away from the contractor. The Bullion Beck and Champion headframe, one of the largest and best preserved in the state, was almost destroyed when a contractor started work to close off the shaft ahead of schedule; they used a backhoe to knock down the wooden skip guides so they could place a grate over the shaft entrance, but instead of carefully removing the guides they simply let the guides fall into the shaft (since that was the cheapest way to get rid of them). When the skip guides got stuck at the top of the shaft, the contractor tried to remove them by setting them on fire. This caused damage to the underlying beams supporting the main frame and almost caused it to collapse. A great deal of money was spent fixing the damage and placing a much larger grate over the shaft than originally planned.

The community of Eureka is proud of its mining heritage and remains optimistic about its future, yet its history is being deliberately erased. There is a great need to document this history before it is entirely gone. The same need exists in many other small mining towns throughout the west, where understaffed and underfunded museums struggle to tell the story of the mines in their areas.

### ***Project Design:***

To fulfill the above needs, the Small Museum Enhancement Program has been established to bring together local experts such as historians, geologists, community members, and mine owners with experts on museum displays, media professionals, and online marketing

firms in order to enhance the online presence of the museums and to preserve and enhance their exhibits and collections. Local community members and high school students will also participate to provide oral histories and additional artifacts for the museums. This is a Pathways project, and as such will act as a feasibility study for programs with other museums throughout the West. This will be done through the following activities:

1. An initial planning meeting will be held with museum officials and historical society members to assess the needs of the museum. These needs may include improving existing displays, such as repairing display cases, installing new lighting, creating new signs, making risers for the cases to better display artifacts and mineral samples, etc. It may involve preserving the collections digitally by scanning photos and documents and by photographing and videotaping artifacts. It may also involve designing and building new exhibits (for example, in the Tintic museum, there is no mention of the EPA reclamation effort, which is a significant historical event for the town and should be shown).
2. From this meeting, a detailed action plan will be developed and project funds used to bring in carpenters and other contractors, museum consultants, and media professionals as consultants to design and build improvements to the museum. Where possible, we will involve Career and Technical Education students from local high schools to do the labor.
3. The museum's website will be expanded and made more user friendly and informative. The website will be linked in to social networking/Web 2.0 sites such as Flickr, Facebook, Twitter, Scribd, GoogleEarth, and more to improve its visibility, with all of these efforts tied together to create an integrated online marketing presence. A search engine optimization (SEO) firm will be hired to improve the museum's search ranking in Google.
4. Students from the local high school will organize a community involvement night, where former miners and community members will be invited to bring in their memorabilia, including photos, documents, etc. The students will scan or photograph the artifacts, then interview the attendees on camera to record their oral histories of the town and its mines.
5. Videos from inside the mines will be provided by Mojave Underground, a group of about 300 amateur mining enthusiasts. They are experienced underground explorers who use proper safety equipment to document and photograph mines.
6. Students at Walden School, where the Principle Investigator teaches, will work with the museum staff through a wiki website to research the town's history and develop an historical outline. They will then plan a date to visit the town, interview the museum expert or historian, and videotape the museum and local sites while the museum staff explain the exhibits.
7. All of this video footage, from experts at the museum, historians, mine personnel, Mojave Underground, and the community will be edited together with photos into a series of video episodes of about 15 minutes length. This editing will be completed by the video production and chemistry classes at Walden School. These videos will be uploaded to our project blog and to YouTube, iTunes, Vimeo, and other video aggregate Internet sites. A short four-minute overview video will also be created, which will be placed on the museum website's home page and used as an introduction to the museum.
8. Depending on the needs of the museum, we may also edit the videos into a point-by-point video tour, with footage of each part of the museum and additional comments by docents and community members, along with photos of exterior sites. These short videos will be uploaded to iPads and used for self-directed walking tours of

the museum or for virtual tours online. At the very least, these videos will be placed onto playable DVDs that can be shown at the museum or even sold as a fundraiser in the museum store and online.

9. Museum staff will be provided with audio video equipment and trained on how to use it, such as how to upload videos to the iPad from iTunes online. They will also be trained how to set up and maintain a museum blog, how to create .pdf files from their documents, and how to upload them to their blogs and to Scribd. Where there is need and interest, they will be trained how to scan and clean up photos and documents.

The exact nature of the enhancements we will organize for each museum will depend on the needs of the museum and its staff. Some museums may need to have their collections digitized, others may have already accomplished this. Some may need only a few improvements to their websites, such as adding the final videos, whereas some don't have websites at all. Some may need only new signs and better lighting for their displays, others may need major structural changes to enlarge or stabilize threatened exhibits. Our goal is to create a coalition of organizations and individuals; of experts, community members, and students that is flexible and capable of changing to meet the needs of the museums. Because of the intensive nature of this effort, we will work with two museums each year for a total of four museums over the two years of the project. We will begin with museums in Utah but expand to Nevada and Colorado if needed for the second year.

#### ***Project Audiences:***

Our primary audience is the visitors that tour the museum, and we will assess their reasons for visiting, how they heard about the museum, and their level of satisfaction with the exhibits (see below). Our secondary audience is those that visit the museums' websites and blogs. We will collect site visitation statistics and collect online questionnaires to assess the effectiveness of our online presence. Our third audience is the participating high school students at Walden School and local high schools. We will assess their attitudes and knowledge of STEM careers before and after their participation.

#### ***Expected Outcomes and Assessment:***

Our goals are to improve the number of visitors to these small museums and to enhance their experience in the museum. We also expect to increase the number of visitors to each museum's website/blog and to allow virtual visits online for people who can't visit physically through the video tours we create. To assess these impacts, we will provide questionnaires for all visitors to the museums for a three month period prior to our making any enhancements, in order to measure a baseline of visitor numbers and satisfaction. Once the enhancements are made, the same questionnaires will be given to visitors during the same three-month period in the following years. Responses before and after the changes will be analyzed. We will also compare visitors who use the iPad self-directed tours versus those who do not use them and look at overall knowledge and attitude changes. Internet usage statistics will be collected and compared from before and after enhancements, including number of daily visitors to the website and blog, what search terms they use to find it, how many click-throughs to other pages they make, and their video viewing preferences. Using the questionnaires, we will also see what factors are leading them to visit the museum and the impact the websites and blogs have on their decision to attend. We will also conduct before and after questionnaires of the high school students involved in the project regarding their attitudes and intentions for STEM careers. In addition, we will gather anecdotal data, such as comments by museum visitors and participating students

and suggestions for further enhancements. All of these questionnaires, comments, and Internet usage statistics will be evaluated to determine the overall efficacy of the project, both positive and negative, and its strategic implications to future projects and to Informal Science Education as a whole.

### ***Broader Impacts:***

Beyond aiding individual museums to improve their exhibits and enhance visitor satisfaction, the broader impact of this project will be to demonstrate and model how a coalition of collaborating groups that include professional educators, high school students, historians, museum staff, mining enthusiasts, community members, and professional contractors and consultants can create a grass-roots effort to preserve mining history, and how they can succeed in the face of great challenges. This coalition will act as a bridge to bring together the talents and skills of many groups, such as the creative video production students of Walden School with the knowledge of local students. It will provide a channel and example for the future efforts of other museums. It will also test the feasibility of marketing small museums using Web 2.0 tools, and of using iPads and video technology to document and enhance museum tours.

### ***Intellectual Merit:***

Involving high school students in this project is based on educational theory and experience that students learn best when they are actively engaged in real-world projects that require self-directed research and professional-quality results. When students create their own educational content that will be used by teachers and students in other classes, they are much more engaged and motivated knowing their efforts will be useful for others; they engage in learning when they see the learning as being meaningful. To upgrade an old saying: Feed a man a fish, and you feed him for a day; teach a man how to fish and you feed him for a lifetime; train a man how to teach others how to fish, and you feed a village forever. By training students how to create educational content and teach others, they become fully invested in science education. Collaboration with students in other schools and with science and history professionals will help get them excited about STEM careers. Through this project, they will also have the opportunity to conduct real science as they design, collect, and analyze the results of the questionnaires.

Another merit of this project is its flexibility; instead of having a one-size-fits all program, we will assess the needs of the participating museums and meet those needs through a multi-pronged method that involves physical improvements, community engagement, and online marketing. This will help use have agility in changing our approach as needs change and opportunities arise.

A final result of this project will be to provide preliminary data on the usefulness of iPads with videos for self-directed museum tours. The iPad is a very new device and has advantages over the smaller iPod in that the videos and other resources can be larger. They can also include Keynote presentations, .pdf documents, and other resources for a museum visitor. This Pathways project will gain statistical and anecdotal evidence of how iPads can be integrated into the tours of even small museums and can enhance the visitor's experience.

### ***Project Management:***

The collaborating entities in this project consist of the Principle Investigator, the students at Walden School, the museum staff, community members including local high school students, and contractors and consultants. David Black, the Principle Investigator, has twenty years' experience as a high school and college science and media design teacher. As

a teacher at Walden School, a small charter school in Provo, Utah, he teaches chemistry, astronomy, and computer applications and multimedia classes. He has produced professional videos for business clients as well as a two-hour documentary on the history of AM radio for KUED, Salt Lake City's PBS station. His ongoing ***Elements Unearthed*** project is the nucleus of this program, and he was chosen as a research fellow at the Chemical Heritage Foundation in Philadelphia by the Société de Chimie Industrielle for the summer of 2009, where he collected photos of rare books on the history of atomic theory, alchemy, and mining technology for this project.

Walden School is a Montessori high school that believes in expeditionary learning; that is, to get the students out of the classroom into the field and working on projects that allow them to create their own self-directed learning experiences. The chemistry and video production classes will direct the videotaping and editing of the interviews and tours. David Black will assure that the videos are of professional quality and will conduct final video editing during the summer after each school year. David will also act as the coordinator and communication center for the project.

The museum staff will provide expertise, help plan improvements, and then implement these improvements. They will be interviewed and videotaped while giving their tours in order to preserve their knowledge of the exhibits. They will also administer the questionnaires to visitors. The PI will collect the questionnaires and work with an evaluation/assessment firm to analyze the results.

Members of the community will get involved by attending a History Night organized and hosted by students at the local high school. Walden School students will work with the local students to plan and set up the evening, and will film, scan, photograph, and catalog the artifacts that community members bring. Local high school shop classes will also help work with contractors and designers to improve the displays of the museum and design new exhibits, including creating new labels and signs.

Finally, consultants including carpenters and other contractors, media design professionals such as search engine optimization and web design firms, video editing professionals, and the Mojave Underground will be hired to provide design plans, construction work, printing, publicity materials, website design and optimization, video production, and underground mine exploration.

Oversight of this program will be provided by an Advisory Committee made up of the PI, staff from the museum and local historical society, science educators at Brigham Young University and Utah Valley University, and science professionals from local businesses who have volunteered through the National Lab Day program. We will also work with the Utah Museum Association, the Utah Mining Association, the National Energy Foundation, and the Utah Education Network to create publicity and lesson materials for teachers and the public. During the second year, organizations in Nevada and Colorado will also become involved.