

Improving Access to Habitat, Water Quality and Watershed Information with the Sacramento Watershed Web Catalog

A Response to the Consolidated Request for Concept Proposals for the Watershed and Non-point Source Pollution Control Programs

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In coordination with: Dawit Zeleke, TNC Sacramento River Office
For consideration by: Chico State University to be the lead organization

A. Summary:

Chico State would be the lead agency for an on-line metadata catalog that will improve everyone's access to environmentally important information in the Sacramento Watershed. This catalog (or set of catalogs) will be incorporated into the State Resources Agency's CERES catalog system for long term archival purposes and to allow greater usefulness across the state. It will be programmed using open source software developed by CERES (<http://gis.ca.gov/catalog/>), UC Davis' CA Spatial Information Library (<http://casil.ucdavis.edu/>), the Bay Delta Consortium (<http://www.baydeltaconsortium.org/>) and other projects and is expected to be more sophisticated than, though similar to TNC's Monitoring and Research Database for the Sacramento River (<http://www.sacramentoriverportal.org/metadata>). Ultimately this project could become similar to what the Bay Delta Consortium hopes to be, but for the Sacramento River watershed.

Any Chico State department that has information important to water quality, water supply, habitat restoration, or watershed protection would receive funds and trained interns to catalog the material that they have and know of. Trained student interns should be made available to help catalog material in offices and agency libraries throughout the valley. These could include the libraries and file cabinets of NRCS, RCDs, Co-op Extension, DWR, CVRWQCB, counties and cities, water and special districts, DFG, USFWS, USACE, USBR and more.

With the help of Chico State's library, significant progress should be made on the keyword and place name/location thesauri that will be important to the catalog. By working closely with CERES and the Bay Delta Consortium on similar projects, this Web Catalog can both benefit from these other efforts and help advance work for others across the state.

With the help of the Chico State computer sciences department, numerous improvements can be made to the open source software that will benefit other campuses and watersheds around the state. Open source software platforms are well organized for collaborative projects.

B. How this Project Meets Proposal Guidelines

This two-year project can help every environmental protection effort and water quality problem in the Sacramento Valley and watershed that has been identified in an existing watershed plan, the State Water Resources Control Board and Regional Water Quality Control Board plans, and CALFED's Watershed Program Plan. Better access to information saves resources and time, improves analysis, and increases public trust. Being able to easily find reports, datasets, GIS layers, photographs, research papers, and other important informational resources helps all stakeholders and leads to better long term decisions and projects.

There are numerous water quality and habitat improvement tools, processes, projects, and practices that will benefit from this Web Catalog proposal. Data atlases, watershed computer models, literature inventories, integrated water management plans, watershed pollutant reduction plans, monitoring programs, and more need access to the same informational resources. By building from the existing project that TNC has developed, the Chico State effort can quickly increase the number of records that will be available in an on-line catalog. This will be useful to existing and proposed project as well as project for years to come.

The proposal is technically sound because aspects of it are already being done by TNC and CERES, the open source technology is available, and cataloging information is a well established library and research practice.

The Concept Proposal will not provide measurable water quality or watershed improvements except in measurements in the number of resources being added to the catalogs, the number of interns that were trained in the program, the number of agencies that participated in cataloging their libraries, and in the number of people using the database.

This project will enhance collaboration and coordination among stakeholders throughout the Sacramento Valley. Participating agencies will have help with their own cataloging needs. More importantly, creating a common on-line set of catalogs of information important to all of them helps improve trust and long term collaboration.

The Web Catalog will provide benefits to local communities in the watershed by helping their governments save money on future projects which need access to historic information. In addition, all local agencies will be invited to have intern help catalog relevant information in their libraries and give them a copy of the database for their own internal uses. Finally, this project will help train dozens of student interns in cataloging, research and web programming skills that will help improve their job prospects and the reputation of the Valley for its technical capabilities.

C. Implementation

Because this project builds from existing open source software, state and federal metadata standards, thesauri work, and local cataloging efforts, it is not difficult to implement. Over the next year, while the proposal is being considered and contracts are being signed, more progress in each of these areas will be made. For example the TNC Monitoring and Research database will have a major new revision and improvements to it in May or June 2003. Dr. David N Brown at Chico State will continue to catalog riparian information resources and gain more understanding of related databases. CERES expects to make significant progress in their place name/location GIS and thesaurus work. The Bay Delta Authority will continue to use open source software to catalog all project proposals made through this and other funding projects. The Bay Delta Consortium hopes to make progress in many areas the parallel this project.

Task 1. Project Administration

The project will be organized a Steering Committee and technical committees that will make numerous policy and planning proposals and decisions for the project. Because work on the project won't start until a year from now, it is impossible to include all the progress that will be made in the next 12 months by other efforts similar to this one. This project is breaking new ground in a number of areas and will need to have a process for providing direction in these different areas.

The project Steering Committee will be made up of the chairs of the three committees, the facilitator, and 3-8 representatives from key stakeholder organizations who will be participating in the project such as The Nature Conservancy. After a number of meetings in the months immediately after contract signing, all the committees will go to a quarterly meeting schedule. The Steering Committee will address broad policy issues, proposals brought by committees, and issues raised by participants. For example, an early decision needs to be made on which database fields and relational tables should be added to this catalog that are in addition to the ones used by CERES and TNC. They will decide issues involving polices such as the level of security that should be maintained within the records and what should be done if someone wants to expunge information from the catalog. Given the nature of these types of projects, maintaining a functioning Steering Committee throughout the project is a prudent task.

The Software Technical Committee will address any software related technical questions, issues or policies. One of their first activities will be to evaluate the progress that has been made in open source software since the proposal was turned in and then decide what open source software should be used and the order in which the programming tasks should be implemented. The core of the project should be able to be on line within weeks because it is easy to add new fields to the existing catalog databases. (It is anticipated that TNC and CERES catalogs will be acceptable bases for this project and will have improved over the next year as well.) More sophisticated comment notification, security protocols, thesauri scripts, auto sort and organize functions and other software tasks will take more time but will not hinder the near-immediate usability of the catalog. Funds will be available for software engineers to do the work and will provide for a part time manager to oversee their effort.

The Library Technical Committee will involve key experts from CERES and other organizations that wrestle with metadata and thesauri issues as well as some software experts who know what the technology is capable of doing. An objective of the project is to allow the users to continually improve the keyword and place name/location thesauri after they are designed by this committee and implemented into the catalog by the software engineers. The Library Technical Committee will develop proposals for a number of policy related issues, some of which will have to be determined by the Steering Committee. For example, when can existing catalog information, some of it proprietary, be loaded into this open source, public domain catalog? How will user-identified keywords be added to the controlled keyword lists? How should location information include River Miles and sub-watershed nesting?

The Cataloging Committee will include representatives from every Chico State department that is involved with the cataloging effort. A key initial task for this committee will be to review proposals and determine intern recruitment, selection and training processes and job descriptions. This committee will also help department representatives prioritize the information they should be cataloging and help address any policy issues. The Cataloging Committee will review the program at the end of year one and make any changes needed for year two.

Kevin Wolf, who has years of experience in consensus-based decision making processes and in the use of the web for environmental projects, will help develop proposals before the meetings, be the facilitator and notetaker for the meetings and maintain the listservs. Well run meetings are essential to effective planning and decision making.

Task 2: Develop the Website and On-line Software

More and more cataloging-related projects are using open source software. This project will build off of the improvements that will occur over the next year and the strong base of public domain software and programming that is already available. Task 1 describes how the Software Technical Committee will meet to determine the best programs to use and which tasks to prioritize. An honorarium should be made available to ensure the involvement of software experts from the CERES, UC Davis CaSIL, Bay Delta Consortium, and TNC projects in the meetings to help in the technical advice needed for the software development part of this project.

CSU Chico's Computer Science Department should be able to help with most of the programming needs and should receive funding for a part time engineer to be the lead programmer and oversee the interns who will work on programming components. Additional funds should be reserved for the documentation of the software and the placement of the scripts and tools into an on-line project library so that others can easily use and add to the products developed by this project. Open source software most likely to be used in the project include: PHP, MySQL, PostgreSQL, Zope, PERL and possibly SourceForge.

Most likely the website will be developed using Zope software (www.zope.org) so that discussion forums, listservs and other products can more easily all link together. Zope is open source so that the framework of what is developed here can easily be copied and used by others. David Siedband with Wolf and Associates is an excellent person to oversee the website development and maintenance.

Task 3: Develop the Library Functions

The Library Technical Committee will start by identifying the key issues for which they will need to make policies and decisions. Besides this, the Committee will have funding to pay for staff, interns or consultants to develop the thesauri needed for location, keywords and more. (There are thesauri for upper level terms and locations but not for keywords and common place names important to the Sacramento Watershed.)

Funds for library staff and support will pay for the development of the thesauri and the moderation of the on-line thesauri self-development. On-line software will allow public to add new keywords and location information. They will have a chance to fill in the rest of the information needed for the thesaurus for this information. Those that do will need to have their work checked to ensure quality control. Library staff will do this. A listserv for this issue will be developed to allow others who wish to collaborate in these decisions on line.

The library staff will also help in finding, gaining permission and working with the software technicians to convert existing catalogs databases to be compatible with and to populate this web catalog.

Task 4: Catalog the Material

There are probably ten different departments and groups within Chico State that have informational resources that should be cataloged with their metadata made available to the public via the web. There are dozens of other organizations in the watershed with varying amounts of important resources that can be found only in their offices. Among the different, regionally important informational resources that should be added to the catalog include:

- GIS layers and projects
- Photographs (e.g. the over 2000 with DWR-Red Bluff)
- Aerial photos including those taken from the Beale Air Force Base
- Monitoring locations and datasets.
- Research papers in NRCS, RCD, Co-op Extension offices.
- And more.

Student interns can be trained to be excellent catalogers. Wolf and Associates have trained many interns in cataloging and can provide the training material, an Access version of the web catalog (see MetaPartner software at <http://www.bizline.com/jsa/>), and phone and on-line support of the interns. Chico State should have someone who recruits, selects, places and evaluates the interns. The interns can also be recruited from local community colleges. Since they should be uploading their work to the catalog on a weekly basis with their name in the metadata entry field, it is easy to evaluate and supervise their products.

This project proposes a \$700 stipend for 100 hours of internship time. Funds should be available for 50 interns over the two year project. Each intern will be listed in the catalog database as the enterer of many records and will be able to use this as a reference for future jobs. At an average of 30 minutes a record, the 5000 hours of intern time should result in 10,000 records entered into the catalog.

By using MetaPartner as the off line data entry tool, each office will be given an Access database of all the work entered by the interns. This internal database will be an asset to these departments and agencies and will help encourage them to continue cataloging information after the project ends.

Other catalogs and databases of metadata-related information should be obtained, converted to be compatible with the Web Catalog and uploaded to the web database. David Brown has already located 17 such databases. The Software team will have the resources needed to make the conversions and load these into the catalog once permission is gained to do so.

Task 5: Public Outreach and Education

The first priority for outreach is to "information providers" (e.g. researchers, local governments, state and federal agencies, non-profits, and associations) to encourage them to use the database and to enter information into the database. The second is to tell students, stakeholders, the press, elected officials and the general public about the web catalogs availability.

Task 6: Draft and Final Reports

Progress in each component of the project will be evaluated by the respective committees and included in an annual and final report. In addition, a web-evaluation form and survey will be used to encourage the review and comments of users.

E. Budget (2 years) Draft Proposal for Discussion Purposes

Task 1. Coordinate and Make Decisions (\$50,000)

Prepare, facilitate, mediate and write notes for the meetings of four committees (20-40 meetings) (Wolf) - \$30,000
Meeting logistics, room rental, communication, etc - (CSU) \$15000
Honorariums and travel - \$5000

Task 2: Develop the Website and On-line Software (\$75,000)

Part-time software project manager/engineer, 2 years (CSU) - \$40,000
Interns in the computer science dept. (CSU) - \$15000
Dedicated server and support (CSU) - \$5000
Website Consultants (Wolf) - \$10,000
Honorariums and travel - \$5000

Task 3: Develop the Library Functions (\$50,000)

Librarian - (CSU) \$20000
Librarian staff/interns (CSU) - \$20000
Consultants - (? or Wolf) \$5000
Honorarium and travel - \$5000

Task 4: Catalog the Material (\$100,000)

Project supervision and support (CSU) - \$35,000
Intern training and on-line support (Wolf) - \$15,000
Cataloging interns (CSU and other students) - \$40,000
MetaPartner (100 licenses and customization) - \$5000
Travel and support - \$5000

Task 5: Public Outreach (\$35,000)

Coordination, press releases, graphics, etc (CSU) \$20,000

Interns (CSU) \$5000

Ads, mailings, brochures - (CSU) \$10,000

Task 6: Project Evaluation \$31,000

10% of each Task total to each Task project for evaluations, annual and final reports.

10% Contingency \$34,000

Total \$375,000