NBWA Digital Library Project
Final Report, Executive Summary
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Background

In this project, conducted between January 2006 and February 2007, Sonoma Ecology Center together with the CalEDLN Program Team has taken project description data from the NBWA's Bay Area IRWMP (formerly the Watershed Stewardship Plan) to the next step using standards and management techniques appropriate for a regional digital library. By developing a CalEDLN library and working toward its eventual distribution among the appropriate data managers – the owners of the data – the NBWA is contributing to the development of a regional environmental digital library network instead of a static database. In addition to developing project, organization, and general data-holdings information for a number of organizations in the region, a detailed data catalog developed by the KRIS Team in a related project was networked with the other data resources developed herein, providing a demonstration of contribution of locally-held metadata using the new networking techniques.

Summary of Project Deliverables

Data Standardization

Existing Bay Area IRWMP project description data was migrated into the CalEDLN Project Metadata Standard, which this project helped to develop. The metadata was augmented with thematic and geographic keywords from CERES and from the IRWMP records. We created the NBWA Project Activity Thesaurus from the objectives in the original data. This keyword list may be seen at http://sfbayarea.calconservationcommons.net/standards/thesauri/nbwa-project-activity. Geographic data from the GIS data associated with the original records was included in the metadata as bounding boxes to enable geographic searching.

Data Posting and Syncing, Online Catalog of Organizations and Projects

The resulting standardized project description and organization metadata is served for harvest on the network. CERES is harvesting the project records into a CERES sub-catalog called the North Bay Watershed Association Catalog, which may be found at http://gis.ca.gov/catalog/BrowseCatalog.epl?id=1181. Inclusion of NBWA's metadata into this state-wide catalog integrates it with project metadata from the Natural Resource Project Inventory (NRPI) and with the hundreds of other collections and thousands of metadata records. The San Francisco Bay Area Conservation Commons (SFBACC, formerly the Northbay Commons) is harvesting the records into its aggregation library where it may be searched together with the other SFBACC metadata at http://sfbayarea.calconservationcommons.net/sfbacc-data-catalogs. At this link there may be found several search utilities, reflecting the fact that there are a number of software development efforts happening in parallel. The geographic search shows the project locations marked on a map as center-points.

Metadata for the KRIS East Marin and Sonoma data products (reports, non-spatial datasets) have been standardized and posted and are being harvested by CERES. The KRIS metadata, an extensive collection including links to over 300 documents and data files, is now a searchable catalog within the California Environmental Information Catalog (CEIC), found at http://gis.ca.gov/catalog/BrowseCatalog.epl?id=1209 .

Editing System

Forms for editing the records are available at the SFBACC website. To view and test the Project, People, and Organization forms, see http://sfbayarea.calconservationcommons.net/sfbacc-data-catalogs/testing/early-adopters/north-bay-watershed-association-projects/. Log in (upper right corner) with the following test user: nbwatest and password: nbwawsp. You will then see a new set of tabs, and can browse to the record you wish to edit and click the "edit" tab. The record converts to a data-entry form, and you can make changes therein. These forms are still in beta form- they need to be tested and refined further based on feedback from a small group of test users.

Organization Survey

An extensive outreach was conducted to collect updates to the organization contacts and record the organizations' data sharing status, needs for data sharing, and their current data holdings. The results of the survey are included in the records shared online, and also provided in an Excel file with this report. Data sharing practices and needs for the future were captured into the Organization description records and are summarized in Table C, attached. Data holdings were captured using keywords representing major categories of data themes and included in the Organization records in the online database. They are summarized in Table D, attached. The comprehensive data is provided in Excel format in an attached file with the complete Final Report.

Catalog Training and Data Updates

Two metadata workshops were held, covering a range of techniques for sharing data. The first metadata training workshop took place over several days in July 2006 and was conducted as a programming workshop to quickly produce a large amount of project metadata in the CalEDLN standard and share it on the network. A second metadata training workshop was held during the week of August 25 through August 29, 2006. An effort was made to obtain contact data for approximately 70 organizations in the Bay Area IRWMP, and this information was used to invite these and other organizations to attend the training session. The IRWMP organization data was updated for project contact information, obtained in the outreach and survey part of this project.

Next Steps

<u>For NBWA:</u>

A. Data Analysis
With the project and organizations descriptions and the KRIS catalog standardized and available for review together with data from other sources, there may next be an effort to analyze the projects in various ways to serve the objectives of the Bay Area IRWMP. It is recommended that a needs assessment be done to determine the desired outcome, and recommendations made for querying the data and reporting results.

B. Project Data Updates
We now have reliable contact information for most of the project descriptions in the database. The next steps toward attaining timely editing of the data are: a) Test and refine the editing forms with a small group of users, b) Carry out editing of the records by offering assistance to the record "owners" (the project contacts) in editing them, thereby introducing them to the new forms. An additional workshop would be valuable for updating those who attended the first ones, and for capturing more participants. This training and support can be viewed as an ongoing task.

<u>For the CalEDLN and SFBACC projects:</u>
Work on the technology to facilitate data sharing and searching continues by the CalEDLN and SFBACC collaboratives. New interfaces for searching and viewing the metadata are in active development at CERES, and will continue on the SFBACC site later in the year when funding is available. It is expected that functionality for crawling through linked keywords and viewing projects' spatial "footprints" will be available from CERES within a month or two of this writing. Additional work is needed to refine the editing software software, and training workshops will need to be offered to help organizations incorporate these methods into their workflow. Data managers will need to continue to make progress on the work of data sharing, and organizations will need training and outreach to help them to participate fully. Additional funding is being sought to continue this work, and our early successes, especially the community's involvement, is important leverage for obtaining these funds.

Attachments:

Table A: Summary of results of the Data Sharing Survey
Table B: Summary of Results for the Data Holdings Survey

Table A. Data sharing summary.

Organization	Level of Data Sharing	Data Sharing Needs
Central Marin Sanitary District	Data Online; Individual Request	Other
City of Petaluma	None	Other
City of San Rafael - Dept. of Public Works	Data Online; Individual Request	
Community Alliance with Family Farmers	Data Online	
County of Sonoma	Catalog Online; Data Online; Individual Request	Other
Ducks Unlimited - Western Region	Individual Request	Training/Help; Funding; Infrastructure & Tech Support; Other
Friends of Corte Madera Creek	Data Online; Individual Request	Funding; Infrastructure & Tech Support
Friends of Novato Creek	None; Individual Request	Training/Help; Funding; Infrastructure & Tech Support
Marin County Open Space District	Individual Request	Funding; Infrastructure & Tech Support
Marin County Flood Control and Water Conservation District	Catalog Online	Training/Help; Funding; Infrastructure & Tech Support
Marin County Stormwater Pollution Prevention Program	Catalog Online	Training/Help; Funding; Infrastructure & Tech Support
Mill Valley Streamkeepers	Data Online	Training/Help
Napa County Resource Conservation District	Data Online; Individual Request	
North Bay Watershed Association	Data Online	Funding; Other
Novato Sanitary District	Data Online; Individual Request	Training/Help; Infrastructure & Tech Support
Petaluma Watershed Foundation - aka Petaluma River Works	Individual Request	Training/Help; Funding; Infrastructure & Tech Support; Other
San Francisco Bay Regional Water Quality Control Board	Catalog Online; Individual Request	
San Francisco Estuary Institute	Data Online; Individual Request	Training/Help; Funding; Infrastructure & Tech Support
Save the Bay	Individual Request	

Table A. Data sharing summary.

Organization	Level of Data Sharing	Data Sharing Needs
Sonoma County Agricultural Preservation & Open Space District	Individual Request	Infrastructure & Tech Support; Other
Sonoma County Water Agency	Data Online; Individual Request	Training/Help; Infrastructure & Tech Support
Sonoma Ecology Center	Catalog Online; Data Online; Individual Request	Funding; Infrastructure & Tech Support
Sonoma Land Trust	Individual Request; Data Online	Training/Help; Funding; Infrastructure & Tech Support; Other
Southern Sonoma County Resource Conservation District	Individual Request	Training/Help; Funding; Infrastructure & Tech Support
State of California Coastal Conservancy	Data Online; Individual Request	Funding; Infrastructure & Tech Support; Other
U.S. Army Corps of Engineers - San Francisco District	Data Online	Other
US EPA STORET System	Data Online	
US Fish & Wildlife Service - San Pablo Bay National Wildlife Refuge - Marin Islands NWR	Catalog Online; Data Online; Individual Request	Training/Help; Funding; Infrastructure & Tech Support; Other
US Geological Survey - San Francisco Bay Estuary Field Station	Individual Request	Funding

Table B. Data holdings summary.

Organization	Resource Types	Resource Themes	Geographic Scope
Central Marin Sanitary District		Water use; Water quality	Immediate Locale
City of Petaluma	Computer Models; Websites; Reports; Paper Maps	Facilities and structures; Environment and conservation; Demographic information; Business and economic information; Water use; Water quality; Water supply	Immediate Locale; Watershed Scale; County Scale
City of San Rafael - Dept. of Public Works	Software; Websites; Images/Photos; Reports; Databases; Paper Maps	Transportation networks; Facilities and structures; Elevation and derived products	Immediate Locale
Community Alliance with Family Farmers	Reports	Business and economic information; Agriculture;	Immediate Locale
County of Sonoma	Computer Models; Software; Websites; Images/Photos; Spatial data; Reports; Databases; Tabular data; Paper Maps	Imagery and remote sensing; Transportation networks; Geology; Facilities and structures; Environment and conservation; Elevation and derived products; Demographic information; Agriculture; Administrative boundaries; Soils and minerals	County Scale; Statewide
Ducks Unlimited - Western Region	Computer Models; Software; Websites; Images/Photos; Spatial data; Books; Reports; Databases; Tabular data; Paper Maps	Imagery and remote sensing; Invasive species; Facilities and structures; Environment and conservation; Elevation and derived products; Biology and ecology; Agriculture; Administrative boundaries; Soils and minerals; Wildlife and fisheries; Water use; Water quality; Water supply	Immediate Locale; Watershed Scale; County Scale; Regional; Statewide
Friends of Corte Madera Creek	Websites; Images/Photos; Reports; Databases; Tabular data	Invasive species; Historical ecology; Biology and ecology; Wildlife and fisheries; Water quality	Immediate Locale; Watershed Scale

Table B. Data holdings summary.

Organization	Resource Types	Resource Themes	Geographic Scope
Friends of Novato Creek	Curricula; Images/Photos; Reports; Tabular data; Paper Maps; Audio/Video	Invasive species; Historical ecology; Biology and ecology; Wildlife and fisheries; Water use; Water quality; Water supply	Immediate Locale; Watershed Scale
Marin County Open Space District	Websites; Images/Photos; Spatial data; Paper Maps	Invasive species; Environment and conservation; Biology and ecology; Recreation; Forests;	Immediate Locale; Watershed Scale; County Scale; Regional
Marin County Flood Control and Water Conservation District	Computer Models; Websites; Images/Photos; Spatial data; Books; Reports; Databases; Tabular data; Paper Maps	Invasive species; Transportation networks; Geology; Environment and conservation; Elevation and derived products; Historical ecology; Biology and ecology; Administrative boundaries; Wildlife and fisheries; Water use; Water quality; Water supply	Immediate Locale; Watershed Scale; County Scale; Regional
Marin County Stormwater Pollution Prevention Program	Computer Models;Websites; Images/Photos; Spatial data; Books; Reports; Databases; Tabular data; Paper Maps	Invasive species; Transportation networks; Geology; Environment and conservation; Elevation and derived products; Historical ecology; Biology and ecology ;Administrative boundaries ; Wildlife and fisheries; Water use; Water quality; Water supply	Immediate Locale; Watershed Scale; County Scale; Regional
Mill Valley Streamkeepers	Websites; Images/Photos; Spatial data; Reports; Databases; Tabular data	Imagery and remote sensing; Environment and conservation; Elevation and derived products; Biology and ecology; Wildlife and fisheries; Water use; Water quality; Water supply	Immediate Locale; Watershed Scale
Napa County Resource Conservation District	Websites; Images/Photos; Spatial data; Books; Reports; Databases; Tabular data; Paper Maps; Audio/Video	Geology; Environment and conservation; Historical ecology; Biology and ecology; Agriculture; Soils and minerals; Wildlife and fisheries; Water use; Water quality; Water	Immediate Locale; Watershed Scale; County Scale

Table B. Data holdings summary.

Organization	Resource Types	Resource Themes	Geographic Scope
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North Bay Watershed Association	Websites; Reports	Environment and conservation; Water use; Water quality; Water supply	
Novato Sanitary District	Websites; Images/Photos; Books; Reports; Paper Maps	Environment and conservation; Water use; Water quality; Water supply	Immediate Locale
Petaluma Watershed Foundation - aka Petaluma River Works	Websites; Curricula; Images/Photos; Books; Reports; Databases; Paper Maps; Audio/Video	Geology; Demographic information; Business and economic information; Administrative boundaries; Wildlife and fisheries; Water use; Water quality; Water supply	Watershed Scale; County Scale
San Francisco Bay Regional Water Quality Control Board	Curricula; Reports	Environment and conservation; Biology and ecology; Wildlife and fisheries; Water use; Water quality	Immediate Locale; Watershed Scale; County Scale
San Francisco Estuary Institute	Computer Models; Software; Websites; Images/Photos; Spatial data; Reports; Databases; Tabular data; Paper Maps	Human health; Invasive species; Environment and conservation; Historical ecology; Soils and minerals; Wildlife and fisheries; Water use; Water quality; Water supply	Immediate Locale; Watershed Scale; County Scale; Regional; Statewide
Save the Bay	Websites; Curricula; Images/Photos; Reports; Audio/Video	Environment and conservation; Biology and ecology; Wildlife and fisheries; Water quality	Immediate Locale

Table B. Data holdings summary.

Organization	Resource Types	Resource Themes	Geographic Scope
Sonoma County Agricultural Preservation & Open Space District	Software; Websites; Images/Photos; Spatial data; Books; Reports; Tabular data; Paper Maps	Imagery and remote sensing; Transportation networks; Geology; Facilities and structures; Environment and conservation; Elevation and derived products; Demographic information; Biology and ecology; Agriculture; Administrative boundaries; Soils and minerals; Recreation; Forests; Wildlife and fisheries	Immediate Locale; Watershed Scale; County Scale; Regional
Sonoma County Water Agency	Audio/Video; Paper Maps; Tabular data; Databases; Reports; Spatial data; Images/Photos	Water supply, water quality, water use; Wildlife and fisheries; Administrative boundaries; Biology and ecology; Historical ecology; Elevation and derived products; Environment and conservation; Facilities and structures; Imagery and remote sensing; Invasive species	Immediate Locale; Watershed Scale; County Scale; Regional
Sonoma Ecology Center	Software; Websites; Curricula; Images/Photos; Spatial data; Reports; Databases; Tabular data; Paper Maps	Invasive species; Geology; Environment and conservation; Elevation and derived products; Historical ecology; Biology and ecology; Administrative boundaries; Soils and minerals; Recreation; Wildlife and fisheries; Water use; Water quality	Immediate Locale; Watershed Scale
Sonoma Land Trust	Software; Websites; Images/Photos; Spatial data; ReportsTabular data; Paper Maps ; Audio/Video	Invasive species; Transportation networks; Geology; Facilities and structures; Environment and conservation; Elevation and derived products; Historical ecology; Biology and ecology; Agriculture; Administrative boundaries; Soils and minerals; Recreation;	Immediate Locale; Watershed Scale; County Scale; Regional

Table B. Data holdings summary.

Organization	Resource Types	Resource Themes	Geographic Scope
		Wildlife and fisheries	
Southern Sonoma County Resource Conservation District	Websites; Curricula; Images/Photos; Books; Reports; Tabular data; Paper Maps; Audio/Video	Environment and conservation; Agriculture; Administrative boundaries; Soils and minerals;	Immediate Locale; Watershed Scale; County Scale; Regional
State of California Coastal Conservancy	Websites; Spatial data; Reports; Databases; Tabular data	Invasive species; Environment and conservation; Biology and ecology; Recreation; Wildlife and fisheries; Water supply	Immediate Locale; Watershed Scale; County Scale; Regional
U.S. Army Corps of Engineers - San Francisco District	Computer Models;Websites; Images/Photos; Spatial data; Reports; Databases; Tabular data; Paper Maps	Geology; Environment and conservation; Elevation and derived products; Business and economic information; Biology and ecology; Wildlife and fisheries; Water use; Water quality; Water supply	Immediate Locale; Watershed Scale; Regional
US EPA STORET System	Databases; Tabular data	Water quality	Immediate Locale; Watershed Scale; County Scale; Regional; Statewide
US Fish & Wildlife Service - San Pablo Bay National Wildlife Refuge - Marin Islands NWR	Images/Photos; Spatial data; Reports; Databases; Tabular data; Paper Maps	Imagery and remote sensing; Invasive species; Environment and conservation; Elevation and derived products; Biology and ecology; Recreation; Wildlife and fisheries	Immediate Locale
US Geological Survey - San Francisco Bay Estuary Field Station	Images/Photos; Reports; Databases; Tabular data	Imagery and remote sensing; Invasive species; Environment and conservation; Elevation and derived products; Biology and ecology; Water use; Water quality; Water supply	Immediate Locale; Watershed Scale; County Scale; Regional; Statewide