

**NSDI 2010 CAP GRANTS
CATEGORY 6
FINAL REPORT**

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Project Title: 2010 CAP – Category 6 ASWM Wetland Mapping Standard Implementation Plan Outreach and Training

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FGDC Wetland Subcommittee

<http://www.fws.gov/wetlands/WetlandsLayer/WetlandsSubcommittee.html>

Executive Summary:

The purpose of this project was to carry out key recommendations included in the Implementation Plan for the FGDC Wetlands Mapping Standard adopted in July of 2009. Through this project the Association of State Wetland Managers (ASWM), in collaboration with members of the Wetlands Mapping Standard Workgroup and the Federal Geographic Data Committee Wetlands Subcommittee, developed training materials and established a forum for enhanced expert communication and resolution of technical issues. Over a period of 15 months ASWM collaborated primarily with the U.S. Fish and Wildlife Service (FWS) to develop online training materials on wetland mapping. Four on-line wetland training modules are available to the public. They can be found at:

http://www.fws.gov/habitatconservation/nwi/wetlands_mapping_training/index.html. The training will enable wetland mappers to adopt the FGDC wetlands mapping standard so that new wetland mapping projects conducted will be consistent with the wetland mapping standard and can be added to the Wetlands Layer of the National Spatial Data Infrastructure and *The National Map*.

In addition, ASWM, in partnership with Virginia Tech, the U.S. Fish and Wildlife Service and subject experts, has organized a Wetland Mapping Consortium, a forum to broaden discussion and resolution of wetland mapping challenges. The Wetland Mapping Consortium currently has 156 members. During the project ASWM hosted webinars and conference calls and made presentations at three conferences on the Wetland Mapping Consortium. To join or learn about the Wetland Mapping Consortium, please visit: <http://clic.cses.vt.edu/WMC/>.

Project Narrative:

The project had two major areas of activity: 1) development of training materials and 2) providing accurate and up-to-date information and innovation and improvements in wetland mapping techniques to members of the Wetland Mapping Consortium.

Wetland On-line Training Materials Available on the Internet

Over the past year the Association of State Wetland Managers has worked closely with FWS National Wetland Inventory staff to develop training materials. Currently four wetland mapping training modules have posted to the U.S. Fish and Wildlife Service Website:

- Module 1: What is the National Wetlands Inventory
- Module 2: National Wetland Classification System (Parts 1-6)
- Module 3: National Wetland Mapping Standards (Parts 1-2)
- Module 4: Image Interpretation of Wetlands (Parts 1-7)

These materials are based in large part on materials created for intensive classroom training by FWS staff. The materials were reorganized and expanded for online use. The transition to online training required information to be broken down into small, logical steps. Many more

images were needed to illustrate each concept, in part to address the absence of a real time instructor who can summarize, describe and answer questions. A final, fifth module, on how to get started on a mapping project will be added in the future.

Initially FWS and ASWM planned to use training software, but later elected to use HTML CSS format to provide greater flexibility to tailor the project and provide a quality learning experience.

The wetland mapping training website is located at:

http://www.fws.gov/habitatconservation/nwi/wetlands_mapping_training/index.html

Wetland Mapping Consortium and Information Distribution Activities

The Wetland Mapping Consortium was established in 2008 to provide an interdisciplinary forum for wetland scientists and managers interested in remote sensing images and products. Virginia Tech University created a “Scholar” website to support discussion and information sharing among consortium members. Interested individuals can find out more about the Wetland Mapping Consortium and request a name and password to participate by visiting <http://clic.cses.vt.edu/WMC/#links>.

While remote sensing imagery and the potential to produce new tools and new applications has grown at an incredible rate in recent years, there has been remarkably little investment in the United States in the public sector in developing and applying these new tools to wetland mapping. The long-term goal of the wetland mapping consortium is to provide a forum for discussion and innovation on this topic.

In the first six months of the project, the Wetland Mapping Consortium (WMC) expanded from 25 to 90 new members. By the end of the project period it grew to 156 (adding 131 members during the project period). Four new resource directories and over 30 new resources (reference documents) were added to the WMC Scholar website. Three new WMC member “groups” were added to the Scholar site. These groups can use the site for specialized discussion and communication among their own members, utilizing a variety of tools, such as separate email lists, separate resource directories, event calendars, blogs and chatrooms.

A webinar entitled, “Introduction to Wetland Mapping Consortium (WMC) Resources for the FGDC Wetlands Standards Working Groups,” was presented by Jane Awl in May 2010. FGDC’s wetland mapping subcommittee, the Wetlands Classification Standard Maintenance Working Group (WCSMWG) and others were invited to attend. A PowerPoint training presentation was developed by Jane Awl, who describes how to navigate and use the WMC Scholar site. Opportunities to participate in the WMC were publicized at the Society of Wetland Scientists annual meeting in Salt Lake City in June of 2010.

An outgrowth of the WMC technical discussions was the development of the Wetlands Classification Image Gallery (www.wetlandgallery.cnlworld.org). An outreach webinar providing a live demo of the Wetlands Classification Image Gallery was hosted by ASWM, FWS and USGS on June 10, 2010.

Outreach also included collaboration with the Southeast Wetlands Working Group (SEWWG). SEWWG has joined the WMC Scholar site as a member group. On July 23, 2010, EPA Region 4 and SEWWG hosted a national webinar presented by ASWM and USGS, which focused on technological innovation utilizing the WMC Scholar site and the WCIG.

Additionally, the WMC developed two articles on current wetlands mapping technology issues which were published in the September/October 2010 edition of the National Wetland Newsletter:

Lang, Megan, Greg McCarty, Bill Wilen, and Jane Awl. 2010. Light Detection and Ranging: New Information for Improved Wetland Mapping and Monitoring. National Wetlands Newsletter, 32:5, pgs 10-13, 36-37.

Awl, Jane, Bill Wilen, Rebecca Allee, Larry Handley, Margarete Heber, Pamela Blasdell, John Galbraith, and Megan Lang. 2010. National Standards for the Mapping and Classification of Wetlands: Implementation and Maintenance. National Wetlands Newsletter, 32:5, pgs 14-17.

In the spring of 2011 presentations on the Wetland Mapping Consortium were given at the Society of Wetland Scientists Southern and Midwest Chapters' joint meeting (March 8) and the ASWM State/Tribal/Federal Coordination Meeting (March 23)

On May 18, 2011 a Wetland Mapping Consortium Organizational Webinar was held. It summarized achievements to date and set the stage for regularly scheduled webinars going forward. http://aswm.org/pdf/lib/wmc_051811_webinar.pdf

The easily restored wetland project was one of the first initiatives of the Wetland Mapping Consortium. The SSURGO geodatabase file and selected tables were combined to create a seamless national database to identify easily restored wetland restoration projects. It currently resides on a hard drive that is being mailed to individuals to copy and forward in turn. John Galbraith from Virginia Tech is working with the National Resources Conservation Service to find a way to make the geodatabase available more broadly.

A webinar on Using the Wetland Mapping Consortium Scholar Site was held on June 29, 2011. The purpose of this webinar was to train Wetland Mapping Consortium members on how to use the WMC Scholar site.

A webinar on Developing Unique Identifiers for Mapping Wetlands was held on July 13. The purpose of this webinar was to introduce Wetland Mapping Consortium members to the unique identifiers project which is funded under another NSDI CAP grant.

A webinar on "Calling All Wetlands" was held on August 22, 2011. The "Calling All Wetlands" project was developed to complement the creation of the Wetlands Classification Gallery the previous year. The webinar described a shorter, easier way to provide images to the Wetland Classification Gallery for people who are not wetland experts.

Information about the Wetland Mapping Consortium can be found on the ASWM's mapping webpage <http://www.aswm.org/wetland-science/wetland-mapping> including the link to the Wetland Mapping Consortium website: <http://clic.cses.vt.edu/WMC/> and directions on how to join the Consortium http://clic.cses.vt.edu/WMC/WMC_Organizers.htm.

Next Steps

Wetland Training - ASWM will continue to publicize the on-line wetland training and assist the U.S. Fish and Wildlife Service in the development of additional on-line training in the future.

Wetland Mapping Consortium - A poll has been distributed to Wetland Mapping Consortium Members to gain further insights into interests and goals to further enhance our collective knowledge about successful wetland mapping projects and applications. Another organizing webinar is planned for October 26. The flyer describing the Wetland Mapping Consortium is out of date and will be revised this fall.

The next phase in the project will be to continue to carry out the implementation plan for the FGDC Wetland Mapping Standard. The Wetland Mapping Consortium provides a resource for addressing a number of the recommendations found in the implementation plan such as improved coordination between cooperators on mapping, collecting and sharing mapping projects, and standardization of methods to remotely map wetlands which can't be "seen" with aerial imagery, but might be identified through radar, LiDAR, infrared or thermal imagery. <http://www.fws.gov/wetlands/documents/gNSDI/DRAFTImplementationPlanFGDCWetlandsMappingStandard.pdf> It would be very helpful to obtain another NSDI CAP grant to support continued actions to carry out the wetland mapping standard implementation plan. There is a great deal of work needed to complete the tasks identified in the plan.

Feedback on Cooperative Agreements Program

The NSDI CAP is a well-run program. It is a good practice to hold conference calls each year when the Request for Proposals is published. It is also a good practice to publish reports to the web on the projects at the beginning, middle, and end. However, the communication is one way. ASWM receives grants through several programs and, although it is more work, it is helpful if the grant making organization can provide ideas for other contacts with useful expertise or organizations pursuing related projects.

It is increasingly hard to meet cost share requirements in the current fiscal climate. The cost share rate may prohibit some interested parties from participating.

ASWM has applied to the NSDI CAP program because there are few sources of funds for education, collaboration, and technical expertise transfer activities. This kind of funding is very important. Otherwise every individual group ends up recreating solutions that have been previously developed by other groups. This slows progress. Given the accelerated growth of GIS technology as well as remote imagery, education and outreach are very important.

Milestones

- 1) ASWM will develop and review objectives as needed for each wetland standard training module section. It will facilitate review and incorporate recommended changes for an online mapping training course. It will complete review by the end of **Month 2**.
Completed.
- 2) ASWM will invite wetland mapping professionals from around the country to participate in the Wetland Mapping Consortium, provide content (new applications, developing mapping applications, grant opportunities, etc.) by the end of **Month 4**.
Completed. Additional invitations will occur over time.
- 3) ASWM will develop wetland mapping standard training materials ready for pilot testing by the end of **Month 6** including the following subtasks:
 - a. Draft training modules **Completed.**
 - b. Organize the mapping standard draft training modules into smaller, cohesive sub-modules. **Completed.**
 - c. Develop an index for the course and indexes for each separate module and sub-module. **Completed.**
 - d. Develop and incorporate learning objectives into the beginning of each module and sub-module. **Completed.**
 - e. Develop the tests for the end of each module and sub-module. **Completed.**
 - f. Identify gaps in the technical instruction provided that need to be developed by ASWM or by FWS; develop needed additional instruction within the technical capability of ASWM; coordinate and incorporate additional input by FWS.
Completed.
 - g. Identify screen-captures, images, or interactive clips that ASWM can provide or that need to be provided by FWS to demonstrate a concept. **Completed.**
 - h. Edit the draft text for spelling, grammar, continuity, clarity, redundancy and appropriate knowledge level; add additional explanation as needed; delete extraneous information; and identify any cross-links needed among the modules (for example, where a concept is explained on another slide or another module). **Completed.**
 - i. Develop list of definitions for technical terms and list of abbreviations that will serve as pop-ups. Note: these are included in the training, but not as pop-ups. **Completed.**
 - j. Provide the revised modules, indices and lists for review; and incorporate changes.
Completed.
- 4) ASWM will support completion of Wetlands Mapping Standard Modules and review of other training materials by the end of **Month 8** including the following subtasks:
 - a. Review modules once completed by FWS (which includes creating the design, incorporating the text, and making the links for a final draft product). **Completed.**
 - b. Coordinate review of the training course by 3-6 outside representative users. **Completed.**
 - c. Incorporate identified changes needed. **Completed.**
 - d. Coordinate beta testing of the training course as it is being reviewed by willing participants in the Wetlands Subcommittee, ASWM, and Wetland Mapping Consortium. **Completed.**
 - e. Incorporate identified changes needed. **Completed.**

- 5) ASWM will continue providing content (new applications, developing mapping applications, grant opportunities, etc.) to the Wetland Mapping Consortium through **Month 10. Completed.**
- 6) ASWM will distribute information about the new standard by identifying information needs and developing new webpages linked to its existing wetland mapping webpage on the mapping standard, <http://aswm.org/wetland-science/wetland-mapping/1123-new-online-wetlands-mapping-training>, and update and maintain those webpages through **Month 11. Completed.**
- 7) Wetland Mapping Consortium will be self-sustaining with members providing new content (new applications, developing mapping applications, grant opportunities, etc.) by the end of **Month 12. Completed.**
- 8) ASWM will deliver a final report on all activities under this grant, within 90 days of completion of the project. **Month 15. Completed.**