MEETING OF
ADVISORY COMMITTEE ON WATER INFORMATION’S (ACWI)
SUBCOMMITTEE ON HYDROLOGY (SOH)

9:00 a.m. – Noon, Eastern Time

April 21, 2011
Room 5140-S
USDA South Building
Washington, D.C.  20250

FINAL MINUTES

AGENDA

1. Welcome and Introductions       Claudia C. Hoeft
2. Review and Approval of Agenda    Claudia C. Hoeft
3. Approval of Minutes from January 20, 2011 meeting Claudia C. Hoeft
4. Status of Action Items from January 20, 20011 meeting Claudia C. Hoeft
5. Guest Speaker:  Dr. Henry Jones, NRC, Hydrologic Engineering Branch Richard Raione
   Topic:  Tsunami Hazards
6. SOH Guests (Follow-up discussion) Claudia C. Hoeft
7. Request for Membership – California Division of Water Resources Nancy Steinberger
8. Hydrologic Modeling Inventory William Merkel
9. Water Data Work Group Status Dave Goodrich
10. Work Group Reports
    a) Hydrologic Modeling Work Group Jerry Webb
    b) Hydrologic Frequency Analysis Work Group Will Thomas
    c) Hydrologic and Hydraulic GIS Applications Work Group William Merkel
    d) Extreme Storms Work Group Tom Nicholson
    e) Satellite Telemetry Interagency Work Group
11. New Work Group Proposals
    a) Climate Change Work Group Nancy Steinberger
    b) Tsunami Flood Protection Richard Raione
12. Current Events within Hydrologic Communities All
13. Announcements and Q&A on Business Reports from Member Organizations All
    a) Business Reports
    b) “The SOH CONNECTIONS” Newsletter Editor’s Report
    c) Other?
14. Plans for Next Meeting Claudia C. Hoeft

Adjourn

ATTENDEES

Guests

<table>
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<tr>
<th>Name</th>
<th>Organization</th>
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<tbody>
<tr>
<td>Jerry Bernard</td>
<td>USDA Natural Resources Conservation Service (NRCS)</td>
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<td>Dr. Henry Jones</td>
<td>U.S. Nuclear Regulatory Commission</td>
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Subcommittee on Hydrology Members

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<tr>
<td>Martin Becker</td>
<td>Defenders of Property Rights (DPR)</td>
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<td>Brian Beueler</td>
<td>Federal Highway Administration</td>
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Guest speaker

(phone)
1. Welcome and Introductions
   - Siamak Esfandiary, PhD, PE, CFM now representing FEMA. Max Yuan retiring at the end of the month.
   - Steve Blanchard, USGS, retiring June 3.

2. Review and Approval of Agenda
   The agenda was reviewed with minor changes proposed and approved.

3. Approval of Minutes from January 20, 2011 meeting
   Minutes were approved pending following corrections:
   - Header: Change January 20, 2010 to January 20, 2011
   - Item 10: Change “flas” to “flash”.

4. Status of Action Items from January 20, 2011 meeting
   - Claudia to send final minutes from the October 21, 2010 meeting to Carol Lewis for posting on the SOH web-site.
   - Claudia work to draft a standard procedure regarding welcome to meetings and expectations / needs of guests who wish to attend SOH meetings.
   - Victor Hom develop a write-up regarding feedback on terminologies.
   - All members submit work group reports and member organization reports for January meeting via e-mail.
   - RECOMMENDED ITEM: For future meetings, all members submit work group reports and member organization reports PRIOR to the meeting.

5. Guest Speaker: Dr. Henry Jones, NRC, Hydrologic Engineering Branch
Dr. Henry Jones gave a very interesting and very well received presentation on tsunamis and answered many questions. Dr. Jones’ PowerPoint slides are attached and are also to be posted on the SOH web-site at: http://acwi.gov/hydrology/minutes/index.html.

6. **SOH Guests (Follow-up discussion)**
   Claudia Hoeft requested to carry this item forward as she has not had the opportunity to develop a draft protocol.

   **Action item:** Claudia work to draft a standard procedure regarding welcome to meetings and expectations / needs of guests who wish to attend SOH meetings

7. **Request for Membership – California Division of Water Resources**
   Nancy Steinberger informed the SOH about an inquiry from the Jeanine Jones of the California Division of Water Resources regarding how they could become a member of SOH. Tom Nicholson suggested that they put in writing this request and what they can contribute and participate with, in addition to inviting them to make a presentation on their major issues and concerns. The SOH members agreed this is consistent with the charter and that CA DWR will be welcome as a member. Nancy Steinberger was going to discuss this further with them.

   **Action Item:** Nancy Steinberger to work with California DWR to encourage them to submit letter requesting to join SOH.

8. **Hydrologic Modeling Inventory**
   The web page for the Texas A&M Hydrologic Modeling Inventory web site is: http://hydrologicmodels.tamu.edu/

   The Hydrologic Model Inventory includes a large number of models. Previously, the models were listed alphabetically. The models are grouped into 6 major categories which helps direct the user to models of interest. Some of the models in the inventory are very familiar to the hydrologic community whereas, a number of the models are specialized and not widely used. The inventory includes proprietary and non-proprietary models.

   The 6 categories are:
   - Precipitation – Runoff Models
   - Hydraulic Models
   - River and Watershed Management Tools
   - GIS Applications in Hydrology and Hydraulics
   - Regional / Global Hydrologic Models
   - Stochastic Models

   Each model is named by its acronym and is linked directly to a completed questionnaire. The questionnaire includes a web link to the model web site and general information on the model.

   At the end of the inventory list, there is a link to the questionnaire. If anyone wants a model to be added to the list, the model developers or supporters must complete a questionnaire and submit it. The questionnaire was designed to provide specific information on all models so a potential user can judge whether a particular model could meet their needs. Having common information on each model allows potential users to compare and contrast various models of interest. Looking through the list, there are some models missing. More outreach could be done to get more of the most commonly models included. Another purpose of the questionnaire is to allow model developers to submit an
updated questionnaire when major model improvements are made. This is then posted for potential users to read.

Tom Nicholson suggested that it might be nice to have an article in the SOH Connections newsletter and to put an article on the SOH web-site about the Hydrologic Modeling Inventory and the EPA Modeling Group.

*Action item:* Bill Merkel to develop a newsletter article and start working on some information that could be rolled up to the web-site on the hydrologic modeling inventory.

9. **Water Data Work Group Status**

   **Dave Goodrich**
   The water data sharing topic has been carried forward to ACWI, including a list of subcommittees interested in the topic, but so far there is no lead subcommittee for this. Bob Pierce, Tom Delbert – co leads/chairs for Spatial Water Data are to evaluate how this can be tested across the fed agencies – they will approach to assess quasi and water efforts. Dave Goodrich continues to keep SOH informed and will continue to coordinate with others, join efforts with SSW.

10. **Work Group Reports**

    a) **Hydrologic Modeling Work Group**
    Jerry Webb reported that there has been no action since last SOH meeting, so there is not yet a location for the next conference in 2014. A planning committee is established. They will try to meet this summer to look at other sites to host the next meeting (other than Las Vegas); however it is doubtful they will find any place that offers such a good deal as Vegas. A summary of the lessons learned from 2010 conference is completed. More participation on the hydrologic modeling side is needed (the 2010 conference was over 67% sedimentation). If you are interested in helping plan the content and/or venue for the next conference and or want to join the working group, contact Jerry Webb and Joe Giacinto.

    b) **Hydrologic Frequency Analysis Work Group**
    As reported at the January 20, 2011 meeting, Tim Cohn, USGS has finalized the Expected Moments Algorithm (EMA) computer code that includes a Generalized Grubbs-Beck test for detecting multiple low outliers. Four conference calls were held in March with the testing team of Tim Cohn, USGS; John England, USBR; Nancy Steinberger, FEMA; and Beth Faber, USACE to discuss and evaluate the new program and to discuss some new test procedures recommended by Jery Stedinger in January 2011. The new procedures suggested by Jery include resampling of data for those gaging stations with low outliers and historical information. The testing group discussed how to implement the analyses suggested by Jery and who would do the work. Based on limited testing, it appears the new EMA code is working as expected.

    It will be a few more months before the EMA-Bulletin 17B testing is completed. This includes the tests agreed to at the November 2009 meeting and the additional tests recommended by Jery Stedinger. Once this testing is completed and documented, a meeting of the HFAWG will be convened.

c) **Hydrologic and Hydraulic GIS Applications Work Group**

    The GIS Applications in Hydrology and Hydraulics Workgroup was organized in July 2007. Since that time the Workgroup has had a number of accomplishments. Appreciation is expressed for the assistance of Workgroup members who volunteered their time and energy to accomplish the goals of the Workgroup. Sixteen teleconferences were held over the 4 years (averaging 4 per year). At these teleconferences, various GIS applications were identified and demonstrated. A questionnaire requesting information on GIS applications in hydrology and hydraulics was
formulated and distributed to federal and outside organizations. Questionnaires were received from 12 application developers. An agreement was funded with the assistance of the Bureau of Reclamation with Texas A&M University to add these applications to the Hydrologic Model Inventory maintained by Texas A&M. Two papers were presented on the activities of the Workgroup at major professional conferences.

Even though there may be additional benefits from keeping the Workgroup active, when the Workgroup was organized the terms of reference did not foresee this as a long-standing Workgroup. The major item from the terms of reference that needs to be completed is a report on the state-of-the-art of GIS applications in hydrology and hydraulics. The field of GIS and its applications is constantly moving forward, so this report is envisioned as a snapshot in time. A draft outline for such a report will be distributed to the Workgroup members for comments within the next month. The complete report is envisioned in about 6 months.

d) Extreme Storms Work Group
At the direction of the SOH, the Extreme Storm Event Work Group formed an Ad Hoc Committee in December 2010, chaired by John England, U.S. Bureau of Reclamation, to prepare a proposal for updating Probable Maximum Precipitation (PMP) estimates for the U.S. The Ad Hoc committee met on February 23, 2011 to discuss development of a proposal outline. The committee decided that the proposal would have a two-phase approach: a short-term (1 to 2 years) Phase I effort to organize and document what is presently available (e.g., existing PMP methods; updating the USACE Storm Rainfall Catalog (1973) with new data such as electronic Depth-Area-Duration data for each new storm; and developing a Web Portal for the data, etc); and a Phase II (2 to 5 years) effort focusing on review of new potential methods such as 3-dimensional models (WRF) to replace the storm separation concept, and evaluation and testing of selected new methods for estimating PMPs. Finally, the HMRs should be updated with PMP estimates using the new methods. It was decided that the initial effort would be on updating HMR 51 (eastern half of the conterminous U.S.). John England requested each Federal agency to provide a short narrative on why they needed an updated HRM 51. (Attached is an example from the U.S. NRC staff)

The Ad Hoc committee reviewed the recommendations made earlier to the SOH and will incorporate them into the proposal (see below).

- Update HMRs for the entire U.S. to include storm events since their last update or development.
- Utilize and, where necessary such as in mountainous areas, support or develop data-collection surveys such as CoCoRaHS (Community Collaborative Rain, Hail, and Snow Network).
- Examine new extreme storm developments (e.g. mesoscale models; individual storms; transposition; moisture maximization) for implications to PMP assumptions.
- Investigate potential effects of climate variability and change on DAD relationships and PMP specific procedures (transposition, maximization and envelopment).
- Develop a national database of extreme storm events related to flooding.
- Assist the States in development of regional and local PMP estimates for use in Dam Safety and Flood Analysis studies

The next meeting of the Ad Hoc committee will be on May 5th at 1:00 p.m. EDST via teleconferencing. The committee will report to the Extreme Storm Event Work Group on their progress, formulation of specific tasks for the proposal and ideas on cost estimates.
During this period, the U.S. Bureau of Reclamation made significant progress on a Pilot Project for the U.S. Nuclear Regulatory Commission on updating HMR 51 for the Carolinas. The research included: review of the HMR 51 (storms up to 1972) and southeast US existing storm records from D-A-D; new storm (since HMR 51) analyses using Multi-sensor Precipitation Reanalysis (MPR) radar data from NCDC for the ten largest storms (i.e., hurricanes); dew point climatology (e.g., need for storm moisture maximization methods); and potential design implications and tools for the NRC licensing staff. The research findings were provided directly to the NRC licensing staff on April 12, 2011 via a Webinar.

Example narrative from a Federal agency on the need to update HMR 51

**U.S. NRC Staff Need for Updating HMR 51**

The U.S. Nuclear Regulatory Commission (U.S. NRC) licenses and regulates the Nation’s civilian use of byproduct, source and special nuclear materials in order to protect public health and safety, and the environment. The U.S. NRC’s scope of responsibility includes regulation of commercial nuclear power plants, research, test and training reactors; nuclear fuel cycle facilities (uranium recovery, enrichment, fuel fabrication, etc...), as well as medical, academic and industrial uses of radioactive materials. Reliable and up-to-date estimates of extreme precipitation and flooding potentials are required elements in the design basis of new nuclear power plants including adequate flood protection measures. This information is also critical to the continued safe operation of existing power plants (as well as for certain fuel cycle facilities). NRC currently regulates 104 operating nuclear reactors, the vast majority of which are located in the region covered by HMR-51. The NRC is currently evaluating license applications for 17 new reactors, all of which are proposed in the region covered by HMR-51. With the exception of uranium recovery facilities and one uranium enrichment facility, all existing fuel cycle facilities are also located in the region covered by HMR-51. The NRC staff is also currently evaluating license applications for fuel cycle facilities located in the region covered by HMR-51. Therefore we consider the review and updating of HMR-51 to have significant benefit to the continued safe operation of NRC licensed facilities, and to NRC staff licensing and operational programs.

**Action Item:** Agencies to develop a need statement for updating HMR 51 and submit to Tom Nicholson.

e) **Satellite Telemetry Interagency Work Group**

No report.

11. **New Work Group Proposals**

a) **Climate Change Work Group**

Nancy Steinberger reported that she attended a workshop this week on floods and climate change which was sponsored by the Western States Water Council and the California DWR. She was wondering if there should be "climate change" workgroup under SOH and if not, could a non-federal group start one. She thought perhaps the California DWR would probably be interested in getting something going. Nancy will work on exploring the possibility of establishing such a work group.

**Action Item:** Nancy Steinberger explore the possibility of establishing a climate change work group under SOH and lead a discussion regarding the role of HFAWG regarding the issue of climate change.

b) **Tsunami Flood Protection**
Richard Raione brought up the potential for starting up a tsunami hazards working group. He proposes that such a Work Group be staffed by interested fed folks from the Dept of Interior (USGS, MMS), NOAA/NWS, Corps of Engineers, Dept. of Navy, NASA, FEMA, NRC, state agencies (i.e., California dept of water resources), AGU members, etc.

**Action items:** Richard asked that member groups consider their needs regarding tsunami hazards and contact him for further discussion/considerations.

12. **Current Events within Hydrologic Communities**
   
   • **Brian Beucler, FHWA**
   
   • **Current events:**
     
     - COE infrastructure systems conference, 13-17 June. Location yet to be determined. Will also cover levee and dam safety.
     
     - US CEQ – revised principles and investments in water resources, ecosystem values, draft document in mid June (Robert Boyd)

13. **Announcements and Q&A on Business Reports from Member Organizations**
   
   a) **Business Reports**

   • **Sam Lin, FERC**
     
     On 4/1/11, FERC and USACE signed an updated memorandum of understanding (MOU) to ensure timely review of non-federal hydropower development applications. The intensified interest in developing renewable energy in the US has made hydropower an increasingly important player in the game. Small hydropower development has become a highly desirable option and the MOU goes a long way to moving these resources forward. This MOU provides a roadmap for identifying issues and resolving them, and integrates FERC and USACE’s efforts on these important hydropower projects.

     On 2/22/11, FERC hosted a visiting Delegation from the Peoples Republic of China. The Tianjin Electric Power Company will visit the SFRO with a Delegation of six Vice Presidents and Directors to learn and discuss FERC’s perspective on smart grid planning and implementation, renewable energy, bulk power operation and dispatch, and latest and new technology on grid and substation automations.

   • **Gene Stallings, NHWC**
     
     The National Hydrologic Warning Council (NHWC) 9th Biennial Training Conference and Exposition was held in San Diego, California on May 9-12, 2011. Approximately 350 practitioners, manufactures, researchers, scientists, engineers, and government representatives attended the conference. This was the largest conference in NHWC’s history, and likely the largest ever in the United States devoted specifically to real-time hydrologic warning systems. NHWC is a growing organization and is becoming the recognized leader in understanding and providing training, and professional development, standards, and guidance for the hydrologic warning community of professionals.

   • **Robert Mason, USGS**

     **USGS National Surface Water Conference and Hydro-acoustics Workshop held**
     
     The USGS held its quadrennial Surface-Water Hydrology Conference and Hydro-acoustics Workshop in Tampa, Florida, March 28-April 1, 2011. The conference was attended by more than 500 hydrologists and engineers from the USGS and various other cooperating agencies. About 5 percent of the attendees were from agencies outside of the US. The conference
included 23 half-day training sessions, 180 technical presentations, and one poster session featuring 78 posters.

The conference featured recognition of life-time contributions to hydrology by noted retirees. Mike Simpson (California Water Science Center) was recognized for his contributions to hydro-acoustics including his early use and adaption of the acoustic Doppler current meter (ADCP) to measurement of streamflow; Lamar Sanders (South Carolina Water Science Center) was recognized for his contributions to statistical hydrology and streamgage network operations, and Gary Tasker (USGS National Research Program) was recognized for his contributions to statistical hydrology including his work on generalized least squares regression and combining independent flood estimates as utilized in Bulletin 17B.

**New USGS Professional paper on 2008 Midwest Flooding released**

USGS Professional paper 1175, Flooding in the United States Midwest, 2008, by Robert R. Holmes, Todd A. Koenig, and Krista A. Karstensen, summarizes flood and rainfall statistics for the Mississippi and Minnesota Rivers and their tributaries and reports on USGS activities measuring and monitoring flood flows and supporting the efforts of the National Weather Service, the Corps of Engineers, and other Federal, State, and local agencies to forecast and fight the flood. During 2008, peak-of-record streamflows were recorded at more than 147 USGS streamgages. The annual exceedance probability of peak flows at 26 streamgages was less that the 0.2 percent flood (greater than the 500-year flood) and peaks at 67 streamgages were between the 1-percent and 0.2-percent exceedance probability (100-500 year floods). The report is available online at URL: [http://pubs.usgs.gov/pp/1775/](http://pubs.usgs.gov/pp/1775/).

**Steve Blanchard retirement**

Steve Blanchard, Chief of the USGS Office of Surface Water and former Chair of the Subcommittee on Hydrology has announced his retirement effected June 3, 2011.

- **Victor Hom, NWS**
  
  **NWS Completes the National Annual Flood Loss Summary for Water Year 2010.**
  
  During FY11Q2, NWS provided the Annual Flood Loss Summary for Water Year 2010 to the U.S. Army Corps of Engineers (USACE) to satisfy their Congressional reporting requirements. Flood damages during Water Year 2010 (October 1, 2009 - September 30, 2010) totaled $5.04 billion. This total is 67% of the thirty year average (1980 - 2009) of $7.56 billion (adjusted for inflation to 2010). There were 112 flood-related deaths (119% of the 30 year average of 93).

**NOAA Issues Spring Outlook Press Release and conducts Annual Spring Outlook Press Conference**

The annual Spring Outlook press release was issued on March 17 ([http://www.noaanews.noaa.gov/stories2011/20110317_springoutlook.html](http://www.noaanews.noaa.gov/stories2011/20110317_springoutlook.html)). The press release was developed by Office of Climate Water Weather Services (OCWWS) Hydrologic Services Division (HSD), Office of Hydrologic Development (OHD), and NOAA Public Affairs and is based largely upon the detailed National Hydrologic Assessment ([http://www.weather.gov/oh/hic/nho/](http://www.weather.gov/oh/hic/nho/)). The annual Press Conference included opening remarks from Craig Fugate the FEMA Administrator and Dr. Jack Hayes the Director of NWS and supported by many NWS subject matter experts. The press conference was organized and facilitated by Susan Buchanan and Chris Vaccaro of NOAA Public Affairs.

**NWS Issues National Hydrologic Assessment**
The 2011 National Hydrologic Assessment – a detailed national analysis of the spring flood threat – was issued on March 17, 2011 [http://www.weather.gov/oh/hic/nho/]. This assessment shows that almost half the country – from the North Central U.S. through the Midwest and the Northeast – continues to have an above-average risk of flooding. Currently, rivers in flood include the Red River of the North, which forms the state line between eastern North Dakota and northwest Minnesota, the Milk River in eastern Montana, the James and Big Sioux Rivers in South Dakota, the Minnesota River, and the upper Mississippi River basin from Minneapolis southward to St. Louis.

**NWS Updates Precipitation Frequency Estimates for California and Precipitation Frequency Data Server Webpages**

In April 2011, the Hydrometeorological Design Studies Center (HDSC) released NOAA Atlas 14 Volume 6: Precipitation-Frequency Atlas of the United States, California and newly re-designed Precipitation-Frequency Data Server web pages. Please check out the newly release data and supporting webpages at: [http://hdsc.nws.noaa.gov/hdsc/pfds/].

b) “The SOH CONNECTIONS” Newsletter Editor’s Report

SOH newsletter target is mid summer; send in your input to Richard Raione and/or Joe Giacinto at NRC. Let’s use this as an effective communication and interest tool!

14. Review Action Items

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<th><strong>Claudia Hoeft:</strong> Make final corrections/edits to minutes from the January 20, 2011 meeting and send to Carol Lewis for posting on SOH web-site.</th>
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<th><strong>Nancy Steinberger:</strong> Prepare a brief write-up on California membership to include in the meeting minutes.</th>
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<th><strong>All members:</strong> Let Jerry Webb know of interest in working on the next Joint Conference.</th>
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<th><strong>All members:</strong> Provide suggestions/recommendations to Jerry Webb on proposed location for next Joint Conference (in 2014).</th>
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<th><strong>Bill Merkel:</strong> Send a brief report on the Hydrologic Modeling Inventory for inclusion into the meeting minutes which can also be used as an SOH Connections article and start the foundation for an “information” section on the SOH web-page.</th>
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<th><strong>Claudia Hoeft:</strong> Investigate what is required for a final report and dissolving a work group.</th>
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<th><strong>Claudia Hoeft:</strong> At the next ACWI meeting, prepare to present information on what we are doing regarding the data working group and find out if they have plans for an umbrella working group covering all the Subcommittees, or if they are planning a Data Subcommittee to deal with the data sharing/data format issues.</th>
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<th><strong>All members:</strong> Provide narratives describing the NEED for updated HMR 51 (PMP) for the Extreme Storms Events Work Groups (Tom Nicholson) by the end of May.</th>
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Brian Beucler: Provide information web-links on Climate Change approaches as applied in FHWA.

All members: Provide narratives to Nancy Steinberger describing Agency/Organization interest and needs relevant to Climate Change to gage interest in forming a Climate Change Work Group.

Nancy Steinberger: Hold discussion within HFAWG on climate change analysis and relation to Bulletin 17B update – report back to SOH at next meeting.

All members: Provide information to Tom Nicholson and Richard Raione regarding need for Tsunami damage information/procedures to gage interest in forming a Tsunami Damages Work Group.

Jerry Webb: Provide information on the Corps’ Infrastructure Systems Conference.

Claudia Hoeft: Recommendation: In future, distribute business reports to the Subcommittee prior to the meetings.

All members: REMINDER: Submit agency business reports prior to the meetings.

All members: Send newsletter articles to Richard Raione, Joe Giacinto – the sooner the better (next newsletter being planned for mid-summer).

Claudia Hoeft: Send information to SOH members regarding the SWRR meeting.

Claudia Hoeft: Send today’s action items out to SOH members after the meeting today. Completed (04-21-2011)

15. Plans for Next Meeting
July 21, 2011, 9:00 a.m., Room 1052-S, South Ag Building, 1400 Independence Avenue, SW, Washington, D.C. 20250

Adjourn