

**MEETING OF THE
ADVISORY COMMITTEE ON WATER INFORMATION'S (ACWI)
SUBCOMMITTEE ON HYDROLOGY (SOH)
12:00 p.m. – 3:00 pm, Eastern Standard Time
Monday October 28, 2013**

**Location: USDOT Headquarters, 1200 New Jersey Avenue, SE, Washington, DC 20590
East Building - Conference Room E75-302**

I. Summary

1. **Welcome and Background on SOH** (5 mins) Victor Hom
 - Please refer to [Victor's PDF slides](#).

2. **Words from our Host** (10 mins) Brian Beucler
 - *Brian noted the disconnect between Climate Model outputs and the design input needs of engineers , FHWA, and DOT to size bridges, culverts, catchments, and crossings.*
 - *Brian expressed concerns with the spatial and temporal resolution of the climate models and its uncertainties, which impact the infrastructure design.*
 - *If there is no stationarity, then what next with non-stationarity? Traditionally within the hydrologic community, the design has been based on historical observations and statistics, whereas climate models project uncertainty and trends into the future.*
 - *Extreme events pose additional considerations - precipitation, debris flow, and service, municipal, and infrastructural interruptions/disruptions, as well as damage.*
 - *Brian then went over some of the FHWA initiatives and projects for the Office of Bridges and Structures (HIBS) and Office of Environment (HEPN).*
 - *HIBS initiatives include: 1) Addendum to HEC-25 Volume 2, Highways in the Coastal Environment, 2) Investigating the Potential Impact of Climate Change on US Precipitation Frequency Estimates, and 3) Culvert Management Case Studies 2.*
 - *HEPN initiatives include: 1) Gulf Coast 2 Project Status, 2) New Round of 19 Climate Pilots, 3) Post Sandy Study, 4) NCHRP 20-05 (44-08) Impacts of Extreme Events on Transportation Systems, and 5) Transportation Engineering Approaches to Address Adaptation and Resiliency*
 - *Please refer to [Brian's PDF slides](#) for more details on these initiatives.*
 - *Brian also recognized the FHWA attendees, who were working on these various initiatives.*
 - *Brian noted that asset management is very important to DOT. Asset management systems should include a portfolio of aging infrastructure, which will be more likely to fail under additional future climate stressors.*
 - *The assessment of aging infrastructure will also need to consider the prolonged durational storms in terms of persistency (series of smaller storms) not just only the extreme events, in which one big storm's results in excessive runoff exceeding infrastructural capacity.*
 - *Beyond the large events, there is also the challenge of flashy events, in which significant runoff is generated over a short timeframe. Runoff volume comparable to a 2 to 10-year storm could occur in a matter of minutes.*

- *Other considerations include antecedent moisture conditions, direction of the storm, peakQ's, and some cases, storms producing major rainfall impacting localized landscape, not just causing floods on rivers and streams.*

3. **Roll-Call (Remote Participants/In-Person Attendees)** SOH Members and Guests

- *Please see attendee list.*

4. **Review and Approval of Agenda** (2 mins) Victor Hom

5. **Approval of the August 2013 Meeting Summary** (2 mins) Victor Hom

6. **Status of Action Items from August 2013 Meeting** (5 mins) Victor Hom

7. **Feature Presentation** (~60 mins)

Water Resources Adaptation to Climate Change (WRACC) (12:35 – 1:45 PM)

- *Guest Introduction* Victor Hom
- *Current Status and WRACC Projects* Jeff Peterson
- *Questions/Answers/Discussion of WRACC topics* All
- *Advice from WRACC Co-Chairs* Jeff Peterson/Paul Freedman

- *Please refer to [Jeff's PDF slides](#).*
- *Jeff wanted to draw a broad brush picture on climate change and stimulate discussion with SOH on what is being done right, could be done better, and collect suggestions on climate change adaption, its characterizations, manifestations, and its effects on water and water resources.*
- *Jeff echoed a quote from the [Water Resources](#) section of US Global Climate Research Program 2009 Study, titled "Global Climate Change Impacts in the U.S" which stated: "**Climate change has already altered, and will continue to alter, the water cycle, affecting where, when, and how much water is available for all uses.**"*
- *Some of the well-established water related effects of climate change include: warmer water temperatures, changing patterns of precipitation, earlier snowmelt, more extreme weather events, increased drought, sea level rise, storm surges, coastal impacts, and ocean acidification. However, it has been hard to get a handle on the cumulative combined effects.*
- *Jeff noted graphics in the Water Supply Sustainability Index from S.B. Roy et al, 2012 and showed the increasing risk projected for 2050 in which extreme water supply risks grew from 29 to 412 communities due to climate change.*
- *Jeff, then discussed, the Federal Government's response to climate change by reviewing some of the activities and initiatives (five major pillars): 1. President's Climate Action Plan, 2. National Climate Assessment, 3. Interagency Climate Adaptation Task Force, 4. National Action Plan: Managing Freshwater Resources in a Changing Climate, and 5. Advisory Committee on Water Information(ACWI) Climate Change Workgroup.*
- *From the **President's Climate Action Plan**, Jeff noted some of the actions undertaken to promote stronger communities and Infrastructure. He then highlighted the commitments to be made in protecting the economy and natural resource in areas of conservation, management, risk*

reduction, and preparedness. He then identified a few activities which have been undertaken to provide recommendation and guidance for sound science to manage Impacts. Jeff recommended that SOH look at EPA's stormwater calculator.

- Jeff noted there was a realization that assessments similar to the National Climate Assessment should occur more often than 3 years and the need for a continuing sustainable study with more frequent updates.
- Jeff stated that the **Interagency Climate Adaptation Task Force** recommended agencies not only to develop individual agency planning but to look across the discipline with cross cutting strategies for Water Resources, Coastal/Ocean, and Fish/Wildlife/Plants.
- Jeff cited key recommendations from the National Action Plan: Managing Freshwater Resources in a Changing Climate, such as improving water information, strengthening vulnerability assessments, and expanding water use efficiency.
- Jeff then provided information on the **ACWI Climate Workgroup** which he co-chairs with Paul Freedman, representing the Water Environment Federation. Since there is much to be shared about WRACC, a link to [WRACC](#) is provided as part of this summary
- Jeff noted that adaptation is about being prepared when, where, when, and how with climate change. WRACC is focus on water and water resources, thus WRACC looks to work with various ACWI subcommittees such as SOH.
- Jeff and Paul's advice is that we should be sharing info and look for opportunities to work in coordinating mutually reinforcing manner with focus on adaptation not just mitigation alone and also beyond the Federal sector as well.
- A very engaging Q&A ensued in which some of the following issues were discussed:
 - In adaptation, there should be awareness of the changing landscaping, figuratively and literally, namely the landscape of changing population, impact on imperviousness, the built environment, erosion, sea level rise, aging infrastructure, dwindling resources and be smart about our short and long range planning.
 - More discussion of the discontinuity between data observations and models occurred. As there is a need for continuity on what we are seeing and what we are predicting to be borne out of the observations. In this situation, data observers need to understand models better and modelers need to use observations better to get results.
 - Figures which enumerate the impacts to human, loss of life, and the economy may need to be estimated, captured, and communicated not only to raise awareness but encourage comprehensive actions.
 - USACE would like to continue this discussion and make a presentation on their efforts in developing "Engineering Guidance Frame Work for Inland Hydrology Considering Climate Change" at the next ACWI-SOH meeting

8. Announcements (5 mins)

- ASCE-EWRI 9th Weather Radar and Hydrology International Symposium Chandra Pathak
- Business Report (FERC) Email from Sam Lin

BREAK (1:50 – 2:10 PM) – Collect and Tally Votes

9. **Election Results** (5 mins) Victor Hom
- *Congratulations Robert on your selection as ACWI-SOH Vice-Chair*
 - *Thanks Claudia for help in collecting, tallying, and announcing results.*
10. **Words from New Vice-Chair** (5 mins) Robert Mason
11. **News from the SOH Workgroups** (30 mins)
- *HFAWG, ESEWG, HMWG (Business Reports to be attached)* Will, Tom, and Claudia
12. **Review Actions and Plans for next SOH meeting** (15 mins) Victor Hom
- *Next Meeting: Thursday Jan 30, 2014 from 1230PM to 330PM EDT*
 - *US Army Corps of Engineers, Headquarters (GAO building) 441 G Street Washington DC*
 - *Guest Speaker: Mr. David Raff*
 - *Topic: "Engineering Guidance Frame Work for Inland Hydrology Considering Climate Change"*
13. **Meeting Adjourn** (Around 3:15 pm)

II. Attendees

SOH Member s, SOH WG, and Guests		Organization	Participation
Jeff	Arnold	U.S. Army Corps of Engineers (USACE)	<i>(phone)</i>
Martin	Becker	Becker	<i>(phone)</i>
Brian	Beucler	Federal Highway Administration	
Eric	Brown	Federal Highway Administration	
Lichuan	Chen	UMD - NOAA	<i>(phone)</i>
Jerry	Coffey	OMB (Retired)	<i>(phone)</i>
Mike	Eberle	U.S. Dept. of Agriculture, Forest Service (USFS)	
Siamak	Esfandiary	U.S. DHS, Federal Emergency Management Agency	
Ian	Ferguson	U.S. Bureau of Reclamation	<i>(phone)</i>
Paul	Freedman	LimnoTech	<i>(phone)</i>
Gerry	Galloway	UMD - NOAA	<i>(phone)</i>

David	Goodrich	U.S. Dept. of Agriculture, Agricultural Research Service (ARS)	<i>(phone)</i>
Dave	Henderson	Federal Highway Administration	
Tina	Hodges	Federal Highway Administration	
Claudia	Hoeft	U.S. Dept. of Agriculture, Natural Resources Conservation Service (NRCS)	
Heather	Holsinger	Federal Highway Administration	
Victor	Hom	NOAA / National Weather Service	
Rob	Hyman	Federal Highway Administration	
Robert	Kafalenos	Federal Highway Administration	
Melissa	Kohler	CA Division of Water Resources	<i>(phone)</i>
Lee	Koss	U.S. Bureau of Land Management (USBLM)	
Rebecca	Lupes	Federal Highway Administration	
Robert	Mason	U.S. Geological Survey (USGS)	<i>(phone)</i>
William	Merkel	U.S. Dept. of Agriculture, Natural Resources Conservation Service (NRCS)	
Khalid	Mohamed	Department of Transportation	
Tom	Nicholson	U.S. Nuclear Regulatory Commission (NRC)	
Chandra	Pathak	U.S. Army Corps of Engineers (USACE)	<i>(phone)</i>
Jeff	Peterson	US Environmental Protection Agency	

Benjamin	Pratt	National Hydrologic Warning Council (NHWC)	<i>(phone)</i>
Kevin	Quinlan	U.S. Nuclear Regulatory Commission (NRC)	<i>(phone)</i>
David	Raff	U.S. Army Corps of Engineers (USACE)	<i>(phone)</i>
Tom	Roberts	Commonwealth of Virginia, DCR Dam Safety	<i>(phone)</i>
Amanda	Rutherford	Federal Highway Administration	<i>(phone)</i>
David	Sutley	U.S. DHS, Federal Emergency Management Agency	<i>(phone)</i>
Marcel	Tchaou	Department of Transportation	
Will	Thomas	Association of State Flood Plain Managers (ASFPM)	
Ed	Tomlinson	Applied Weather Associates	<i>(phone)</i>
David	Wells	US Environmental Protection Agency (USEPA)	