

**SUMMARY OF THE MEETING OF THE
ADVISORY COMMITTEE ON WATER INFORMATION'S (ACWI)
SUBCOMMITTEE ON HYDROLOGY (SOH)
12:30 pm – 3:30 pm, Eastern Standard Time
October 19, 2017**

1. Welcome

Chair Robert Mason called the meeting to order at 12:40 pm.

2. Roll call

The list of attendees is attached. There was not a quorum. The meeting proceeded with the hopes that a quorum will be achieved before any votes. There are only a few items to vote on: streamflow information consortium, data gaps group, and the certification of the vote for vice chair. A list of attendees is included as Attachment 1.

3. Review and approval of agenda

There were no new attendees at the meeting, so Robert suggested that the "Background on the SOH" section of the agenda should be skipped.

Robert asked for a motion to adopt the revised agenda. Victor Hom motioned to adopt the agenda, and Claudia Hoeft seconded the motion. There were no objections, and the agenda was adopted. The agenda is included as Attachment 2.

4. Feature presentation

Robert introduced the featured speaker, Rich Vogel. Rich is a recently retired professor at Tufts University, in the civil and environmental engineering department. He has done a lot of work on low flow. He has also taught several USGS staff. Rich contacted Robert about ACWI interest in low flow. As the SOH has finished 17C, this may be a good time.

Rich presented "The need for national guidelines for determining low streamflow frequency."

Rich currently has a fellowship with the Institute for Water Resources. This provides him the means to continue studying low flow. As an overview of his presentation, he provided several topics to be discussed, including some background on low flow statistics, the purpose and justification for guidelines, the analogy to flood frequency guidelines, the distinction between drought and low flow statistics, a brief review of existing manuals, and finally a scope of work for a low flow working group.

The applications of low flow statistics are largely for water supply purposes. It answers the question of what is left in the river. This is useful for ecosystem protection and water quality, as well as maintenance of water quantity and water quality.

Low flow statistics impact water use restrictions, reductions in quality, agricultural stresses, fire risk, and groundwater depletion.

The purpose of a low flow statistics working group would be to produce a state of the art and appropriate frequency analysis of low streamflow data. It would provide a uniform, consistent, objective and reproducible method. It would enable prediction of low flow statistics.

For an initial product, the report would be analogous to the inventory of uniform national methods for flood frequency analysis. Bulletin 13 had methods, but no testing or evaluation of procedures.

Low flow statistics are important for looking at drought. There are three definitions of drought: meteorological drought, agricultural drought, and hydrological drought. We focus on hydrological drought. This means drought that impacts the hydrologic system, with an emphasis on water resources planning and management.

Hydrologic statistics are mostly used for drought planning, design, and management. The Q7,10 (7 day, 10-year low flow) is a common statistic. Flow duration curves show the frequency and magnitude of all stream flows.

A brief review on existing manuals included the Riggs 1972 report, "Low flow investigations." This summarized USGS techniques. In the UK, Alan Gustard wrote "Low flow estimations in the United Kingdom." In 2008, Gustard and Desmuth published a manual on low flow estimation and prediction.

The initial scope of work for a low flow working group would include the following:

- 1) Survey of low streamflow statistics and their use in practice;
- 2) Survey probability distributions (PDs) recommended in large scale studies for 7-day minima;
- 3) Inventory current practices in low flow frequency analysis;
- 4) Inventory software for low flow frequency analysis (what toolbox exists for computing these statistics) and,
- 5) Review USGS guidance including OSW memos, training, and software.

Membership background and skillsets for the proposed work group would be expertise in statistical and physical hydrology. The timeline is calendar year 2018. This would include quarterly meetings; solicitation of input from state/federal agencies; public comments, and a report delivered by December 2018.

There was time for comments and questions from the floor/phone.

Will Thomas commented that Rich has a good idea. He thinks the effort is needed and useful. He suggested establishing a separate low flow workgroup, rather than incorporating this work into HFAWG.

Martin Becker asked, if you perform the low flow frequency to come up with a 10-yr flood, how closely would it resemble the 10-yr flood. Rich answered that it is a different statistic altogether. For frequency, the annual maximum is used, and fit to a distribution. For low flow, the annual minimum of the 7-day series is used. But the technique is similar. Martin asked about regulatory benefits. Rich said yes, there are regulatory benefits. For example, the EPA would use it. The "7 day 10" is a low flow regulation in many states. It can also be used to make decisions about withdrawals from reservoirs.

Martin asked if there was consensus between the different methods. Rich said there is a very slow evolutionary agreement over certain principles.

Martin suggested taking the terms of reference from the HFAWG group and applying them to the low flow group.

Martin asked if the agencies agree on procedure. Robert said the agencies recognize the need for this. EPA and USGS have broad agreement, but there are other statistics not in broad circulation.

Martin asked if there is a climate change impact that should be investigated. Rich noted that low flows are particularly sensitive to climate and other changes.

Martin supports Will's suggestion.

Robert noted that EPA is not on the call today, but they have an interest in low flow.

Victor noted that it is hard to get the data sometimes (water below invert). How do you address that?

Rich said this should be entered as a censored sample; as observations below the threshold. There is some work on taking low flow measurements on a few days. There are improvements.

Victor noted the river forecast centers have procedures for identifying and noting that the water is below the invert, and that there could be forecast errors due to this observational issue during low flows.

Sujay Kumar asked what is the accepted practice at the National Water Center? Rich said he is not familiar. National water model is a tremendous opportunity. They mostly have been working on a deterministic model. Rich is working with data/statistical methods.

Martin asked, in forming the committee, are you comfortable in reaching out to various opinions that are out there today, in terms of developing an opinion that is as useful as possible. In other words, reaching out to people you do not agree with. Rich said yes, that is always the most challenging thing to do.

Ben Pratt commented that he is very interested in this topic and happy to participate in the workgroup; he could bring more to the table in terms of the application. Over time, his group has gone from Q7,10 to more seasonal variation, so that is something to consider, as well as application of the flow duration curve.

Will had one more comment; he noticed that Brian Beucler just joined the call, but noted that FHWA/state DOTs are very interested in fish passage, so that would be another use of the low flow data. He likes Martin's suggestion of taking the terms of reference for the HFAWG and developing a low flow workgroup. Robert answered that we can bring this up a little later in the agenda under new business. A discussion needs to occur. Also, we did not have a quorum at the beginning of the meeting, so we need a new roll call.

5. Review of and approval of September 21 meeting summary

Laura Chap stated that the initial draft of the minutes was sent out October 3; on October 10, another draft was sent out that incorporated all revisions received. The only revision of note was Tom Nicholson's vote. Tom was having difficulty unmuting his phone during the vote, and he was incorrectly marked as "not present" during the vote. This change was noted with no objections. Will motioned to adopt the minutes. Vic seconded the motion.

6. Status of action items

- Work groups to submit reports – done (what was received was incorporated)
- Agencies to submit reports – done
- Streamflow information group to find a vice chair – Doug Yeskis is serving as chair. He is still looking for a vice chair. If anyone is interested, please let Doug know.

- Robert to take group concerns about travel budgets back to HMWG to consider – No subsequent meeting held.
- Ted to prepare a charter for the data gaps group and distribute – done
- Robert will contact the group regarding the location for the next meeting and speaker for the feature presentation, as well as regarding nominations for vice chair - done

7. New business

Robert noted that there were three items under new business: selection of vice chair; installation of new chair, and discussion of the new work item on low flow characterization.

Regarding the vice chair, there were two nominations at the last meeting. Chandra Pathak was not present at the meeting to accept his nomination, and later declined. Sujay accepted the nomination.

Sujay is a physical scientist at Goddard. He has been a member of the SOH for about a year now. At NASA, his focus is on exploiting the information from remote sensing data sets. He is interested in broadening the scope of the group to encourage the larger hydrology community to engage. He would like to encourage the community to use remote sensing data sets.

Robert counted the emailed votes (Siamak Esfandiary was copied) and all received in were in favor of Sujay.

The vice chair rises to become the chair every two years. Robert will now step aside and Siamak will become the new chair. Siamak is now chair.

Siamak thanked Robert and noted that recently FEMA has deployed most of their staff, either on site at disasters or in call centers. Siamak was deployed to the call center, which was a new experience for him. But the experience emphasized that what we are doing here is very important. There are so many people living in floodplains and no good assessment of risk. We don't have the nation's flood risk profile. We have flood insurance rate maps, which are not really risk maps. Siamak has wanted to have a work group on risk; this is difficult as everyone has a different definition. Perhaps a smaller step would be how do we talk about risk; how do we identify risk. He thinks it is important to have a work group on mapping risk in floodplains. FEMA has started a different type of modeling and mapping of flood risk. He would like to do feature presentation next time. Bulletin 17C is out and we are using it. He is looking forward to working with Sujay. He also noted that FEMA may be having some email issues. If there is no response, please call or email him a second time.

The next item on the agenda was the discussion of the new work item on low flow characterization.

Siamak asked if this will require a new work group, or would it be part of HFAWG? Robert answered that the HFAWG charter included many topics that deserved more study. Low flow statistics refer to more drought-oriented applications. Low flow could fit within the HFAWG charter, but it doesn't have to be in HFAWG. HFAWG will not retire.

Siamak asked for opinions about having seven work groups. Will responded that he does not see a problem, the subcommittee has diverse interests. Will would like to see HFAWG enhance Bulletin 17C further.

Siamak noted that when the SOH establishes a work group, a charter is needed. The work group should have a defined scope.

Claudia noted that some work groups have terms of reference, some have a charge and some have a charter. In some cases, the groups have a defined product, but not in all cases.

Siamak thinks there should be an interim product, so that it is clear what the work group is trying to accomplish. We need to know which work groups will stop and which will continue. It is easier to manage work groups that way. If we have seven groups, we need reports from seven groups. At some point, two- or three-hour meetings won't be long enough. We need a way to manage work group beginnings and ends. Not every work group needs to create a report like Bulletin 17C. Each group needs a plan.

Claudia said that ESEWG had many months of planning before it became a work group. Having seven is not too much providing the reports are submitted prior to the meeting and each group does not have to give a report.

Siamak asked if we should we have a more structured approach, or if we should we just keep things the way they are.

Sujay agrees on developing the structure. There is a need to identify common areas and broaden the scope.

Siamak suggested spending 15-20 minutes at the next meeting discussing requirements for a work group. We should create visible, high quality products like Bulletin 17C (although that is a very high bar). Other products that we produce should follow a similar path.

Victor shares these concerns. He would like work groups to complete their work, and then sunset them. Regarding the low flow group, he would love EPA to lead it.

Claudia said that there are two separate topics being discussed. One is if there should be a subordinate group regarding low flows. We would need more involvement from the EPA, but we could start developing a charter or a plan. We also need to look at our own terms for forming work groups.

Victor noted that ESEWG was limping along as a subordinate group and then got a charter approved by ACWI.

Victor made a motion to create a subordinate group for low flow and have the group consider the charter.

Robert commented that for the data gaps group, Ted Engman wanted to write a white paper. The other groups are more topically developed and arranged. He is not sure any of the groups need to come back with a report. If the SOH wants to charge each of these groups with a report, we can do that.

Siamak said that we don't have to call every item a work group.

Martin said he was involved in writing the original SOH terms of reference. He shares a concern with Siamak; each time a work group does something productive, we don't need to cause a proliferation of work groups. Certain tasks could be done by the chair of the subcommittee appointing three people to go look at an issue.

Siamak suggested that in the next quarterly meeting, there should be a 30-minute agenda item on work groups. Siamak will work with Sujay and Robert to look at the terms of reference. We might end up saying that we will keep going as we have been. Martin would be happy to assist in looking at this issue. Victor agrees that these should be fast action items. Martin would not want any comments on the work group structure to be perceived as negative towards the low flow proposal, and noted that it was one of the best presentations in the past year.

Rich said that he and Chuck Kroll have an interest in the topic, but it might make more sense that the initial effort is a white paper. Without active participation from the EPA, it makes no sense to have the work group. A proposal phase or a white paper phase might make the most sense.

Siamak said we will set aside time to discuss at the next meeting. Low flow characterization fits right into SOH topics. There will be no resolution on a low flow characterization work group at this meeting.

Martin asked that if there is a work group, is it important enough that a GS staff work on this instead of something else at the agency? When HFAWG terms of reference were developed, the idea was that the issue addressed by the work group would need to be important enough that for agencies to commit personnel to this issue rather than another issue. He thinks Richard is following the right process with the white paper. It will be more convincing if EPA or other agencies were to commit personnel.

Claudia thinks we are a little tied up in semantics. Richard should move forward with development of a white paper. She doesn't want to stop the process while we discuss a governance issue.

Robert thinks the motion should be that we ask two or three agencies to work with Rich to develop a charter.

Martin endorsed the process of Rich developing a white paper to engage a work group to present the request to the SOH.

Martin made a motion that the SOH support the effort of Rich Vogel and Chuck Kroll to prepare a white paper for the SOH to review and other agencies to review as a way to justify the formation of the work group on low flows. Claudia seconded the motion.

Robert noted that Richard already provided a three-page paper and a proposal to the group. What else are we asking for?

Martin said Rich seemed to believe we need more meat and potatoes with it. Rich agreed.

Ben is concerned about too many work groups. He thinks it should be pitched to HFAWG. It seems like HFAWG should decide about taking on the issue.

Vic noted he had similar thoughts but Will thinks HFAWG should press on with Bulletin 17C.

Martin supports Will's suggestion. When writing HFAWG, they were trying to shape the wording to incorporate all kinds of analysis. He would like to see Siamak call the motion.

Siamak would like to move forward. He called the motion. All were in favor, and none opposed. The motion passed.

Claudia had a final thought, that the development of a white paper does not make the decision of whether the work goes under HFAWG or a new work group.

Will said it is logical to put it under HFAWG, but it could have multiple tasks.

8. SOH Work Groups

Siamak asked that the work groups condense their reports.

HFAWG – Will provided the report. At this point, the group needs ACWI concurrence on Bulletin 17C. Robert noted that the USGS approved Bulletin 17C as a USGS report. Siamak asked if the website for the draft document will stay up. Robert affirmed that it would.

Data gaps – Sujay provided the report. Robert distributed the updated description. They are changing the title; it may be called “Filling the gaps,” or other working titles such as “Working with irregular data.” The objective is to produce a white paper and make some recommendations. We will also try to focus on technical advancements in big data.

Robert will not make motion to adopt the charter at this time. Some have not read it, and we need a governance discussion.

9. Review actions and plan for next meeting

Action items

- Martin, Siamak, Victor and Claudia will discuss governance
- Review of the low flow white paper – this will likely not be available by the January meeting but might be an action item for the April meeting.

The next meeting will be January 18. There were no objections to this date.

For the location, Siamak will check about hosting it at FEMA. The feature presentation will be by Siamak.

Martin made a motion to adjourn. Victor seconded the motion. The meeting adjourned at 3:13 pm.

Attachment 1. Roll Call

Name	Agency/Group	In person/On phone
Richard Vogel	IWR	On phone
Robert Mason*	USGS	In person
Will Thomas*	ASFPM	On phone
Steven Yochum*	USDA/U.S. Forest Service	On phone
Ben Pratt*	National Hydrologic Warning Council	On phone
Victor Hom*	NOAA/National Weather Service	On phone
Laura Chap	Atkins/STARR II	In person
Mathini Sreetharan	Dewberry	In person
Jason Giovannettone	Dewberry	In person
Siamak Esfandiary*	FEMA	In person
Claudia Hoeft*	USDA/NRCS	On phone
Martin Becker*	BECKER	On phone
Sujay Kumar*	NASA	On phone
Brian Beucler*	FHWA	On phone
Terry Davies*	NSF	In person

* SOH member

Attachment 2. Meeting Agenda

**MEETING OF THE
ADVISORY COMMITTEE ON WATER INFORMATION'S (ACWI)
SUBCOMMITTEE ON HYDROLOGY (SOH)
12:30 p.m. – 3:30 pm, Eastern Time
Thursday October 19, 2017**

Location: In-person meeting at USGS, National Center, 12201 Sunrise Valley Drive, Reston, VA (Meeting Room 5A323)

Problems? Laura Chap, Office: (301) 210 6800; Robert Mason, cell: (703) 405-5823

Meeting Instructions and Resources:

1. In the interest of time, we will be using the survey monkey to do our roll-call. Please register before COB on October 19, 2017 via <https://www.surveymonkey.com/r/9QFPVJL>
2. Webx link:
<https://usgs.webex.com/usgs/j.php?MTID=m9a14db417b9bdde7ef8847c08811900c>
3. Conference call Number(s): 1- 855-547-8255 (703-648-4848) ACCESS CODE: 20387
Note: PC weblink for meeting will be open around 5-10 minutes prior to the meeting. Please allow ample time to setup your computer.

I. Tentative Agenda

- | | |
|--|-------------------------------|
| 1. Welcome (5 mins) | Robert Mason |
| 2. Roll-Call (5 mins) <ul style="list-style-type: none">• <i>See Survey Monkey.</i> | SOH Members and Guests |
| 3. Review and Approval of Agenda (2 mins) | Robert Mason |
| 4. Background on SOH (5 mins) | Siamak Esfandiary |
| 5. Featured presentation (45 mins) | |
| 6. Approval of the September 21, 2017 Meeting Summary (3 mins) | Laura Chap |
| 7. Status of Action Items from September 21, 2017 Meeting (5 mins) <ul style="list-style-type: none">• Work groups to submit reports –<i>Done and posted in meeting summary.</i>• Agencies to submit business reports –<i>Done and posted in meeting summary.</i>• Streamflow information group to find a vice chair –<i>Ongoing.</i>• Robert to take group concerns about travel budgets back to HMWG to consider –<i>No subsequent meeting held.</i>• Ted to prepare a charter for the data gaps group and distribute –<i>Report pending.</i> | Robert Mason |

- Robert will contact the group regarding the location for the next meeting and speaker for the feature presentation, as well as regarding nominations for vice chair.

8. **New Business** (10 mins)

Robert Mason/Siamak Esfandiary

Selection of vice chair

Installation of new chair

Discussion of new work item on lowflow characterization

9. **SOH Workgroups** (50 mins)

Siamak Esfandiary

- HFAWG
- ESEWG
- STIWG
- *Streamflow Info Consortium*
- *Data Gaps*
- HMWG

Will Thomas
Tom Nicholson
LySanias Broyles
Doug Yeskis
Ted Engman
Claudia Hoeft

11. **Review Actions and Plans for next SOH meeting** (10 mins)

Siamak Esfandiary

12. **Next Meeting:**

All

- *Thursday, January 18, 2018 from 12:30PM to 3:30PM EDT (Tentative)*
- *Location: TBA*
- *Guest Speaker Topics? Suggestions??*

13. **Meeting Adjourn** (Around 3:30 pm)