

MINUTES
CHIEF OF ENGINEERS ENVIRONMENTAL ADVISORY BOARD
January 19, 2012
Washington, DC

1. CALL TO ORDER

The U.S. Army Corps of Engineers (Corps) Deputy Commanding General for Civil and Emergency Operations, **MG Michael J. Walsh**, called the Environmental Advisory Board (EAB) to order at 0900, hours, 19 January 2012 at the Corps HQ in Washington, DC 20314. The following EAB members were present:

Dr. Richard F. Ambrose, Director of the Environmental Science and Engineering Program and Professor, Department of Environmental Health Sciences, University of California at Los Angeles;
Dr. Christopher I. Goddard, Executive Director of the Great Lakes Fisheries Commission;
Dr. William L. Graf, Foundation University Professor and Chair, Department of Geography; Interim Associate Dean for Research, College of Arts and Science, University of South Carolina;
Dr. James E. Kundell, EAB Chair, Professor Emeritus and Director of the Environmental Policy Program, Vinson Institute of Government, Professor Emeritus, Odum School of Ecology, University of Georgia;
Dr. Denise J. Reed, Professor, Department of Earth and Environmental Sciences, University of New Orleans; and,
Dr. William W. Walker, Executive Director, Mississippi Department of Marine Resources

Also present were **Mr. Theodore (Tab) Brown**, Chief of Planning and Policy and **Mr. John Furry**, Designated Federal Officer to the EAB.

2. WELCOMING REMARKS

The Deputy Commanding General for Civil and Emergency Operations, **MG Michael J. Walsh**, opened the meeting, and **Dr. James E. Kundell** welcomed all to the meeting, stating that the EAB advises the Chief on civil works environmental issues, especially regarding environmental benefits of infrastructure reoperation and rehabilitation.

MG Walsh remarked that this is the 40th year of the EAB, serving its 11th Chief of Engineers. The Board has advised the Chief through many eras, including the passage of the Clean Water Act and the Water Resources Development Act of 1986. The Board has been invaluable in helping guide the transition within the Corps from full Federal funding to a more collaborative planning model that includes NEPA and stakeholders. The Formerly Utilized Sites Remedial Action Program (FUSRAP) is but one of the accomplishments of the Board. The Chief takes input from many individuals and groups, both within and without the Corps, and EAB input is an important part of that. The regional approach implicitly suggested by the EAB is an important way to conduct environmental analysis, reaching beyond district or political lines to judge issues at a watershed level.

MG Walsh performed the oaths of office for Dr. Richard Ambrose, Dr. Christopher Goddard, Dr. James Kundell, Dr. Denise Reed, and Dr. William Walker.

3. OPENING DISCUSSION

Dr. Kundell opened the discussion updating MG Walsh on a field visit to the Lower Mississippi in August 2011 conducted at the request of Mr. Steven Stockton, Director of Civil Works. The flood cycles

of a system like the Missouri and Lower Mississippi are important from an environmental standpoint, as they provide for plant and animal habitat and sediment and nutrient deposition into the flood plains and delta. The Board visited the control structures for the Bonnet Carre Spillway along Lake Pontchartrain, the Morganza and Old River Control structures, and the Atchafalaya Floodway. The Old River structures are designed to send 30% of the combined flow of the Mississippi River and Red River through the Atchafalaya River to the Gulf. While currently being operated as designed with flows balanced on a daily basis, Dr. Kundell suggested that if this quota was met over a monthly- or yearly-timescale, it might provide more benefits than the current daily time scale. The Board also believes that if there were separate operations plans for water and for sediment and nutrients, it might prove beneficial for ecosystem services as well as facilities maintenance.

Dr. Kundell then discussed the Board's visit to the Missouri Basin in October 2011. The Board was briefed by both Northwestern Division (NWD) and Omaha and Kansas City Districts staff on the prior summer flooding, and they also engaged with BG McMahon, Division Commander of NWD, who spoke of the importance of the Corps Environmental Operating Principles. While in the Lower Missouri, the Board looked at habitat for pallid sturgeon, which is currently the focus of restoration efforts in the basin. The Board also had an overflight of the areas flooded during the summer along the Lower Missouri River from near Hamburg, Iowa up to the Lewis and Clark Reservoir near Yankton, South Dakota. A major question for the Corps is how the 2011 flood event should be defined. That is, is it an outlier, a .02% flood, or is it the new normal? If it is an outlier, reconstruction of levees and infrastructure in their current footprint is a good option, but if similar flood extents are the new normal, alternative options should be considered. Dr. Kundell suggested that this question is only answerable in hindsight, however.

Dr. Kundell characterized the emergent sandbar habitat seen from the air as a temporary feature, as it will evolve to vegetated riparian habitat. Due to its short lived nature, and the importance to Tern and Plover species, sandbar habitat must be approached from an adaptive sediment management perspective. Such an approach should also consider the sediment impounded behind dams, such as Gavin Point, which is a positive for habitat but decreases reservoir storage capacity. Flushing the sediment downstream could benefit both the environmental mission of the Corps as well as the flood risk management mission. The Corps appears to be moving in the right direction with environmental restoration in the region; development of a floodplain management plan could prove beneficial. A watershed approach is key for basin management and restoration.

MG Walsh expressed appreciation for this report. He asked his staff to look into the rationale behind the 70/30 flow split at the Atchafalaya. The governor of Louisiana can request changes to the current split, which has been tweaked in the recent past for the benefit of the downriver crawfish industry, however the built environment was developed with an understanding of the historic flow patterns and many factors influence the possibility of altering flow regimes.

Dr. Reed and **Dr. Graf** followed with further remarks on the flow split. The Board is aware of the issue that the balance is hard to achieve over a calendar year or a water year, and more generally realize that the new control structure is an important addition, as the old structure did not allow the ability to control the flow on a daily basis. Hydropower generation is another consideration in determining flow regimes due to an inability for operators to generate base load if the daily fluctuation is too significant, forcing operators into peak power conditions. This is not an inherently bad situation, but one that must be planned for.

MG Walsh also mentioned operations at Bonnet Carre, specifically that it has been opened to flood overflows in two of the last three years, against the historical average of once every fifteen years. The governor of Mississippi, in 2008, was concerned about the salinity mixture in Lake Pontchartrain and the

effect on oyster populations. **Dr. Kundell** clarified that the Board was not suggesting that the Lake be a freshwater body, but to maintain periodic inflows that mimic historic flows.

MG Walsh said he understood the important of the sediment management scheme brought up by Dr. Kundell. He added that in some reservoirs, there are HTRW concerns just a few feet below the top layers, creating an additional challenge for managing those sediments. **Dr. Graf** continued the discussion, explaining that not all floods are bad, and the 2011 floods created more shallow wetland habitat in several weeks that the Corps has created cumulatively in the preceding years. **MG Walsh** noted the benefits of periodic flooding; over time this speaks to a watershed approach. Allowing flood waters also can become a lands right issue that needs to be studied and resolved. **Dr. Reed** mentioned the Yolo bypass in Sacramento as another approach to managing a river, by moving the river itself and not the city and infrastructure. It created much habitat, but there are still other issues to be addressed, like land easements for instance. **MG Walsh** suggested looking into ways to reconnect rivers to old meanders in the floodplain as another way to store water during flood events.

MG Walsh put an open question to the Board regarding what science is needed to push forward, asking if flood curves were up to date, for instance. **Dr. Graf** suggested the need for a better way to measure sediment, since there is no guarantee that there will ever be a large enough network of sediment gauges to do the job. **Dr. Reed** admitted that the scientific community is just not able to do certain things yet, when one is predicting dynamic changes in rapid flow through a channel. This is a rich area for research, and systems are hard to manage without knowing what will happen in a given flood event. Is there a way to measure the flood induced changes to river geomorphology before they are buried? There is need to detect channel changes after a flood right away; floods provide an opportunity to learn about effects of decisions.

MG Walsh asked for comments from each member of the Board on any other issues they wished to raise.

Dr. Goddard spoke about the Great Lakes and the Asian carp issue, stating that the carp are the greatest threat to Great Lake ecosystem. The Mississippi and Great Lakes systems should be separated, to limit the ability of almost 40 species to migrate between the two. Chicago waterways have been identified has the most likely transport vector, and the Great Lakes-Mississippi inter basin study recommends hydrologic separation. If the carp get to the lakes, the potential for devastation is very high, and more than \$40 million was spent last year managing Asian carp. Further, **Dr. Goddard** discussed the Great Lakes Ecosystem Restoration study (GLER) and the difficulty in not having steady funding despite being authorized for \$100 million. **MG Walsh** was encouraged to add planning for the GLER to the 2012 work plan. **MG Walsh**, as President of the Mississippi River Commission, went to Chicago to speak with fisheries representatives and others regarding the Asian carp. At the time, however, the science said that carp propagate mainly in rivers because of the flow, but less so in lake environments. **MG Walsh** said that great work is being done by the US Geological Survey to study the problem.

Dr. Walker spoke next, saying that the State of Mississippi is blessed to have good relationship with Corps. The state has been working with Mobile District to develop Mississippi Coastal Plan. Many islands have been restored along the coast and people and wildlife are benefitting and using the resources. Regionally, the Gulf of Mexico alliance works well with the Mobile District, and the Corps at large, and brings attention to projects on a regional basis. The Executive Order released by the President creating the National Ocean Council charged that council with a better way to manage oceans as well as the Gulf Coast Ecosystem Restoration Task Force. The Corps has been participant on that task force, and without good input from the Corps, the report would not have been released on time this past December.

Dr. Graf brought up the Corps partnership with The Nature Conservancy (TNC) and the mission to improve infrastructure operation, which has been ongoing on for about ten years. Limited reoperation

helps areas downstream of dams maintain integrity and provide water for people and water for nature. Currently 10-12 structures are involved in the program, and this could be a good time to focus on more troubling spots. The Board would like to work with MG Walsh to expand this program, as there have been successes, such as the Green River in Kentucky. A less smooth example comes from Savannah, and Dr. Graf believes that District Commanders are the lynchpin in moving these efforts forward.

Dr. Ambrose reminded the Board and MG Walsh that regulatory is also important, but hasn't been spoken about at all. The cumulative impacts tool that the Institute for Water Resources (IWR) is developing is very important as part of the need to look at whole watersheds. In the past cumulative impact analysis has been somewhat qualitative and not necessarily convincing to stakeholders. The current tool looks very useful and is currently being rolled out in a limited manner. Dr. Ambrose is interested to see how it works in practice. **MG Walsh** said that the regulators in the field are making difficult decisions every day on issues not resolved at the national level. He states that such a tool could be a step in the right direction.

4. GREATER MISSISSIPPI RIVER FLOOD REPAIR AND ASSESSMENT OF RESPONSE OPERATIONS

Mr. Stephen DeLoach, Deputy Chief of Engineering and Constructions, U.S. Army Corps of Engineers, discussed the Operations Order (OPORD) 2011-50 (dated 13 July 2011), Part 1, the purpose of which was to establish Mississippi River system operability for the coming season. The U.S. Army Corps of Engineers Guidance for Emergency Repairs, dated 4 August 2001, called for five actions: collect data, assure adequate environmental documentation, identify immediate system repair requirements, identify immediate risk reduction measures, and identify longer term measures to restore the system to its pre-flood condition.

The Guidance identified four classes of repair priority with the highest being "High Potential for Loss of Life". The Corps was able to arrange fund transfers from May through November 2011 totaling approximately \$331 million, versus approximately \$2.2 billion estimated to be needed. Since then, the Corps has received \$1.7 billion supplemental, but is still way short of the need. By 18 January 2012, of the total amount spent, approx \$1.9 billion, only \$204 million was needed for the highest priority class projects (High Potential for Loss of Life).

Mr. Jonathan Davis, Deputy Chief Operations and Regulatory, U.S. Army Corps of Engineers, discussed Part 2 of the OPORD 2011-50, the assessment, that is, the "human" side of operations decisions. The performance assessment will assess performance and risk, review the decision process, evaluate communications, evaluate economic and environmental impact, make operational recommendations, identify additional authority needs, identify water control manual revisions needed, and identify lessons learned. The assessment is to primarily rely on qualitative analysis and existing information, along with hydraulic/hydrologic modeling to evaluate system performance. The team will use a levee screening tool and levee safety action classification process and prepare a single consolidated report assessing performance of the entire Great Mississippi River Basin System. And the Review Team is to include members external to the Corps. **Mr. Davis** suggested that the Board members could be part of the assessment team. At present, the Corps is still seeking funds, expecting to start in April 2012 with an anticipated completion in September 2013.

Discussion

Dr. Graf asked about the levee database. **Mr. Davis** replied that a national database has just been rolled out by a national committee, with some restrictions.

Dr. Ambrose asked about consideration of the environment. **MG Walsh** responded that the environmental community appears not to have shown much interest. There has been little clamor regarding environmental impacts unlike the 1993 and 1997 floods.

5. USACE CLIMATE CHANGE ACTIVITIES

Dr. Kathleen White, Institute for Water Resources, updated the Board on Corps Climate Change activities focusing on its climate adaptation mission, which she stated is to increase resilience and decrease vulnerability to the effects of climate change and variability. The Corps released its Climate Change Adaptation Policy in June 2011 to integrate climate change adaptation planning and actions in Corps missions, operations, program, and projects. The policy called for using the best available and actionable climate science and climate change information. In September 2011, the Corps issued a Climate Adaptation Plan and Report, which identifies climate change impacts to selected strategic missions and goals, presents the priority questions driving the Corps approach to manage climate change, addresses current and potential collaborative efforts, summarizes current activities, and lists FY2011-2012 priorities.

Among the points she made, **Dr. White** stated that the U.S. Bureau of Reclamation and the Corps are viewed as leaders together in climate change adaptation policy. Also, the Corps is scaling climate change information needs to what the decision needs and guidance is not overly prescriptive. The key to future actions is being able to adapt. For considering Sea-Level Change, 2011 guidance calls for a multiple scenario approach, which has been adopted by the State of Florida.

Discussion

Dr. Ambrose asked about extreme precipitation events and how to consider them. **Dr. White** responded that in western U.S., paleo-hydrology is well established as a mechanism to extend the record, although not so in the southern U.S. **Dr. David Raff**, a hydrologist at IWR formerly with the Bureau of Reclamation, is preparing a paper on how to consider other information on extreme events.

Dr. Ambrose also asked about downscaling. **Dr. White** replied that ARRA (Stimulus) funds had been used to support an interagency downscaling project to leverage work by Reclamation and DoE, among others. The results are publicly available and have been used in at least one of the Corps pilot adaptation projects. However, she stressed that downscaling, while it may bring higher resolution, can also bring higher uncertainty. Therefore, downscaling does not necessarily provide the best results. The Climate Change and Water Working Group (CCAWWG) conducted a workshop in 2010 to examine best practices for selecting climate information from among the portfolio of approaches (e.g., whether or not downscaling is appropriate). Follow-on work by an interagency group including USACE, Reclamation and NOAA continues to make progress in this area.

MG Walsh responded that the Corps manages 12 million acres and asked if present initiatives are looking at how our lands are adapting and if operations changes can effect positive change. **Dr. White** replied that one issue concerning examining carbon sequestration effects is that it may be a temporary effect and is tied to complex ecosystem dynamics that are not sorted out yet. In three to four years, we may be able to couple science and engineering.

6. PUBLIC COMMENTS

There were no public comments

7. CLOSING REMARKS AND ADJOURNMENT

MG Walsh closed the meeting by noting that environmental compliance has become more difficult as the issues have become more complex. The planning process cannot be driven to stagnation by the need for ever better science, and an appropriate balance needs to be struck between expediency and level of understanding. Today's scenario-based analysis can vary substantially dependent on several different factors, and it is difficult to get total buy-in on any given solution.

MG Walsh directed Mr. Brown to prepare a draft letter to EAB proposing EAB assistance on the following topics.

Work with the Greater Mississippi River Flood Recovery Assessment Team
Assess how the Environmental Operating Principles address new ideas and changed conditions
Integration of ecosystem considerations and system-wide approaches into project operations.

In that letter, the Chief will also ask EAB what they see as a good future direction for the Board.

MG Walsh asked the Board to help the Corps and society think in watershed terms and in aggregating projects. He asked the Board to look at effects of extreme weather on rivers and how to think of this in a watershed approach. He asked the Board how to revitalize the Environmental Operating Principles, which are perhaps unique to the Corps. Are Division Commanders still in tune with them? Consideration of climate change is within those seven principles. Finally, integrating ecosystem considerations into plans at the project level is important, and operating projects with an eye to the environment is necessary. Are we operating projects with an eye to the environment?

MG Walsh thanked the Board members, the presenters and the audience for attending and participating. He asked those present to remember the 800 Corps civilians that are still serving in harm's way. He adjourned the meeting.

I have reviewed these minutes and certify they are an accurate account of the subject meeting:

 date 4/13/12
James E. Kundell, Ph.D.
Chairman, Chief of Engineers Environmental Advisory Board

Posted to the CoE EAB Webpage:

John C. Furry, Designated Federal Officer
Chief of Engineers Environmental Advisory Board