



DEPARTMENT OF THE ARMY  
U.S. ARMY CORPS OF ENGINEERS  
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WASHINGTON, DC 20314-1000

REPLY TO  
ATTENTION OF

NOV 3 0 2015

Planning and Policy Division

Dr. Rollin E. Hotchkiss  
Professor and Chair  
Department of Civil and Environmental Engineering  
Chair, Chief of Engineers Environmental Advisory Board  
Brigham Young University  
368 Clyde Building  
Provo, Utah 84602-4028

Dear Chairman Hotchkiss:

Thank you for your letter of April 24, 2014, providing the recommendations of the Environmental Advisory Board (EAB) on implementing environmental flows. Your letter comes at a time when the Corps is being increasingly asked to assess how the Nation's rivers and waters might be managed differently to provide more environmental benefits, while concurrently providing for navigation, flood risk management, hydropower, recreation, and water supply. Further, the Corps is under pressure to complete work with shorter schedules and less funding, and when our largest and most expensive environmental efforts are driven by litigation and endangered species.

It is precisely at these times that we need to aggressively and proactively pursue ideas like implementation of environmental flows, which have high environmental potential for relatively low costs.

The report covered several concepts and recommendations related to environmental flows that are addressed below:

### **Awareness**

Leadership. Per the EAB's first recommendation, a segment about aquatic ecosystem restoration, including environmental flows, will be developed and offered for inclusion as part of the Command School curriculum for district commanders. This will also be done for the Corps' Senior Leaders Meetings, which occur bi-annually and involve high-level civilian staff. This combination of outreach to both military and civilian leadership is envisioned as an effective strategy to broaden awareness of environmental flow efforts and opportunities. The Corps welcomes the EAB's offer to help create and present materials. The Corps contact will be the Designated Federal Officer for the EAB.

Capacity Building. The Planning Core Curriculum and Planning Associates Program also offer recurring opportunities to train Corps staff. Environmental flow theory, strategy, and practice will be included in these and as many other training venues as possible to broadly build Corps capacity. This should be done while continuing to offer the Corps *Water and the Watershed* and *Hydrologic Analysis for Ecosystem Restoration* training courses, which already include environmental flows content. A Corps contact for this will be identified in the Planning Community of Practice (CoP), as described below.

Positioning within Corps. To date, Corps environmental flow efforts have been aligned primarily with planning and engineering groups within the Corps. In the interests of accelerating implementation of environmental flows, these efforts will also be aligned with Operations and Regulatory CoP. This will encourage a more consistent awareness of environmental flow projects and allow those efforts to better connect with water management staff located within Operations. Three Headquarters (HQ) positions will be identified as environmental flow representatives, one each within Planning and Policy Division, the Engineering and Construction CoP, and the Operations CoP and the Regulatory CoP. These representatives will be responsible for identifying key policy guidance and technical issues related to environmental flows activities and seeking opportunities to advance these activities and their implementation within their respective communities and business lines. Given its long history of involvement in the water management community and past support for environmental flows, the Hydrologic Engineering Center (HEC) will designate a Corps technical coordinator for technical implementation of HQ- approved environmental flow activities. Together the HQ representatives will work with the technical coordinator to align priorities and funding across the communities and business lines.

## **Opportunities**

Prioritization of Reservoirs. Per the EAB's second recommendation, concur that reporting of reservoirs with best potential for environmental flow implementation by district commanders will be useful to both prioritize projects and energize local efforts. Conceptually, there are three fundamental parts to this: understanding reservoirs operations, measuring the degree of control reservoirs have on downstream rivers, and estimating the ecological potential of environmental flows). Information about operations was recently compiled via a national reservoir survey initiated in 2008. Data collection and review were completed in 2013. The resulting database includes information about water supply operations and sediment status at Corps reservoirs, as well as water management operations at reservoirs with federally authorized flood storage. To date, this information has not been used to investigate the relative potential of reservoirs as candidates for environmental flow implementation, but has much promise to do so. The Sustainable Rivers Project (SRP), with assistance from the Institute for Water Resources (IWR) and Hydrologic Engineering Center (HEC), intends to pursue this, as funding allows. Measuring degree of control has been initiated. This is largely a geospatial analysis and is being managed by HEC with support from the

Cold Regions Laboratory of the Engineer Research and Development Center. It is also funded by SRP and will be advanced as funds allow. Given the diversity of rivers influenced by Corps reservoirs, estimating ecological potential is a thought-provoking task. This effort has not been initiated, and the Corps would welcome any suggestions the EAB might care to provide on this. Corps contacts for integrating and disseminating the district reporting of candidates will be identified within the Hydrology, Hydraulics, and Coastal (HH&C) CoP.

Guidance. The Corps has a range of policies related to environmental flows, including Engineering Regulations (ER), Circulars (EC), and Manuals (EM), water control manuals, and deviations. Environmental flow definitions and guidance are being infused into ER 1110-2-8154 (Water Quality and Environmental Management at Corps Civil Works Projects), ER 1110-2-240 (Water Control Management), and ER 1110-2-241 (Use of Storage Allocated for Flood Control and Navigation at non-Corps Projects). It is important that this process continues and expands to other relevant policies as those documents are periodically updated. In addition to incorporating environmental flow guidance into existing policy, a new EC entitled "Environmental Flows from Corps Dams" is also being developed as guidance specifically focused on environmental flows. As noted in the EAB report, update of reservoir operations guidance offers an opportunity to renew environmental strategies. Alignment with Operations, as mentioned above, will help bring environmental flow efforts together with ongoing and future reservoir policy updates, including water control manuals, which are typically funded through the Operations appropriation. It is recognized that policy development for any emerging focus, such as environmental flows, is a responsibility that intersects with many CoPs. It is important that the work of the HH&C CoP with the ER updates mentioned above be expanded to other Engineering policies and to the policy resources of other Corps communities.

Synergies with other national efforts. Several national Corps efforts have potential synergies with implementation of environmental flows and should be coordinated. The Corps Water Management System is a technology suite used by reservoir management groups to assist with data and modeling that may provide Corps managers with tools and information needed to implement and assess environmental flows. The Risk Management Center and the Modeling, Mapping, and Consequence Center are developing data sets and models that may have applications for ecological resources. The Engineering with Nature initiative though initially concentrated on sediment solutions, is expanding and may complement environmental flow implementation efforts. Civil Works programs for Sustainability and Resilience may have goals and strategies related to reservoir operations and environmental flows. The HQ representatives will coordinate with these efforts to explore connections and seek opportunities regarding how each might align with environmental flows implementation.

Partnerships. Changing the way water is managed has technical, organizational, and social implications. The Nature Conservancy (TNC) is an important partner in environmental flows and other efforts. Past environmental flow efforts have involved

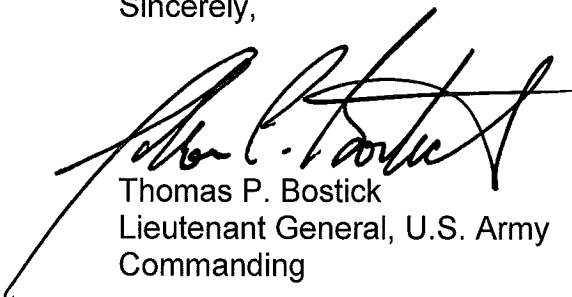
numerous governmental (federal and state) and non-governmental organizations, including more than 50 groups that have already contributed to the advancement of environmental flows. Widespread implementation of environmental flows is a heavy undertaking and will require engagement of as many strategic partners as possible. The U.S. Fish and Wildlife Service (USFWS) and National Oceanic and Atmospheric Administration (NOAA) Fisheries are key agencies in this vision. Management of many rivers with Corps involvement is already constrained by species of federal concern. Dialogue between the Corps and the USFWS and NOAA Fisheries is needed to determine how the agencies might partner in this work, programmatically. Further, the Corps supports additional partnerships with non-governmental organizations and other partners who can provide contributed funds to support development of information needed to more effectively implement environmental flows (e.g., revision of water control manuals). The Planning and Policy Division will identify a Corps contact to better engage these agencies and non-Federal partners regarding environmental flows potential at our projects.

### **Expansion of Environmental flows and the Sustainable Rivers Project**

Number of sites and Engagement with Districts and Divisions. The SRP is an ongoing national partnership between the Corps and The Nature Conservancy to improve the health and productivity of ecosystems by re-operating reservoirs, while continuing to meet authorized project purposes. Currently, 8 river systems with 36 reservoirs are in SRP. In 2015, work began on emerging sites in six additional river basins- the Upper Ohio River, NY and PA; the Des Moines River, IA; the Lehigh River, PA; Twelve Pole Creek, WV; Barren River, KY, and Susquehanna River, NY, PA, and MD. The SRP is an example of the type of proactive effort that has also achieved traction and visibility within the water management community that could be leveraged to accelerate future implementation efforts. Through its leadership training and capacity building and in its outreach with partners, the Corps will continue to identify and prioritize opportunities to incorporate environmental flows into its programs and activities.

I thank the EAB for your insights, and I encourage you to revisit the topic of environmental flows in upcoming meetings. We would be pleased to report on our progress and status at upcoming meetings pertaining to any and all of the points listed in this letter.

Sincerely,



Thomas P. Bostick  
Lieutenant General, U.S. Army  
Commanding