



April 25, 2016

Colonel Kevin P. Landers, Sr.
District Engineer
U.S. Army Engineers District, Wilmington
Corps of Engineers
69 Darlington Avenue
Wilmington, N.C. 28403-1343

Re: Regional General Permit No. 197800080--Comments

Dear Colonel Landers:

We are submitting these comments on Regional General Permit 80 (RGP 80) as members of the scientific community and as concerned citizens of the United States. We, Dr. Charles H. Peterson, Dr. Christine M. Voss, and Dr. Rachel K. Gittman, offer these comments in response to the Wilmington District's (Corps) public notice dated March 25, 2016. We concur with the Southern Environmental Law Center (SELC) comments submitted on the behalf of the North Carolina Coastal Federation (NCCF) and here supplement those comments with additional scientific justifications for SELC-recommended changes to RGP 80.

Summary of Peer-reviewed Science Relevant to RGP 80

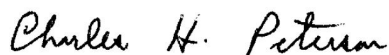
Shoreline hardening, defined as the installation of engineered shore structures to (1) stabilize sediment and prevent erosion; and/or (2) provide flood protection, is a common practice in the United States, with over 22,000 km (roughly 14%) of shoreline hardened (Gittman et al. 2015). Given the current levels of shoreline hardening and the projected growth of coastal populations, understanding the ecological effects of these structures is critical for developing sustainable coastal management, including permitting regulations, and climate-adaptation strategies (Titus 1998, Arkema et al. 2013, Gittman et al. 2015). Recent reviews have identified many of the negative impacts of engineered shore structures on coastal ecosystems and have recommended ways to minimize these impacts (Chapman and Underwood 2011, Dugan et al. 2011, Perkins et al. 2015, Gittman et al. *in review*).

Maintaining the ecosystem services delivered by coastal habitats and other public trust resources is an important and inherent part of the Clean Water Act and of the Coastal Zone Management Act. The management of our Nation's coastal shorelines under a scenario of rising sea levels should be science based. Here, we summarize the evidence, as provided in publications subject to scientific peer-review, of the well-documented, **beyond minimal and cumulative, adverse effects of shoreline hardening:**

1. Vertical walls (seawalls and bulkheads) support lower biodiversity and abundance of marine organisms than natural, intertidal biogenic, rocky, and sand/sediment shorelines or bioengineered (“living” shorelines) (Balouskus and Targett 2012, Bilkovic and Roggero 2008, Bulleri et al. 2004, Chapman 2003, Dugan et al. 2006, 2008, 2011, Gittman et al. 2016, Gittman et al. *in review*, Heatherington and Bishop 2012, Hendon et al. 2000, Long et al. 2011, Jackson et al. 2015, Moriera et al. 2006, Morley et al. 2012, Peterson et al. 2000, Scyphers et al. 2015, Seitz et al. 2006, Sobocinski et al. 2012, Strayer et al. 2012, Toft et al. 2007);
2. Because of their permitted construction landward of intertidal, biogenic habitats on low-energy shorelines of estuaries, the presence of bulkheads results in scour and erosion of seaward and adjacent biogenic habitats and will prevent indefinitely any upslope transgression of coastal marsh and other intertidal biogenic habitats as sea-level rises, resulting in the ultimate loss of these habitats (Bozek and Burdick 2005, Dethier et al. 2016, Dugan et al. 2008, Gittman et al. 2014, Pontee 2013, Titus 1998); and
3. Bulkheads and seawalls sever the connection between terrestrial and marine habitats, reducing the ability of land-to-sea transition habitats, such as salt marshes, to provide nutrient cycling and pollutant filtration services (Harris et al. 2014, Heerhartz et al. 2014, Heatherington and Bishop 2012, O’Meara et al. 2015).

Given the overwhelming evidence of beyond minimal and cumulative adverse impacts of bulkheads and seawalls on coastal ecosystems, we concur with the SELC and NCCF in concluding that issuance of RGP 80 in its current state by the Corps is in direct violation of the Clean Water Act and the National Environment Policy Act. Therefore, we do not support the renewal of RGP 80 as currently written.

Best regards,



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