NOTICE OF PUBLICATION

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RESEARCH REPORTS

Sustainable Aquaculture for a Secure Future

Title: Characterization of potential aquaculture pond effluents, and physicochemical and microbial assessment of effluent-receiving waters in central Ghana

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Date: **01 August 2017** Publication Number: AquaFish Research Report **13-A04**

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Abstract: An understanding of specific aquaculture systems and the impacts of their management practices leads to sound and cost-effective policies to protect the aquatic environment. Water samples were collected in 2009 from fish ponds, streams that receive effluents directly from ponds and reference streams in Ghana to assess potential environmental impacts of pond aquaculture. Although relatively dilute, fish ponds had higher levels of all physicochemical variables measured compared to those of locations upstream and downstream of farms, and to reference locations. Total nitrogen and BOD_5 were most clearly statistically significant. Of 292 earthen fish ponds surveyed in central Ghana, approximately 92% were used for either *Oreochromis* monoculture or *Oreochromis–Clarias* polyculture. These had similar pond water (i.e. potential effluent) quality but different management practices. The study ponds had the potential to pollute effluent-receiving streams, but their actual impacts will depend on how pond effluents are managed. Conventional treatment of effluents from these small-scale, low-volume operations, which discharge relatively dilute effluents infrequently, might not be cost-effective.

This abstract was excerpted from the original paper, which was in the *African Journal of Aquatic Science* (2013), 38(2): 185-192.

AQUAFISH RESEARCH REPORTS are published as occasional papers by the Management Entity, AquaFish Innovation Lab, Oregon State University, Corvallis, Oregon 97331-1643 USA. The AquaFish Innovation Lab is supported by the US Agency for International Development under Grant No. EPP-A-00-06-00012-00. See the website at <aquafishcrsp.oregonstate.edu>.