Title: Evaluation of Equilibrium Phosphorus Concentrations of Everglades Agricultural Area Canal Sediments using Adsorption Isotherms and Incubation of Intact Sediment Cores

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The Everglades Agricultural Area (EAA) is located in South Florida, between Lake Okeechobee and the Everglades National Park. Nutrient enrichment particularly phosphorus (P) from the EAA is thought to be responsible for the ecosystem changes in the Everglades. Due to years of P loading, the EAA canal sediments can function as a P source to the water column through internal loading from sediments. Equilibrium Phosphorus Concentration (EPC) measurements can identify the sediments as P sources or sinks. The objectives of the study were to determine the EPC of the sediments of three EAA main canals: Miami canal, West Palm Beach canal (WPB) and Ocean canal using adsorption isotherms and intact sediment column incubation studies. The EPC values for Miami canal sediments determined by intact sediment columns ranged from 0.075 to 0.124 mg L^{-1}. West Palm Beach canal EPC values ranged from 0.021 to 0.094 mg L^{-1} and Ocean canal sediments EPC values ranged from 0.050 to 0.141 mg L^{-1}. Miami canal sediments had higher EPC values than WPB and Ocean canal sediments. The EPC values determined from incubation isotherms were lower than that determined by intact sediment cores. The EPC values from batch adsorption isotherms are not influenced by canal conditions like the presence of plants, algae or the arrangement of sediment layers that can affect P release that could be responsible for the lower values.