Lake Technology- Ecoslough

Purpose and General Description: Above ground treatment and storage feature that is intended to mimic a natural setting to a greater degree than a standard reservoir or stormwater treatment area. Feature is intended to be designed with meanders and pockets and is to be open for recreational uses such as fishing and hunting. Includes man-made landform (in lieu of standard levee/embankment) which is intended to provide containment and would be vegetated to provide habitat restoration and recreational value.

Physical Description: 4 foot water maximum water depth above grade; landform ≤9 feet with 12:1 side slopes are utilized to provide more natural aesthetics (in lieu of standard levee/embankment). Feature includes seepage canals for seepage management.

General Description of Operations: Ecoslough features would be located downstream of Ecolake features and would include gravity inflow such that upstream Ecoreservoir feature could provide gravity flows to the Ecoslough feature. Treated water would be discharged through pump structure to the Everglades. Operational intent is to maintain in a wetted condition with a minimum water depth of 1/2 foot.

Hydrologic Performance: Since feature uses gravity flows it will experience hydraulic limitations related to vegetation and other resistance and may not be able to deliver flows consistent with target time series. When this feature is maintained in a wetted condition it requires supplemental water to meet this requirement during dry periods, which may have an impact on ability to meet environmental hydrologic targets (Everglades demands, Lake low stage, Caloosahatchee base flows). Since water depths are shallow with emergent vegetation, these features can experience higher ET losses, and in certain locations seepage losses, than deeper storage features.

Water Quality Performance: High uncertainty exists with regard to water quality performance. No South Florida data exists on this type of feature. Current water quality analysis assumes these features will have water quality performance similar to flow-ways, which are assumed to be variable with some treatment when feature is maintained in wet condition and no treatment assumed when feature is allowed to go dry. Therefore, discharges from an ecoslough must receive further treatment in an STA prior to discharge to the Everglades.

Environmental / Ecological Advantages or Benefits: Lake Technology Ecosloughs are meant to provide additional habitat for birds, fish, reptiles and aquatic vegetation.

Environmental / Ecological Impacts or Concerns: Due to shallower storage depths and landform design, these features are land intensive which increases chances that existing wetlands and/or threatened or endangered species will be impacted by the project footprint. Due to the fact the project's components are intended to have full public recreational use and create habitat, adequate remediation will need to be included in project design. Need to consider potential for recreational activities to impact treatment performance. Ensuring that Ecosloughs do not interfere or compete with ability to achieve restoration benefits to the existing natural system (e.g., Everglades Protection Area) and to the Everglades. If these features are successfully managed or operated to encourage wildlife utilization, additional

regulatory constraints related to wildlife protection may emerge (i.e. the Migratory Bird Treaty Act, Endangered Species Act, etc.). As a result, these features could be subjected to operational constraints in order to protect wildlife, which could greatly limit operations and associated benefits to the natural system.

Economic / Recreational Advantages or Benefits: Outdoor recreation and its associated economic benefit is a cornerstone of this project configuration. The proposed features are intended to draw boaters, fishermen, hunters and birdwatchers as tourist attractions (ecotourism). It is expected that spending on these activities will boost the local economy.

Economic / Recreational Impacts or Concerns: Due to the fact these features are intended to have full public recreational use and create habitat, remediation costs will likely be higher than that of other potential configurations.

O&M Considerations (if any): Vegetation management, particularly removal of exotic species will be a major consideration for this type of feature given the high amount of vegetated shoreline proposed. Use of pump assisted gravity flow structures is intended to minimize fuel costs and associated carbon release. O&M elements related to the recreational components of this configuration need to be taken into consideration.

Uncertainty Concerns: High uncertainty related to water quality performance. There are hydraulic uncertainties related to Ecosloughs. High uncertainty of vegetation types that will grow and habitat types that will develop in areas previously impacted by agricultural production and significant soil subsidence and oxidation.