Lake Technology- Ecoreservoir

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

Physical Description: 6 foot 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 cutoff wall and seepage canals for seepage management.

General Description of Operations: Ecoreservoir features would include combination pump station/operable gate. When sufficient hydraulic head exists, operable gates would allow water to gravity flow into the storage features and the pumps would not operate. During low Lake Okeechobee level periods, the pumps could be utilized. Feature would be allowed to go dry, although may operate with a step-down approach so that certain features would go dry first while other features would remain wet longer.

Hydrologic Performance: If feature is allowed to go dry and is not operated according to recreational needs, it can provide hydrologic performance similar to deep storage. Since water depths are shallow with emergent vegetation, these features can experience higher ET losses, than deeper storage features.

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

Environmental / Ecological Advantages or Benefits: Lake Technology Ecoreservoirs are meant to provide additional habitat for birds, fish, reptiles and aquatic vegetation. It should be noted that these features will be allowed to go dry which will have an ecological impact within the feature

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. 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. Due to shallower storage depths and landform design, these features are land intensive which will result in greater land acquisition costs and greater impacts to existing land uses. Intent is to offset those costs/impacts with benefits resulting from Ecotourism and associated water-based development (e.g., waterfront properties, marinas, etc).

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. Associated pump stations and gravity control structures will also require regular operation and maintenance. Use of pump assisted gravity flow structures is intended to minimize fuel costs and associated carbon release. O&M elements related to the recreational component of this configuration need to be taken into consideration.

Uncertainty Concerns: The frequency of drying out periods may be a concern for this feature, given its emphasis on recreational use and habitat creation. In order to achieve maximum amount of benefit for Everglades deliveries and cutback in harmful estuary discharges, filling and draining the feature will be necessary and may conflict with the desire to maintain stable water levels for recreation and habitat. Uncertainties exist related to the ability to completely drain feature so that water can be made available and provide benefits to other portions of the system. High uncertainty exists with regard to water quality performance. 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.