

**APPENDIX F**  
**RECREATION**

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## **F.1 AUTHORIZATION**

The Comprehensive Everglades Restoration Plan (CERP), authorized by the Water Resources Development Act of 2000 (WRDA 2000), will involve modifying the Central and Southern Florida (C&SF) Project, which was constructed with extensive Congressional authorizations from the 1944 Flood Control Act to the Water Resources Development Act of 1996. The Federal Water Project Recreation Act (P.L. 89-72) and the Water Resources Development Act of 1986 (P.L. 99-662) provide additional guidance. Further specific CERP design guidance was signed on May 12, 2000, in the form of the Department of the Army and South Florida Water Management District (SFWMD) Design Agreement for Everglades and South Florida Ecosystem Restoration Project.

Additional authorization and guidance for the proposed ancillary recreation resources development is contained in CECW-AG, 11 June 1998 Memorandum, Policy Guidance Letter No. 59, Recreation Development at Ecosystem Restoration Projects and EP 1165-2-502. Despite austere budgets and policy requirements, recreational developments can and do contribute to community health and well being (CECW, 1998). The recreation resources that are being proposed as part of the CERP Central Everglades Planning Project (CEPP) will comply with the philosophy and inclusion of the CESAD-PD-J 15 SEP 2004 Memorandum, are economically justified, and fall within the ten percent rule.

Additional supporting documentation for public access and recreational opportunities is found in the Presidential Memorandum - America's Great Outdoors, April 2010, and the subsequent report put out jointly by the major federal land management agencies, Americas Great Outdoors Report, February 2011. The documents call for land managers to maintain or improve public access to government owned lands and waters also to maintain or improve recreational opportunities on said lands and waters.

The recreation proposal was developed by the U.S. Army Corps of Engineers (USACE) and local sponsor SFWMD. The proposed recreation is recommended for construction based on Congressional approval and sponsor willingness to pay.

## **F.2 INTRODUCTION TO RECREATION FOR THE CENTRAL EVERGLADES PLANNING PROJECT (CEPP)**

This appendix contains a description of the conceptual plan that is being proposed for the Central Everglades Planning Project (CEPP) for recreation purposes at four sites within the EAA Compartment A2 footprint, one site in Northern WCA 3A and additional features in Southern WCA 3A/B. This analysis will determine the net benefits for the recreation sites proposed: within the proposed FEB footprint and along the L-5 in northern WCA 3A accessed from Hwy 27 and additional features at the southern end of WCA 3A and in 3B. Recreation features are being included in the CEPP as an incidental project benefit requested by the local sponsor, the South Florida Water Management District (SFWMD). These recreation benefits will not be used in the justification of the recommended plan. The SFWMD provided the conceptual recreation plan which identified facilities and their locations. Due to the incidental effect of the recreation elements, a determination of acceptable design to meet Corps standards has not been completed at this study phase. Recreation costs have been provided by the SFWMD and a contingency of 43% bring the estimated total costs for recreation to \$6,400,000.

The CEPP areas enhanced wildlife watching, canoeing, hiking, horseback riding, bicycle riding and hunting will attract users from all around the nation. The adjacent STA's and WMA's currently

experience approximately 1 million visitors per year total, and visitors from all over the state and nation. The CEPP FEB Area will experience increased visitation through its geographic proximity to Holeyland and Rotenburger WMA's and STA's 2, 3/4, 5, 6, and WCA 3 and due to large public interest in the CERP. The proposed recreational features for WCA 3A and 3B will also experience increased visitation through its geographic proximity to Everglades National Park and Big Cypress National Preserve.

The proposed features of the CEPP recreation plan will not require additional real estate to be purchased. All features will be compatible with the environmental purposes of the project, and will not detract from the environmental and may increase socioeconomic benefits being generated by the project. The activities that will be permitted in the project area (bicycle riding, horseback riding, nature study, wildlife viewing, walking/hiking, motor boating, canoeing/kayaking, fishing, and hunting) are all well-suited to the environmental purposes of the project. A major feature of the CEPP will be approximately 20 miles of levee top trails which will Loop around the proposed FEB in EAA Compartment A2 and tie into the FEB being constructed by SFWMD on EAA Compartment A1, additional levee top trails will run along the top of L-67A from Everglades Holliday Park to the Tamiami Trail at the south end and on the Blue Shanty Levee. The levee tops will provide many recreation activities to include Florida's Statewide Comprehensive Outdoor Recreation Plan (SCORP) projected deficits, as well as National and State recreation trends as noted in the Yellow Book, 1999, as described below.

This recreation appendix considers the planned structures with levees and strives to maintain existing access. The new structures envisioned accommodate public access across these features or provide a reasonable route to reach the same destinations. Where these structures types may change in future designs access across or a reasonable route will be maintained.

### **F.3 BENEFIT CATEGORIES**

#### **F.3.1 Study Area**

The study area for the recreation benefit analysis is specific to Martin and Broward Counties, Florida. The 2008 Florida Statewide Comprehensive Outdoor Recreation Plan (SCORP) identifies the proposed project area as part of The Treasure Coast and South Florida Regions comprised of Indian River, St. Lucie, Martin, Palm Beach, Broward, Miami-Dade, and Monroe Counties. User-oriented recreation activity deficits identified by the SCORP for this region include; Bicycle riding, hiking, fresh and saltwater beach activities, Fresh and Saltwater non-boat fishing, nature study, swimming pools and horseback riding (SCORP, 2008). Approximately 88 miles of levee would provide access for biking, hiking, jogging, horseback riding, fishing and nature study/wildlife viewing. An additional 114 miles would be designated blueways. National recreation trends of walking, primitive camping, paddle sports and wildlife-related recreation could also be accommodated.

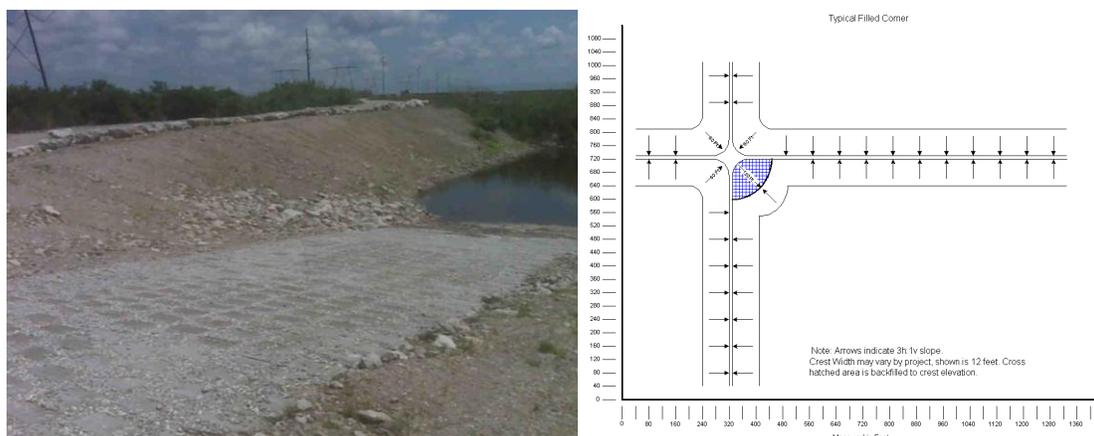
The population growth of south Florida will only add to the projected existing recreation deficits. Regional population figures and future population estimates were not factored into Table F-7 because the additional figures would display extreme recreation deficits that in all probability would not be accurate. The proposed ancillary recreation resources study area is with the project study area on CEPP lands, Palm Beach and Broward Counties, Florida, west of U.S. Highway 27 in the EAA and in WCA-3 (See **Figure F-2, Figure F-3 and Figure F-4**)

The recreation planning for the Flow Equalization Basin will incorporate an adaptive management strategy to address the uncertainty regarding what vegetation will occur within the cells. The project will also, as much as feasible, provide for blueways and greenways to circulate on the project levees, canals, and form interconnections between adjacent lands. The actual program of activities will be dependent on the resulting vegetation and how the activities will affect the projects purposes.

The vegetation types and resulting wildlife that are found in different habitats greatly change the nature based recreational interests. Potentially, emergent vegetation could dominant the cells in such a heavy monoculture manner that the wildlife is not present to draw the public that are interested in some of the nature based recreation. Further, in these conditions the area is also not sufficiently accessible to the interior waters as access can cause damage to vegetation thus creating internal trails that cause changes in flow. A blend of emergent and submerged vegetation tends to draw the wildlife that interests those members of the public desiring to view wildlife, hunt and fish.

Our intent to control vegetation may change or not be completely accomplished. Experience has shown that even where a monoculture of emergent vegetation is desired for project purposes this is not always accomplished due to many factors, such as fluctuations in water levels due to long wet or dry hydro periods. Therefore the recreation facilities will be developed in anticipation of this uncertainty.

During the development of the project designs we will incorporate the earthworks needed that would provide the locations for potential facilities. Construction staging areas and staff required boat ramps provide earthworks that can be utilized to additionally serve recreation. Retained staging areas and sharing boat ramps with staff thus incorporated into the designs are consistent with this same planning approach in other restoration projects. Specific to FEBs, we could include boat ramps of articulated block construction that serve staff access (**Figure F-1**) and foreseeable additional boat trailer parking areas for public could be expanded outside the levees as necessary to accommodate demand. Filled in corners at certain key levee intersections and elongated turnouts can fulfill the 1<sup>st</sup> phase of this adaptive strategy in a cost effective manner. These earthen features as used in earlier projects also are commonly used for construction and maintenance purposes later.



**Figure F-1. Articulated block boat ramp and filled corner.**

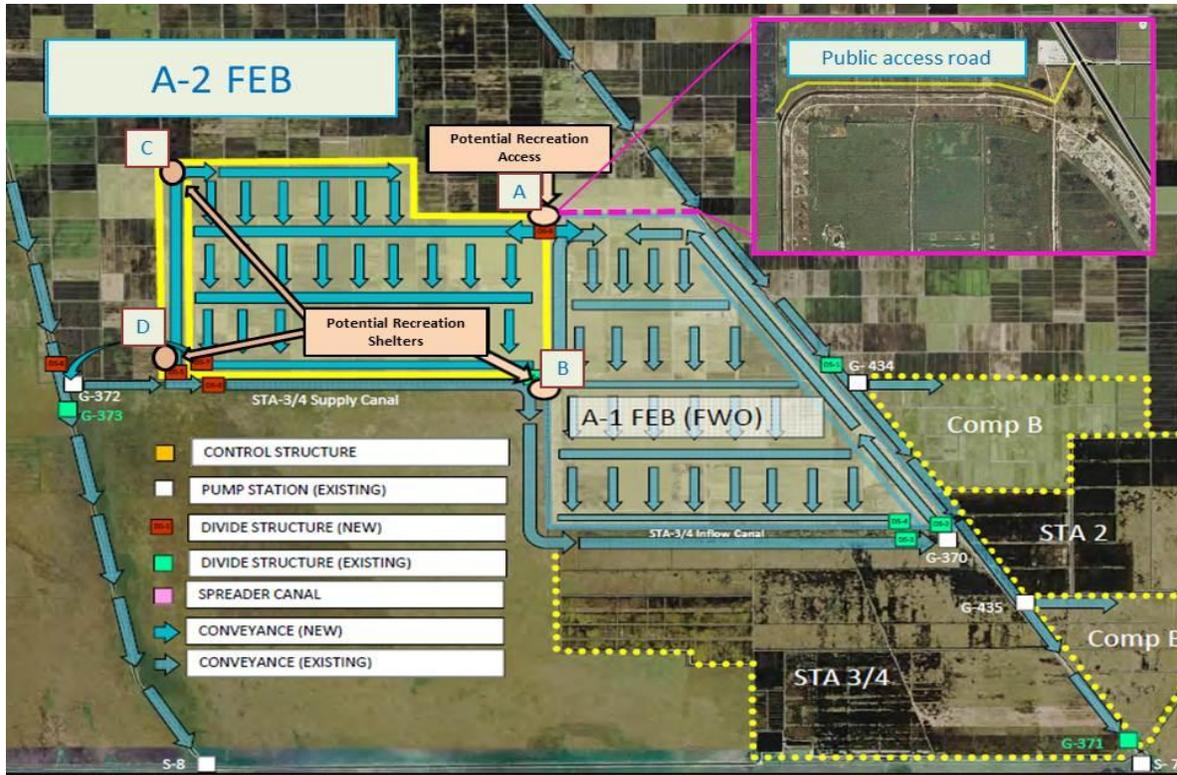


Figure F-2. A-2 Flow Equalization Basin Conceptual Recreation Plan

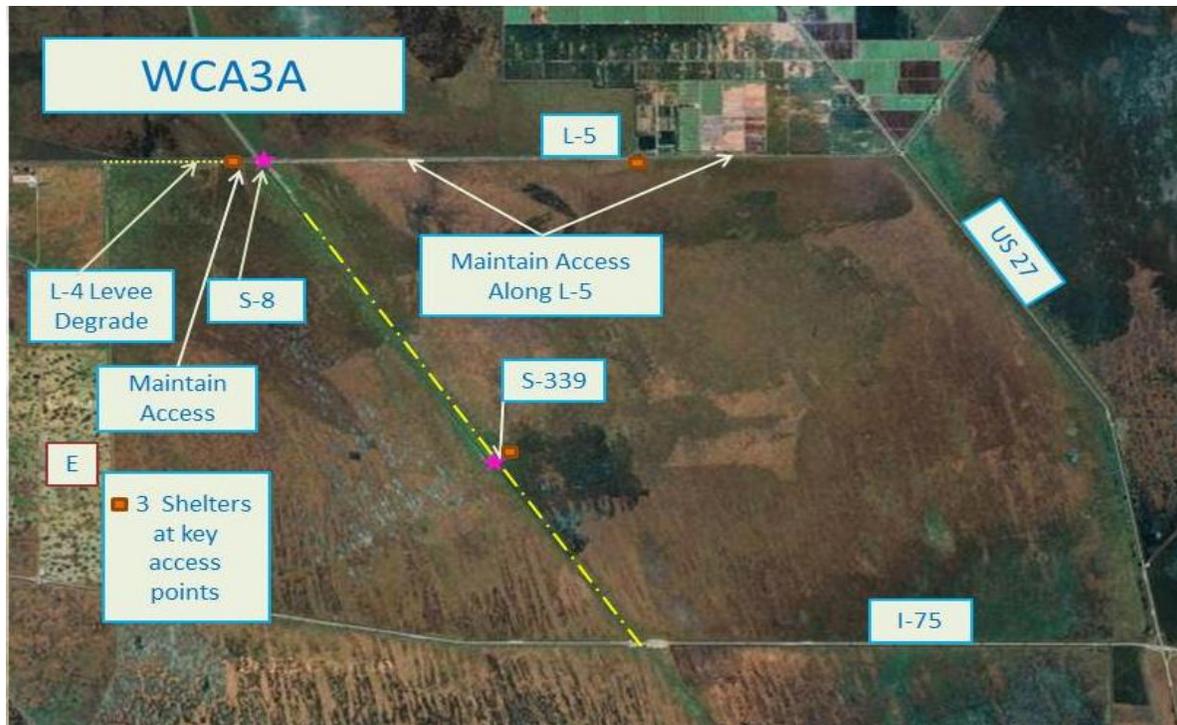


Figure F-3. Water Conservation Area 3A Conceptual Recreation Plan.



Figure F-4. Water Conservation Area 3B Conceptual Recreation Plan

### F.3.2 'Site A' Northeast Corner of A-2 Flow Equalization Basin

An existing transition lane off of highway US 27 would provide access to this site. A two lane gravel road from Hwy 27 to the recreation facility is suggested. It is proposed that a construction staging area for the proposed FEB occur at this place. A parking area for visitors to the FEB A-2 will be located here. A trailhead, boat ramp, group shelter, prefabricated ADA accessible Double Vault Toilet, Interpretive Signs, Bike Racks, Bank Fishing Access, An Airboat crossing to get from FEB A2 to A1 and ADA Van Accessible Parking would also be located at this site.

Site A is the point of access to the A2- FEB for the public. Project designs should not inhibit public access to circumnavigate the entire FEB via the levees as pedestrian or by vehicle. The recreation program will control the access. The SFWMD owns fee title to this site.

**Table F-1. 'Site A' Recreation features.**

Feature	Quantity	Unit Cost	Total Cost
Vehicle/ Ped Gate	3	\$5,000	\$15,000
Signs	1	\$2,000	\$2,000
Sign 4'x4'	1	\$4,000	\$4,000
Picnic Tables	4	\$500	\$2,000
Bike Rack	1	\$1,000	\$1,000
Group Shelter 16'x24'	1	\$30,000	\$30,000
Vault Toilet, 2 gender	1	\$40,000	\$40,000
Addn't Fill Shelter Cubic Yards	225	\$20	\$4,500
Improved Vehicle Access Road (Shell Rock/Gravel) 2.25 miles 25'x2'x11,880 = 22000 cubic Yards	22000	\$20	\$440,000
Improved Parking Area 1550x90x4 =765 CY	765	\$20	\$15,300
Guard Rails	200	\$200	\$40,000
Split Rail Fence	100	\$15	\$1,500
ADA Fishing Platform	1	\$50,000	\$50,000
Boat Ramp	1	\$100,000	\$100,000
Airboat Crossing	1	\$75,000	\$75,000
Table Summary			\$820,300

**F.3.3 Site B' Southeast Corner of A-2 Flow Equalization Basin**

Access to Site B would be by boat or by hiking or biking on the levee. This site will be much more primitive than the north east site containing only a filled corner, a staff boat ramp, a kiosk shelter, bike racks, and small gravel area. The SFWMD owns fee title to this site.

**Table F-2. 'Site B' Recreation features.**

Site B Features	Quantity	Unit Cost	Total Cost
4'x4' Sign	1	\$4,000	\$4,000
Picnic Tables	1	\$500	\$500
Bike Rack	1	\$1,000	\$1,000
Kiosk Shelter 12'x16'	1	\$20,000	\$20,000
Addn't Fill Shelter cubic yards	225	\$20	\$4,500
Table Summary			\$30,000

### F.3.4 'Site C' Northwest Corner of A-2 Flow Equalization Basin

Access to Site C would be by boat or by hiking or biking on the levee. This site will be much more primitive than the north east site containing only a filled corner, a staff boat ramp, a kiosk shelter, bike racks, and small gravel area. The SFWMD owns fee title to this site.

**Table F-3. 'Site C' Recreation features.**

Site C Features	Quantity	Unit Cost	Total Cost
4'x4' Sign	1	\$4,000	\$4,000
Picnic Tables	1	\$500	\$500
Bike Rack	1	\$1,000	\$1,000
Kiosk Shelter 12'x16'	1	\$20,000	\$20,000
Addn't Fill Shelter cubic yards	225	\$20	\$4,500
Table Summary			\$30,000

### F.3.5 'Site D' Southwest Corner of A-2 Flow Equalization Basin

Access to Site D would be by boat or by hiking or biking on the levee. This site will be much more primitive than the north east site containing only a filled corner, a staff boat ramp, a kiosk shelter, bike racks, and small gravel area. The SFWMD owns fee title to this site.

**Table F-4. 'Site D' Recreation features.**

Site D Features	Quantity	Unit Cost	Total Cost
4'x4' Sign	1	\$4,000	\$4,000
Picnic Tables	1	\$500	\$500
Bike Rack	1	\$1,000	\$1,000
Kiosk Shelter 12'x16'	1	\$20,000	\$20,000
Addn't Fill Shelter cubic yards	225	\$20	\$4,500
Table Summary			\$30,000

### F.3.6 'Site E' Water Conservation Area 3A Shelters

Access to Site E is along the L5 levee and by airboats, or track vehicles to shelters at common access points and junctions within the WCA 3A. See **Figure F-3** for proposed locations of shelters. The public currently has open access for the entire length of the L5 and L4 from US 27 through the S8, 24/7. Structures across levees will need to allow vehicle access along existing routes. The SFWMD owns fee title to this site.

**Table F-5. 'Site E' Recreation features.**

Site E Features	Quantity	Unit Cost	Total Cost
Shelters 12'X16'	3	\$20,000	\$60,000
Additional mobilization for one shelter	1	\$5,000	\$5,000
Addn't Fill Shelter 225 cy X3	775	\$20	\$15,500
Boat Ramp	2	\$100,000	\$200,000
Addn't fill for parking 450 CY	900	\$20	\$18,000
Fill for earthen crossing near S339 120x40x2 = 350CY	350	\$20	\$7,000
Table Summary			\$305,500

### F.3.7 'Site F' S-151 Education and Boat Ramps

#### S151 Education and Boat Ramps Site

Here the Miami, L67A and L67C canals nearly meet and are within short walking distance of each other and the intersection of levees leaves sufficient dry land for a substantial site. The site is 5.5 miles along the L67A Levee, and provides hiking, bicycling and vehicle access to Holiday Park; and access via airboat or power boat. Public vehicles will be able to reach this site with an improvement to widen a 1.1 mile length of levee and one way traffic on two different levees. The widening of this levee may require mitigation depending on the actual width and quality of the wetlands affected. This will allow boat access with ramps into the north ends of the Miami and the L67C. The SFWMD owns fee title to a majority of this site. A portion of the boat ramp to the L67C borrow canal will be located on lands where SFWMD has a perpetual easement. The easement rights owned by SFWMD are tantamount to fee. These easements contain the following language: "...the right, privilege, use and easement in and to the lands hereinafter described for any and all purposes necessary to the construction, maintenance and operation of any project in the interest of flood control, reclamation, conservation and allied purposes now or that may hereafter be conducted by the grantee herein, its successors or assigns, including the right to permanently or intermittently flood all or any part of the area covered hereby as a result of the said construction, maintenance, or operation, in carrying out the purposes and intents of the statutes of the State of Florida relating to the Central and Southern Florida Flood Control District presently existing or that may be enacted in the future pertaining hereto."

**Table F-6. 'Site F' Recreation features.**

Site F Features	Quantity	Unit Cost	Total Cost
Vehicle/Ped gate	4	\$5,000	\$20,000
Signs	1	\$2,000	\$2,000
4'x4' sign	2	\$4,000	\$8,000
Picnic Tables	12	\$500	\$6,000
Bike Rack	1	\$1,000	\$1,000
Shelter 12X16	1	\$20,000	\$20,000
Kayak Launch	1	\$5,000	\$5,000
Group Shelter 32X40	1	\$50,000	\$50,000
Vault Toilet, 2 gender	1	\$40,000	\$40,000
Addn't Fill Shelter and Parking CY	450	\$20	\$9,000
1.1 mile Levee Widening 8X12X5338=18979 CY	18979	\$20	\$379,580
Guard Rail	200	\$200	\$40,000
Boat Ramp	2	\$100,000	\$200,000
Courtesy Dock L67A	1	\$10,000	\$10,000
Table Summary			\$790,580

### F.3.8 'Site G' Southwest Water Conservation Area 3 Access Point

Where the L67A and L67C canals meet the L29 at Hwy 41 there are currently boat ramps into L67A, L67C and WCA 3B. Here parking is very limited. This site is accessed across the existing S-333N and will see substantive changes to incorporate changes to the S333. This site, with improved parking capacity can provide access into these same waters and the L29 canal. This site would also serve as a trail head for blue and greenways accessible from Hwy 41. This does not attempt to capture costs to locate roller Gate Structures to prevent barriers to boats in L67A, to maintain existing vehicle crossing at S333. Existing public access allows pedestrian and vehicles towing boats to access boat ramps into L67A, L67C, WCA 3B, across the S-333W and S-334 structures and to drive on L29, 24/7. Pedestrian access is allowed to Holiday Park along the L67A and on L67C levee. This existing access will be maintained. The SFWMD owns fee title to this site.

**Table F-7. 'Site G' Recreation features.**

Site G Features	Quantity	Unit Cost	Total Cost
Vehicle and Ped/ gates	use existing gates		
Signs	1	\$2,000	\$2,000
Sign 4x4	3	\$4,000	\$12,000
Picnic Tables	1	\$500	\$500
Bike Rack	1	\$1,000	\$1,000
Kiosk Shelter 12'x16'	1	\$20,000	\$20,000
Vault Toilet 2 Gender	1	\$40,000	\$40,000
Addn't Fill Parking/Shelter	25000	\$20	\$500,000
Fishing Pier	1	\$50,000	\$50,000
Boat Ramps	3	\$100,000	\$300,000
Kayak Launch Sites	2	\$5,000	\$10,000
Table Summary			\$935,500

**F.3.9 'Site H' Southeast Water Conservation Area 3 Access Point**

This site is located at the S-334 and serves as the most eastern terminus as a trail head. Here parking is sufficient. This site would serve as a trail head for blue and greenways accessible from Hwy 41. Vehicle and pedestrian access is allowed across this structure to reach boat ramps into the WCA 3B and L29 canal and westward to Tiger Tail Camp and S-333W. When constructed this westward access will be maintained to the new S-355W, the L29 divide structure. Eastward access will also be maintained. The SFWMD owns fee title to this site.

**Table F-8. 'Site H' Recreation features.**

Site H Features	Quantity	Unit Cost	Total Cost
Vehicle and Ped/ Gates	use existing gates		
Sign 4x4	1	\$4,000	\$4,000
Picnic Table	1	\$500	\$500
Bike Rack	1	\$1,000	\$1,000
Kiosk Shelter 12'x16'	1	\$20,000	\$20,000
Addn't Fill Shelter	225	\$20	\$4,500
Kayak launch Sites	1	\$5,000	\$5,000
Table Summary			\$35,000

### F.3.10 'Site I' Spoil Island Camping

On multiple spoil islands primitive camping would be provided for blue ways trail use or other access via boat. This is based on utilizing 5 spoil islands along the northern spoils of the L67A. Site improvements on each spoil island would include; a vault toilet, signs, a courtesy dock, a picnic table and fire rings along with grubbing and clearing. The SFWMD owns fee title to this site.

**Table F-9. 'Site I' Recreation features.**

Site I Features	Quantity	Unit Cost	Total Cost
Signs	1	\$2,000	\$2,000
Picnic Tables	30	\$500	\$15,000
Fire Rings	30	\$250	\$7,500
Vault Toilet	5	\$55,000	\$275,000
Grubbing and Clearing \$ 3,500 per acre	5	\$3,500	\$17,500
Addn't Mobilization	1	\$15,000	\$15,000
Minor Courtesy Dock	5	\$5,000	\$25,000
Table Summary			\$357,000

### F.3.11 'Site J' Blue Shanty Public Access Features

Access to Site J would be by air boat within WCA 3B this would maintain existing airboat access east to west within WCA 3B by providing a means to cross the Blue Shanty Levee. Airboat Crossing would be located in a suitable location on the Blue Shanty levee to allow airboats to safely traverse the levee. See **Figure F-4** (1, will allow public access across for greenways use. The S-355W, will allow public vehicles to cross to access the L29 towards Tiger Tail camp. Vehicle for public access will not be allowed north bound on the Blue Shanty Levee. The culverts along the L67A levee, S-631, S-632 and S-633, see **Figure F-4** will allow pedestrian access across for public uses. The existing east to west greenways access will not be lost when the L29 levee is degraded. This access will be rerouted using the L67A levee and crossing the S-632 and S-633 to reach the Blue Shanty Levee returning to the L29. Cost associated with the public crossing these structures is incorporated in the structure costs. The SFWMD owns fee title to this site.

**Table F-10. 'Site J' Recreation features.**

Site J Feature	Quantity	Unit Cost	Total Cost
Airboat Crossing	1	\$75,000	\$75,000
Table Summary			\$75,000

## F.4 RECREATION BENEFITS

The national economic development (NED) benefit evaluation procedures contained in ER 1105-2-100 (22 Apr 00), Appendix E Section VII, include three methods of evaluating the beneficial and adverse NED

effects of project recreation: travel cost method (TCM), contingent valuation method (CVM), and unit day value (UDV) method.

The unit day value (UDV) method was selected for estimating recreation benefits associated with the creation of the Central Everglades Planning Project. The UDV approach in recreation benefit analysis consists of two parts: determining value per visit and estimating visitation.

#### F.4.1 Determining Value Per Visit

When the UDV method is used for economic evaluations, planners will select a specific value from the range of values provided annually. Application of the selected value to estimate annual use over the project life, in the context of the with- and without-project framework of analysis, provides the estimate of recreation benefits.

The without project condition in the Everglades Agricultural Area portion of this analysis has no recreation value since the Everglades Agricultural Area inside of CEPP would not exist and would not be open to the public. It is presumed that the impoundment must be opened to the public in order to realize the recreation benefits being claimed. The without project condition for the areas outside of the EAA portion currently offer recreational opportunities. To capture additional recreation benefits from this project area we must look at existing visitation and subtract that from projected visitation claimed by the additional proposed recreation features. The with-project will be the expected value of the recreational activity based on the UDV method.

**Table F-11** illustrates the method of assigning a point rating to a particular activity. The table also shows the point values assigned based on measurement standards described for the five criteria: Recreation Experience, Availability of Opportunity, Carrying Capacity, Accessibility and Environmental.

**Table F-11. Guidelines for assigning points for general recreation.**

Criteria	Judgment Factors				
Recreation experience <sup>1</sup> Total Points: 30	Two general activities <sup>2</sup>	Several general activities	Several general activities: one high quality value activity <sup>3</sup>	Several general activities; more than one high quality activity	Numerous high quality value activities; some general activities
Point Value: 10	0-4	5-10	11-16	17-23	24-30
Availability of opportunity <sup>4</sup> Total Points: 18	Several within 1 hr. travel time; a few within 30 min. travel time	Several within 1 hr. travel time; none within 30 min. travel time	One or two within 1 hr. travel time; none within 45 min. travel time	None within 1 hr. travel time	None within 2 hr. travel time
Point Value: 3	0-3	4-6	7-10	11-14	15-18

Carrying capacity <sup>5</sup>  Total Points: 14	Minimum facility for development for public health and safety	Basic facility to conduct activity(ies)	Adequate facilities to conduct without deterioration of the resource or activity experience	Optimum facilities to conduct activity at site potential	Ultimate facilities to achieve intent of selected activities
Point Value: 8	0-2	3-5	6-8	9-11	12-14
Accessibility  Total Points: 18	Limited access by any means to site or within site	Fair access, poor quality roads to site; limited access within site	Fair access, fair road to site; fair access, good roads within site	Good access, good roads to site; fair access, good roads within site	Good access, high standard road to site; good access within site
Point Value: 15	0-3	4-6	7-10	11-14	15-18
Environmental  Total Points: 20	Low aesthetic factors <sup>6</sup> that significantly lower quality <sup>7</sup>	Average aesthetic quality; factors exist that lower quality to minor degree	Above average aesthetic quality; any limiting factors can be reasonably rectified	High aesthetic quality; no factors exist that lower quality	Outstanding aesthetic quality; no factors exist that lower quality
Point Value: 10	0-2	3-6	7-10	11-15	16-20
Point Sum 46					

Point value assignments for **Table F-11** above are based on Economic Guidance Memorandum (EGM) 12-03. The Criteria and Judgment Factors for General Recreation were specifically used as the basis of the estimated point values for the proposed recreation area. Judgment factors were based on site visits and coordination with local agencies. The following selection factors were used for the criteria outlined in **Table F-11**.

The proposed CEPP recreation resources would provide several general activities that would be afforded by the project setting and the project levees. The proposed CEPP site offers solitude and panoramic views in a growing metropolitan region, and would provide specific recreation amenities (as outlined in **Table F-1** through **Table F-10**) for expanding local populations and increasing recreation demands. The environmental restoration component (water storage and release) could help to provide an increase of quality freshwater boat and bank fishing for the region on project lands. Boat launching ramps, shelters

with benches and multi-purpose trail experiences would be enhanced by panoramic views and wildlife viewing opportunities. The proposed recreation sites would provide several general recreation activities.

The availability of opportunity rating is based upon current local recreation facilities near the project area in the proposed recreation resource location. A 25-mile radius around the proposed project area represents a fairly dense urban population to the east. A 50-mile radius would include more of the Everglades Agricultural Area and a couple of other wildlife management areas, regional parks and greenways with similar resources and a much larger urban setting to the East. The proposed multi-use trail, freshwater bank fishing, boat launch and shelters and benches would provide unique opportunities in the proposed water management areas. The proposed recreation resources will help to provide facilities for current and projected statewide Treasure Coast and South Florida Region deficits. There are similar recreation opportunities available within a one hour travel time and a few within a 30 minute travel time.

The proposed CEPP recreation resource carrying capacity values are based on the optimum use of the site potential, without overuse of the proposed recreation resources. Good water resources and access to them for boat and non-boat fishing, multi-use trail and environmental observation comprise a balanced use of the proposed recreation resource use. Adequate facilities will be constructed to conduct these activities without deteriorating the resource or activity experience. Peak use is expected to occur during half of the calendar year.

The accessibility rating is based upon the availability of the local highways, roads and streets in good condition that would provide access to the proposed recreation facilities. Existing access off of US-27, I-75, and US-41 would provide good access to these sites. The levees would provide approximately 99 miles of good multi-use trail access on the project sites. Area canals would also provide 114 miles of blueways from these sites.

The environmental quality rating is based upon the existing natural resources and aesthetic quality of the proposed project area. The proposed site of the FEB possesses poor aesthetic resources which would be dramatically improved with the CEPP construction. These areas would provide panoramic views of open water and Everglades type landscape features. The best aesthetics of the proposed project areas are of views from the levee out vast expanses of open water and over these areas to the east and south. Views from the CEPP levees to the north and west would be of the agricultural lands currently in sugarcane production.

The value of a day of general recreation at the proposed recreation sites for the Central Everglades Planning Project was determined using the guidelines for Assigning Points for the General Recreation in **Table F-11**. The points were then converted to dollar values using conversion factors included in the Economic Guidance Memorandum 14-03, Unit Day Values for Recreation, 2014, which is based on ER 1105-2-100. **Table F-12** was used to convert points to a UDV FY2014 dollar amount. Using linear interpolation the total point value for the recreation sites was determined to be 46. The user day value conversion equivalent is \$7.79.

**Table F-12: Conversion of points to dollar values.**

<b>Point Values</b>	<b>General Recreation Values</b>
<b>0</b>	\$ 3.84
<b>10</b>	\$ 4.56
<b>20</b>	\$ 5.04
<b>30</b>	\$ 5.76
<b>40</b>	\$ 7.20
<b>50</b>	\$ 8.17
<b>60</b>	\$ 8.89
<b>70</b>	\$ 9.37
<b>80</b>	\$ 10.33
<b>90</b>	\$ 11.05
<b>100</b>	\$ 11.53

#### **F.4.2 Estimating Visitation**

The State of Florida's Department of Environmental Protection's Division of Recreation and Parks coordinated and developed the Florida Statewide Comprehensive Outdoor Recreation Plan (SCORP) for 2008. This information was used to derive and project total recreation participation and allocates the participation from state to regional levels. The SCORP includes guidelines for resource-based outdoor recreation activities as listed in **Table F-14** and **Table F-15**. These guidelines are based on maximum levels of carrying capacity developed by the Division of Recreation and Parks for use and protection of state park resources. The Treasure Coast and Southern Regions include Palm Beach County, along with adjacent counties. The CEPP Flow Equalization Basin (FEB) and WCA-3 A and B Features would be large inland bodies of shallow freshwater in an area of the state where state based recreation resources are mainly coastal and saltwater based. SCORP was determined to be the best available resource for estimating recreation usage capacity.

The current SCORP indicates demands not met for the year 2015 with several activities associated with the proposed CEPP recreation activities (bicycling, hiking, and non-boat freshwater fishing). These demands not met will likely increase as population is projected to almost double in coming decades, but for economic justification purposes, user rates were calculated using the capacity projection for 2015. Due to the CEPP's relatively rural location and rustic/minimal recreation features proposed, it was determined that an extremely conservative usage rate would be projected. The projected usage rates follow the resource needs and guidelines published by the SCORP, but in every case rates were estimated to be substantially lower than the SCORPs published rates. It is also anticipated that the water-based recreation opportunities could be reduced during the dry periods, and only several miles on either side of access points will be utilized to their potential. This the most practical scenario for justifying the proposed recreation features for the CEPP.

The use guidelines designated for biking, hiking, and nature study trails were based on carrying capacity guidelines adopted by the SCORP and used by the state park system. The bicycle trail use guidelines are

40 to 80 users per mile per day and assume 10 to 20 riders per mile per day with a daily turnover rate of 4. The use guideline for hiking trails, 4-20 hikers per mile per day with a daily turnover rate of 4. The CEPP consist of approximately 99 miles of proposed levee top multi-purpose trails available for use. A conservative approach was used for the purpose of usage projections. Only 75 miles of the 99 total miles were used to determine daily user rates, because of combined distances to points of interest from each trailhead. These areas would be the most utilized. This philosophy underestimates the potential daily usage rate, but was determined to be the most likely scenario.

Additionally, the Outdoor Recreation Coalition of America (ARC) notes the trend in walking, bird watching and primitive camping increased 42%, 155%, and 58% respectively from the 1984 survey to the 1995 survey. The U.S. Fish & Wildlife Service, National Survey of Fishing, Hunting and Wildlife-Associated Recreation shows a 98% and 38% increase of residential and non-residential wildlife watching in the State of Florida (Yellow Book, 1999).

It is assumed that 10 linear feet of CEPP FEB shoreline is required for each person fishing at any given time. It is assumed that this space will be used twice per day and therefore the use guideline was established at five linear feet per person per day. It is assumed that bank fishing would be most popular adjacent to the CEPP pump stations and gated structures. It is also assumed bank fishing would occur up to a ¼ mile away from the structures on either side. Four structures are relatively close to the trailheads totaling two miles (10,560 linear feet) of bank fishing associated with the CEPP FEB for benefit estimation purposes.

The SCORP Projections for the Treasure Coast and Southern Regions show minimal projected shortage of horseback riding and/or nature study in the region by the year 2015. These activities are planned in the CEPP FEB Recreation Proposal because they are compatible activities and are anticipated to have greater state deficits as the population nearly doubles by the year 2050. With ensuing development in the immediate area and region, and the increase in population projections for the State of Florida, the study team believes there would be ample use of the proposed recreation facilities and by 2070 fully expects a continued shortage in some of the existing activities in this area.

## **F.5 ECONOMIC JUSTIFICATION OF RECREATION**

The justification of incurring additional costs for recreation features is derived by utilizing a benefit to cost ratio. The tangible economic justification of the proposed ancillary recreation project component can be determined by comparing the equivalent average annual charges (facility costs) against the estimate of the equivalent average annual benefits, which would be realized over the period of analysis (project lifespan). These average annual recreation benefits and costs are summarized in **Table F-13**.

Engineering Regulation 1105-2-100 (The Planning Guidance Notebook) provides economic evaluation procedures to be used in all Federal water resources planning studies. The guidelines specified in the regulation, were observed in preparing this cost analysis. The federally mandated project evaluation interest rate of 3.5 percent, an economic period of analysis of 50 years and 2014 price levels were used to evaluate economic feasibility.

**Table F-13: Summary of recreation costs and annual costs and benefits.**

<b>Summary of Feature Tables</b>	
Site A Table Summary	\$820,000
Site B Table Summary	\$30,000
Site C Table Summary	\$30,000
Site D Table Summary	\$30,000
Site E Table Summary	\$305,000
Site F Table Summary	\$790,000
Site G Table Summary	\$935,500
Site H Table Summary	\$35,000
Site I Table Summary	\$357,000
Site J Table Summary	\$75,000
*Summary of Feature Costs	\$3,410,000
PED, S&A and EDC	\$1,070,000
Contingency	\$1,930,000
<b>Total Cost including contingency</b>	<b>\$6,400,000</b>
<b>Summary of Annual Costs and Benefits</b>	
Interest During Construction	\$330,000
Total Investment	\$6,730,000
Amortized	\$287,000
OMRR&R	\$68,000
<b>Average Annual Cost</b>	<b>\$355,000</b>
Unit Day Value <sup>1</sup>	\$7.79
Daily Use	200 users
Annual Use (200 users x 365 days)	73,000
<b>Average Annual Benefit</b>	<b>\$570,000</b>
Benefit to Cost	1.6 to 1
Net Annual Benefits	\$215,000

*\*Cost includes onetime fill costs*

*<sup>1</sup> Unit Day Values are derived from EGM 14-03, Unit Day Values for Recreation*

This analysis leads to the conclusion that there are 1.6 times the benefits than the costs. The benefit to cost ratio for the recreation features equals, 1.6 to 1 with net annual benefits equaling \$215,000. The costs and benefits associated with this Recreation Plan have been preliminary estimated.

**Table F-14: Potential recreation participation user day projection Central Everglades Planning Project (FEB).**

Activity	Units Provided	Maximum Area Requirements	Turnover Rates	Guidelines	SCORP Resource (Needs)(2015)		CEPP FEB Projected Expected Users
					User Occasions	Regional Deficits Units	
Multi-use Trail (Biking, Hiking, Equestrian)	20 Miles	10-20 per mile	4/day	40-80 users per mile per day	4,657,562	54 Miles	15 15 15
Boating (Non & Motorized)	20 miles of canals and 21 sq miles of FEB	1-2 users per boat	2/day	1-2 boats per square mile	N/A	N/A	25
Nature Study	20 Miles	5-20 groups per mile	4/day	40-160 users per mile of trail/day	9,289,990	46 Miles	10
Freshwater Bank Fishing	10,560 linear Feet	10 linear feet (LF) of bank per person	2/day	5 LF of bank per user per day	786,890	2,801 LF	20
General Recreation Total							100 users per day

**Table F-15: Potential recreation participation user day projection Central Everglades Planning Project (South)**

Activity	Units Provided	Maximum Area Requirements	Turnover Rates	Guidelines	SCORP Resource (Needs)(2015)		Regional Deficits	CEPP South Projected Expected Users
					User Occasions	Units		
Multi-use Trail (Biking, Hiking, Equestrian)	68 Miles	10-20 per mile	4/day	40-80 users per mile per day	4,657,562	54 Miles		15 15 15
Boating (Non & Motorized)	114 miles of canals and 6.84 sq miles	1-2 users per boat	2/day	1-2 boats per square mile	N/A	N/A		25
Nature Study	68 Miles	5-20 groups per mile	4/day	40-160 users per mile of trail/day	9,289,990	46 Miles		10
Freshwater Bank Fishing	6,600 linear Feet	10 linear feet (LF) of bank per person	2/day	5 LF of bank per user per day	786,890	2,801 LF		20
General Recreation Total								100 users per day

## F.6 SENSITIVITY ANALYSIS

A sensitivity analysis was conducted to further reinforce expected benefits and provide extra support for the justification of recreation features. **Table F-16** includes a sensitivity analysis which contains the expected average annual benefits from the above table, a worst case scenario depicting the number of annual visitors required for benefits to equal costs, and a scenario in which the SCORP guidelines are utilized as they are presented. As can be noted from this sensitivity analysis, a minimum average rate of 125 users per day would be required to justify the proposed costs for recreation, and following the minimum guidelines from SCORP the expected minimum benefits from 9,935,100 users to the site could be 68.2 million dollars. However, to provide a conservative scenario, 20% of SCORP expected benefits are shown.

**Table F-16: Sensitivity analysis using multiple scenarios.**

Scenario	Annual Users	Average Daily Users	Annual Benefit
Worst Case Scenario to Cover Annual Cost	45,600	125	\$355,000
Projected Scenario	73,000	200	\$570,000
SCORP at 20%	1,879,020	5,148	\$14,600,000