

Valuing Ecosystem Services of a Restored “River of Grass”

GEER 2010: *Ecosystem Services Valuation as a Method to Guide Future Planning, Policy, and Science*

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Abstract

Valuing the ecosystem services provided by the restoration of the “river of grass” is necessary to aid in the best environmental decision-making. Various water storage, treatment, and conveyance structures have ten specific values that correspond with six configurations developed by different stakeholders (Costanza, *et al.*, 256; SFWMD). The benefit-to-cost ratios clearly indicate that all of these configurations will enhance the economic value of the “river of grass” and surrounding estuary ecosystems. It is essential to apply these methods of total ecosystem valuation to ensure sound policy for the benefit of future generations.

Features	Northern Expansion (ERNE)	Estuary Driven Restoration (EDER)	Florida Crystals (FC)	Marshall Plan (MPE6)	Performance (P)	Restoration Plus Employment (RPE)
STA	8,200	32,500	49,200	14,600	34,000	20,000
Deep Storage	55,000	108,333	87,500	90,567	116,667	100,000
Flow Way	170,000	75,000	45,000	108,385		
Forested Wetland				14,500		
Total Acres:	233,200	215,833	181,700	228,052	150,667	120,000

Table 1. Summary of configuration feature acreages.

Ecosystem Services	STA	Flow Way	Deep Water Reservoir
Cultural		✓	
Disturbance Regulation	✓	✓	✓ (x0.5)
Food Production		✓	
Gas Regulation	✓	✓	
Habitat	✓	✓	
Raw Materials		✓	
Recreation	✓	✓	
Pollution Control	✓ (x1.5)		
Water Regulation	✓	✓	✓
Water Supply	✓ (x0.5)	✓	✓

Table 2. Ecosystem services found in water conservation features. Flow-ways provide the greatest amount of ecosystem services. Values have been adjusted to match potential functions.

Values of Services for Floodplains (\$ ac⁻¹ yr⁻¹)

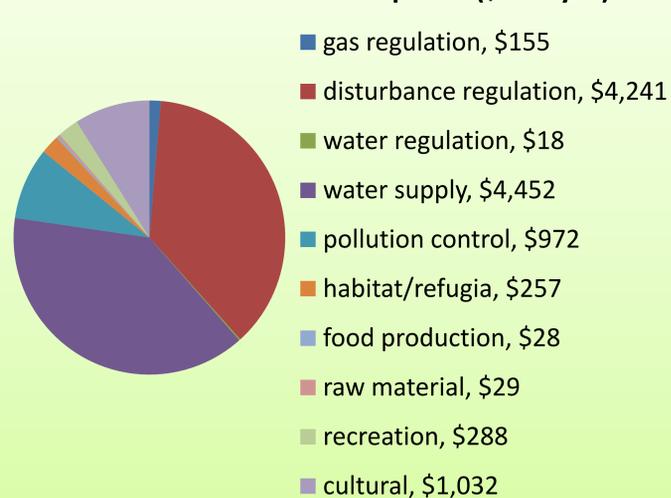


Figure 1. Ecosystem service values for floodplains (\$ ac⁻¹yr⁻¹). Services provided by configuration features share similar functions with floodplains as defined by Constanza *et al.* Water supply is the greatest cost value.

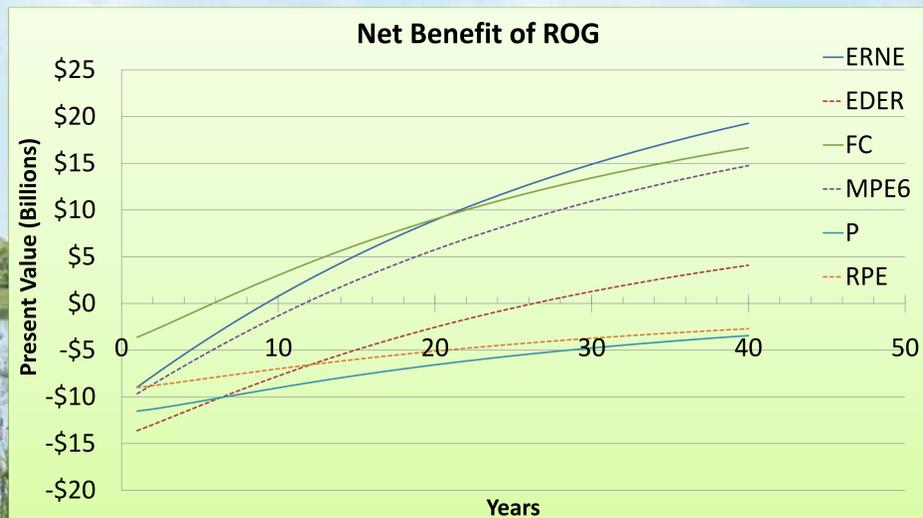


Figure 2. The net benefit of “river of grass” configurations precluding estuary restoration in billions of dollars. The Everglades River of Grass Northern Expansion (ERNE) configuration provides the greatest net benefit.

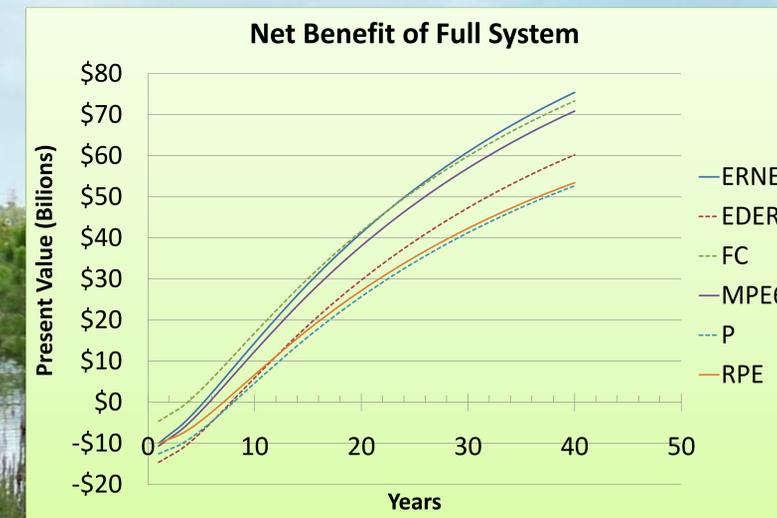


Figure 3. Net benefit of “river of grass” including benefits to estuaries. The Everglades River of Grass Northern Expansion (ERNE) configuration provides the estuaries with the greatest ecosystem benefit.

Features	Annual Value ac (\$ ac ⁻¹ yr ⁻¹)
STA	\$8,643.05
Deep Water Reservoir	\$6,590.59
Flow-Way	\$10,499.25
Forested Wetland	\$11,470.56

Table 3. The annual economic value of features in \$ ac⁻¹yr⁻¹.



Figure 4. The benefit-to-cost ratio of the configurations for the total restoration of affected estuaries. *Florida Crystals (FC) has the highest benefit-to-cost ratio due to the absence of a deep water reservoir, resulting in a low capital and O&M cost.

Conclusion

The Costanza *et al.* method of total ecosystem valuation is a necessary analytic tool to evaluate the relative benefits of planning configurations. In addition, it also puts the “sticker shock” of costs into appropriate perspective by synthesizing the notional “sticker benefits” to the economy. The viability of the Florida Crystals (FC) plan, while requiring further consideration, may be the best plan for the cost. The Everglades River of Grass Northern Expansion (ERNE) plan offers the greatest net benefit economically. Other factors must be considered, but given the pressing economic and political need of southern flow from the lake to restore the estuaries, it is made clear that any one of these configurations has a massive net economic benefit. No matter what plan is chosen, the benefit is clear and the need is pressing.