

PHOENIX LAKE IRWM RETROFIT

Attachment 10 - Costs and Benefits Summary

Table 1 is a summary of costs and benefits for the five component projects comprising the Phoenix Lake IRWM Retrofit. Benefit-cost ratio was only computed for the Flood Damage Reduction Project because the benefits for other projects were primarily quantified in physical terms, not economic terms. The benefit-cost ratio of the Flood Damage Reduction Project is about 0.8; however, it is important to point out that the cost of the Flood Damage Reduction Project includes seismic improvements that have an estimated present value of cost of about \$2,500,000 to \$3,000,000. **If the cost of seismic improvements is not included in the Flood Damage Reduction Project, the benefit-cost ratio of the Flood Damage Reduction Project would be about 1.2.**

It is also important to point out that the economic benefit of the Flood Damage Reduction Project has been described and quantified in terms of future reduced flood damage; that is, the dollar value of the flood damage that is reduced in the future over the long term. This dollar value of reduced flood damage was estimated based on avoided physical damage to buildings and contents only. The Project would provide other additional flood damage reduction benefits which have not and cannot be quantified due to a lack of data needed for quantification. These benefits are economic and non-economic in nature and include, but are not limited to, the following benefit types. **If these benefits could be quantified in economic terms, then the benefit-cost ratio for the Flood Damage Reduction Project would far exceed 1.0.**

- Avoided physical damage
 - Buildings
 - Contents
 - Infrastructure
 - Landscaping
 - Vehicles
 - Equipment
 - Nursery crops
 - Ecosystems
- Avoided loss of functions:
 - Loss of business income
 - Loss of rental income
 - Loss of wages
 - Loss of public services
 - Loss of utility services
 - Transportation system disruptions
- Avoided emergency response costs:
 - Evacuation and rescue costs
 - Security costs
 - Dewatering, debris removal and cleanup costs
 - Emergency flood management system repairs
 - Humanitarian assistance
- Avoided public safety and health impacts:
 - Population at risk
 - Casualties
 - Displacement/shelter needs
 - Critical facilities

Table 1 Proposal Project Costs and Benefits Summary for Proposition 1E

Proposal: Phoenix Lake IRWM Retrofit

Agency: Marin County Flood Control and Water Conservation District, Flood Zone 9 (FZ9)

Project	Agency	Total Present Value Project Costs	Total Present Value Project Benefits				B/C Ratio
			Water Supply	Flood Damage Reduction	Other	Total	
(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)
Flood Damage Reduction Project	FZ9	\$9,633,000		\$7,662,000		\$7,662,000	0.8
Water Supply	FZ9	\$555,000					
Water Quality Project	FZ9	\$363,000			\$34,000	\$34,000	
Ecosystem Restoration Project	FZ9	\$303,000					
Recreation and Public Access Project	FZ9	\$1,420,000					
Total		\$12,274,000		\$7,662,000	\$34,000	\$7,696,000	