

APPENDIX D.1
***ENVIRONMENTAL
PROTECTION, MITIGATION & ENHANCEMENT MEASURES
SUMMARY TABLE***

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ENLOE HYDROELECTRIC PROJECT
Environmental Protection, Mitigation and Enhancement Measures

Section	PM&E	Cost	Frequency	Total Cost	Capital Cost	Annual Cost
Water Quality	Install continuous monitoring of water temperature in 3 locations in Project Area to contribute information to the regional water temperature monitoring program. 5 year program	\$ 2,000	5 years	\$ 10,000	\$ 10,000	
	Implement monitoring of TDG below the Project for one year to help define the period when TDG exceeds water quality standards.	\$ 10,000	once	\$ 60,000	\$ 10,000	
	Implementation of BMP to prevent erosion and sediment reaching the water courses. Monitor during construction to identify excessive sedimentation or violation of water quality standards.	\$ 75,000	during construction	\$ 75,000	\$ 75,000	
	Implement standard spill containment BMP for prevention of accidental releases of hazardous or toxic substances.	\$ 25,000	once	\$ 25,000	\$ 25,000	
Fish	Boulder clusters upstream of reservoir - 5 year program	\$ 50,000	5 years	\$ 50,000	\$ 50,000	
	Movement of accumulated logs (Large Woody Debris) over dam	\$ 2,000	annually/40 years	\$ 80,000		\$ 2,000
	Entrainment of Fish at Project Intake one year study	\$ 80,000	once	\$ 80,000	\$ 80,000	
	Reservoir Fish Monitoring one year study	\$ 20,000	once	\$ 20,000	\$ 20,000	
	Tailrace Monitoring two year study	\$ 20,000	2 years	\$ 20,000	\$ 20,000	
	Gravel Augmentation - 5 year program	\$ 170,000	5 years	\$ 170,000	\$ 170,000	
	Side Channel Enhancement Project	\$ 600,000	once	\$ 600,000	\$ 600,000	
	Blasting BMPs including timing to avoid steelhead	\$ 100,000	during construction	\$ 100,000	\$ 100,000	
	Tailrace modifications involving maximizing the velocities in the draft tubes to create a velocity barrier for the fish	\$ 125,000	once	\$ 125,000	\$ 125,000	
	Adaptive Management/Consultation	\$ 10,000	annually/40 years	\$ 400,000		\$ 10,000
Wildlife	Concentrate construction activities with the loudest noise to occur in summer and early fall to minimize effects to over wintering birds bald eagles as much as possible	\$0.0		\$ -	\$ -	
	Planting of riparian vegetation along the road planned for closure along the reservoir	see botanical		included below	included below	
	Transmission line poles in prime raptor habitat to be modified to prevent raptor electrocution.	\$ 500	one pole	\$ 500	\$ 500	
	In-kind mitigation of habitat flooded due to the crest gates	see botanical		included below	included below	
Botany	Riparian restoration at sites along west and east banks of the impoundment	\$ 30,000	once	\$ 30,000	\$ 30,000	
	Abandon the existing access road that traverses the riparian zone and construct a new road	\$ 350,000	once	\$ 350,000	\$ 350,000	
	Plant woody riparian species in riparian areas of the abandoned road	\$ 15,000	once	\$ 15,000	\$ 15,000	
	Plant woody riparian species in the riparian area on the east bank downstream of Shanker's Bend	\$ 20,000	once	\$ 20,000	\$ 20,000	
	Monitor the restoration areas annually for three years and provide an annual report	\$ 10,000	3 years	\$ 30,000	\$ 30,000	
	Replace planting if survival is low in restored areas	\$ 15,000		\$ 15,000	\$ 15,000	
	Install grazing control measures to protect riparian plantings from cattle grazing	\$ 20,000	once	\$ 20,000	\$ 20,000	
	Flag and temporarily fence wetland and riparian vegetation in the vicinity of project activities to protect from inadvertent harm during construction activities	\$ 2,500		\$ 2,500	\$ 2,500	
	Provide environmental training on the sensitive biological resources to Licensee's employees, contractors, and subcontractors who work on the project during construction and operation	\$ 5,000		\$ 5,000	\$ 5,000	
	Install grazing controls to protect sensitive areas	\$ 32,000	once	\$ 32,000	\$ 32,000	
	Implement standard construction BMP's for erosion and sediment control	see water quality section			\$ -	
	Provide a biological construction monitor	\$ 25,000	for construction season	\$ 25,000	\$ 25,000	
	Seed or mulch exposed or disturbed soils	\$ 10,000	once	\$ 10,000	\$ 10,000	
	Control of noxious weed dispersal	\$ 15,000		\$ 15,000	\$ 15,000	

Cultural	Installation of interpretative panels with information about the history of the powerhouse	\$	25,000	once	\$	25,000	\$	25,000		
	Site Closure of historic powerhouse	\$	35,000	once	\$	35,000	\$	35,000		
	Demolition of existing powerhouse	\$	85,000	once	\$	85,000	\$	85,000		
	Monitoring of the shoreline area to determine that no additional recorded or previously unrecorded archeological sites erode due to water fluctuations and recreational activities.	\$	65,000	once	\$	65,000	\$	65,000		
	Avoidance of all known NRHP-eligible archeological sites	\$	15,000	during construction	\$	15,000	\$	15,000		
Socioeconomics	No PM&Es						\$	-		
Geology & Soils	Concerns addressed by terrestrial and water quality PM&Es						\$	-		
Recreation	Limit vehicle access to the shoreline area immediately adjacent to the dam and the lower reaches of the impoundment with fencing and barricades	\$	40,000	once	\$	40,000	\$	40,000		
	Transfer ownership of the trestle bridge to the County for development into a public, nonmotorized, recreational use trail (only transaction costs are shown here; the value of the donation is estimated at \$1 M)	\$	10,000	once	\$	10,000	\$	10,000		
	Replace the existing boat ramp with an improved ramp	\$	40,000	once	\$	40,000	\$	40,000		
	Clean up and restore the wooded area on the east bank of the reservoir to enhance visitor experience	\$	10,000	once	\$	10,000	\$	10,000		
	Implement river access improvements (including parking and loading areas, trail, and directional and interpretive signage) at Shanker's Bend	\$	25,000	once	\$	25,000	\$	25,000		
	Develop a map of the Enloe Dam area that illustrates recreation sites and access	\$	5,000	once	\$	5,000	\$	5,000		
	Remove trash from recreation sites on both sides of the dam and also during an annual clean up event.	\$	1,500	annually/40 years	\$	60,000			\$ 1,500	
	Develop a parking area with a universally-accessible vault toilet near the dam with access to people with physical disabilities	\$	40,000	once	\$	40,000	\$	40,000		
	Install picnic tables, including a handicap accessible table, near the parking area	\$	15,000	once	\$	15,000	\$	15,000		
Interpretive signs near the dam would include, at a minimum, one sign near the parking and picnic area and a second sign at or near the abutment of the old powerhouse access bridge, below Similkameen Falls	\$	2,500	once	\$	2,500	\$	2,500			
Aesthetics	Use of visually compatible colors and building material textures that harmonize with the existing landscape for the new construction	\$	10,000	once	\$	10,000	\$	10,000		
Land Use	No PM&Es						\$	-		
Plans	Construction Related Plans						\$	-		
	Sediment control plan	\$	20,000	once	\$	20,000	\$	20,000		
	Spill containment plan	\$	10,000	once	\$	10,000	\$	10,000		
	Stormwater runoff plan	\$	20,000	once	\$	20,000	\$	20,000		
	Inadvertent discovery plan for archeological resources	\$	15,000	once	\$	15,000	\$	15,000		
	Project Operation Plans						\$	-		
	Mitigation and monitoring plan - terrestrial	\$	20,000	once	\$	30,000	\$	30,000		
	Adaptive management plan - fish	\$	60,000	once	\$	60,000	\$	60,000		
	Develop an operations plan - fish	\$	50,000	once	\$	50,000	\$	50,000		
Avian protection plan	\$	5,000	once	\$	5,000	\$	5,000			
Recreational user plan	\$	40,000	once	\$	40,000	\$	40,000			
Coordination and Consultation	Short term						\$	-		
	The District will coordinate with the Department of Public Works regarding road approaches and signage	\$	5,000		\$	5,000	\$	5,000		
	Ongoing for term of the license						\$	-		
	The District will consult annually with BLM to review progress on implementation of PM&Es	\$	3,000	annually/40 years		#REF!	\$	3,000		
The District will coordinate with CCT	\$	3,000	annually/40 years		#REF!	\$	3,000			
TOTAL COST FOR PM&Es						#REF!	\$	2,532,500	\$	19,500