

APPENDIX B. ESTIMATED CARBON DIOXIDE EMISSIONS DIABLO POWERHOUSE TAILRACE RESTORATION PROJECT

Equipment	Fuel Use (gal/hr)	Est Use (hrs)	MPT	Total Trips		VMT		Fuel Eff (mpg)	Fuel Use (gal)		EF (lbs C/gal)	CO ₂ Emissions (lbs)		Comments/Assumptions
				17 CY	22 CY	17 CY	22 CY		17 CY	22 CY		17 CY	22 CY	
Alternative B - Complete Cobble Bar Removal														
Loaders Excavation Site	4	420							1680	1680	22.49	37783	37783	Two excavators 7 hrs/day for 30 days (6 weeks)
Loader/Dozer Disposal Site	4	210							840	840	22.49	18892	18892	One excavator 7 hrs/day for 30 days (6 weeks)
Dump Trucks	4		31	1147	886	35559	27477	7.23	4918	3800	22.49	110611	85472	
Barge-mounted crane	4	16							64		22.49	1439	1439	Two days for placing and removing coffer dams
Land-base crane mobilization/ demobilization						214		7.23	30		22.49	666	666	214 miles roundtrip to and from Everett
Land-base crane operation	4	8							32		22.49	720	720	Stinger boom truck crane model 4792 or equivalent for one day
Tugboat	4	16							64		22.49	1439	1439	Two days for placing and removing coffer dam
Total	670											171550	146411	
Total Estimated Annual Emissions of Carbon Dioxide (lbs)												78	66	
Alternative C - Partial Cobble Bar Removal														
Loaders Excavation Site	4	392							1568	1568	22.49	35264	35264	Two excavators 7 hrs/day for 28 days (about 6 weeks)
Loader/Dozer Disposal Site	4	196							784	784	22.49	17632	17632	One excavator 7 hrs/day for 28 days (about 6 weeks)
Dump Trucks	4		31	1059	818	32824	25364	7.23	4540	3508	22.49	102103	78897	
Barge-mounted crane	4	16							64	64	22.49	1439	1439	Two days for placing and removing coffer dams
Land-base crane mobilization/ demobilization						214		7.23	30		22.49	666	666	214 miles roundtrip to and from Everett
Land-base crane operation	4	8							32	32	22.49	720	720	Stinger boom truck crane model 4792 or equivalent for one day
Tugboat	4	16							64	64	22.49	1439	1439	Two days for placing and removing coffer dam
Total	628											159263	136058	
Total Estimated Annual Emissions of Carbon Dioxide (metric tons)												72	62	
NOTES:														
Estimated amount of excavated material for Alternative B is 19,500 CY; estimated amount of excavated material for Alternative C is 18,000 CY.														
Fuel use rate of 4 gallons/hour from M. Wheeler, Power Structures Mechanic Crew Chief, SCL, pers. comm. 2014.														
Total number of dump truck trips will depend on the capacity of the dump truck and amount of material excavated for each alternative. Capacity of Cat 730 Articulating Dump Truck varies from 17 to 22 CY.														
Fuel efficiency (Fuel Eff) in miles per gallon (mpg) is the value for heavy duty trucks operating at highway speeds used in the CLIP Tool model.														
Emission factor (EF) for diesel (distillate fuel oil no. 2) is 10.21 kg/gal, according to the published EF in Table C-1 of the U.S. EPA's Final Greenhouse Gas Reporting Rule (2014).														
To convert EF in kg/gal to lbs/gal multiply by 2.2026432 = 22.49														
C - carbon; CY - cubic yards; MPT - miles per trip; VMT - Vehicle Miles Traveled														
A metric ton is 2,205 lbs														
Total emissions as CO _{2e} would be slightly higher than those shown when accounting for the small amount of methane and nitrous oxide that also would be generated in addition to the CO ₂ from combustion of diesel fuel.														