

FEATURE: REVISION #1 Klamath River Dams Removal Full Removal Option Copco No. 2 Dam & Powerplant Removal Most Probable Low Diversion and Care	PROJECT: Klamath River Northern California/Southern Oregon	
	WOID: AF652	ESTIMATE LEVEL: Feasibility
	REGION: MP	UNIT PRICE LEVEL: July-2010
	FILE: C:\Estimating\Klamath\Klamath River Dams\Removal\Feasibility Estimates\MPL, MP, MPH - Revision #1 - 2011-03\Copco 2\Klamath Dams Removal - COPCO 2 - Full Removal Option - REV#1 - MPL Feas Est - 4-2011.xlsx\Penstock	

PLANT ACCOUNT	PAY ITEM	DESCRIPTION	CODE	QUANTITY	UNIT	UNIT PRICE	AMOUNT
		CIVIL					
	1	Construct and Remove Embankment Cofferdam to Remove Right Side of Dam. Upstream cofferdam 2,300 cy Downstream cofferdam 800 cy Assumes 10 ft wide crest with 2:1 side slopes. Embankment material taken from borrow/waste area on left abutment of Iron Gate Dam, approximately 10 mile haul distance.	86-68130	3,100	cy	\$70.00	\$217,000.00
	2	Furnish, Install and Remove Riprap Upstream cofferdam 280 cy Downstream cofferdam 185 cy	86-68130	465	cy	\$120.00	\$55,800.00
	3	Provide Dewatering behind Cofferdams Assume two 3 inch portable trash pump operating for approximately 4 months.	86-68130	1	ls		\$40,000.00
	4	Remove Water from behind Cofferdams Upstream cofferdam 230,000 gals Downstream cofferdam 11,000 gals Assume 3 inch portable trash pump	86-68130	241,000	gals	\$0.01	\$2,410.00
	5	Construct and Remove Embankment Cofferdam to Remove Left Side of Dam. Also allows for removal of trashracks, caterpillar gate, and concrete intake structure, and to construct tunnel plug in the dry. Assumes 10 ft wide crest with 2:1 side slopes, approximately 300 ft long and 5 ft high. Embankment material taken from right side cofferdam.	86-68130	1,100	cy	\$70.00	\$77,000.00
	6	Furnish, Install and Remove Riprap Reuse riprap from right side cofferdam.	86-68130	250	cy	\$120.00	\$30,000.00
SUBTOTAL THIS SHEET							\$422,210.00

QUANTITIES		PRICES	
BY Rick Benik	CHECKED Sheena Barnes	BY Craig A. Grush, P.E.	CHECKED DW 05-18-11
DATE PREPARED 10/19/10	PEER REVIEW / DATE Tom Hepler P.E. 10/20/10	DATE PREPARED 05/17/11	PEER REVIEW / DATE DCAR 6/3/11

FEATURE: REVISION #1 Klamath River Dams Removal Full Removal Option Copco No. 2 Dam & Powerplant Removal Most Probable Low Diversion and Care	PROJECT: Klamath River Northern California/Southern Oregon		
	WOID: AF652	ESTIMATE LEVEL: Feasibility	
	REGION: MP	UNIT PRICE LEVEL: July-2010	
	FILE: C:\Estimating\Klamath\Klamath River Dams\Removal\Feasibility Estimates\MPL, MP, MPH - Revision #1 - 2011-03\Copco 2\Klamath Dams Removal - COPCO 2 - Full Removal Option - REV#1 - MPL Feas Est - 4-2011.xlsx\Penstock		

PLANT ACCOUNT	PAY ITEM	DESCRIPTION	CODE	QUANTITY	UNIT	UNIT PRICE	AMOUNT
		CIVIL					
	7	Provide Dewatering behind Left Side Cofferdam Assume 3 inch portable trash pump operating for approximately 4 months.	86-68130	1	ls		\$40,000.00
	8	Remove Water from behind Cofferdam Assume 3 inch portable trash pump	86-68130	36,000	gals	\$0.04	\$1,440.00
	9	Remove Water from behind Tailrace Cofferdam Unwatering of tailrace for removal of the powerhouse in the dry. Assume 3 inch portable trash pump	86-68130	400,000	gals	\$0.01	\$4,000.00
	10	Provide Dewatering behind Tailrace Cofferdam for removal of Powerhouse in the dry. Assume 3 inch portable trash pump operating for approximately 3 months.	86-68130	1	ls		\$30,000.00
	11	Construct Embankment Cofferdam across Tailrace to remove Powerhouse in dry. Assumes 10 ft wide crest with 2:1 side slopes, approximately 110 ft long and 12 ft high. Embankment material taken from Iron Gate Dam Removal, approximately 10 mile haul distance.	86-68130	1,700	yd3	\$70.00	\$119,000.00
SUBTOTAL THIS SHEET							\$194,440.00

QUANTITIES		PRICES	
BY Rick Benik	CHECKED Sheena Barnes	BY Craig A. Grush, P.E.	CHECKED [Signature] 05-18-11
DATE PREPARED 10/19/10	PEER REVIEW / DATE Tom Hepler P.E. 10/20/10	DATE PREPARED 05/17/11	PEER REVIEW / DATE [Signature] 6/3/11

FEATURE: REVISION #1 Klamath River Dams Removal Full Removal Option Copco No. 2 Dam & Powerplant Removal Most Probable Low Powerplant Access Road Bridge	PROJECT: Klamath River Northern California/Southern Oregon
	WOID: AF652 ESTIMATE LEVEL: Appraisal REGION: MP UNIT PRICE LEVEL: July-2010
	FILE: C:\Estimating\Klamath\Klamath River Dams\Removal\Feasibility Estimates\MPL, MP, MPH - Revision #1 - 2011-03\Copco 2\Klamath Dams Removal - COPCO 2 - Full Removal Option - REV#1 - MPL Feas Est - 4-2011.xlsx\Diversion & Care

PLANT ACCOUNT	PAY ITEM	DESCRIPTION	CODE	QUANTITY	UNIT	UNIT PRICE	AMOUNT
		CIVIL					
	12	Construct 240-ft-long, 2-span concrete Bridge. 31-ft deck width (two 12-ft lanes, two 2-ft shoulders, additional width for jersey barriers along each side). To be constructed near existing bridge, which is to be kept in service until new bridge is ready for service. Design loading is HS-20 truck. Cost is based on unit cost per ft2 of deck for similar concrete bridge at Upper San Joaquin priced out in 2009.	86-68130	0	ft2	\$200.00	
	13	Remove and dispose of existing bridge. Bridge is approximately 231 feet long. Consists of 4 steel girder spans: One @ 40', one @ 75', one @ 56', one @ 60'. Timber deck (15'-16' wide) with wood running planks. Rails and wheel guards along both sides are timber. Two piers are concrete, third pier appears to be timber posts. Assume wood is pressure-treated. Assume girders contain paint with heavy metals.	86-68130	0	ls	\$300,000.00	
DIVERSION AND CARE SUBTOTAL							\$616,650.00

QUANTITIES		PRICES	
BY Stephen Latham	CHECKED Rick Benik	BY Craig A. Grush, P.E.	CHECKED <i>[Signature]</i> 05-25-11
DATE PREPARED 11/08/10	PEER REVIEW / DATE Tom Hepler, P.E. 11/08/10	DATE PREPARED 05/25/11	PEER REVIEW / DATE <i>[Signature]</i> 6/3/11

FEATURE: REVISION #1 Klamath River Dams Removal Full Removal Option Copco No. 2 Dam & Powerplant Removal Most Probable Low Dam	PROJECT: Klamath River Northern California/Southern Oregon
	WOID: AF652 ESTIMATE LEVEL: Feasibility REGION: MP UNIT PRICE LEVEL: July-2010
	FILE: C:\Estimating\Klamath\Klamath River Dams\Removal\Feasibility Estimates\MPL, MP, MPH - Revision #1 - 2011-03\Copco 2\Klamath Dams Removal - COPCO 2 - Full Removal Option - REV#1 - MPL Feas Est - 4-2011.xlsx\Penstock

PLANT ACCOUNT	PAY ITEM	DESCRIPTION	CODE	QUANTITY	UNIT	UNIT PRICE	AMOUNT
		CIVIL					
		Concrete and Structural Steel Items:					
	14	Remove Concrete in Dam. Reinforced concrete in ogee overflow section and in D/S apron and sidewalls, gate piers, hoist deck, & north wingwall (on right side, upstream of dam).	86-68130	4,400	yd3	\$270.00	\$1,188,000.00
	15	Remove concrete equipment slab from top of embankment wing dam on right abutment.	86-68130	5	yd3	\$170.00	\$850.00
	16	Remove Concrete Wingwall. Located on left side of spill tunnel outfall channel. Assume wall is unreinforced concrete.	86-68130	220	yd3	\$170.00	\$37,400.00
SUBTOTAL THIS SHEET							\$1,226,250.00

QUANTITIES		PRICES	
BY Stephen Latham	CHECKED Jonathan East	BY <i>[Signature]</i> Craig A. Grush, P.E.	CHECKED <i>[Signature]</i> 05-18-11
DATE PREPARED 10/19/10	PEER REVIEW / DATE Rick Benik P.E. 10/19/10	DATE PREPARED 05/17/11	PEER REVIEW / DATE <i>[Signature]</i> 6/3/11

FEATURE: REVISION #1 Klamath River Dams Removal Full Removal Option Copco No. 2 Dam & Powerplant Removal Most Probable Low Dam	PROJECT: Klamath River Northern California/Southern Oregon
	WOID: AF652 ESTIMATE LEVEL: Feasibility REGION: MP UNIT PRICE LEVEL: July-2010
	FILE: C:\Estimating\Klamath\Klamath River Dams\Removal\Feasibility Estimates\MPL, MP, MPH - Revision #1 - 2011-03\Copco 2\Klamath Dams Removal - COPCO 2 - Full Removal Option - REV#1 - MPL Feas Est - 4-2011.xlsx\Penstock

PLANT ACCOUNT	PAY ITEM	DESCRIPTION	CODE	QUANTITY	UNIT	UNIT PRICE	AMOUNT
		GEOTECHNICAL					
		These quantities represent the work required to remove the earth fill embankment and concrete cutoff wall of Copco 2 Dam to original ground surface.					
		Right Abutment Removal					
	17	Random Fill	86-68313	1,200	yd3	\$13.00	\$15,600.00
	18	Remove Hand Placed Riprap average size 12-inches, 8 inches thick	86-68313	7,800	ft2	\$0.85	\$6,630.00
	19	Gunite Curtain Wall similar to a concrete cutoff wall remove to 5' below excavated grade.	86-68313	210	yd3	\$170.00	\$35,700.00
		SUBTOTAL THIS SHEET					\$57,930.00

QUANTITIES		PRICES	
BY Randy Kuzniakowski	CHECKED Tuti Tierney	BY <i>[Signature]</i> Craig A. Grush, P.E.	CHECKED <i>[Signature]</i> 05-18-11
DATE PREPARED 11/01/10	PEER REVIEW / DATE Daniel W. Osmun 11/1/10	DATE PREPARED 05/17/11	PEER REVIEW / DATE <i>[Signature]</i> 6/3/11

FEATURE: REVISION #1 Klamath River Dams Removal Full Removal Option Copco No. 2 Dam & Powerplant Removal Most Probable Low Dam	PROJECT: Klamath River Northern California/Southern Oregon
	WOID: AF652 ESTIMATE LEVEL: Feasibility REGION: MP UNIT PRICE LEVEL: July-2010
	FILE: C:\Estimating\Klamath\Klamath River Dams\Removal\Feasibility Estimates\MPL, MP, MPH - Revision #1 - 2011-03\Copco 2\Klamath Dams Removal - COPCO 2 - Full Removal Option - REV#1 - MPL Feas Est - 4-2011.xlsx\Penstock

PLANT ACCOUNT	PAY ITEM	DESCRIPTION	CODE	QUANTITY	UNIT	UNIT PRICE	AMOUNT
		MECHANICAL					
		Remove and dispose of the following equipment at Dam:					
	20	Hand Rails and Light Poles	86-68420	5,000	lb	\$0.60	\$3,000.00
	21	Radial Gates and Hoists 5 radial gates, 2 hoists (2,900 lbs. each)	86-68420	66,000	lb	\$0.60	\$39,600.00
	22	5 - Radial Gate stoplogs & slots (steel) (stoplog slots embedded in concrete ~1,500 lb each)	86-68420	95,800	lb	\$0.60	\$57,480.00
SUBTOTAL THIS SHEET							\$100,080.00

QUANTITIES		PRICES	
BY K. Converse	CHECKED T Turnage	BY <i>[Signature]</i> Craig A. Grush, P.E.	CHECKED <i>[Signature]</i> 05-18-11
DATE PREPARED 10/28/10	PEER REVIEW / DATE Dan Drake 11/1/10	DATE PREPARED 05/17/11	PEER REVIEW / DATE <i>[Signature]</i> 6/5/11

FEATURE: REVISION #1 Klamath River Dams Removal Full Removal Option Copco No. 2 Dam & Powerplant Removal Most Probable Low Dam	PROJECT: Klamath River Northern California/Southern Oregon
	WOID: AF652 ESTIMATE LEVEL: Feasibility REGION: MP UNIT PRICE LEVEL: July-2010
	FILE: C:\Estimating\Klamath\Klamath River Dams\Removal\Feasibility Estimates\MPL, MP, MPH - Revision #1 - 2011-03\Copco 2\Klamath Dams Removal - COPCO 2 - Full Removal Option - REV#1 - MPL Feas Est - 4-2011.xlsx\Penstock

PLANT ACCOUNT	PAY ITEM	DESCRIPTION	CODE	QUANTITY	UNIT	UNIT PRICE	AMOUNT
		ELECTRICAL					
		Remove and dispose of the following equipment at Spillway:					
	23	Spillway intake gate motor & control panel Total weight approximately: 500 lbs.	86-68430	1	EA	\$900.00	\$900.00
	24	Spillway radial gate motors & control panel Total weight approximately: 500 lbs.	86-68430	1	EA	\$900.00	\$900.00
	25	Spillway trashrake motor, festoon cable & control Total weight approximately: 100 lbs.	86-68430	1	EA	\$400.00	\$400.00
	26	Distribution equipment , panelboards Total weight approximately: 500 lbs.	86-68430	1	EA	\$4,000.00	\$4,000.00
		DAM SUBTOTAL					\$1,390,460.00

QUANTITIES		PRICES	
BY D. Berk	CHECKED T. Griess	BY <i>[Signature]</i> Craig A. Grish, P.E.	CHECKED <i>[Signature]</i> 05-18-11
DATE PREPARED 10/19/10	PEER REVIEW / DATE L. Rossi 11/1/10	DATE PREPARED 05/17/11	PEER REVIEW / DATE <i>[Signature]</i> 6/3/11

FEATURE: REVISION #1 Klamath River Dams Removal Full Removal Option Copco No. 2 Dam & Powerplant Removal Most Probable Low Powerhouse, Switchyard, and Transmission Line	PROJECT: Klamath River Northern California/Southern Oregon
	WOID: AF652 ESTIMATE LEVEL: Feasibility REGION: MP UNIT PRICE LEVEL: July-2010
	FILE: C:\Estimating\Klamath\Klamath River Dams\Removal\Feasibility Estimates\MPL, MP, MPH - Revision #1 - 2011-03\Copco 2\Klamath Dams Removal - COPCO 2 - Full Removal Option - REV#1 - MPL Feas Est - 4-2011.xlsx\Penstock

PLANT ACCOUNT	PAY ITEM	DESCRIPTION	CODE	QUANTITY	UNIT	UNIT PRICE	AMOUNT
		CIVIL					
		Concrete and Structural Steel Items:					
	27	Remove Copper Shingles from Roof of Powerhouse for Recycling.	86-68130	7,000	ft2	\$2.00	\$14,000.00
	28	Remove Powerhouse Concrete down to spring-line of the turbines, Elev. 2338 (USGS datum). Local datum is converted to USGS datum by adding 2211 feet. (Elev. 127.0 + 2211 = Elev. 2338.) All concrete is reinforced. Includes all exterior & interior walls, columns, & beams, and concrete in foundations for transformers (outside powerhouse).	86-68130	1,050	yd3	\$270.00	\$283,500.00
	29	Remove Structural Steel Items associated with Powerhouse. Includes columns, beams, crane girders, bracing, misc. shapes, roof trusses, purlins, etc.	86-68130	220,000	lb	\$0.60	\$132,000.00
	30	Remove Control House Concrete. Control house is located between the powerhouse and the switchyards. All concrete is reinforced.	86-68130	30	yd3	\$170.00	\$5,100.00
	31	Remove Control House Structural Steel Items. This is actually total metal weight for steel gutter frames (2174 lbs) with aluminum tread plate (1344 lbs).	86-68130	3,500	lb	\$0.60	\$2,100.00
	32	Remove Shop Building <i>Located just SW of the switchyards.</i> See dwg PB-45621. Assume single story steel bldg on concrete slab. Estimate 40 ft x 90 ft.	86-68130	3,600	ft2	\$55.00	\$198,000.00
		SUBTOTAL THIS SHEET					\$634,700.00

QUANTITIES		PRICES	
BY Stephen Latham	CHECKED Jonathan East	BY <i>[Signature]</i> Craig A. Orish, P.E.	CHECKED <i>[Signature]</i> 05-18-11
DATE PREPARED 11/01/10	PEER REVIEW / DATE Rick Benik P.E. 11/1/10	DATE PREPARED 05/17/11	PEER REVIEW / DATE <i>[Signature]</i> 6/3/11

FEATURE: REVISION #1 Klamath River Dams Removal Full Removal Option Copco No. 2 Dam & Powerplant Removal Most Probable Low Powerhouse, Switchyard, and Transmission Line	PROJECT: Klamath River Northern California/Southern Oregon
	WOID: AF652 ESTIMATE LEVEL: Feasibility REGION: MP UNIT PRICE LEVEL: July-2010
	FILE: C:\Estimating\Klamath\Klamath River Dams\Removal\Feasibility Estimates\MPL, MP, MPH - Revision #1 - 2011-03\Copco 2\Klamath Dams Removal - COPCO 2 - Full Removal Option - REV#1 - MPL Feas Est - 4-2011.xlsx\Penstock

PLANT ACCOUNT	PAY ITEM	DESCRIPTION	CODE	QUANTITY	UNIT	UNIT PRICE	AMOUNT
		MECHANICAL					
		Remove and dispose of the following equipment at the Power House:					
	33	2 - Governor oil systems governor, sump tanks, accumulator tank, piping	86-68420	38,000	lb	\$0.60	\$22,800.00
	34	Cooling water and bearing oil systems	86-68420	13,300	lb	\$0.60	\$7,980.00
	35	Oil / Water seperator tank and piping	86-68420	2,700	lb	\$0.60	\$1,620.00
	36	12 - Cast Iron Columns (encased in concrete)	86-68420	54,000	lb	\$0.60	\$32,400.00
	37	2 - Francis Turbines (includes runner, scroll case, draft tube and shaft)	86-68420	660,000	lb	\$0.60	\$396,000.00
	38	2-40 Ton indoor crane Includes crane and rail, not steel rail base)	86-68420	140,000	lb	\$0.60	\$84,000.00
	39	Compressed Air systems	86-68420	1,000	lb	\$0.60	\$600.00
	40	2 - CO2 systems	86-68420	2,100	lb	\$0.60	\$1,260.00
	41	Plant Water and Fire Protection	86-68420	3,100	lb	\$0.60	\$1,860.00
	42	Transformer Oil Fire protection	86-68420	6,500	lb	\$0.60	\$3,900.00
	43	Unwatering Piping	86-68420	32,000	lb	\$0.60	\$19,200.00
	44	Drainage Piping	86-68420	10,000	lb	\$0.60	\$6,000.00
		SUBTOTAL THIS SHEET					\$577,620.00

QUANTITIES		PRICES	
BY K. Converse	CHECKED T Turnage	BY <i>[Signature]</i> Craig A. Gush, P.E.	CHECKED <i>[Signature]</i> 05-18-11
DATE PREPARED 10/28/10	PEER REVIEW / DATE Dan Drake 11/1/10	DATE PREPARED 05/17/11	PEER REVIEW / DATE <i>[Signature]</i> 6/3/11

FEATURE: REVISION #1 Klamath River Dams Removal Full Removal Option Copco No. 2 Dam & Powerplant Removal Most Probable Low Powerhouse, Switchyard, and Transmission Line	PROJECT: Klamath River Northern California/Southern Oregon <hr/> WOID: AF652 ESTIMATE LEVEL: Feasibility REGION: MP UNIT PRICE LEVEL: July-2010 FILE: C:\Estimating\Klamath\Klamath River Dams\Removal\Feasibility Estimates\MPL, MP, MPH - Revision #1 - 2011-03\Copco 2\Klamath Dams Removal - COPCO 2 - Full Removal Option - REV#1 - MPL Feas Est - 4-2011.xlsx\Penstock
---	---

PLANT ACCOUNT	PAY ITEM	DESCRIPTION	CODE	QUANTITY	UNIT	UNIT PRICE	AMOUNT
		ELECTRICAL					
		Remove and dispose of the following equipment in the Powerplant:					
	45	AC Generator, Indoor Vertical Unit 1 & 2 ea: 15 MVA (13.5 MW); 0.9PF, 6,600V, 171.5 RPM, 3 Ph, including rotating exciter Total weight each approximately: 230,000 lbs. Stator: 113,000 lbs., Rotor: 117,000 lbs. Exciter Assembly: 3,260 lbs. Heaviest lift: 117,000 lbs.	86-68430	2	EA	\$120,000.00	\$240,000.00
	46	Excitation equipment for 15 MVA Generator (2 sections) Total weight approximately: 1,000 lbs.	86-68430	2	EA	\$5,000.00	\$10,000.00
	47	Surge protection equip. for 15 MVA Generator Total weight approximately: 800 lbs.	86-68430	2	EA	\$1,500.00	\$3,000.00
	48	Neutral grounding equip. for 15 MVA Generator includes transformer Total weight approximately: 500 lbs.	86-68430	2	EA	\$1,500.00	\$3,000.00
		SUBTOTAL THIS SHEET					\$256,000.00

QUANTITIES		PRICES	
BY D. Berk	CHECKED T. Griess	BY <i>[Signature]</i> Craig A. Gush, P.E.	CHECKED <i>[Signature]</i> 05-18-11
DATE PREPARED 10/19/10	PEER REVIEW / DATE L. Rossi 11/1/10	DATE PREPARED 05/17/11	PEER REVIEW / DATE <i>[Signature]</i> 6/3/11

FEATURE: REVISION #1 Klamath River Dams Removal Full Removal Option Copco No. 2 Dam & Powerplant Removal Most Probable Low Powerhouse, Switchyard, and Transmission Line	PROJECT: Klamath River Northern California/Southern Oregon <hr/> WOID: AF652 ESTIMATE LEVEL: Feasibility REGION: MP UNIT PRICE LEVEL: July-2010 FILE: C:\Estimating\Klamath\Klamath River Dams\Removal\Feasibility Estimates\MPL, MP, MPH - Revision #1 - 2011-03\Copco 2\Klamath Dams Removal - COPCO 2 - Full Removal Option - REV#1 - MPL Feas Est - 4-2011.xlsx\Penstock
---	---

PLANT ACCOUNT	PAY ITEM	DESCRIPTION	CODE	QUANTITY	UNIT	UNIT PRICE	AMOUNT
		ELECTRICAL					
		Remove and dispose of the following equipment in the Powerplant:					
	49	Generator Switchgear, 7.2kV-includes unit breaker (2 Sections @ 2,400 lbs each section) 3 ft x 7.5 ft x 95 inches high Total weight approximately: 4,800 lbs.	86-68430	1	EA	\$15,000.00	\$15,000.00
	50	Station Service Switchgear, 600 volt -(5 sections) (400 lbs each section), 3 ft x 3ft x 90 inches high Total weight approximately: 2,000 lbs.	86-68430	1	EA	\$15,000.00	\$15,000.00
	51	Unit and plant control switchboard 5 cubicles (400 lbs each), 2ft x 2ft x 90 in. high Total weight approximately: 2,000 lbs.	86-68430	1	EA	\$14,000.00	\$14,000.00
	52	Battery system - assume 60 batteries, charger, racks and supports. Total weight approximately: 2,500 lbs.	86-68430	1	EA	\$9,000.00	\$9,000.00
	53	Raceways, Conduit and Cable (approx. 3000 lin. Ft. power & control cable, 1000 lin. Ft. conduit, 200 lin. Ft. cabletray) Total weight approximately: 8,000 lbs.	86-68430	1	EA	\$14,000.00	\$14,000.00
	54	Misc. power & control boards 10 boards (50 lbs each) 3ft x 2 ft x 9 in Total weight approximately: 500 lbs.	86-68430	1	EA	\$4,000.00	\$4,000.00
SUBTOTAL THIS SHEET							\$71,000.00

QUANTITIES		PRICES	
BY D. Berk	CHECKED T. Griess	BY <i>[Signature]</i> Craig A. Grish, P.E.	CHECKED <i>[Signature]</i> 05-18-11
DATE PREPARED 10/19/10	PEER REVIEW / DATE L. Rossi 11/1/10	DATE PREPARED 05/17/11	PEER REVIEW / DATE <i>[Signature]</i> 6/3/11

FEATURE: REVISION #1 Klamath River Dams Removal Full Removal Option Copco No. 2 Dam & Powerplant Removal Most Probable Low Powerhouse, Switchyard, and Transmission Line	PROJECT: Klamath River Northern California/Southern Oregon
	WOID: AF652 ESTIMATE LEVEL: Feasibility
	REGION: MP UNIT PRICE LEVEL: July-2010
	FILE: C:\Estimating\Klamath\Klamath River Dams\Removal\Feasibility Estimates\MPL, MP, MPH - Revision #1 - 2011-03\Copco 2\Klamath Dams Removal - COPCO 2 - Full Removal Option - REV#1 - MPL Feas Est - 4-2011.xlsx\Penstock

PLANT ACCOUNT	PAY ITEM	DESCRIPTION	CODE	QUANTITY	UNIT	UNIT PRICE	AMOUNT
		ELECTRICAL					
		Remove and dispose of the following equipment in the Powerplant:					
	55	7 40-Ton Travelling Crane motors-hoist (2-30Hp*) hoist trolley (7.5Hp*), gantry (4-15Hp*) (Hp* Approx.) Total weight approximately: 600 lbs.	86-68430	1	EA	\$2,000.00	\$2,000.00
	56	40-Ton Travelling Crane control equipment (5 cubicles), Total weight approximately: 500 lbs.	86-68430	1	EA	\$9,000.00	\$9,000.00
	57	40-Ton Travelling Crane Festoon Cable (approx. 200 lin. Ft. cable) Total weight approximately: 800 lbs.	86-68430	1	EA	\$1,000.00	\$1,000.00
		Remove and dispose of the following equipment outside the Powerplant:					
	58	Step-up Transformers, outdoor, oil-filled, 1-phase 10/20 MVA, 6,600/72,000 volt Total weight approximately each: 40,300 lbs.	86-68430	6	EA		Deleted
	59	Step-up Transformers, outdoor, oil-filled, 1-phase 10/20 MVA, 73,800/230,000 volt Total weight approximately each: 58,200 lbs.	86-68430	3	EA		Deleted
		Remove and dispose of the following equipment from switchyard:	86-68430				
	60	Transmission Line No. 15 From Copco No. 2 switchyard to Copco No. 2 plant 556 AAC, 69-kV	86-68430	0.14	mile	\$25,000.00	\$3,500.00
POWERHOUSE, SWITCHYARD, & TRANS LINE SUBTOTAL							\$1,554,820.00

QUANTITIES		PRICES	
BY D. Berk	CHECKED T. Griess	BY <i>[Signature]</i> Craig A. Grush, P.E.	CHECKED <i>[Signature]</i> 05-18-11
DATE PREPARED 10/29/10	PEER REVIEW / DATE L. Rossi 11/1/10	DATE PREPARED 05/17/11	PEER REVIEW / DATE <i>[Signature]</i> 6/3/11

FEATURE: REVISION #1 Klamath River Dams Removal Full Removal Option Copco No. 2 Dam & Powerplant Removal Most Probable Low Penstock	PROJECT: Klamath River Northern California/Southern Oregon	
	WOID: AF652	ESTIMATE LEVEL: Feasibility
	REGION: MP	UNIT PRICE LEVEL: July-2010
	FILE: C:\Estimating\Klamath\Klamath River Dams\Removal\Feasibility Estimates\MPL, MP, MPH - Revision #1 - 2011-03\Copco 2\Klamath Dams Removal - COPCO 2 - Full Removal Option - REV#1 - MPL Feas Est - 4-2011.xlsx\Penstock	

PLANT ACCOUNT	PAY ITEM	DESCRIPTION	CODE	QUANTITY	UNIT	UNIT PRICE	AMOUNT
		CIVIL					
		Concrete and Structural Steel Items:					
	61	Remove Intake Structure Concrete. <i>All reinforced concrete. Includes structure plus entrance transition (to tunnel No. 1) D/S to construction joint at Sta. 0+20.00.</i>	86-68130	1,500	yd3	\$170.00	\$255,000.00
	62	Remove Concrete Items associated with 16-foot I.D. Wood Stave Pipe. <i>Assume reinforced concrete conduit sections will be removed between Tunnel No. 1 exit portal at Sta. 24+40 and the D/S end of concrete at Sta. 24+55, and between the U/S end of concrete at Sta. 37+70 and tunnel No. 2 entrance portal at Sta. 37+85. Assume the concrete conduit sections will be sawcut at the tunnel portals. Quantity also includes reinforced concrete in cradle footings for pipeline (148 footings spaced on 8- to 10-foot centers).</i>	86-68130	1,300	yd3	\$170.00	\$221,000.00
	63	Place Concrete Plugs for Tunnels. <i>There will be 9 plugs total (4 for tunnel No. 1 and 5 for tunnel No. 2). Plugs will be 2 feet thick, reinforced concrete, 3000 psi min. Location of plugs and info about openings is as follows: Tunnel No. 1, Sta. 0+20; Upper portal is a 16-ft dia., concrete-lined, horseshoe shape. Tunnel No. 1, Sta. 24+40; Lower portal is a 16-ft dia., concrete-lined, circular shape. Tunnel No. 1, Sta. 9+77.25; Top of air vent shaft is a 4-ft x 6-ft, concrete-box-lined (assumed) shaft. Tunnel No. 1, Sta. 9+96.96; Adit entrance (300 ft from tunnel) is a 7-ft x 7-ft, timber-lined opening. Tunnel No. 2, Sta. 37+85; Upper portal is a 16-ft dia., concrete-lined, horseshoe shape. Tunnel No. 2, Sta. 48+80; Lower portal is a double-barrel conduit; Each barrel is a 13.5-ft dia., steel-lined, circular shape. Tunnel No. 2, Sta. 47+75; Top of surge chamber air vent shaft is a 4-ft x 6-ft (assumed), concrete-box-lined (assumed) shaft. Tunnel No. 2; D/S end of Spill Tunnel, Sta. 3+30, is an approx. 15-ft to 16-ft dia., gunite-lined, horseshoe shape.</i>	86-68130	100	yd3	\$1,100.00	\$110,000.00
		SUBTOTAL THIS SHEET					\$586,000.00

QUANTITIES		PRICES	
BY Stephen Latham	CHECKED Jonathan East	BY Craig A. Grush, P.E.	CHECKED [Signature] 6-5-11
DATE PREPARED 10/19/10	PEER REVIEW / DATE Rick Benik P.E. 10/19/10	DATE PREPARED 05/17/11	PEER REVIEW / DATE [Signature] 6/3/11

FEATURE:				PROJECT:			
REVISION #1 Klamath River Dams Removal Full Removal Option Copco No. 2 Dam & Powerplant Removal Most Probable Low Penstock				Klamath River Northern California/Southern Oregon			
WOID: AF652		ESTIMATE LEVEL: Feasibility		REGION: MP		UNIT PRICE LEVEL: July-2010	
FILE:				C:\Estimating\Klamath\Klamath River Dams\Removal\Feasibility Estimates\MPL, MP, MPH - Revision #1 - 2011-03\Copco 2\Klamath Dams Removal - COPCO 2 - Full Removal Option - REV#1 - MPL Feas Est - 4-2011.xlsx\Penstock			

PLANT ACCOUNT	PAY ITEM	DESCRIPTION	CODE	QUANTITY	UNIT	UNIT PRICE	AMOUNT
		MECHANICAL					
		Remove and dispose of the following equipment at the Intake:					
	65	Caterpillar Gate : Gate, frame and hoist (steel)	86-68420	50,000	lb	\$0.60	\$30,000.00
	66	Trash rack and trash rake (steel)	86-68420	86,000	lb	\$0.60	\$51,600.00
	67	Stop Logs and slots for intake (steel) stop log slots embedded in concrete (~10,000 lb)	86-68420	220,000	lb	\$0.60	\$132,000.00
		Middle section of Penstock					
	68	Wood staves soaked in creosote	86-68420	1,100,000	lb	\$0.65	\$715,000.00
	69	<i>Cradles (steel)</i>	86-68420	290,000	lb	\$0.60	\$174,000.00
	70	<i>Bands (steel)</i>	86-68420	463,000	lb	\$0.60	\$277,800.00
	71	Penstock after bifurcation to butterfly valves includes pipe, expansion joint and support rings (steel, partially encased in concrete supports)	86-68420	860,000	lb	\$0.60	\$516,000.00
	72	Bifurcated vent pipes and support structure	86-68420	19,500	lb	\$0.60	\$11,700.00
	73	2 - 138" Butterfly valves	86-68420	148,000	lb	\$0.60	\$88,800.00
		PENSTOCK SUBTOTAL					\$3,177,900.00

QUANTITIES				PRICES			
BY K. Converse	CHECKED T Turnage	BY <i>[Signature]</i>	CHECKED <i>[Signature]</i>	05-14-11			
DATE PREPARED 10/28/10	PEER REVIEW / DATE Dan Drake 11/1/10	DATE PREPARED 05/17/11	PEER REVIEW / DATE <i>[Signature]</i>	6/3/11			

FEATURE: REVISION #1 Klamath River Dams Removal Full Removal Option Copco No. 2 Dam & Powerplant Removal Most Probable Low SUMMARY	PROJECT: Klamath River Northern California/Southern Oregon		
	WOID: AF652	ESTIMATE LEVEL: Feasibility	
	REGION: MP	UNIT PRICE LEVEL: July-2010	
	FILE: C:\Estimating\Klamath\Klamath River Dams\Removal\Feasibility Estimates\MPL, MP, MPH - Revision #1 - 2011-03\Copco 2\Klamath Dams Removal - COPCO 2 - Full Removal Option - REV#1 - MPL Feas Est - 4-2011.xlsx\Penstock		

PLANT ACCOUNT	PAY ITEM	DESCRIPTION	CODE	QUANTITY	UNIT	UNIT PRICE	AMOUNT
		Diversion and Care					\$616,650.00
		Dam Removal					\$1,390,460.00
		Powerhouse/Switchyard/Transmission Line Removal					\$1,554,820.00
		Penstock Removal					\$3,177,900.00
		Reservoir Vegetative Restoration					\$0.00
		Road Improvements					\$0.00
		Recreational Facilities to be Removed					\$0.00
		Subtotal					\$6,739,830.00
		Mobilization	5%	+/-			\$340,000.00
		Subtotal 1 with Mobilization					\$7,079,830.00
		Escalation to Notice to Proceed (NTP), from July 2010 to July 2020 (assumes 1.5%/yr compounding over 10 years)					\$1,136,602.00
		Subtotal 2 = Subtotal 1 with Mobilization + Escalation to NTP					\$8,216,432.00
		Design Contingencies	8%	+/-			\$683,568.00
		Allowance for Procurement Strategies (APS)	0%	+/-			
		Type of solicitation assumed is: Competitive RFP					
		CONTRACT COST					\$8,900,000.00
		Construction Contingencies	18%	+/-			\$1,600,000.00
		FIELD COST					\$10,500,000.00
		Non-Contract Costs: (Environmental & Cultural Resources Mitigation ~ 35%, Design Data Collection ~ 1%, Engineering Design ~ 3%, Permitting ~ 2%, Procurement ~ 1%, Construction Management ~ 9%, and Closeout ~ 1%)	52%	+/-			\$5,500,000.00
		CONSTRUCTION COST					\$16,000,000.00
Ref.: For appropriate use and terminology, see Reclamation Manual, Directives and Standards FAC; 09-01, 09-02 and 09-03.							

QUANTITIES		PRICES	
BY Refer to Previous Sheets	CHECKED Refer to Previous Sheets	BY Craig A. Brush, P.E.	CHECKED [Signature] 05-18-11
DATE PREPARED	PEER REVIEW / DATE Refer to Previous Sheets	DATE PREPARED 05/17/11	PEER REVIEW / DATE [Signature] 6/3/11