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| FEATURE: Klamath River Dams Removal Partial Removal Option Copco No. 1 Dam & Powerplant Removal Most Probable High Diversion and Care | PROJECT: Klamath River Northern California/Southern Oregon <hr/> WOID: AF652 ESTIMATE LEVEL: Feasibility <hr/> REGION: MP UNIT PRICE LEVEL: July-2010 <hr/> FILE: C:\Estimating\Klamath\Klamath River Dams\Removal - Partial\Feasibility Estimates\Copco 1\Klamath Dams Removal - COPCO 1 - Partial Removal Option - MPH Feas Est - 4- 2011.xlsx\Diversion & Care |
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| PLANT ACCOUNT | PAY ITEM | DESCRIPTION | CODE | QUANTITY | UNIT | UNIT PRICE | AMOUNT |
|----------------------------|----------|--|---------------------|--------------------|-----------------|------------|-----------------------------------|
| | | CIVIL | | | | | |
| | 1 | Furnish, Install, and Remove Barge-Mounted Crane in Reservoir for Dam Removal. Barge taken from Iron Gate Reservoir. Barge is used to modify diversion tunnel intake structure. Barge is also used to remove spillway gates, piers, bridge and concrete in spillway crest. Barge is located on reservoir for approximately 5 months. | 86-68130 | 1 | ls | | \$370,000.00 |
| | 2 | Remove Sediment from Diversion Tunnel Intake to provide access. Requires removing sediment 115 feet deep using clamshell or suction dredge. | 86-68130 | 30 | cy | \$3,000.00 | \$90,000.00 |
| | 3 | Furnish, Install, and Remove Large Crane on Right Abutment. Crane used to deliver equipment and materials and to remove waste materials as required. Crane in place for 4 months. | 86-68130 | 1 | ls | | Included in the mobilization item |
| | 4 | Remove Water from behind Tailrace Cofferdam. Unwatering of tailrace for removal of the powerhouse in the dry. Assume 3 inch portable trash pump operating for 1 day. | 86-68130 | 200,000 | gals | | DELETED |
| | 5 | Riprap Protection on Cofferdam. Riprap protects cofferdam from diversion tunnel releases. | 86-68130 | 260 | cy | | DELETED |
| | 6 | 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 | | DELETED |
| SUBTOTAL THIS SHEET | | | | | | | \$460,000.00 |

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|---------------------------|---|--|---|
| QUANTITIES | | PRICES | |
| BY Rick Benik | CHECKED Jonathan East | BY <i>[Signature]</i> Craig A. Grysh, P.E. | CHECKED <i>[Signature]</i> 06-01-11 |
| DATE PREPARED 11/18/10 | PEER REVIEW / DATE Tom Hepler P.E. 12/9/10 | DATE PREPARED 06/01/11 | PEER REVIEW / DATE <i>[Signature]</i> 6/3/11 |

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| | 7 | Remove Current Diversion Tunnel Plug <i>Plug located in the middle of the tunnel</i> <i>Reinforced concrete</i> <i>Tunnel work</i> | 86-68130 | 195 | yd3 | \$1,800.00 | \$351,000.00 |
| | 8 | Construct Embankment Cofferdam in Tailrace <i>to remove Powerhouse in dry.</i> <i>Assumes 10 ft wide crest with 2:1 side slopes, approximately 250 ft long and up to 12 ft high.</i> <i>Embankment material taken from Iron Gate Dam Removal, approximately 10 mile haul distance.</i> | 86-68130 | 1,700 | yd3 | | DELETED |
| | | SUBTOTAL THIS SHEET | | | | | \$351,000.00 |

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|----------------------------------|--|-----------------------------------|---|
| QUANTITIES | | PRICES | |
| BY Jonathan East | CHECKED Sheena Barnes | BY Craig A. Brush, P.E. | CHECKED Dov 06-01-11 |
| DATE PREPARED 11/18/10 | PEER REVIEW / DATE Rick Benik P.E. 12/9/10 | DATE PREPARED 06/01/11 | PEER REVIEW / DATE Dov 6/3/11 |

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| | | Concrete and Structural Steel Items: | | | | | |
| | 10 | Remove Concrete Dam down to Elev. 2476 <i>Elev. 2476 represents original streambed channel at downstream face of dam. Concrete in foundation to remain. Spillway crest at Elev. 2593.5. Includes concrete in dam, spillway crest, piers (390 cy), bridge deck (72 cy) and left abutment. Concrete is reinforced. Requires notching of concrete dam under head below spillway crest for a wet water year. Assume twenty notches, 12 ft deep, alternating sides with ten on each side for removal of approximately 120 feet of dam. Each notch overlaps the previous alternating notch in 6 foot lifts. Each notch is approximately 20 ft wide with an average 6 ft thickness to be removed by blasting below reservoir surface.</i> | 86-68130 | 36,000 | yd3 | \$320.00 | \$11,520,000.00 |
| | 11 | Remove Concrete Intake Structure on Right Abutment <i>Includes concrete in gate houses and headworks for units 1 and 2.</i> | 86-68130 | 21,000 | yd3 | | DELETED |
| | 12 | Remove Structural Steel from Spillway <i>Includes rails, misc. steel Does not include spillway gates Assume contains paint with heavy metals. By barge and crane</i> | 86-68130 | 55,000 | lbs | \$1.50 | \$82,500.00 |
| | 13 | Install Diversion Tunnel Plugs <i>Plug upstream (6 cy) and downstream ends Assume 2' thick each</i> | 86-68130 | 24 | yd3 | \$1,300.00 | \$31,200.00 |
| | 14 | Remove Diversion Tunnel Control Structure <i>Concrete Includes guide boxes Assume reinforced</i> | 86-68130 | 350 | yd3 | | DELETED |
| SUBTOTAL THIS SHEET | | | | | | | \$11,633,700.00 |

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| BY Jonathan East | CHECKED Sheena Barnes | BY <i>GW</i> Craig A. Grush, P.E. | CHECKED <i>DN</i> 06-01-11 |
| DATE PREPARED 02/22/11 | PEER REVIEW / DATE Rick Benik P.E. 2/22/11 | DATE PREPARED 06/01/11 | PEER REVIEW / DATE <i>DN</i> 6/3/11 |

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| | | MECHANICAL | | | | | |
| | | Remove and dispose of the following equipment at Dam: | | | | | |
| | 15 | Hand Rails (Assume contains paint with heavy metals) By barge and crane | 86-68420 | 11,000 | lb | \$1.50 | \$16,500.00 |
| | 16 | Radial Gates 13 radial gates, wall and sillplates and 3-hoists (Assume contains paint with heavy metals & petroleum products) By barge and crane | 86-68420 | 140,500 | lb | \$1.50 | \$210,750.00 |
| | | | | | Revised 8.26.10 TJT | | |
| | 17 | Radial Gate stoplogs 8 stop logs and 13 sets of guides (Assume contains paint with heavy metals & petroleum products) By barge and crane | 86-68420 | 18,000 | lb | \$1.50 | \$27,000.00 |
| | 18 | Stoplog hoist, track and supports (Assume contains paint with heavy metals & petroleum products) By barge and crane | 86-68420 | 26,000 | lb | \$1.50 | \$39,000.00 |
| | | Remove and dispose of the following equipment at the waste tunnel: | | | | | |
| | 19 | 3 sections of 23' of 72" Ø steel lining (embedded) (Assume contains paint with heavy metals) | 86-68420 | 54,000 | lb | | DELETED |
| | 20 | 3 - 72" butterfly valves (embedded) (Assume contains paint with heavy metals & petroleum products) | 86-68420 | 55,000 | lb | | DELETED |
| | 21 | 3-72" flapper valves with remote mechanical control (embedded) (Assume contains paint with heavy metals) Removal requires a dive depth of 115 ft. | 86-68420 | 78,000 | lb | \$5.00 | \$390,000.00 |
| | | SUBTOTAL THIS SHEET | | | | | \$683,250.00 |

| QUANTITIES | | PRICES | |
|------------------------------------|--|---|---|
| BY K. Converse 10/28/10 | CHECKED T Turnage | BY <i>[Signature]</i> Craig A. Grush, P.E. | CHECKED <i>[Signature]</i> 06-01-11 |
| DATE PREPARED November 18, 2010 | PEER REVIEW / DATE Dan Drake 12/16/2010 | DATE PREPARED 06/01/11 | PEER REVIEW / DATE <i>[Signature]</i> 6/3/11 |

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| | | ELECTRICAL | | | | | |
| | | Remove and dispose of the following equipment at Spillway: | | | | | |
| | 22 | Spillway gate motor & control panel Total weight approximately: 500 lbs. | 86-68430 | 1 | EA | \$1,500.00 | \$1,500.00 |
| | 23 | Distribution equipment , panelboards Total weight approximately: 500 lbs. | 86-68430 | 1 | EA | \$7,000.00 | \$7,000.00 |
| | | DAM SUBTOTAL | | | | | \$12,325,450.00 |

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| BY D. Berk | CHECKED T. Griess | BY <i>[Signature]</i> Craig A. Grush, P.E. | CHECKED <i>[Signature]</i> 06-01-11 |
| DATE PREPARED 11/18/10 | PEER REVIEW / DATE L. Rossi 12/9/10 | DATE PREPARED 06/01/11 | PEER REVIEW / DATE <i>[Signature]</i> 6/3/11 |

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| | | CIVIL | | | | | |
| | | Concrete and Structural Steel Items: | | | | | |
| | 24 | Remove Powerhouse Concrete down to top of rock under the PH, Elev. 2482.75 (USGS datum). Local datum is converted to USGS datum by adding 2411 feet. (Elev. 71.75 + 2411 = Elev. 2482.75.) All concrete is reinforced. Includes all exterior & interior walls, columns, & beams, and concrete in foundations for transformers | 86-68130 | 3,100 | yd3 | | DELETED |
| | 25 | Remove Powerhouse Structural Steel Roof truss members, purlins, and crane rail Assume contains paint with heavy metals. | 86-68130 | 110,000 | lbs | | DELETED |
| SUBTOTAL THIS SHEET | | | | | | | |

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| DATE PREPARED 11/18/10 | PEER REVIEW / DATE Rick Benik P.E. 12/9/10 | DATE PREPARED 06/01/11 | PEER REVIEW / DATE <i>[Signature]</i> 6/3/11 |

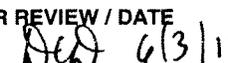
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| | | MECHANICAL | | | | | |
| | | Remove and dispose of the following equipment at the Power House: | | | | | |
| | 26 | 2- Governor oil systems governor, sump tanks, accumulator tank, piping (Assume contains paint with heavy metals & petroleum products) | 86-68420 | 38,000 | lb | | DELETED |
| | 27 | Cooling water and bearing oil systems (Assume contains paint with heavy metals & petroleum products) (encased in concrete) | 86-68420 | 11,000 | lb | | DELETED |
| | 28 | 4- Horizontal Tandem Francis Turbines (includes runner, scroll case, draft tube and shaft) (Assume contains paint with heavy metals & petroleum products) | 86-68420 | 452,000 | lb | | DELETED |
| | 29 | 2- 40 Ton indoor cranes Includes crane and rail, not steel rail base (Assume contains paint with heavy metals & petroleum products) | 86-68420 | 140,000 | lb | | DELETED |
| | 30 | Compressed Air system (Assume contains paint with heavy metals & petroleum products) | 86-68420 | 1,000 | lb | | DELETED |
| | 31 | 2- CO2 systems (Assume contains paint with heavy metals & petroleum products) | 86-68420 | 3,100 | lb | | DELETED |
| | 32 | Plant Water and Fire Protection (Assume contains paint with heavy metals) | 86-68420 | 2,600 | lb | | DELETED |
| | | SUBTOTAL THIS SHEET | | | | | |

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| BY K. Converse | CHECKED T Turnage | BY <i>[Signature]</i> Craig A. Grush, P.E. | CHECKED <i>[Signature]</i> DN 06-01-11 |
| DATE PREPARED 12/08/10 | PEER REVIEW / DATE Dan Drake 12/16/2010 | DATE PREPARED 06/01/11 | PEER REVIEW / DATE <i>[Signature]</i> 6/3/11 |

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| | | ELECTRICAL | | | | | |
| | | Remove and dispose of the following equipment in the Powerplant: | | | | | |
| | 36 | Horizontal AC Generator, Indoor Open-Frame Unit 1 & 2 ea: 12.5 MVA (10 MW); 0.8PF, 2,300V, 200 RPM, 3 Ph, including rotating exciter Total weight each approximately: 123,500 lbs. Stator: 32,250 lbs., Rotor: 55,000 lbs. Base: 17,000 lbs., Exciter Assembly: 7,550 lbs. Heaviest lift: 55,000 lbs. | 86-68430 | 2 | EA | | DELETED |
| | 37 | Excitation equipment for 12.5 MVA Generator (2 sections) Total weight approximately: 1,000 lbs. | 86-68430 | 2 | EA | | DELETED |
| | 38 | Surge protection equip. for 12.5 MVA Generator Total weight approximately: 800 lbs. | 86-68430 | 2 | EA | | DELETED |
| | 39 | Neutral grounding equip. for 12.5 MVA Generator includes transformer Total weight approximately: 500 lbs. | 86-68430 | 2 | EA | | DELETED |
| | 40 | Generator Switchgear, 5kV includes unit breakers (6 Sections @ 400 lbs each section) 3 ft x 3 ft x 90 inches high Total weight approximately: 2,400 lbs. | 86-68430 | 1 | EA | | DELETED |
| | 41 | 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 | | DELETED |
| SUBTOTAL THIS SHEET | | | | | | | |

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| BY D. Berk | CHECKED T. Griess | BY  Craig A. Grush, P.E. | CHECKED  06-01-11 |
| DATE PREPARED 12/08/10 | PEER REVIEW / DATE L. Rossi 12/9/10 | DATE PREPARED 06/01/11 | PEER REVIEW / DATE  6/3/11 |

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| | | ELECTRICAL | | | | | |
| | | Remove and dispose of the following equipment in the Powerplant: | | | | | |
| | 42 | Unit and plant control switchboard 5 cubicles (200 lbs each), 2ft x 2ft x 00 in. high Total weight approximately: 1,000 lbs. | 86-68430 | 1 | EA | | DELETED |
| | 43 | Battery system - assume 60 batteries, charger, racks and supports. Total weight approximately: 2,500 lbs. | 86-68430 | 1 | EA | \$12,000.00 | \$12,000.00 |
| | 44 | 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 | | DELETED |
| | 45 | Misc. power & control boards 10 boards (50 lbs each) 3ft x 2 ft x 0 in Total weight approximately: 500 lbs. | 86-68430 | 1 | EA | | DELETED |
| | 46 | Step-up Transformers, indoor, oil-filled, 1 phase, 5,000 kVA, 2,300/72,000 volt Total weight approximately each: 31,500 lbs. | 86-68430 | 3 | EA | | DELETED |
| | 47 | Step-up Transformers, indoor, oil-filled, 1 phase, 4,165 kVA, 2,300/72,000 volt Total weight approximately each: 31,500 lbs. | 86-68430 | 3 | EA | | DELETED |
| | 48 | Seven 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 | | DELETED |
| | | SUBTOTAL THIS SHEET | | | | | \$12,000.00 |

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| | | Remove and dispose of the following equipment in the Powerplant: | | | | | |
| | 49 | 40-Ton Travelling Crane control equipment (5 cubicles), Total weight approximately: 500 lbs. | 86-68430 | 1 | EA | | DELETED |
| | 50 | 40-Ton Travelling Crane Festoon Cable (approx. 200 lin. Ft. cable) Total weight approximately: 800 lbs. | 86-68430 | 1 | EA | | DELETED |
| | 51 | Four 15-Ton Overhead Crane motors - hoist (10Hp*), hoist trolley (5Hp*), gantry (2-5Hp*) (Hp* Approx.) Total weight approximately: 350 lbs. | 86-68430 | 1 | EA | | DELETED |
| | 52 | 15-Ton Overhead Crane control equipment (1 cubicle), Total weight approximately: 100 lbs. | 86-68430 | 1 | EA | | DELETED |
| | 53 | 15-Ton Overhead Crane Festoon Cable (approx. 100 lin. Ft. cable) Total weight approximately: 250 lbs. | 86-68430 | 1 | EA | | DELETED |
| | 53A | Remove Oil from Oil-filled Step-up Transformers. From Item 46, four transformers (includes one spare) @ 1,500 gallons each. From Item 47, four transformers (includes one spare) @ 1,175 gallons each. | 86-68430 | 10,500 | gal | \$12.00 | \$126,000.00 |
| SUBTOTAL THIS SHEET | | | | | | | \$126,000.00 |

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| | | ELECTRICAL | | | | | |
| | | Remove and dispose of the following equipment in the Switchyard: | | | | | |
| | | All equipment is on wood-pole structures | | | | | |
| | 54 | 69-kV circuit breakers, oil-filled, PCB | 86-68430 | 2 | EA | \$3,500.00 | \$7,000.00 |
| | 55 | 69-kV disconnect switches, group-operated | 86-68430 | 2 | EA | \$2,000.00 | \$4,000.00 |
| | 56 | 60-foot wood poles | 86-68430 | 12 | EA | \$1,300.00 | \$15,600.00 |
| | 57 | 30-foot wood crossarms | 86-68430 | 24 | EA | \$600.00 | \$14,400.00 |
| | 58 | 69-kV insulator strings | 86-68430 | 12 | EA | \$500.00 | \$6,000.00 |
| | | Remove and dispose of the following wood-pole transmission lines: | | | | | |
| | 59 | Transmission Line No. 3 From Copco No. 1 switchyard to Fall Creek 266.8 ACSR, 69-kV | 86-68430 | 1.66 | mile | \$40,000.00 | \$66,400.00 |
| | 60 | Transmission Line No. 15 From Copco No. 1 switchyard to Copco No. 2 266.8 ACSR, 69-kV | 86-68430 | 1.23 | mile | \$40,000.00 | \$49,200.00 |
| | 61 | Transmission Line No. 26-1 From Copco No. 1 powerhouse to Copco No. 1 switchyard 2/0 copper, 69-kV | 86-68430 | 0.07 | mile | \$40,000.00 | \$2,800.00 |
| | 62 | Transmission Line No. 26-2 From Copco No. 1 powerhouse to Copco No. 1 switchyard 2/0 copper, 69-kV | 86-68430 | 0.07 | mile | \$40,000.00 | \$2,800.00 |
| POWERHOUSE, SWITCHYARD, & TRANS LINE SUBTOTAL | | | | | | | \$321,200.00 |

| QUANTITIES | | PRICES | |
|------------------------|-------------------------------------|---|--|
| BY D. Berk | CHECKED T. Griess | BY <i>[Signature]</i> Craig A. Grush, P.E. | CHECKED <i>[Signature]</i> 06-01-11 |
| DATE PREPARED 12/08/10 | PEER REVIEW / DATE L. Rossi 12/9/10 | DATE PREPARED 06/01/11 | PEER REVIEW / DATE <i>[Signature]</i> 6/3/11 |

| | |
|---|--|
| FEATURE: Klamath River Dams Removal Partial Removal Option Copco No. 1 Dam & Powerplant Removal Most Probable High 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 - Partial\Feasibility Estimates\Copco 1\Klamath Dams Removal - COPCO 1 - Partial Removal Option - MPH Feas Est - 4- 2011.xlsx\Summary |

| PLANT ACCOUNT | PAY ITEM | DESCRIPTION | CODE | QUANTITY | UNIT | UNIT PRICE | AMOUNT |
|---------------|----------|---|----------|----------|------|------------|---------|
| | | CIVIL | | | | | |
| | | Concrete and Structural Steel Items: | | | | | |
| | 63 | Remove gate house #1 from top of dam | 86-68130 | 570 | #2 | | DELETED |
| | 64 | Remove gate house #2 from top of dam | 86-68130 | 600 | #2 | | DELETED |
| | 65 | Remove Concrete Items associated with 10-foot diameter Penstocks, concrete is-reinforced | 86-68130 | 1,050 | yd3 | | DELETED |
| | 66 | Plug 14-foot diameter penstock with concrete Plug upstream and downstream ends Assume 2' thick each | 86-68130 | 23 | yd3 | | DELETED |
| | | SUBTOTAL THIS SHEET | | | | | |

| | | | |
|---------------------------|---|--|---|
| QUANTITIES | | PRICES | |
| BY Jonathan East | CHECKED Sheena Barnes | BY <i>[Signature]</i> Craig A. Grush, P.E. | CHECKED <i>[Signature]</i> 06-01-11 |
| DATE PREPARED 12/08/10 | PEER REVIEW / DATE Rick Benik P.E. 12/9/10 | DATE PREPARED 06/01/11 | PEER REVIEW / DATE <i>[Signature]</i> 6/3/11 |

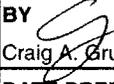
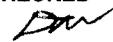
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|---|--|--------------------|------------------------------------|-------------------|------------------------------------|
| FEATURE: Klamath River Dams Removal Partial Removal Option Copco No. 1 Dam & Powerplant Removal Most Probable High Penstock | PROJECT: Klamath River Northern California/Southern Oregon | | | | |
| | <table border="1" style="width:100%; border-collapse: collapse;"> <tr> <td style="width:30%;">WOID: AF652</td> <td>ESTIMATE LEVEL: Feasibility</td> </tr> <tr> <td>REGION: MP</td> <td>UNIT PRICE LEVEL: July-2010</td> </tr> </table> | WOID: AF652 | ESTIMATE LEVEL: Feasibility | REGION: MP | UNIT PRICE LEVEL: July-2010 |
| WOID: AF652 | ESTIMATE LEVEL: Feasibility | | | | |
| REGION: MP | UNIT PRICE LEVEL: July-2010 | | | | |
| | FILE: C:\Estimating\Klamath\Klamath River Dams\Removal - Partial\Feasibility Estimates\Copco 1\Klamath Dams Removal - COPCO 1 - Partial Removal Option - MPH Feas Est - 4-2011.xlsx\Summary | | | | |

| PLANT ACCOUNT | PAY ITEM | DESCRIPTION | CODE | QUANTITY | UNIT | UNIT PRICE | AMOUNT |
|---------------|----------|---|----------|----------|------|------------|---------|
| | | MECHANICAL | | | | | |
| | | Remove and dispose of the following equipment at the intake: | | | | | |
| | 67 | 8 screens- (Assume contains paint with heavy metals) | 86-68420 | 18,000 | lb | | DELETED |
| | 68 | 8 Water Gates (Assume contains paint with heavy metals) | 86-68420 | 18,000 | lb | | DELETED |
| | 69 | 3- 30"Ø x 25' stand pipes (Assume contains paint with heavy metals) | 86-68420 | 6,000 | lb | | DELETED |
| | 70 | 14' Ø penstock pipe- (includes encased and open air intake up to underground portion Revised 9/14/2010) (Assume contains paint with heavy metals) | 86-68420 | 256,000 | lb | | DELETED |
| | 71 | 10' Ø penstock pipe (includes intake and main conduit) (Assume contains paint with heavy metals) | 86-68420 | 270,000 | lb | | DELETED |
| | | PENSTOCK SUBTOTAL | | | | | |

| | | | |
|------------------------|---|---|--|
| QUANTITIES | | PRICES | |
| BY K. Converse | CHECKED T Turnage | BY <i>[Signature]</i> Craig A. Grush, P.E. | CHECKED <i>[Signature]</i> 06-01-11 |
| DATE PREPARED 11/19/10 | PEER REVIEW / DATE Dan Drake 12/16/2010 | DATE PREPARED 06/01/11 | PEER REVIEW / DATE <i>[Signature]</i> 6/3/11 |

| | | |
|---|--|------------------------------------|
| FEATURE: Klamath River Dams Removal Partial Removal Option Copco No. 1 Dam & Powerplant Removal Most Probable High Reservoir Vegetative Restoration | 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 - Partial\Feasibility Estimates\Copco 1\Klamath Dams Removal - COPCO 1 - Partial Removal Option - MPH Feas Est - 4-2011.xlsx\Summary | |

| PLANT ACCOUNT | PAY ITEM | DESCRIPTION | CODE | QUANTITY | UNIT | UNIT PRICE | AMOUNT |
|----------------------------|----------|--|----------|----------|-------|-------------|------------------------|
| | | WATER AND ENVIRONMENTAL | | | | | |
| | 75 | SPRING AERIAL SEEDING: | 86-68220 | 802 | Acres | \$15,000.00 | \$12,030,000.00 |
| | | Idaho fescue (Festuca idahoensis) | 3208 | lbs PLS | | | |
| | | Blue wildrye (Elymus glaucus) | 3208 | lbs PLS | | | |
| | | Small fescue (Vulpia microstachys) | 3208 | lbs PLS | | | |
| | | Bluebunch wheatgrass (Pseudoroegneria spicata) | 4812 | lbs PLS | | | |
| | | Sandberg bluegrass (Poa secunda) | 401 | lbs PLS | | | |
| | | Spike bentgrass (Agrostis exarata) | 201 | lbs PLS | | | |
| | | Western needlegrass (Achnatherum occidentale) | 3208 | lbs PLS | | | |
| | | California brome (Bromus carinatus) | 6416 | lbs PLS | | | |
| | | Squirreltail (Elymus elymoides) | 3208 | lbs PLS | | | |
| | | Wood mulch | 1604000 | lbs | | | |
| | | Tackifier | 96240 | lbs | | | |
| | 76 | FALL GROUND SEEDING: | 86-68220 | 602 | Acres | \$4,000.00 | \$2,408,000.00 |
| | | Idaho fescue (Festuca idahoensis) | 2406 | lbs PLS | | | |
| | | Blue wildrye (Elymus glaucus) | 2406 | lbs PLS | | | |
| | | Small fescue (Vulpia microstachys) | 2406 | lbs PLS | | | |
| | | Bluebunch wheatgrass (Pseudoroegneria spicata) | 3609 | lbs PLS | | | |
| | | Sandberg bluegrass (Poa secunda) | 301 | lbs PLS | | | |
| | | Spike bentgrass (Agrostis exarata) | 150 | lbs PLS | | | |
| | | Western needlegrass (Achnatherum occidentale) | 2406 | lbs PLS | | | |
| | | California brome (Bromus carinatus) | 4812 | lbs PLS | | | |
| | | Squirreltail (Elymus elymoides) | 2406 | lbs PLS | | | |
| | | Wood mulch | 185077 | lbs | | | |
| | | Tackifier | 11105 | lbs | | | |
| SUBTOTAL THIS SHEET | | | | | | | \$14,438,000.00 |

| | | | |
|----------------------------------|---------------------------------------|--|---|
| QUANTITIES | | PRICES | |
| BY O'Meara, Scott A | CHECKED Greimann, Blair P | BY  Craig A. Brush, P.E. | CHECKED  06-01-11 |
| DATE PREPARED 04/12/11 | PEER REVIEW / DATE 04/12/11 | DATE PREPARED 06/01/11 | PEER REVIEW / DATE  6/3/11 |

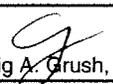
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|---|---|------------------------------------|
| FEATURE: Klamath River Dams Removal Partial Removal Option Copco No. 1 Dam & Powerplant Removal Most Probable High Reservoir Vegetative Restoration | PROJECT: Klamath River Northern California/Southern Oregon | |
| | WOID: AF652 | ESTIMATE LEVEL: Feasibility |
| | REGION: MP | UNIT PRICE LEVEL: July-2010 |
| | FILE: C:\Estimating\Klamath\Klamath River Dams\Removal - Partial\Feasibility Estimates\Copco 1\Klamath Dams Removal - COPCO 1 - Partial Removal Option - MPH Feas Est - 4-2011.xls\Summary | |

| PLANT ACCOUNT | PAY ITEM | DESCRIPTION | CODE | QUANTITY | UNIT | UNIT PRICE | AMOUNT |
|---------------|----------|--|----------|------------|-------|-------------|------------------------|
| | | WATER AND ENVIRONMENTAL | | | | | |
| | 77 | RIPARIAN POLE PLANTING: (1,000 ea/acre) | 86-68220 | 170 | Acres | \$10,000.00 | \$1,700,000.00 |
| | | Narrowleaf willow (<i>Salix exigua</i>) | 102000 | cutting | | | |
| | | Arroyo willow (<i>Salix lasiolepis</i>) | 17000 | cutting | | | |
| | | Shining willow (<i>Salix lucida</i>) | 17000 | cutting | | | |
| | | Three-leaf sumac (<i>Rhus trilobata</i>) | 17000 | cutting | | | |
| | | Western serviceberry (<i>Amelanchier alnifolia</i>) | 8500 | cutting | | | |
| | | Chokecherry (<i>Prunus virginiana</i>) | 8500 | transplant | | | |
| | | Herbivore screen | 170000 | each | | | |
| | | Chemical herbivore deterrent | 3400 | gal | | | |
| | | Polymer | 536 | lbs | | | |
| | 78 | WEED MANAGEMENT: | 86-68220 | 602 | Acres | \$2,000.00 | \$1,204,000.00 |
| | | Herbicide, post-emergent | 1203 | lbs AI | | | |
| | | MAINTENANCE TREATMENTS ON 10% OF THE RESTORATION AREAS PER YEAR OVER 4 YEARS, POST-RESTORATION | | | | | |
| | 79 | FALL GROUND SEEDING: | 86-68220 | 321 | Acres | \$4,000.00 | \$1,284,000.00 |
| | | Idaho fescue (<i>Festuca idahoensis</i>) | 1283 | lbs PLS | | | |
| | | Blue wildrye (<i>Elymus glaucus</i>) | 1283 | lbs PLS | | | |
| | | Small fescue (<i>Vulpia microstachys</i>) | 1283 | lbs PLS | | | |
| | | Bluebunch wheatgrass (<i>Pseudoroegneria spicata</i>) | 1925 | lbs PLS | | | |
| | | Sandberg bluegrass (<i>Poa secunda</i>) | 160 | lbs PLS | | | |
| | | Spike bentgrass (<i>Agrostis exarata</i>) | 80 | lbs PLS | | | |
| | | Western needlegrass (<i>Achnatherum occidentale</i>) | 1283 | lbs PLS | | | |
| | | California brome (<i>Bromus carinatus</i>) | 2566 | lbs PLS | | | |
| | | Squirreltail (<i>Elymus elymoides</i>) | 1283 | lbs PLS | | | |
| | | Wood mulch | 641600 | lbs | | | |
| | | Tackifier | 38496 | lbs | | | |
| | 80 | WEED MANAGEMENT: | 86-68220 | 321 | Acres | \$2,000.00 | \$642,000.00 |
| | | Herbicide, post-emergent | 30 | lbs AI | | | |
| | | RESERVOIR VEGETATIVE RESTORATION SUBTOTAL | | | | | \$19,968,000.00 |

| QUANTITIES | | PRICES | |
|----------------------------------|---------------------------------------|--|---|
| BY O'Meara, Scott A | CHECKED Greimann, Blair P | BY  Craig A. Grush, P.E. | CHECKED  06-01-11 |
| DATE PREPARED 04/12/11 | PEER REVIEW / DATE 04/12/11 | DATE PREPARED 06/01/11 | PEER REVIEW / DATE  6/3/11 |

| | | |
|--|---|------------------------------------|
| FEATURE: Klamath River Dams Removal Partial Removal Option Copco No. 1 Dam & Powerplant Removal Most Probable High Road Improvements | 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 - Partial\Feasibility Estimates\Copco 1\Klamath Dams Removal - COPCO 1 - Partial Removal Option - MPH Feas Est - 4- 2011.xlsx\Summary | |

| PLANT ACCOUNT | PAY ITEM | DESCRIPTION | CODE | QUANTITY | UNIT | UNIT PRICE | AMOUNT |
|---------------|----------|---|----------|----------|------|--------------|------------------------|
| | | GEOTECHNICAL | | | | | |
| | | These quantities represent the work required to prepare a disposal site and improve the haul road to the disposal site for Copco 1 and Copco 2. In addition it provides the length of county road required to be repaired after construction. | | | | | |
| | | General Sitework Copco 1 And Copco 2 | | | | | |
| | 81 | Clear and Grub Disposal Area Estimated haul distance 1 mile. Disposed concrete estimated to be 10' deep and traffic compacted (50% bulking factor). For Copco 1 and Copco 2 | 86-68313 | 5.5 | acre | \$7,000.00 | \$38,500.00 |
| | 82 | Soil Cover for Disposal Area | 86-68313 | 18,000 | yd3 | \$60.00 | \$1,080,000.00 |
| | | Access/Haul Road Improvements maximum 12% grades 4 reaches required improvement | | | | | |
| | 83 | Soil Excavation | 86-68313 | 9,000 | yd3 | \$14.00 | \$126,000.00 |
| | 84 | Rock Excavation | 86-68313 | 9,000 | yd3 | \$45.00 | \$405,000.00 |
| | 85 | Soil Backfill | 86-68313 | 30,000 | yd3 | \$55.00 | \$1,650,000.00 |
| | 86 | 4" Gravel Surfacing 50% contingency for excavation 100% contingency for backfill | 86-68313 | 320 | ton | \$120.00 | \$38,400.00 |
| | | County Road Improvements | | | | | |
| | 87 | Asphalt Overlay Repair - Juniper Road | 86-68313 | 3 | mi | \$350,000.00 | \$1,050,000.00 |
| | 88 | Asphalt Overlay Repair - Copco Road Assume the 2 lane county road from I-5 to the Copco Dams will be overlayed after construction with 3" asphalt. | 86-68313 | 19 | mi | \$350,000.00 | \$6,650,000.00 |
| | | ROAD IMPROVEMENTS SUBTOTAL | | | | | \$11,037,900.00 |

| QUANTITIES | | PRICES | |
|----------------------------------|--|--|---|
| BY Randy Kuzniakowski | CHECKED Tuti Tierney | BY  Craig A. Grush, P.E. | CHECKED  06-01-11 |
| DATE PREPARED 11/29/10 | PEER REVIEW / DATE Daniel W. Osmun 12/9/10 | DATE PREPARED 06/01/11 | PEER REVIEW / DATE  6/3/11 |

| | | |
|--|--|------------------------------------|
| FEATURE: Klamath River Dams Removal Partial Removal Option Copco No. 1 Dam & Powerplant Removal Most Probable High Recreational Facilities to be Removed | 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 - Partial\Feasibility Estimates\Copco 1\Klamath Dams Removal - COPCO 1 - Partial Removal Option - MPH Feas Est - 4-2011.xlsx\Summary | |

| PLANT ACCOUNT | PAY ITEM | DESCRIPTION | CODE | QUANTITY | UNIT | UNIT PRICE | AMOUNT |
|---------------|----------|---|------|----------|------|-------------|---------------------|
| | | Mallard Cove | | | | | |
| | 89 | Concrete total | BLM | 106 | CY | \$400.00 | \$42,400.00 |
| | | Boat ramp: 100'x25'x1' (93 CY) | | | | | |
| | | Dock abutment: 6'x8'x3' (6 CY) | | | | | |
| | | 8 Concrete wheel stops (0.5 CY) | | | | | |
| | | 4 Campfire ring foundations (1 CY) | | | | | |
| | | 6 Concrete sign bases (3 CY) | | | | | |
| | | 3 Concrete fire rings (2 CY) | | | | | |
| | 90 | 25'x5' Dock made of composite decking and poly floats | BLM | 1 | EA | \$3,000.00 | \$3,000.00 |
| | 91 | 20'x5' Gangway w/ aluminum frame and railings | BLM | 1 | EA | \$2,500.00 | \$2,500.00 |
| | 92 | Signs to be removed and hauled away | BLM | 6 | EA | \$350.00 | \$2,100.00 |
| | 93 | Wood plank tables to be removed and hauled away | BLM | 8 | EA | \$120.00 | \$960.00 |
| | 94 | Parking area to be regraded, ripped, seeded and planted this area is made of fill about 6 ft deep | BLM | 2.5 | ACRE | \$30,000.00 | \$75,000.00 |
| | | Copco Cove | | | | | |
| | 95 | Concrete total | BLM | 84 | CY | \$400.00 | \$33,600.00 |
| | | Boat ramp: 80'x25'x1' (74 CY) | | | | | |
| | | Dock abutment: 14'x5'x3' (8 CY) | | | | | |
| | | 6 Concrete sign bases (2 CY) | | | | | |
| | 96 | Dock abutment railing made of 2.5" dia. steel pipe | BLM | 25 | LF | \$45.00 | \$1,125.00 |
| | 97 | Signs to be removed and hauled away | BLM | 6 | EA | \$350.00 | \$2,100.00 |
| | 98 | Wood plank tables to be removed and hauled away | BLM | 2 | EA | \$120.00 | \$240.00 |
| | 99 | Regrade, rip, seed and plant disturbed areas | BLM | 2.3 | ACRE | \$30,000.00 | \$69,000.00 |
| | | RECREATIONAL FACILITIES REMOVAL SUBTOTAL | | | | | \$232,025.00 |

| QUANTITIES | | PRICES | |
|----------------------------------|--|-----------------------------------|---|
| BY Renee Snyder (BLM) | CHECKED Sheena Barnes | BY Craig A. Grish, P.E. | CHECKED DW 06-01-11 |
| DATE PREPARED 11/19/10 | PEER REVIEW / DATE Rick Benik P.E. 12/9/10 | DATE PREPARED 06/01/11 | PEER REVIEW / DATE ACD 6/3/11 |

| | | | |
|---|--|------------------------------------|--|
| FEATURE: Klamath River Dams Removal Partial Removal Option Copco No. 1 Dam & Powerplant Removal Most Probable High SUMMARY | PROJECT: Klamath River Northern California/Southern Oregon | | |
| | WOID: AF652 | ESTIMATE LEVEL: Feasibility | |
| | REGION: MP | UNIT PRICE LEVEL: July-2010 | |
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| PLANT ACCOUNT | PAY ITEM | DESCRIPTION | CODE | QUANTITY | UNIT | UNIT PRICE | AMOUNT | |
|---------------|----------|---|------|-----------|------|------------|-------------------------|------------------------|
| | | Sediment Removal (assumes by natural erosion) | | 1,453,800 | CY | \$0.00 | \$0.00 | |
| | | Diversion and Care | | | | | \$1,540,000.00 | |
| | | Dam Removal | | | | | \$12,325,450.00 | |
| | | Powerhouse/Switchyard/Transmission Line Removal | | | | | \$321,200.00 | |
| | | Penstock Removal | | | | | \$0.00 | |
| | | Reservoir Vegetative Restoration | | | | | \$19,968,000.00 | |
| | | Road Improvements | | | | | \$11,037,900.00 | |
| | | Recreational Facilities to be Removed | | | | | \$232,025.00 | |
| | | Subtotal | | | | | \$45,424,575.00 | |
| | | Mobilization | 5% | +/- | | | \$2,300,000.00 | |
| | | Subtotal 1 with Mobilization | | | | | \$47,724,575.00 | |
| | | Escalation to Notice to Proceed (NTP), from July 2010 to July 2020 (assumes 4.375%/yr compounding over 10 years) | | | | | | \$25,508,447.00 |
| | | Subtotal 2 = Subtotal 1 with Mobilization + Escalation to NTP | | | | | | \$73,233,022.00 |
| | | Design Contingencies | 15% | +/- | | | \$11,082,618.00 | |
| | | Allowance for Procurement Strategies (APS) | 2% | +/- | | | \$1,684,360.00 | |
| | | Type of solicitation assumed is: Competitive RFP | | | | | | |
| | | CONTRACT COST | | | | | \$86,000,000.00 | |
| | | Construction Contingencies | 25% | +/- | | | \$19,000,000.00 | |
| | | FIELD COST | | | | | \$105,000,000.00 | |
| | | Non-Contract Costs: (Environmental & Cultural Resources Mitigation ~ 45%, Design Data Collection ~ 2%, Engineering Design ~ 6%, Permitting ~ 4%, Procurement ~ 2%, Construction Management ~ 11%, and Closeout ~ 1%) | 71% | +/- | | | \$75,000,000.00 | |
| | | CONSTRUCTION COST | | | | | \$180,000,000.00 | |
| | | 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. Grush, P.E. | CHECKED DW 06-01-11 |
| DATE PREPARED | PEER REVIEW / DATE Refer to Previous Sheets | DATE PREPARED 06/01/11 | PEER REVIEW / DATE DCA 6/3/11 |