### Upper Chehalis Project (Flood Only)
#### Preliminary Direct Construction Cost Estimate (2010 Dollars)

**Summary Sheet**  
Updated October 6, 2010

<table>
<thead>
<tr>
<th>Acct No</th>
<th>Description</th>
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<td>334</td>
<td>Accessory Electrical Equipment incl install</td>
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**ESTIMATED COSTS SUBTOTAL**  
111,127,000

WSST @ 7.9%  
8,779,033

**SUBTOTAL**  
119,906,033

Contingency Allowance (30%)  
35,971,800

**TOTAL ESTIMATED DIRECT COST (rounded)**  
$155,878,000

Engineering and Construction Management Assistance (6%)  
9,352,700

**TOTAL DIRECT PROJECT COST 2010 (rounded)**  
165,230,000
### Upper Chehalis Project (Flood Only)

**Preliminary Direct Construction Cost Estimate (2010 Dollars)**

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Upper Chehalis Project (Flood Only)
Preliminary Direct Construction Cost Estimate (2010 Dollars)

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EES Consulting
10/22/2010

3 of 3  Upper Chehalis Project (Flood Only)
## South Fork Project (Flood Only)
### Preliminary Direct Construction Cost Estimate (2010 Dollars)

#### Summary Sheet
Updated October 6, 2010

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**ESTIMATED COSTS SUBTOTAL**: 62,588,500

**WSST @ 7.9%**: 4,944,492

**SUBTOTAL**: 67,532,992

**Contingency Allowance (30%)**: 20,259,900

**TOTAL ESTIMATED DIRECT COST (rounded)**: $87,793,000

**Engineering and Construction Management Assistance (6%)**: 5,267,600

**TOTAL DIRECT PROJECT COST 2010 (rounded)**: 93,060,000
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<thead>
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<th>Unit Price ($)</th>
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<td>332.32</td>
<td>12ft Diameter Steel Liner (Installation Included)</td>
<td>1,100</td>
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<td>Upstream Portal Excavation</td>
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<td>332.35</td>
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<td>Downstream Portal Outlet Structure Concrete</td>
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<td>Subtotal - Tunnel- 12' diameter</td>
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South Fork Project (Flood Only)
Preliminary Direct Construction Cost Estimate (2010 Dollars)

<table>
<thead>
<tr>
<th>332</th>
<th>4</th>
<th>Penstock</th>
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<tr>
<td></td>
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<td>Subtotal - Penstock Supply and Install</td>
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<td>Subtotal - Acc No. 332 - Reservoirs, Dams and Waterways</td>
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<thead>
<tr>
<th>333</th>
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<th>TURBINES AND GENERATORS- Water To Wire Package</th>
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<tr>
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<tr>
<th>334</th>
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<tr>
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<th>MISCELLANEOUS MECHANICAL EQUIPMENT - POWERPLANT</th>
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<tr>
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<td>Subtotal - Acc No. 335 - Miscellaneous Mechanical Equipment</td>
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<tr>
<th>336</th>
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<th>337</th>
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<table>
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<tr>
<th>337</th>
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<th>337</th>
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<th>353</th>
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<td></td>
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<th>355</th>
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<td></td>
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<td>Subtotal - Acc No. 355 - Transmission Lines</td>
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# Upper Chehalis Project (Multi-Purpose)
## Preliminary Direct Construction Cost Estimate (2010 Dollars)

### Summary Sheet
Updated September 2, 2010

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<thead>
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<th>Acct No</th>
<th>Description</th>
<th>Amount ($)</th>
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<tr>
<td>330</td>
<td>Land and Land Rights. Permits, Owner Costs</td>
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<tr>
<td>331</td>
<td>Structures and Improvements</td>
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<td>Penstock Supply</td>
<td>257,000</td>
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<tr>
<td>332</td>
<td>All Other Reservoirs, Dams, and Waterways</td>
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<td>333</td>
<td>Turbine and Generator Water To Wire Package</td>
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<tr>
<td>334</td>
<td>Accessory Electrical Equipment incl install</td>
<td>452,850</td>
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<tr>
<td>335</td>
<td>Misc. Mechanical Equipment incl install</td>
<td>1,050,000</td>
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<td>Transmission Lines</td>
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**ESTIMATED COSTS SUBTOTAL**: 164,818,600

**WSST @ 7.9%**: 13,020,669

**SUBTOTAL**: 177,839,269

**Contingency Allowance (30%)**: 53,351,800

**TOTAL ESTIMATED DIRECT COST (rounded)**: $231,191,000

**Engineering and Construction Management Assistance (6%)**: 13,871,500

**TOTAL DIRECT PROJECT COST 2010 (rounded)**: 245,060,000

---

*EES Consulting*

11/1/2010
## Upper Chehalis Project (Multi-Purpose)
### Preliminary Direct Construction Cost Estimate (2010 Dollars)

<table>
<thead>
<tr>
<th>Acct No</th>
<th>Description</th>
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<th>Unit</th>
<th>Price ($/Unit)</th>
<th>Amount ($)</th>
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<tr>
<td>.1 Mobilization/Logistics/Permits</td>
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<td></td>
<td></td>
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<tr>
<td>.11 Mobilize &amp; Demob</td>
<td>1</td>
<td>LS</td>
<td></td>
<td>$5,000,000</td>
<td>$5,000,000</td>
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<tr>
<td>.12 Land acquisition</td>
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<td>ACRE</td>
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<td>$15,000,000</td>
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<td>.13 FERC Licensing</td>
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<td>$8,000,000</td>
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<tr>
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<td>$500,000</td>
<td>$500,000</td>
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<tr>
<td>.15 BPA Coordination/costs</td>
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<td>$50,000</td>
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<tr>
<td>.16 District internal costs, legal, etc</td>
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<td>$100,000</td>
<td>$100,000</td>
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<td><strong>Subtotal - Acc No. 330 - Land and Land Rights</strong></td>
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<td><strong>$28,650,000</strong></td>
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</tbody>
</table>

| 331     | STRUCTURES AND IMPROVEMENTS        |          |       |                |            |
| .1       | Powerhouse                         |          |       |                |            |
| .11 Clearing (P.H. & Switchyard)   | 3.5      | ACRE    |      | $5,000         | $17,500    |
| .12 Excavation and Grading (Downstream Tunnel Portal Included) | 208,825 | CY | $16 | $3,341,200 |
| .13 Tailrace Cofferdam/Dewatering  | 1        | LS      |      | $50,000        | $50,000    |
| .14 Concrete Foundations           | 480      | CY      |      | $600           | $288,000   |
| .15 Concrete Block Building (50'x125'x30' High) | 6,250 | SQ FT | $25 | $156,250 |
| .16 Roof System w/Steel Joist Supports | 6,250 | SQ FT | $35 | $218,750 |
| .17 Concrete Thrust Block          | 252      | CY      |      | $500           | $126,000   |
| .18 Valve House (15x35)            | 525      | SQ FT   |      | $40            | $21,000    |
| .19 Draft Tube Gates               | 2        | EA      |      | $75,000        | $150,000   |
| .110 Howell Bunger Valve           | 1        | EA      |      | $100,000       | $100,000   |
| **Subtotal - Powerhouse**          |          |         |       |                | **$4,468,700** |

| 331 .2 | Powerhouse Site/Switchyard        |          |       |                |            |
| .21 Switchyard Concrete Foundations | 100       | CY | $800 | $80,000 |
| .23 Fencing, Lighting and Misc     | 1        | LS   | $10,000 | $10,000 |
| .24 Grounding Grid                 | 1        | LS   | $10,000 | $10,000 |
| .25 Oil Spill Containment          | 1        | LS   | $20,000 | $20,000 |
| **Subtotal - Powerhouse Site/Switchyard** | | | | | **$120,000** |

| 332     | RESERVOIRS, DAMS, AND WATERWAYS   |          |       |                |            |
| .1 Dam and Intake Tower            |          |       |       |                |            |
| .11 Clearing                        | 1,500    | ACRE  |      | $2,000         | $3,000,000 |
| .12 Dewatering/care of water/cofferdam | 1      | LS  | $1,000,000 | $1,000,000 |
| .13 Grout Curtain                   | 1        | LS   | $14,000,000 | $14,000,000 |
| .14 Stripping-Dam Foundation        | 1,107,000 | CY | $16 | $17,712,000 |
| .15 Dam Embankment                  | 7,815,000 | CY | $5.5 | $42,982,500 |
| .16 Reinforced Concrete For Intake Tower | 7,020 | CY | $800 | $5,616,000 |
| .17 Trashracks                      | 1        | LS   | $30,000 | $30,000 |
| .18 Gates w/ operators              | 2        | LS   | $100,000 | $200,000 |
| .19 Dam Instrumentation             | 1        | LS   | $10,000 | $10,000 |
| .110 Miscellaneous Metals (grating, handrail, decking, etc.) | 15,000 | LB | $5 | $75,000 |
| .111 Electrical Conduit and Wiring, Grounding | 1 | LS | $20,000 | $20,000 |
| .112 Heating, Lighting and Ventilation | 1 | LS | $5,000 | $5,000 |
| .113 Intake Control Building        | 384      | SQ FT | $110 | $42,240 |
| .114 Intake Control Panel and HMI/PLC | 1 | LS | $20,000 | $20,000 |
| .115 Fish Passage (allowance for u/s and d/s trap and haul) | 1 | LS | $18,000,000 | $18,000,000 |
| **Subtotal - Dam and Intake**       |          |       |       |                | **$102,712,740** |
## Upper Chehalis Project (Multi-Purpose)
### Preliminary Direct Construction Cost Estimate (2010 Dollars)

<table>
<thead>
<tr>
<th>Section</th>
<th>Description</th>
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<th>Unit</th>
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<td>332 .2</td>
<td>Spillway</td>
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<tr>
<td>.21</td>
<td>Clearing</td>
<td>7 ACRE</td>
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<tr>
<td>.22</td>
<td>Excavation</td>
<td>75,000 CY</td>
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<td>.23</td>
<td>Concrete Overflow Crest</td>
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<td>.25</td>
<td>Chute Concrete</td>
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<td>.26</td>
<td>Stillling Basin Concrete</td>
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<td>Subtotal - Spillway</td>
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<td>332 .3</td>
<td>Tunnel- 12’ diameter</td>
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<td>.31</td>
<td>Tunnel Excavation</td>
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<td>Portal Excavation (Upstream Only, Downstream see P.H.)</td>
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<tr>
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<td>12 ft Diameter Steel Liner (Installation Included)</td>
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<td>Concrete Plug at Downstream Portal</td>
<td>18 CY</td>
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<td>Subtotal - Tunnel- 12’ diameter</td>
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<td>Supply and Install Steel Pipe (48” Diameter)</td>
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<td>Pipe Fittings and Appurtenances</td>
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<td>Subtotal - Acc No. 332 - Reservoirs, Dams and Waterways</td>
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<td>TURBINES AND GENERATORS- Water To Wire Package</td>
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<td>Hydraulic Turbines (based on recent bids) w HPU/LPU</td>
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<td>Generator and Accessories (6.9 kV)</td>
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<td>Powerhouse Station Service System</td>
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<td>.15</td>
<td>Protection and Controls</td>
<td>1 LS</td>
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<td>Turbine Shutoff Valve</td>
<td>2 EA</td>
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<td>$150,000</td>
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<tr>
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<td>Engine Gen Sets, Propane w tanks (1-dam, 1-P.H)</td>
<td>2 EA</td>
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<td>$50,000</td>
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<tr>
<td>.18</td>
<td>Main Power Transformer (6.9 kv to 12.5 kv)</td>
<td>11,110 kVA</td>
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<td>PTs, CTs and Protective Gear</td>
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<td>Line Circuit Breaker and Switches (15 kV)</td>
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<td>Subtotal - Acc No. 333 - Turbines and Generators- Water To Wire Contract</td>
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<td>ACCESSORY ELECTRICAL EQUIPMENT</td>
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<tr>
<td>.11</td>
<td>Generator Switchgear and Bus (15 KV metal clad switchgear)</td>
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<td>$0 above</td>
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<td>.13</td>
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<td>Grounding</td>
<td>1 LS</td>
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<td>.15</td>
<td>Powerhouse Interior Lighting</td>
<td>1 LS</td>
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<td>$10,000</td>
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<td>.16</td>
<td>Powerline to Dam- material and install in conduit incl vaults</td>
<td>1,300 FT</td>
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<td>$29,900</td>
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<td>Communications Line to Dam- mat'l &amp; install in conduit/vaults</td>
<td>1,300 FT</td>
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<td>$19,500</td>
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<td>.18</td>
<td>Wire, Cables, Ducts, and Cable Trays</td>
<td>1 LS</td>
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<td>.19</td>
<td>Valve House power feed</td>
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<td>Electrical Equipment Installation &amp; all wiring-powerhouse</td>
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<td>Electrical Equipment Installation and all wiring- intake/valve hou</td>
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<td>.112</td>
<td>Powerhouse Video Surveillance and security Systems</td>
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<td>Subtotal - Acc No. 334 - Accessory Electrical Equipment</td>
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### Upper Chehalis Project (Multi-Purpose)

**Preliminary Direct Construction Cost Estimate (2010 Dollars)**

<table>
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<tr>
<th>Account</th>
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<th>Quantity</th>
<th>Unit</th>
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<th>Indirect Cost</th>
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<td></td>
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<tr>
<td>.11</td>
<td>Heating and Ventilating</td>
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<td>$50,000</td>
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<td>Dewatering, Drainage and Plumbing</td>
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<td>$100,000</td>
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<td>Bridge Crane - 30 ton</td>
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<td>$200,000</td>
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<td>Fire Alarm System</td>
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<td>$10,000</td>
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<tr>
<td>.15</td>
<td>Misc Metals, gates, handrails</td>
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<td>LB</td>
<td>$5</td>
<td>$75,000</td>
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<tr>
<td>.16</td>
<td>Bathroom, septic system</td>
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<td>LS</td>
<td>$15,000</td>
<td>$15,000</td>
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<tr>
<td>.17</td>
<td>Installation of Misc Mechanical Equip- intake tower</td>
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<td>$50,000</td>
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<td>Installation of Misc Mechanical Equip.- powerhouse</td>
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<td>LS</td>
<td>$50,000</td>
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<td>Installation Turbine and Generator</td>
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<td>LS</td>
<td>$250,000</td>
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<td>Permanent Roads (Allowance)</td>
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<td>LS</td>
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<td>12.5 kV line to POI (1 mile new /2 mile upgrade)</td>
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<td>miles</td>
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### South Fork Project (Multi-Purpose)
#### Preliminary Direct Construction Cost Estimate (2010 Dollars)

**Summary Sheet**  
Updated September 2, 2010

<table>
<thead>
<tr>
<th>Acct No.</th>
<th>Description</th>
<th>Amount ($)</th>
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<tr>
<td>330</td>
<td>Land and Land Rights. Permits, Owner Costs</td>
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<td>331</td>
<td>Structures and Improvements</td>
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<td>Penstock Supply Contract</td>
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<td>332</td>
<td>All Other Reservoirs, Dams, and Waterways</td>
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<td>333</td>
<td>Turbine and Generator Water To Wire Package</td>
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<td>334</td>
<td>Accessory Electrical Equipment incl install</td>
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<td>335</td>
<td>Misc. Mechanical Equipment incl install</td>
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<td>355</td>
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**ESTIMATED COSTS SUBTOTAL**  
99,899,400

**WSST @ 7.9%**  
7,892,053

**SUBTOTAL**  
107,791,453

**Contingency Allowance (30%)**  
32,337,400

**TOTAL ESTIMATED DIRECT COST (rounded)**  
$140,129,000

**Engineering and Construction Management Assistance (6%)**  
8,407,700

**TOTAL DIRECT PROJECT COST 2010 (rounded)**  
148,540,000
## South Fork Project (Multi-Purpose)
**Preliminary Direct Construction Cost Estimate (2010 Dollars)**

<table>
<thead>
<tr>
<th>Acct No</th>
<th>Description</th>
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<th>Unit Price ($)</th>
<th>Amount ($)</th>
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<td>District internal costs, legal, etc</td>
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<td>$100,000</td>
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</table>

| 331     | STRUCTURES AND IMPROVEMENTS |          |      |                |            |
| .11     | Clearing (P.H. & Switchyard) | 2        | ACRE | $5,000         | $10,000    |
| .12     | Excavation and Grading (Downstream Portal Included) | 33,600 | CY | $16 | $537,600 |
| .13     | Concrete Foundations | 480 | CY | $600 | $288,000 |
| .14     | Concrete Block Building (50'x125'x30' High) | 6,250 | SQ FT | $25 | $156,250 |
| .15     | Roof System w/Steel Joist Supports | 6,250 | SQ FT | $35 | $218,750 |
| .16     | Concrete Thrust Block | 140 | CY | $500 | $70,000  |
| .17     | Valve House (15x35) | 525 | SQ FT | $40 | $21,000  |
| .18     | Draft Tube Gates | 2 | EA | $75,000 | $150,000 |
| .19     | Howell Bunger Valve | 1 | EA | $100,000 | $100,000  |
| **Subtotal - Powerhouse** | | | | | $1,551,600 |

| 331     | Powerhouse Site/Switchyard |          |      |                |            |
| .21     | Switchyard Concrete Foundations | 100 | CY | $800 | $80,000 |
| .23     | Fencing, Lighting and Misc | 1 | LS | $10,000 | $10,000 |
| .24     | Grounding Grid | 1 | LS | $10,000 | $10,000 |
| .25     | Oil Spill Containment | 1 | LS | $20,000 | $20,000 |
| **Subtotal - Powerhouse Site/Switchyard** | | | | | $120,000 |

| **Subtotal - Acc No. 331 - Structures and Improvements** | | | | | $1,671,600 |

| 332     | RESERVOIRS, DAMS, AND WATERWAYS |          |      |                |            |
| .11     | Clearing | 600 | ACRE | $2,000 | $1,200,000 |
| .12     | Dewatering/ care of Water/cofferdam | 1 | LS | $1,000,000 | $1,000,000 |
| .13     | Temporary 12 ft Bypass Pipe (Installation Included) | 1,200 | FT | $1,200 | $1,440,000 |
| .14     | Grout Curtain | 1 | LS | $1,400,000 | $1,400,000 |
| .15     | Stripping-Dam Foundation | 880,600 | CY | $16 | $14,089,600 |
| .16     | Dam Embankment | 4,250,000 | CY | $5.5 | $23,375,000 |
| .17     | Reinforced Concrete For Intake Tower | 4,600 | CY | $800 | $3,680,000 |
| .18     | Trashracks | 1 | LS | $30,000 | $30,000 |
| .19     | Gates w/ operators | 2 | LS | $100,000 | $200,000 |
| .10     | Dam Instrumentation | 1 | LS | $10,000 | $10,000 |
| .111    | Miscellaneous Metals (grating, handrail, decking, etc.) | 15,000 | LB | $5 | $75,000 |
| .112    | Electrical Conduit and Wiring, Grounding | 1 | LS | $20,000 | $20,000 |
| .113    | Heating, Lighting and Ventilation | 1 | LS | $5,000 | $5,000 |
| .114    | Intake Control Building | 384 | SQ FT | $110 | $42,240 |
| .115    | Intake Control Panel and HMI/PLC | 1 | LS | $20,000 | $20,000 |
| .116    | Fish Passage (allowance for u/s and d/s trap and haul) | 1 | LS | $18,000,000 | $18,000,000 |
| **Subtotal - Dam and Intake** | | | | | $64,586,840 |

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EES Consulting
11/1/2010

South Fork Chehalis Hydroelectric Project
### South Fork Project (Multi-Purpose)
#### Preliminary Direct Construction Cost Estimate (2010 Dollars)

#### 332 Spillway

<table>
<thead>
<tr>
<th>Item Description</th>
<th>Quantity</th>
<th>Unit</th>
<th>Direct Cost 2010</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clearing</td>
<td>3</td>
<td>ACRE</td>
<td>$2,000 $6,000</td>
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<tr>
<td>Excavation</td>
<td>59,250</td>
<td>CY</td>
<td>$20 $1,185,000</td>
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<td>Concrete Overflow Crest (Included in Chute)</td>
<td>0</td>
<td>CY</td>
<td>$500 $0</td>
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<tr>
<td>Chute Concrete</td>
<td>4,900</td>
<td>CY</td>
<td>$800 $2,940,000</td>
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<tr>
<td>Stilling Basin Concrete</td>
<td>1,500</td>
<td>CY</td>
<td>$600 $900,000</td>
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</table>

**Subtotal - Spillway** $5,031,000

#### 332 Tunnel - 12' diameter

<table>
<thead>
<tr>
<th>Item Description</th>
<th>Quantity</th>
<th>Unit</th>
<th>Direct Cost 2010</th>
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<tbody>
<tr>
<td>Tunnel Excavation</td>
<td>400</td>
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<td>$4,000 $1,600,000</td>
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<td>Portal Excavation (Upstream Only, Downstream see P.H.)</td>
<td>6,950</td>
<td>CY</td>
<td>$65 $451,750</td>
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<tr>
<td>12ft Diameter Steel Liner (Installation Included)</td>
<td>1,100</td>
<td>FT</td>
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<td>Concrete Plug at Downstream Portal</td>
<td>24</td>
<td>CY</td>
<td>$600 $14,400</td>
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**Subtotal - Tunnel - 12' diameter** $3,386,150

#### 332 Penstock

<table>
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<th>Item Description</th>
<th>Quantity</th>
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<th>Direct Cost 2010</th>
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<tbody>
<tr>
<td>Supply and Install Steel Pipe (60&quot; Diameter)</td>
<td>665</td>
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<td>Supply and Install Steel Pipe (48&quot; Diameter)</td>
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<td>Pipe Fittings and Appurtenances</td>
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</table>

**Subtotal - Penstock Supply and Install** $594,300

**Subtotal - Acc No. 332 - Reservoirs, Dams and Waterways** $73,003,990

#### 333 TURBINES AND GENERATORS - Water To Wire Package

<table>
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<th>Item Description</th>
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<tbody>
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<td>Generator Accessories (6.9 kV)</td>
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<td>kW</td>
<td>$300 $600,000</td>
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<tr>
<td>Generator Switchgear and Bus (15 KV metal clad switchgear)</td>
<td>2</td>
<td>EA</td>
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<tr>
<td>Powerhouse Station Service System</td>
<td>1</td>
<td>EA</td>
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<tr>
<td>Protection and Controls</td>
<td>1</td>
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<td>$400,000 $400,000</td>
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<tr>
<td>Turbine Shutoff Valve</td>
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<td>Engine Gen Sets, Propane w tanks (1-intake, 1-PH)</td>
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<td>EA</td>
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<td>Main Power Transformer (6.9 kV to 34.5 kV)</td>
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<td>kVA</td>
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<td>PTs, CTs and Protective Gear</td>
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<td>Line Circuit Breakers and Switches</td>
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**Subtotal - Acc No. 333 - Turbines and Generators - Water To Wire Contract** $2,752,000

#### 334 ACCESSORY ELECTRICAL EQUIPMENT

<table>
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<th>Direct Cost 2010</th>
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<tbody>
<tr>
<td>Generator Switchgear and Bus (15 KV metal clad switchgear)</td>
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<td>EA</td>
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<tr>
<td>Station Service System</td>
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<td>EA</td>
<td>$0 above</td>
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<tr>
<td>Protection and Controls</td>
<td>1</td>
<td>LS</td>
<td>$0 above</td>
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<td>Grounding</td>
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<td>Powerhouse Interior Lighting</td>
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<tr>
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<td>Wire, Cables, Ducts, and Cable Trays</td>
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<td>Valve House power feed</td>
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<td>Electrical Equipment Installation &amp; all wiring-powerhouse</td>
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<td>Electrical Equipment Installation and all wiring- intake</td>
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<td>Powerhouse Video Surveillance and security Systems</td>
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**Subtotal - Acc No. 334 - Accessory Electrical Equipment** $471,850
## South Fork Project (Multi-Purpose)
### Preliminary Direct Construction Cost Estimate (2010 Dollars)

<table>
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<th>Account</th>
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<td>Temporary Roads</td>
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<td>Temporary Bridges</td>
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