

94336.(file 94336A2)

TVA - FHP FHE ESTIMATING

Phase II Approval

Sept:np95

KINGSTON FOSSIL PLANT
COAL YARD RUNOFF POND
.ALT 2-TWO PUMPS & ONE PIPELINE.

24-Sep-94

08:21 AM

EXECUTIVE SUMMARY

| Location | Material \$\$ | T & L | | Labor \$\$ | Eqpt/Othr \$\$ | Subcontr \$\$ | Total Cost |
|---|---------------------------------------|--------------|--|---------------|----------------|---------------|----------------|
| | | Man-Hours | | | | | |
| A REMOVALS | | 488 | | 8,750 | | | 8,750 |
| COAL YARD SUMP | 15,560 | 946 | | 16,913 | | | 32,473 |
| DX PUMPING ASSY | 178,118 | 304 | | 7,026 | | | 185,144 |
| EARTHFILL | 2,235 | 87 | | 1,728 | 19 | | 3,982 |
| PIPE TO ASHPOND | 22,764 | 1,348 | | 25,084 | 5,562 | | 53,410 |
| STNLS STL PIPE | 41,546 | 329 | | 7,907 | | | 49,453 |
| z0 ELECTRICAL | 1,573 | 144 | | 3,432 | 12 | | 5,017 |
| z1 HEAVY EQUIP | | | | | 20,670 | | 20,670 |
| z1 TAGGED EQUIP | | | | | 5,540 | | 5,540 |
| Construction Facilities | | 997 | | 16,318 | 11,809 | 244 | 28,371 |
| TOTAL DIRECT COST | 261,794 | 4,639 | | 87,151 | 43,611 | 244 | 392,800 |
| Non-Manual Labor | (Phase 2 = 6,000 + Phase 3 = 21,100) | | | | | | 27,100 |
| Total Contingency | (Phase 2 = 10,500 + Phase 3 = 19,800) | | | | | | 30,300 |
| Partner Expnse/Charges(84E) | (Fee = 8,300 + Ins = 8,300) | | | | | | 16,600 |
| TOTAL CONSTRUCTION | | | | | | | 466,800 |
| :: LESS Engineered Materials - (Phase 2 = 197,500 + 10,500 contingency) | | | | | | | > 208,000 < |
| TOTAL CONTRACT CONSTRUCTION | | | | | | | 258,800 |
| F&H Engineering | | | | | | | 23,250 |
| Plant Overhead Charges for Procurement & Handling of Capital Materials | | | | | | | 12,000 |
| Project Manager's Contingency | | | | | | | 24,950 |
| == TOTAL (PAB APPROVAL) COST == | | | | | | | 527,000 |

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KINGSTON FOSSIL PLANT

COAL YARD RUNOFF POND

ALT 2 - TWO PUMPS & ONE PIPELINE.

24-Sep-94

08:18 AM

ATTACHMENT 1

| Loc | Description | Quantity | Unit | Material \$\$ | M-H/Unit | Man-Hours | Labor \$\$ | Eqpt/Othr \$\$ | Subcont \$ | Unit Cost | Total Cost |
|------------------------|-----------------------------------|----------|------|----------------|----------|------------|---------------|----------------|------------|-----------|----------------|
| A REMOVALS | | | | | | | | | | | |
| | Electrical Demolition | 1.0 | ls | | 24.00 | 24 | 580 | | | 580.00 | 580 |
| | Remove Pump & Piping | 1.0 | ls | | 144.00 | 144 | 2,561 | | | 2,561.00 | 2,561 |
| | Remove Pump House & Slab | 1.0 | ls | | 180.00 | 180 | 2,614 | | | 2,614.00 | 2,614 |
| | Remove Pump Platform & Piping | 1.0 | ls | | 140.00 | 140 | 2,995 | | | 2,995.00 | 2,995 |
| | subtotal A REMOVALS | | | 0 | | 488 | 8,750 | 0 | 0 | | 8,750 |
| COAL YARD SUMP | | | | | | | | | | | |
| | Excavate for sump | 810.0 | cy | | 0.13 | 108 | 1,845 | | | 2.28 | 1,845 |
| | Backfill for sump | 470.0 | cy | | 0.27 | 128 | 2,187 | | | 4.65 | 2,187 |
| | Backfill 1" crushed stone | 340.0 | C.Y. | | 3.443 | 40 | 652 | | | 12.04 | 4,095 |
| | Formwork for slab & walls sump | 1,792.0 | sfca | | 3.665 | 358 | 6,327 | | | 5.58 | 9,992 |
| | Reinforcing place walls, #3 #7 | 4.4 | ton | | 2,160 | 70 | 1,531 | | | 838.86 | 3,991 |
| | Pour concrete in place 3000psi | 60.0 | cy | | 3,900 | 160 | 2,610 | | | 108.50 | 6,510 |
| | Welded shear conn 3/4"x4 - 3/16" | 24.0 | ea | | 24 | 18 | 394 | | | 17.42 | 418 |
| | 3"x3"x5/16 steel angle A36 | 10.0 | lf | | 40 | 6 | 131 | | | 17.10 | 171 |
| | Str att, w/10' - 45's, w 14 x 26 | 50.0 | lf | | 638 | 32 | 672 | | | 26.20 | 1,310 |
| | Steel Plates 3/4"x1'x1'-2" | 6.0 | ea | | 150 | 16 | 341 | | | 81.83 | 491 |
| | 1 - 1/2" x 3/16" Galv bar grating | 125.0 | sf | | 1,500 | 6 | 129 | | | 13.03 | 1,629 |
| | 4" PVC pipe sch 40 | 10.0 | lf | | 40 | 4 | 94 | | | 13.40 | 134 |
| | subtotal COAL YARD SUMP | | | 15,560 | | 946 | 16,913 | 0 | 0 | | 32,473 |
| DX PUMPING ASSY | | | | | | | | | | | |
| | :::Polypropylene Sump 10'diax16'h | 1.0 | ea | > 18,000 | < 40.00 | 40 | 848 | | | 18848.00 | 18,848 |
| | :::36" Polypropylene Suction pipe | 1.0 | ls | > 12,109 | < 144.00 | 144 | 3,362 | | | 15471.00 | 15,471 |
| | :::6" Vert Cant 40hp pump w/mtr | 2.0 | ea | > 145,009 | < 48.00 | 96 | 2,236 | | | 73622.50 | 147,245 |
| | :::Level control system | 1.0 | ea | > 3,000 | < 24.00 | 24 | 580 | | | 3580.00 | 3,580 |
| | subtotal DX PUMPING ASSY | | | 178,118 | | 304 | 7,026 | 0 | 0 | | 185,144 |
| EARTHFILL | | | | | | | | | | | |

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rept:nl85

KINGSTON FOSSIL PLANT

COAL YARD RUNOFF POND

.ALT 2-TWO PUMPS & ONE PIPELINE.

24-Sep-94

08:18 AM

ATTACHMENT 1

| Loc | Description | Quantity | Unit | Material \$\$ | M-H/Unit | Man-Hours | Labor \$\$ | Eqpt/Cthr \$\$ | Subcontr \$\$ | Unit Cost | Total Cost |
|-----|---------------------------------|----------|------|---------------|----------|--------------|---------------|----------------|---------------|-----------|---------------|
| | Earth Fill & compaction | 700.0 | C.Y. | | 0.01 | 9 | 151 | | | 0.22 | 151 |
| | Crushed Stone Pmp House Area | 230.0 | tn | 2,070 | 0.20 | 46 | 819 | | | 12.56 | 2,889 |
| | 1"GRS conduit w/fts & sps | 80.0 | lf | 165 | 0.40 | 32 | 758 | 19 | | 11.78 | 942 |
| | subtotal EARTHFILL | | | 2,235 | | 87 | 1,728 | 19 | 0 | | 3,982 |
| | PIPE TO ASHPOND | | | | | | | | | | |
| | Temporary dike @ coal yd sump | 1.0 | ls | | 160.00 | 160 | 2,454 | 562 | | 3016.00 | 3,016 |
| | Backfill sand around 10' pipe | 620.0 | cy | 3,382 | 0.33 | 205 | 3,047 | | | 10.37 | 6,429 |
| | Excavate for 10' pipe trench | 2,050.0 | cy | | 0.11 | 219 | 3,639 | | | 1.78 | 3,639 |
| | Backfill earth for 10' trench | 1,430.0 | cy | | 0.17 | 240 | 3,714 | | | 2.60 | 3,714 |
| | ::10' Polyethylene Pipe SDR 19 | 4,200.0 | lf | > 18,270 | < 0.11 | 481 | 11,222 | | | 7.02 | 29,492 |
| | ::10' Polyethylene Pipe fgs 90d | 2.0 | ea | > 339 | < 4.50 | 9 | 216 | | | 277.50 | 555 |
| | ::10' Polyethylene Pipe fgs 45d | 5.0 | ea | > 385 | < 4.50 | 23 | 540 | | | 185.00 | 925 |
| | ::10' Polyethylene Pipe flange | 1.0 | ea | > 97 | < 4.50 | 5 | 108 | | | 205.00 | 205 |
| | Rent polyethylene fusion welder | 1.0 | ls | | | | | 5,000 | | 5000.00 | 5,000 |
| | ::10' Polyethylene Pipe fgs WYE | 1.0 | ea | > 291 | < 6.00 | 6 | 144 | | | 435.00 | 435 |
| | subtotal PIPE TO ASHPOND | | | 22,764 | | 1,348 | 25,084 | 5,562 | 0 | | 53,410 |
| | STNLS STL PIPE | | | | | | | | | | |
| | Valve box 20"x14"x16"dp,plas | 2.0 | ea | 400 | 16.00 | 32 | 776 | | | 588.00 | 1,176 |
| | Valve box 20"x14"x8"dp,plas | 2.0 | ea | 200 | 8.00 | 16 | 388 | | | 294.00 | 588 |
| | 10' SSteel 316 flange,150# SO | 2.0 | ea | 1,400 | 6.00 | 12 | 289 | | | 844.50 | 1,689 |
| | 6' SSteel 316 flange,150# SO | 2.0 | ea | 470 | 4.00 | 8 | 193 | | | 331.50 | 663 |
| | 6' SSteel 316 90deg sch 40 | 2.0 | ea | 750 | 9.00 | 18 | 434 | | | 592.00 | 1,184 |
| | 10' SSteel 316 45deg sch 40 | 4.0 | ea | 3,520 | 12.00 | 48 | 1,156 | | | 1169.00 | 4,676 |
| | 10x6" SS 316 reducer sch 40 | 2.0 | ea | 1,200 | 12.00 | 24 | 578 | | | 889.00 | 1,778 |
| | 10' SSteel 316 pipe sch 40 | 20.0 | lf | 2,840 | 1.00 | 20 | 466 | | | 165.30 | 3,306 |
| | 1" SSteel 316 pipe sch 40 | 20.0 | lf | 140 | 0.40 | 8 | 193 | | | 16.65 | 333 |
| | 10"x1" socketlet 3000# 316 ss | 2.0 | ea | 216 | 4.00 | 8 | 189 | | | 202.50 | 405 |
| | 1" socketlet 3000# 316ss 90deg | 4.0 | ea | 200 | 4.00 | 16 | 378 | | | 144.50 | 578 |
| | 10"x1" threadolet 3000# 316 ss | 2.0 | ea | 180 | 4.00 | 8 | 189 | | | 184.50 | 369 |
| | 1/2"plug hex head 316 ss | 2.0 | ea | 30 | 1.00 | 2 | 47 | | | 38.50 | 77 |

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**KINGSTON FOSSIL PLANT
COAL YARD RUNOFF POND
.ALT 2-TWO PUMPS & ONE PIPELINE.**

24-Sep-94

08:18 AM

ATTACHMENT 1

| Loc | Description | Quantity | Unit | Material \$ | M-H/Unit | Man-Hours | Labor \$ | Eqpt/Otr \$ | Subcont \$ | Unit Cost | Total Cost |
|-----|---------------------------------|----------|------|---------------|----------|------------|--------------|-------------|------------|-----------|---------------|
| | 12" pipe sleeves A53 cs,coated | 100.0 | lf | 4,800 | 0.56 | 56 | 1,349 | | | 61.49 | 6,149 |
| | 10" ss check valve 150# flngd | 2.0 | ea | 12,600 | 24.00 | 48 | 1,164 | | | 6882.00 | 13,764 |
| | 1" ss gate valve 150#, threaded | 2.0 | ea | 12,600 | 2.50 | 5 | 118 | | | 6359.00 | 12,718 |
| | subtotal STNLS STL PIPE | | | 41,546 | | 329 | 7,907 | 0 | 0 | | 49,453 |
| | Z0 ELECTRICAL | | | | | | | | | | |
| | 3/4"GRS conduit w/flgs & sps | 30.0 | lf | 52 | 0.72 | 22 | 517 | | | 19.20 | 576 |
| | 1-1/2"GRS conduit w/flgs & sps | 12.0 | lf | 35 | 0.80 | 10 | 230 | | | 22.17 | 266 |
| | 2" GRS conduit w/flgs & sps | 30.0 | lf | 116 | 0.50 | 15 | 369 | | | 15.97 | 479 |
| | 3/4"flexible conduit, sealite | 5.0 | lf | 18 | 1.20 | 6 | 145 | | | 32.60 | 163 |
| | 1" flexible conduit, sealite | 10.0 | lf | 45 | 0.90 | 9 | 218 | | | 26.30 | 263 |
| | 2" flexible conduit, sealite | 5.0 | lf | 53 | 1.80 | 9 | 218 | | | 54.20 | 271 |
| | #10 -3/c PXMJ 600v P & C cable | 100.0 | lf | 79 | 0.04 | 4 | 87 | | | 1.66 | 166 |
| | #12-4/c PXMJ 600v P & C cable | 40.0 | lf | 37 | 0.08 | 3 | 73 | | | 2.75 | 110 |
| | #2/0-s/c PXJ-600v P & C cable | 120.0 | lf | 228 | 0.08 | 9 | 221 | | | 3.74 | 449 |
| | Cable Terminations | 62.0 | ea | 62 | 0.40 | 25 | 600 | | | 10.68 | 662 |
| | Bare copper wire stranded #2 | 50.0 | lf | 39 | 0.30 | 15 | 363 | | | 8.04 | 402 |
| | Grnd,cdwl,#2 wire motr frame | 4.0 | ea | 40 | 2.00 | 8 | 196 | | | 59.00 | 236 |
| | 1" FD outlet box | 1.0 | ea | 10 | 0.67 | 1 | 16 | | | 26.00 | 26 |
| | Ground fault indicating,15 amp | 1.0 | ea | 40 | 1.00 | 1 | 24 | | | 64.00 | 64 |
| | Cover plwthr proof nema 7-23 | 1.0 | ea | 19 | 1.00 | 1 | 24 | | | 43.00 | 43 |
| | Safety hvy duty 600v 3p 60 a | 1.0 | ea | 700 | 6.00 | 6 | 141 | | | 841.00 | 841 |
| | subtotal z0 ELECTRICAL | | | 1,573 | | 144 | 3,432 | 12 | 0 | | 5,017 |
| | Z1 HEAVY EQUIP | | | | | | | | | | |
| | AirComp,250cfm | 1.0 | ea | | | | | 250 | | 250.00 | 250 |
| | Trac,Crawf,Med,D5,100-110 hp | 1.0 | ea | | | | | 2,700 | | 2700.00 | 2,700 |
| | Trac,Crawf,Hvy,D8,270-300 hp | 1.0 | ea | | | | | 1,750 | | 1750.00 | 1,750 |
| | Compct,SheepFL,ReX,3-50 | 1.0 | ea | | | | | 1,400 | | 1400.00 | 1,400 |
| | Bkhd,dr,1-1/4CYx17"x18" | 2.0 | ea | | | | | 2,700 | | 1350.00 | 2,700 |
| | TrkDmp, 4x2, Platform | 1.0 | ea | | | | | 1,500 | | 1500.00 | 1,500 |
| | TrkDmp,6x4,12-14CY, OnRd | 3.0 | ea | | | | | 4,050 | | 1350.00 | 4,050 |

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ATTACHMENT 1

| Loc | Description | Quantity | Unit | Material \$\$ | M-H/Unit | Man-Hours | Labor \$\$ | Eqpt/Ohrs \$\$ | Subcont \$\$ | Unit Cost | Total Cost |
|-----|---|--------------|------|---------------|----------|------------|---------------|----------------|--------------|-----------|---------------|
| | Trk, Fuel, 4x2 | 1.0 ea | | | | | | 750 | | 750.00 | 750 |
| | Sprink, 6x4, 2,000 Gal | 1.0 ea | | | | | | 900 | | 900.00 | 900 |
| | Crn, RghTrn, 21-25Tn, SwCb | 1.0 ea | | | | | | 1,800 | | 1,800.00 | 1,800 |
| | Crn, RghTrn, 41-50Tn, SwCb | 1.0 ea | | | | | | 1,500 | | 1,500.00 | 1,500 |
| | Welder | 1.0 ea | | | | | | 500 | | 500.00 | 500 |
| | Tugger, 2,000-2,500 lb | 1.0 ea | | | | | | 870 | | 870.00 | 870 |
| | subtotal z1 HEAVY EQUIP | | | 0 | | 0 | 0 | 20,670 | 0 | | 20,670 |
| | Z1 TAGGED EQUIP | | | | | | | | | | |
| | Air Hoist(Tugger)1000# | 1.0 ea | | | | | | 750 | | 750.00 | 750 |
| | AirEqp, jkhrm, to 70 # paving blr | 1.0 ea | | | | | | 200 | | 200.00 | 200 |
| | CrmpEqp, Tamper, 175lb, | 2.0 ea | | | | | | 2,400 | | 1,200.00 | 2,400 |
| | Conrete bucket, laydown, 1 C.Y. | 1.0 ea | | | | | | 240 | | 240.00 | 240 |
| | Conrete, mtrzd, buggy, walk - behnd | 1.0 ea | | | | | | 1,365 | | 1,365.00 | 1,365 |
| | Bndr, hydr, endt/pipe, to 2" | 1.0 ea | | | | | | 585 | | 585.00 | 585 |
| | subtotal z1 TAGGED EQUIP | | | 0 | | 0 | 0 | 5,540 | 0 | | 5,540 |
| | Construction Facilities | | | | | | | | | | |
| | Mobilization | 1.0 WKS. | | 192.00 | | 192 | 2,876 | 243 | | 3,119.00 | 3,119 |
| | Admin Time(Employee proc, etc.) | 13.0 WKS. | | 9.00 | | 117 | 2,442 | | | 187.85 | 2,442 |
| | General Cleanup | 13.0 WKS. | | 16.00 | | 208 | 3,109 | 788 | | 299.77 | 3,897 |
| | Drinking Water | 13.0 WKS. | | 8.00 | | 104 | 1,741 | 1,438 | | 244.54 | 3,179 |
| | Hauling | 13.0 WKS. | | 24.00 | | 312 | 5,223 | 2,365 | | 583.69 | 7,588 |
| | Small Tool Dispense & Repair | 4,640.0 sthr | | | | | | 3,155 | | 0.68 | 3,155 |
| | Portable Toilet Service | 13.0 WKS | | | | | | 244 | | 18.77 | 244 |
| | Consumables & Expendables | 4,640.0 cefr | | | | | | 3,699 | | 0.80 | 3,699 |
| | Demobilization | 1.0 WKS. | | 64.00 | | 64 | 927 | 121 | | 1,048.00 | 1,048 |
| | subtotal Construction Facilities | | | 0 | | 997 | 16,318 | 11,809 | 244 | | 28,371 |

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|--|--|----------|------|---------------|----------|-----------|------------|----------------|---------------|-----------|----------------|
| TOTAL DIRECT COST | | | | | | | | | | | |
| | Non-Manual Labor | | | 261,794 | | 4,639 | 87,151 | 43,611 | 244 | | 392,800 |
| | Total Contingency | | | | | | | | | | 27,100 |
| | Partner Expenses/Charges (94E) | | | | | | | | | | 30,300 |
| | | | | | | | | | | | 16,600 |
| | | | | | | | | | | | 466,800 |
| TOTAL CONSTRUCTION | | | | | | | | | | | |
| | LESS Engineered Materials - (Indicated by ><) | | | | | | | | | | 208,000 < |
| | | | | | | | | | | | 258,800 |
| TOTAL CONTRACT CONSTRUCTION | | | | | | | | | | | |
| | F&H Engineering - Phase 1 | | | | | | | | | | 21,580 |
| | F&H Engineering - Phase 2 | | | | | | | | | | 1,670 |
| | F&H Engineering - Phase 3 | | | | | | | | | | 12,000 |
| | Plant Overhead Charges for Procurement & Handling of Capital Materials | | | | | | | | | | 24,950 |
| | Project Manager's Contingency | | | | | | | | | | 527,000 |
| == TOTAL (PAB APPROVAL) COST == | | | | | | | | | | | 527,000 |