Big Sandy Plant Unit 2

ORDER-OF-MAGNITUDE FGD COST ESTIMATE

Prepared for:
Kentucky Power Company (Owner)
and American Electric Power Service Corporation

Project No. 12721-000
September 29, 2010

Report for WFGD, DFGD, IAQCS
and NID Technologies

Volume 5 – NID Technology

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Issue Summary Page

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* - Estimates 2A, 2B, 3A, 3B, 4A and 4B contain only accounts whose costs are different from the corresponding base estimates 1A and 1B.

1.0 INTRODUCTION

The purpose of this document was to establish the Basis of the Order-of-Magnitude NID FGD (NID) Cost Estimate to assist American Electric Power (AEP) with the selection of an FGD technology for Big Sandy Plant Unit 2. It was also intended to organize and present the deliverables for the NID technology that were used to develop the Order-of-Magnitude FGD Cost Estimates. This document defines the project scope of work for the NID technology and the organization of the capital cost estimate structure. The technical and commercial basis used to develop the Capital and O&M Cost Estimates and the assumptions used in preparing them are defined in Volume 1, Summary Report.

The Order-of-Magnitude FGD Cost Estimate Report is comprised of five (5) volumes as follows:

Volume	Description
1	Summary Report
2	WFGD Technology
3	DFGD Technology
4	IAQCS Technology
5	NID Technology

Order-of-Magnitude FGD Cost Estimates were prepared for the following four FGD Technologies:

- **Wet (WFGD):** Wet FGD Spray Tower and Integrated Wet ESP
- **Dry (DFGD):** Dry FGD Spray Dryer Absorber (SDA) and Fabric Filter (FF)
- **IAQCS:** Integrated Air Quality Control System (IAQCS) Dry SDA/FF and Wet FGD Spray Tower
- **NID:** Dry FGD NID and Fabric Filter

For the NID technology, cost estimates were prepared considering fuel specifications with sulfur content of 1.7, 3.0, 4.5 and 7.5 lb SO_2/MMbtu. A base fuel was selected and a capital cost estimate was prepared for each assuming an Engineer, Procure, Construct (EPC) contracting approach. Adjustments were then

made to the base cost estimate to develop the remaining fuel estimates for that specific technology. To achieve the required lime rate, 14 lime hydrators and accompanying NID modules are required for the 7.5 lb SO_2/MMbtu fuel. For the other fuels 12 NID modules are required. The cost estimates also consider both the existing ESP in and removed from service. In order to reduce the size of the report the non-base cost estimates contain only those cost accounts that were different from the corresponding base estimate 1A or 1B.

The cost estimates were based upon conceptual design deliverables prepared by S&L for each technology and the AEP Order of Magnitude/Relative Capital Installed Cost Estimate Specification (BS2-FGDSCE-052010, Rev. 2) which provided design basis and performance requirements. The conceptual deliverables, consisting of project general arrangements, process flow diagrams, mass balances, water balances and single lines, formed the basis for development of preliminary major equipment sizes and commodity estimates. Attention was focused on the significant elements that changed from one fuel to another, such as storage, handling and disposal of reagent and byproduct materials. The OEM equipment costs were taken from recent vendor quotes and adjusted for Big Sandy specifications, unit capacity, and escalated to 2010 dollars.

Table 1-1 illustrates the total of eight (8) cost estimates that were prepared for the NID.

Table 1-1

EPC COST ESTIMATES

Technology	1.7 lb SO_2/MMbtu	3.0 lb SO_2/MMbtu	4.5 lb SO_2/MMbtu	7.5 lb SO_2/MMbtu
NID (ESP)	NID Est-2A	NID Base Est-1A	NID Est-3A	NID Est-4A
NID (N/ESP)	NID Est-2B	NID Base Est-1B	NID Est-3B	NID Est-4B

ESP= ESP In Service **N/ESP = ESP Out of Service**

For details of the Technical and Commercial Basis of the entire study and the various technology cost comparisons, see Volume 1, Summary Report.

EXHIBIT 5-1
NID Project Deliverable Index

VOLUME 5 - EXHIBIT 5-1

Project Deliverable Index
NID Technology

Document No.	Description	Attachment No.
MSK-NID-PFD-001_C	NID FGD Process Flow Diagram – Sheet 1	5-1
MSK-NID-PFD-002_C	NID FGD Process Flow Diagram – Sheet 2	5-1
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VOLUME 5 - EXHIBIT 5-1
Project Deliverable Index
NID Technology

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EXHIBIT 5-2
NID Capital Cost Estimate Outline

EXHIBIT 5-2
NID CAPITAL COST ESTIMATE OUTLINE
DIRECT COSTS

PROJECT DIRECT COSTS					
ACCT	**COST ESTIMATE CATEGORY**	**EQUIPMENT/MATERIAL COST RESPONSIBILITY**	**CONSTRUCTION/ERECTION COST RESPONSIBILITY**	**ESTIMATE BASIS**	**NOTES**
1.0	**ID FANS**	S&L	S&L	Previous OEM proposals and S&L Estimates	1
2.0	**NID MODULES**	S&L	S&L	Previous OEM proposals and S&L Estimates	
3.0	**NEW STACK**	AEP	AEP	Past AEP Projects	
4.0	**LIME HANDLING SYSTEM**	S&L	S&L	Previous OEM proposals and S&L Estimates	
5.0	**LIME SLAKER BUILDER BUILDING**	S&L	S&L	Previous OEM proposals and S&L Estimates	
6.0	**BYPRODUCT WASTE & FLY ASH HANDLING**	S&L	S&L	Previous OEM proposals and S&L Estimate	
7.0	**ABSORBER ISLAND**	S&L	S&L	Previous OEM proposals and S&L Estimates	1, 2
8.0	**ACTIVATED CARBON INJECTION SYSTEM**	AEP	AEP	AEP	
9.0	**COMPRESSED AIR SYSTEM**	S&L	S&L	Past & Current S&L Projects	

EXHIBIT 5-2
NID CAPITAL COST ESTIMATE OUTLINE
DIRECT COSTS

PROJECT DIRECT COSTS					
ACCT	**COST ESTIMATE CATEGORY**	**EQUIPMENT/MATERIAL COST RESPONSIBILITY**	**CONSTRUCTION/ERECTION COST RESPONSIBILITY**	**ESTIMATE BASIS**	**NOTES**
10.0	**SERVICE WATER SYSTEM**	S&L	S&L	Past & Current S&L Projects	
11.0	**POTABLE WATER SYSTEM**	S&L	S&L	Past & Current S&L Projects	
12.0	**FGD SUBSTATION**	S&L	S&L	Past & Current S&L Projects	
13.0	**FGD DCS SYSTEM**	S&L	S&L	Past S&L Projects Adjusted to Meet AEP Design Criteria	
14.0	**CEM SYSTEM**	AEP	AEP	Past AEP Projects	
15.0	**RAIL INFRASTRUCTURE**	S&L	S&L	Past & Current S&L Projects	
16.0	**SITE IMPROVEMENTS - CIVIL WORK**	S&L	S&L	Past & Current S&L Projects	
17.0	**BOP ITEMS**	S&L	S&L	Past & Current S&L Projects	
18.0	**CAPITAL REPLACEMENTS - REMOVAL AND RELOCATION OF EXISTING EQUIPMENT AND INFRASTRUCTURE**	S&L	S&L	Site Plans	
19.0	**ARSENIC, ASBESTOS , LEAD ABATEMENT**	AEP	AEP	Past AEP Projects	

Notes: 1) Noise Mitigation costs were considered for ID fan insulation and lagging and blower bldg construction.
2) Ductwork costs are based upon general arrangement layouts.

EXHIBIT 5-2
NID CAPITAL COST ESTIMATE OUTLINE
INDIRECT COSTS

PROJECT INDIRECT COSTS			
ACCT	**COST ESTIMATE CATEGORY**	**TOTAL COST RESPONSIBILITY**	**ESTIMATE SOURCE**
	ENGINEERING, PROCUREMENT, & PROJECT SERVICES	S&L	Past FGD and AEP Projects
	CONSTRUCTION MANAGEMENT	S&L	Estimating Percentage
	S-U / COMMISSIONING	S&L	Estimating Percentage
	ESCALATION	S&L	Material, Equipment and Labor Indices
	CONTINGENCY	S&L	Range Estimating

EXHIBIT 5-3
NID Contingency Analysis

AEP
BIG SANDY UNIT 2
FGD PROJECT - NID (ESP) - 1A - 3.0 LB/MM BTU

@RISK
Risk Analysis and Simulation Add-In for Microsoft EXCEL
Version 5.0
Palisade Corporation

ANALYSIS INPUT

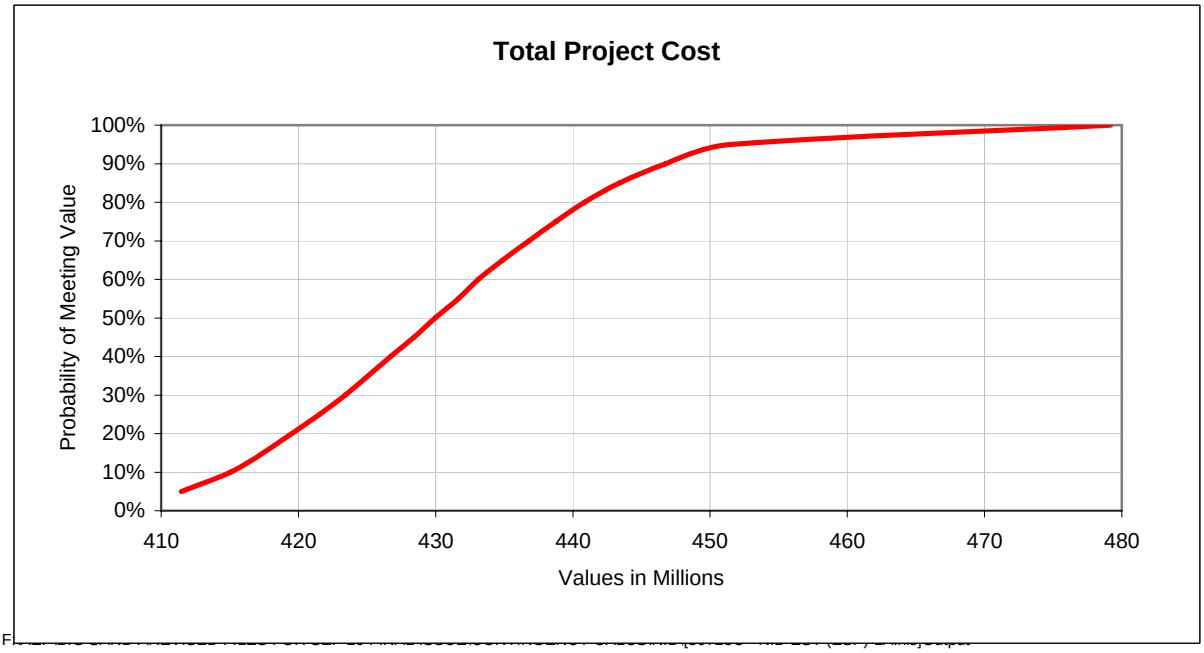
Values in Thousands

Accnt. No.	Cost Elements	Target Value $k	Minimum	Maximum	Minimum	Maximum
1.0	ID FANS	$47,418,600	95%	130%	$45,047,670	$61,644,180
2.0	NID MODULES	$129,091,200	95%	125%	$122,636,640	$161,364,000
3.0	STACK	$19,350,000	95%	130%	$18,382,500	$25,155,000
4.0	LIME HANDLING SYSTEM	$21,764,900	95%	125%	$20,676,655	$27,206,125
6.0	BYPRODUCT WASTE & FLY ASH HANDLING SYSTEMS	$13,688,400	95%	130%	$13,003,980	$17,794,920
8.0	ACTIVATED CARBON INJECTION SYSTEM	$5,381,600	95%	130%	$5,112,520	$6,996,080
9.0	COMPRESSED AIR SYSTEM	$3,981,400	95%	135%	$3,782,330	$5,374,890
10.0	SERVICE WATER SYSTEM	$2,907,200	95%	135%	$2,761,840	$3,924,720
11.1	POTABLE WATER SYSTEM	$800,900	95%	135%	$760,855	$1,081,215
12.0	FGD SUBSTATION	$7,694,200	95%	135%	$7,309,490	$10,387,170
13.0	FGD DCS SYSTEM	$5,016,900	95%	135%	$4,766,055	$6,772,815
14.0	CEM SYSTEM	$2,110,000	95%	130%	$2,004,500	$2,743,000
15.0	TRUCK & RAIL INFRASTRUCTURE	$4,340,800	95%	140%	$4,123,760	$6,077,120
16.0	SITE IMPROVEMENTS - CIVIL WORK	$12,845,200	95%	140%	$12,202,940	$17,983,280
17.0	BOP ITEMS	$3,223,700	95%	160%	$3,062,515	$5,157,920
18.0	CAPITAL REPLACEMENTS - REMOVAL AND RELOCATION OF EXISTING EQUIPMENT AND INFRASTRUCTURE	$3,509,200	95%	200%	$3,333,740	$7,018,400
19.0	ARSENIC, ASBESTOS , LEAD ABATEMENT	$750,000	95%	150%	$712,500	$1,125,000
99.0	OVERALL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS	$65,599,200	95%	140%	$62,319,240	$91,838,880
	OVERALL PROJECT INDIRECT COSTS	$44,758,400	95%	130%	$42,520,480	$58,185,920
	SPARE PARTS	$1,501,700	95%	130%	$1,426,615	$1,952,210
	Total Base Case	**$395,733,500**				

ANALYSIS OUTPUT

Probability of meeting "Total Base Case" value: 395,733,500 0.0%

Total Budget Required ($k)	% Confidence Level	Confidence Level Risk	Contingency % of Base
479,184,552	100.0%	83,451,100	21.088%
451,631,740	95.0%	55,898,200	14.125%
446,758,653	90.0%	51,025,200	12.894%
443,394,152	85.0%	47,660,700	12.044%
440,841,932	80.0%	45,108,400	11.399%
438,785,539	75.0%	43,052,000	10.879%
436,790,575	70.0%	41,057,100	10.375%
434,886,934	65.0%	39,153,400	9.894%
433,108,571	60.0%	37,375,100	9.445%
431,654,306	55.0%	35,920,800	9.077%
429,983,805	50.0%	34,250,300	8.655%
428,422,825	45.0%	32,689,300	8.260%
426,729,860	40.0%	30,996,400	7.833%
425,082,719	35.0%	29,349,200	7.416%
423,421,784	30.0%	27,688,300	6.997%
421,532,504	25.0%	25,799,000	6.519%
419,511,351	20.0%	23,777,900	6.009%
417,445,357	15.0%	21,711,900	5.486%
415,087,241	10.0%	19,353,700	4.891%
411,471,395	5.0%	15,737,900	3.977%



AEP
BIG SANDY UNIT 2
FGD PROJECT - NID (ESP) - 2A - 1.7 LB/MM BTU

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ANALYSIS INPUT

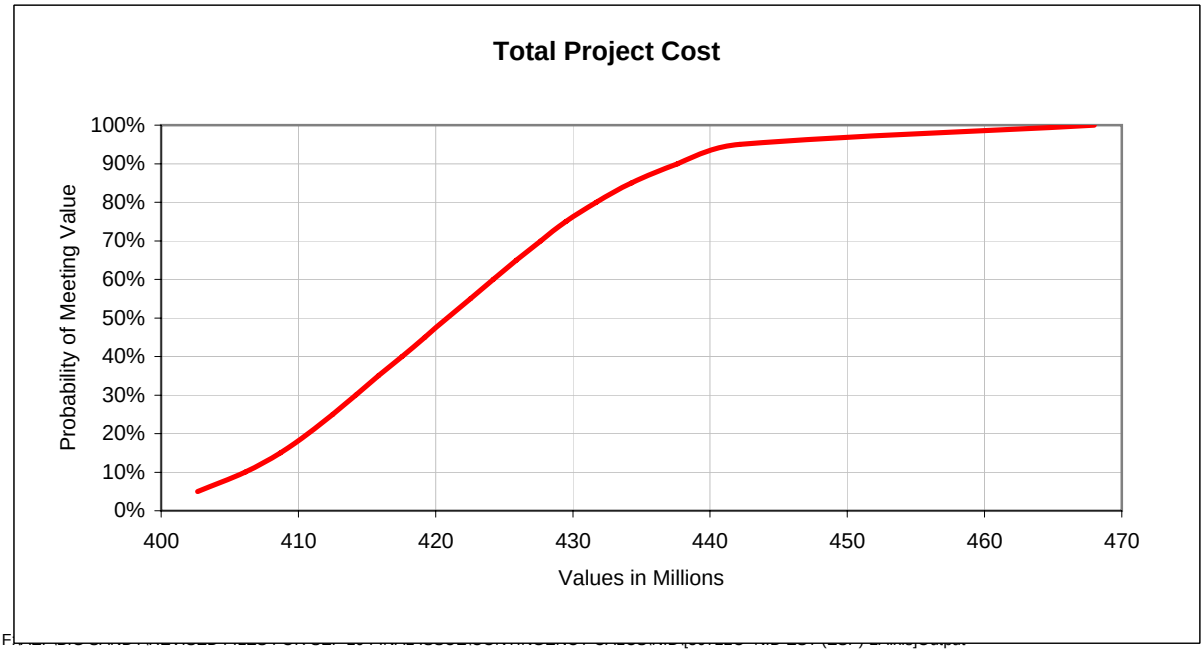
Values in Thousands

Accnt. No.	Cost Elements	Target Value $k	Minimum	Maximum	Minimum	Maximum
1.0	ID FANS	$47,418,600	95%	130%	$45,047,670	$61,644,180
2.0	NID MODULES	$128,071,200	95%	125%	$121,667,640	$160,089,000
3.0	STACK	$19,350,000	95%	130%	$18,382,500	$25,155,000
4.0	LIME HANDLING SYSTEM	$17,192,000	95%	125%	$16,332,400	$21,490,000
6.0	BYPRODUCT WASTE & FLY ASH HANDLING SYSTEMS	$12,064,700	95%	130%	$11,461,465	$15,684,110
8.0	ACTIVATED CARBON INJECTION SYSTEM	$5,381,600	95%	130%	$5,112,520	$6,996,080
9.0	COMPRESSED AIR SYSTEM	$3,981,400	95%	135%	$3,782,330	$5,374,890
10.0	SERVICE WATER SYSTEM	$2,907,200	95%	135%	$2,761,840	$3,924,720
11.1	POTABLE WATER SYSTEM	$800,900	95%	135%	$760,855	$1,081,215
12.0	FGD SUBSTATION	$7,694,200	95%	135%	$7,309,490	$10,387,170
13.0	FGD DCS SYSTEM	$5,016,900	95%	135%	$4,766,055	$6,772,815
14.0	CEM SYSTEM	$2,110,000	95%	130%	$2,004,500	$2,743,000
15.0	TRUCK & RAIL INFRASTRUCTURE	$4,340,800	95%	140%	$4,123,760	$6,077,120
16.0	SITE IMPROVEMENTS - CIVIL WORK	$12,845,200	95%	140%	$12,202,940	$17,983,280
17.0	BOP ITEMS	$3,223,700	95%	160%	$3,062,515	$5,157,920
18.0	CAPITAL REPLACEMENTS - REMOVAL AND RELOCATION OF EXISTING EQUIPMENT AND INFRASTRUCTURE	$3,509,200	95%	200%	$3,333,740	$7,018,400
19.0	ARSENIC, ASBESTOS , LEAD ABATEMENT	$750,000	95%	150%	$712,500	$1,125,000
99.0	OVERALL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS	$64,808,600	95%	140%	$61,568,170	$90,732,040
	OVERALL PROJECT INDIRECT COSTS	$44,400,100	95%	130%	$42,180,095	$57,720,130
	SPARE PARTS	$1,409,400	95%	130%	$1,338,930	$1,832,220
	Total Base Case	**$387,275,700**				

ANALYSIS OUTPUT

Probability of meeting "Total Base Case" value: 387,275,700 0.0%

Total Budget Required ($k)	% Confidence Level	Confidence Level Risk	Contingency % of Base
467,988,274	100.0%	80,712,600	20.841%
442,172,540	95.0%	54,896,800	14.175%
437,605,636	90.0%	50,329,900	12.996%
434,250,127	85.0%	46,974,400	12.129%
431,721,783	80.0%	44,446,100	11.477%
429,499,946	75.0%	42,224,200	10.903%
427,663,213	70.0%	40,387,500	10.429%
425,887,507	65.0%	38,611,800	9.970%
424,214,002	60.0%	36,938,300	9.538%
422,545,208	55.0%	35,269,500	9.107%
420,874,329	50.0%	33,598,600	8.676%
419,219,877	45.0%	31,944,200	8.248%
417,559,315	40.0%	30,283,600	7.820%
415,833,817	35.0%	28,558,100	7.374%
414,200,310	30.0%	26,924,600	6.952%
412,500,933	25.0%	25,225,200	6.513%
410,708,070	20.0%	23,432,400	6.051%
408,705,762	15.0%	21,430,100	5.534%
406,124,891	10.0%	18,849,200	4.867%
402,654,912	5.0%	15,379,200	3.971%



AEP
BIG SANDY UNIT 2
FGD PROJECT - NID (ESP) - 3A - 4.5 LB/MM BTU

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Version 5.0
Palisade Corporation

ANALYSIS INPUT

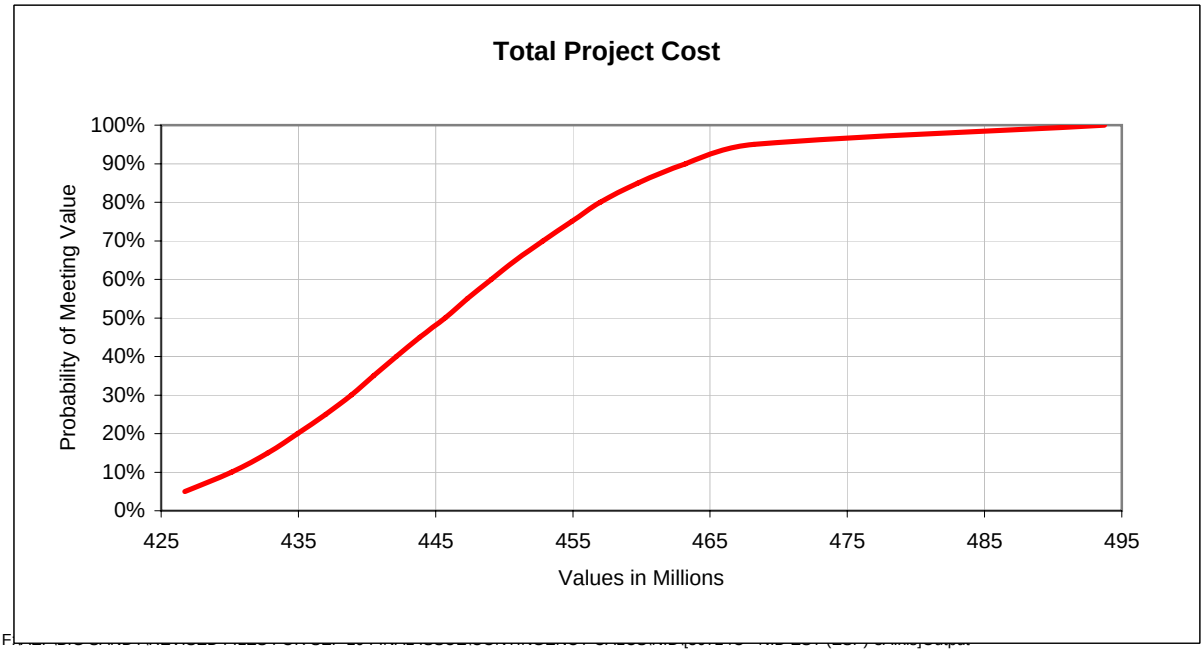
Values in Thousands

Accnt. No.	Cost Elements	Target Value $k	Minimum	Maximum	Minimum	Maximum
1.0	ID FANS	$47,418,600	95%	130%	$45,047,670	$61,644,180
2.0	NID MODULES	$134,918,600	95%	125%	$128,172,670	$168,648,250
3.0	STACK	$19,350,000	95%	130%	$18,382,500	$25,155,000
4.0	LIME HANDLING SYSTEM	$27,761,700	95%	125%	$26,373,615	$34,702,125
6.0	BYPRODUCT WASTE & FLY ASH HANDLING SYSTEMS	$14,007,800	95%	130%	$13,307,410	$18,210,140
8.0	ACTIVATED CARBON INJECTION SYSTEM	$5,381,600	95%	130%	$5,112,520	$6,996,080
9.0	COMPRESSED AIR SYSTEM	$3,981,400	95%	135%	$3,782,330	$5,374,890
10.0	SERVICE WATER SYSTEM	$2,907,200	95%	135%	$2,761,840	$3,924,720
11.1	POTABLE WATER SYSTEM	$800,900	95%	135%	$760,855	$1,081,215
12.0	FGD SUBSTATION	$7,694,200	95%	135%	$7,309,490	$10,387,170
13.0	FGD DCS SYSTEM	$5,016,900	95%	135%	$4,766,055	$6,772,815
14.0	CEM SYSTEM	$2,110,000	95%	130%	$2,004,500	$2,743,000
15.0	TRUCK & RAIL INFRASTRUCTURE	$4,340,800	95%	140%	$4,123,760	$6,077,120
16.0	SITE IMPROVEMENTS - CIVIL WORK	$12,845,200	95%	140%	$12,202,940	$17,983,280
17.0	BOP ITEMS	$3,223,700	95%	160%	$3,062,515	$5,157,920
18.0	CAPITAL REPLACEMENTS - REMOVAL AND RELOCATION OF EXISTING EQUIPMENT AND INFRASTRUCTURE	$3,509,200	95%	200%	$3,333,740	$7,018,400
19.0	ARSENIC, ASBESTOS , LEAD ABATEMENT	$750,000	95%	150%	$712,500	$1,125,000
99.0	OVERALL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS	$67,381,500	95%	140%	$64,012,425	$94,334,100
	OVERALL PROJECT INDIRECT COSTS	$45,398,600	95%	130%	$43,128,670	$59,018,180
	SPARE PARTS	$1,633,500	95%	130%	$1,551,825	$2,123,550
	Total Base Case	**$410,431,400**				

ANALYSIS OUTPUT

Probability of meeting "Total Base Case" value: 410,431,400 0.0%

Total Budget Required ($k)	% Confidence Level	Confidence Level Risk	Contingency % of Base
493,738,177	100.0%	83,306,800	20.297%
468,201,046	95.0%	57,769,600	14.075%
463,198,595	90.0%	52,767,200	12.857%
459,747,245	85.0%	49,315,800	12.016%
456,990,746	80.0%	46,559,300	11.344%
454,926,051	75.0%	44,494,700	10.841%
452,817,810	70.0%	42,386,400	10.327%
450,836,800	65.0%	40,405,400	9.845%
449,062,878	60.0%	38,631,500	9.412%
447,309,145	55.0%	36,877,700	8.985%
445,714,222	50.0%	35,282,800	8.597%
443,849,435	45.0%	33,418,000	8.142%
442,141,695	40.0%	31,710,300	7.726%
440,474,689	35.0%	30,043,300	7.320%
438,866,102	30.0%	28,434,700	6.928%
436,993,730	25.0%	26,562,300	6.472%
434,943,175	20.0%	24,511,800	5.972%
432,793,931	15.0%	22,362,500	5.449%
430,144,234	10.0%	19,712,800	4.803%
426,726,903	5.0%	16,295,500	3.970%



AEP
BIG SANDY UNIT 2
FGD PROJECT - NID (ESP) - 4A - 7.5 LB/MM BTU

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ANALYSIS INPUT

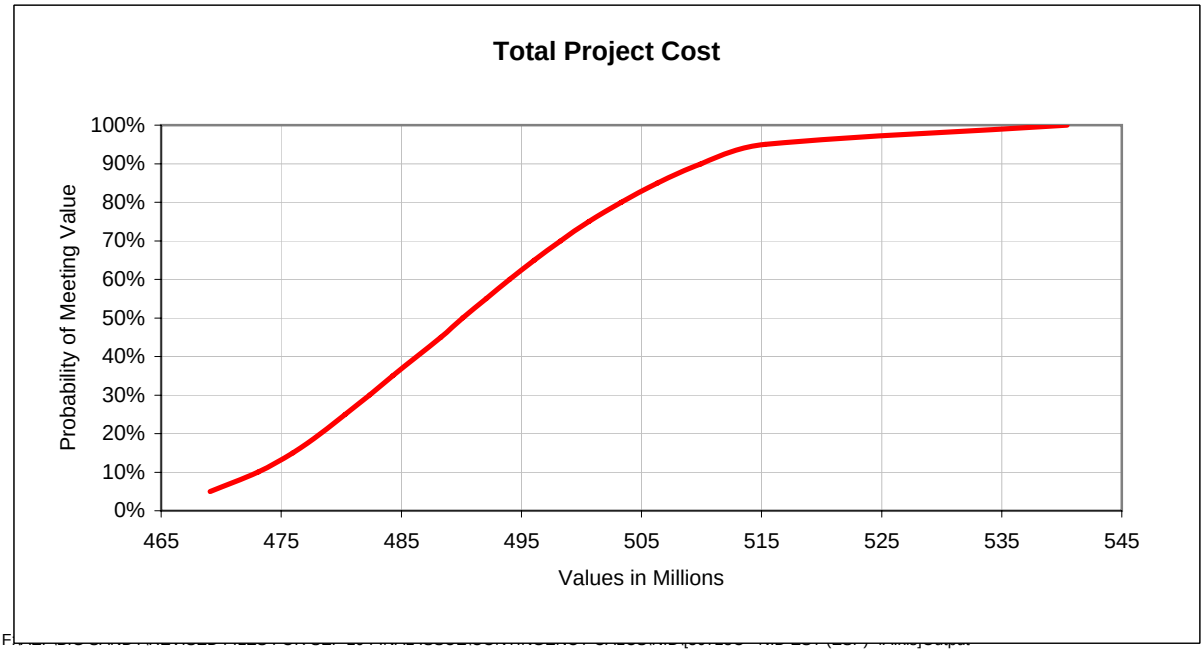
Values in Thousands

Accnt. No.	Cost Elements	Target Value $k	Minimum	Maximum	Minimum	Maximum
1.0	ID FANS	$47,418,600	95%	130%	$45,047,670	$61,644,180
2.0	NID MODULES	$160,126,200	95%	125%	$152,119,890	$200,157,750
3.0	STACK	$19,350,000	95%	130%	$18,382,500	$25,155,000
4.0	LIME HANDLING SYSTEM	$34,267,700	95%	125%	$32,554,315	$42,834,625
6.0	BYPRODUCT WASTE & FLY ASH HANDLING SYSTEMS	$15,801,300	95%	130%	$15,011,235	$20,541,690
8.0	ACTIVATED CARBON INJECTION SYSTEM	$5,381,600	95%	130%	$5,112,520	$6,996,080
9.0	COMPRESSED AIR SYSTEM	$3,981,400	95%	135%	$3,782,330	$5,374,890
10.0	SERVICE WATER SYSTEM	$2,907,200	95%	135%	$2,761,840	$3,924,720
11.1	POTABLE WATER SYSTEM	$800,900	95%	135%	$760,855	$1,081,215
12.0	FGD SUBSTATION	$7,694,200	95%	135%	$7,309,490	$10,387,170
13.0	FGD DCS SYSTEM	$5,016,900	95%	135%	$4,766,055	$6,772,815
14.0	CEM SYSTEM	$2,110,000	95%	130%	$2,004,500	$2,743,000
15.0	TRUCK & RAIL INFRASTRUCTURE	$4,340,800	95%	140%	$4,123,760	$6,077,120
16.0	SITE IMPROVEMENTS - CIVIL WORK	$12,845,200	95%	140%	$12,202,940	$17,983,280
17.0	BOP ITEMS	$3,278,800	95%	160%	$3,114,860	$5,246,080
18.0	CAPITAL REPLACEMENTS - REMOVAL AND RELOCATION OF EXISTING EQUIPMENT AND INFRASTRUCTURE	$3,509,200	95%	200%	$3,333,740	$7,018,400
19.0	ARSENIC, ASBESTOS , LEAD ABATEMENT	$750,000	95%	150%	$712,500	$1,125,000
99.0	OVERALL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS	$73,198,500	95%	140%	$69,538,575	$102,477,900
	OVERALL PROJECT INDIRECT COSTS	$47,233,700	95%	130%	$44,872,015	$61,403,810
	SPARE PARTS	$1,953,300	95%	130%	$1,855,635	$2,539,290
	Total Base Case	**$451,965,500**				

ANALYSIS OUTPUT

Probability of meeting "Total Base Case" value: 451,965,500 0.0%

Total Budget Required ($k)	% Confidence Level	Confidence Level Risk	Contingency % of Base
540,450,899	100.0%	88,485,400	19.578%
515,318,244	95.0%	63,352,700	14.017%
509,969,924	90.0%	58,004,400	12.834%
506,345,650	85.0%	54,380,100	12.032%
503,324,516	80.0%	51,359,000	11.363%
500,633,869	75.0%	48,668,400	10.768%
498,253,869	70.0%	46,288,400	10.242%
496,073,862	65.0%	44,108,400	9.759%
494,029,329	60.0%	42,063,800	9.307%
492,069,773	55.0%	40,104,300	8.873%
490,133,758	50.0%	38,168,300	8.445%
488,297,771	45.0%	36,332,300	8.039%
486,285,901	40.0%	34,320,400	7.594%
484,303,650	35.0%	32,338,200	7.155%
482,381,735	30.0%	30,416,200	6.730%
480,311,405	25.0%	28,345,900	6.272%
478,266,669	20.0%	26,301,200	5.819%
475,987,746	15.0%	24,022,200	5.315%
473,067,699	10.0%	21,102,200	4.669%
469,079,035	5.0%	17,113,500	3.786%



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FGD PROJECT - NID (N/ESP) - 1B - 3.0 LB/MM BTU

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ANALYSIS INPUT

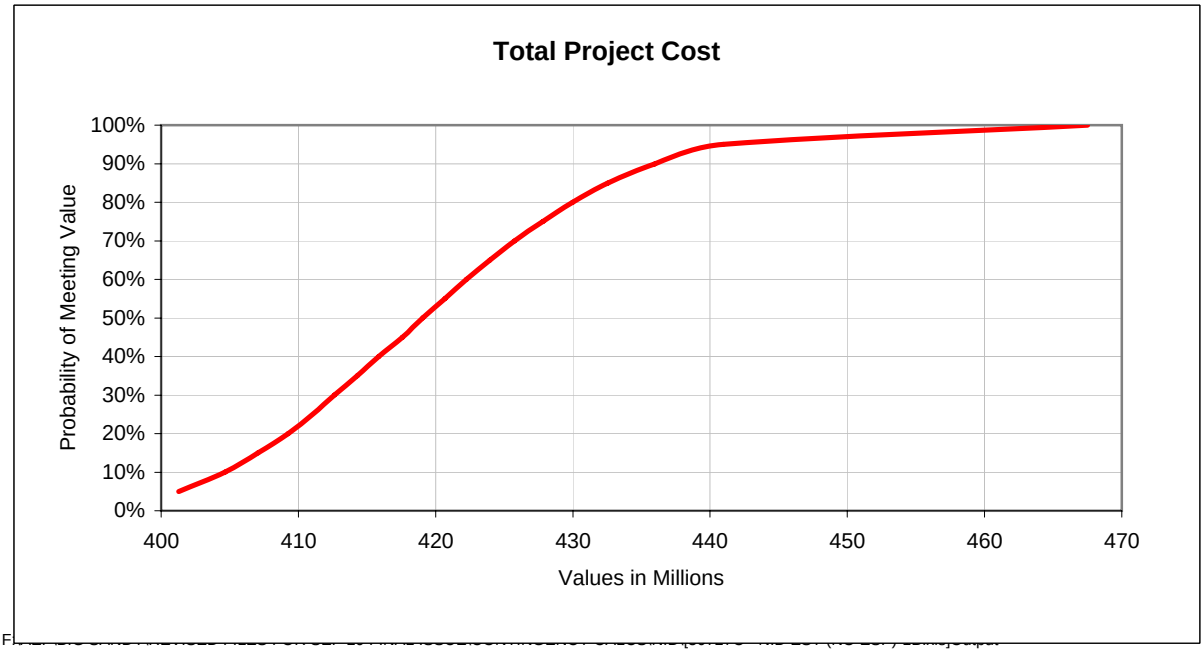
Values in Thousands

Accnt. No.	Cost Elements	Target Value $k	Minimum	Maximum	Minimum	Maximum
1.0	ID FANS	$48,130,300	95%	130%	$45,723,785	$62,569,390
2.0	NID MODULES	$124,123,100	95%	125%	$117,916,945	$155,153,875
3.0	STACK	$19,350,000	95%	130%	$18,382,500	$25,155,000
4.0	LIME HANDLING SYSTEM	$21,764,900	95%	125%	$20,676,655	$27,206,125
6.0	BYPRODUCT WASTE & FLY ASH HANDLING SYSTEMS	$10,815,700	95%	130%	$10,274,915	$14,060,410
8.0	ACTIVATED CARBON INJECTION SYSTEM	$5,381,600	95%	130%	$5,112,520	$6,996,080
9.0	COMPRESSED AIR SYSTEM	$3,981,400	95%	135%	$3,782,330	$5,374,890
10.0	SERVICE WATER SYSTEM	$2,907,200	95%	135%	$2,761,840	$3,924,720
11.1	POTABLE WATER SYSTEM	$800,900	95%	135%	$760,855	$1,081,215
12.0	FGD SUBSTATION	$7,795,100	95%	135%	$7,405,345	$10,523,385
13.0	FGD DCS SYSTEM	$5,016,900	95%	135%	$4,766,055	$6,772,815
14.0	CEM SYSTEM	$2,110,000	95%	130%	$2,004,500	$2,743,000
15.0	TRUCK & RAIL INFRASTRUCTURE	$4,340,800	95%	140%	$4,123,760	$6,077,120
16.0	SITE IMPROVEMENTS - CIVIL WORK	$12,845,200	95%	140%	$12,202,940	$17,983,280
17.0	BOP ITEMS	$3,223,700	95%	160%	$3,062,515	$5,157,920
18.0	CAPITAL REPLACEMENTS - REMOVAL AND RELOCATION OF EXISTING EQUIPMENT AND INFRASTRUCTURE	$3,509,200	95%	200%	$3,333,740	$7,018,400
19.0	ARSENIC, ASBESTOS , LEAD ABATEMENT	$750,000	95%	150%	$712,500	$1,125,000
99.0	OVERALL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS	$63,181,200	95%	140%	$60,022,140	$88,453,680
	OVERALL PROJECT INDIRECT COSTS	$44,295,700	95%	130%	$42,080,915	$57,584,410
	SPARE PARTS	$1,511,500	95%	130%	$1,435,925	$1,964,950
	Total Base Case	**$385,834,400**				

ANALYSIS OUTPUT

Probability of meeting "Total Base Case" value: 385,834,400 0.0%

Total Budget Required ($k)	% Confidence Level	Confidence Level Risk	Contingency % of Base
467,509,494	100.0%	81,675,100	21.168%
440,959,174	95.0%	55,124,800	14.287%
435,974,828	90.0%	50,140,400	12.995%
432,544,320	85.0%	46,709,900	12.106%
429,991,125	80.0%	44,156,700	11.444%
427,826,341	75.0%	41,991,900	10.883%
425,739,782	70.0%	39,905,400	10.343%
423,941,739	65.0%	38,107,300	9.877%
422,256,411	60.0%	36,422,000	9.440%
420,675,831	55.0%	34,841,400	9.030%
419,072,899	50.0%	33,238,500	8.615%
417,583,544	45.0%	31,749,100	8.229%
415,856,426	40.0%	30,022,000	7.781%
414,303,527	35.0%	28,469,100	7.379%
412,631,000	30.0%	26,796,600	6.945%
411,025,258	25.0%	25,190,900	6.529%
409,248,043	20.0%	23,413,600	6.068%
407,056,070	15.0%	21,221,700	5.500%
404,665,373	10.0%	18,831,000	4.881%
401,283,783	5.0%	15,449,400	4.004%



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ANALYSIS INPUT

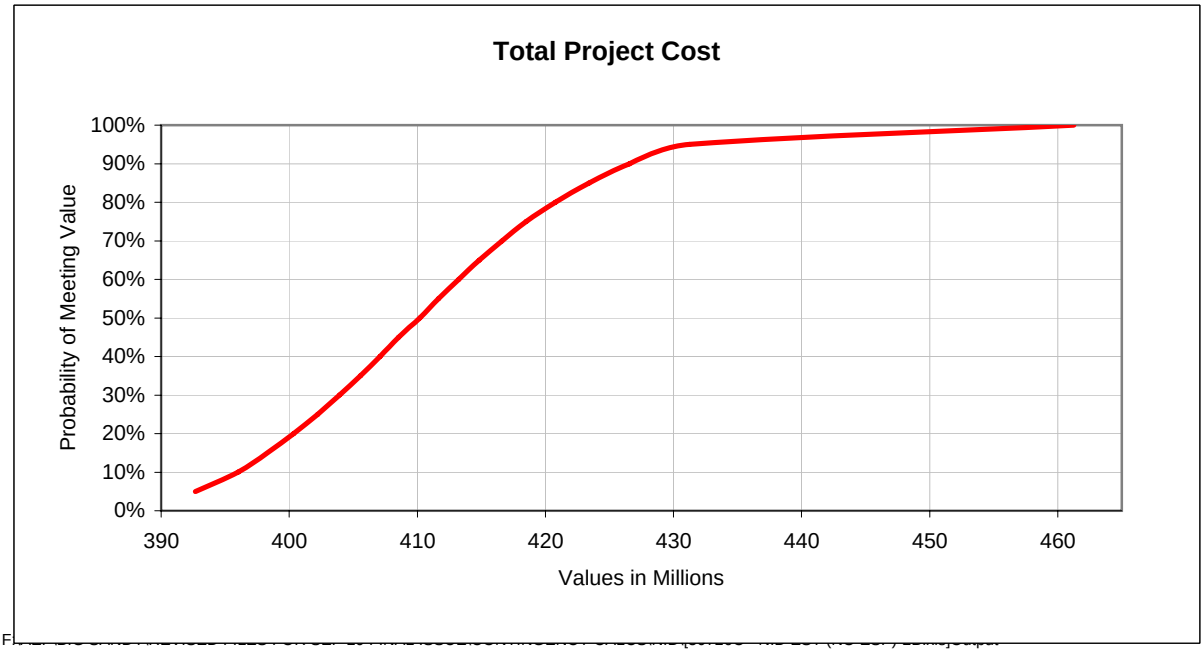
Values in Thousands

Accnt. No.	Cost Elements	Target Value $k	Minimum	Maximum	Minimum	Maximum
1.0	ID FANS	$48,130,300	95%	130%	$45,723,785	$62,569,390
2.0	NID MODULES	$123,042,300	95%	125%	$116,890,185	$153,802,875
3.0	STACK	$19,350,000	95%	130%	$18,382,500	$25,155,000
4.0	LIME HANDLING SYSTEM	$17,192,000	95%	125%	$16,332,400	$21,490,000
6.0	BYPRODUCT WASTE & FLY ASH HANDLING SYSTEMS	$9,313,400	95%	130%	$8,847,730	$12,107,420
8.0	ACTIVATED CARBON INJECTION SYSTEM	$5,381,600	95%	130%	$5,112,520	$6,996,080
9.0	COMPRESSED AIR SYSTEM	$3,981,400	95%	135%	$3,782,330	$5,374,890
10.0	SERVICE WATER SYSTEM	$2,907,200	95%	135%	$2,761,840	$3,924,720
11.1	POTABLE WATER SYSTEM	$800,900	95%	135%	$760,855	$1,081,215
12.0	FGD SUBSTATION	$7,795,100	95%	135%	$7,405,345	$10,523,385
13.0	FGD DCS SYSTEM	$5,016,900	95%	135%	$4,766,055	$6,772,815
14.0	CEM SYSTEM	$2,110,000	95%	130%	$2,004,500	$2,743,000
15.0	TRUCK & RAIL INFRASTRUCTURE	$4,340,800	95%	140%	$4,123,760	$6,077,120
16.0	SITE IMPROVEMENTS - CIVIL WORK	$12,845,200	95%	140%	$12,202,940	$17,983,280
17.0	BOP ITEMS	$3,223,700	95%	160%	$3,062,515	$5,157,920
18.0	CAPITAL REPLACEMENTS - REMOVAL AND RELOCATION OF EXISTING EQUIPMENT AND INFRASTRUCTURE	$3,509,200	95%	200%	$3,333,740	$7,018,400
19.0	ARSENIC, ASBESTOS , LEAD ABATEMENT	$750,000	95%	150%	$712,500	$1,125,000
99.0	OVERALL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS	$62,420,600	95%	140%	$59,299,570	$87,388,840
	OVERALL PROJECT INDIRECT COSTS	$43,942,000	95%	130%	$41,744,900	$57,124,600
	SPARE PARTS	$1,419,200	95%	130%	$1,348,240	$1,844,960
	Total Base Case	**$377,471,800**				

ANALYSIS OUTPUT

Probability of meeting "Total Base Case" value: 377,471,800 0.0%

Total Budget Required ($k)	% Confidence Level	Confidence Level Risk	Contingency % of Base
461,262,371	100.0%	83,790,600	22.198%
431,263,831	95.0%	53,792,000	14.251%
426,555,922	90.0%	49,084,100	13.003%
423,397,695	85.0%	45,925,900	12.167%
420,784,438	80.0%	43,312,600	11.474%
418,499,634	75.0%	41,027,800	10.869%
416,602,763	70.0%	39,131,000	10.367%
414,827,034	65.0%	37,355,200	9.896%
413,241,823	60.0%	35,770,000	9.476%
411,667,177	55.0%	34,195,400	9.059%
410,214,372	50.0%	32,742,600	8.674%
408,541,655	45.0%	31,069,900	8.231%
407,095,115	40.0%	29,623,300	7.848%
405,558,564	35.0%	28,086,800	7.441%
403,946,119	30.0%	26,474,300	7.014%
402,222,640	25.0%	24,750,800	6.557%
400,343,368	20.0%	22,871,600	6.059%
398,294,691	15.0%	20,822,900	5.516%
396,023,590	10.0%	18,551,800	4.915%
392,665,282	5.0%	15,193,500	4.025%



AEP
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ANALYSIS INPUT

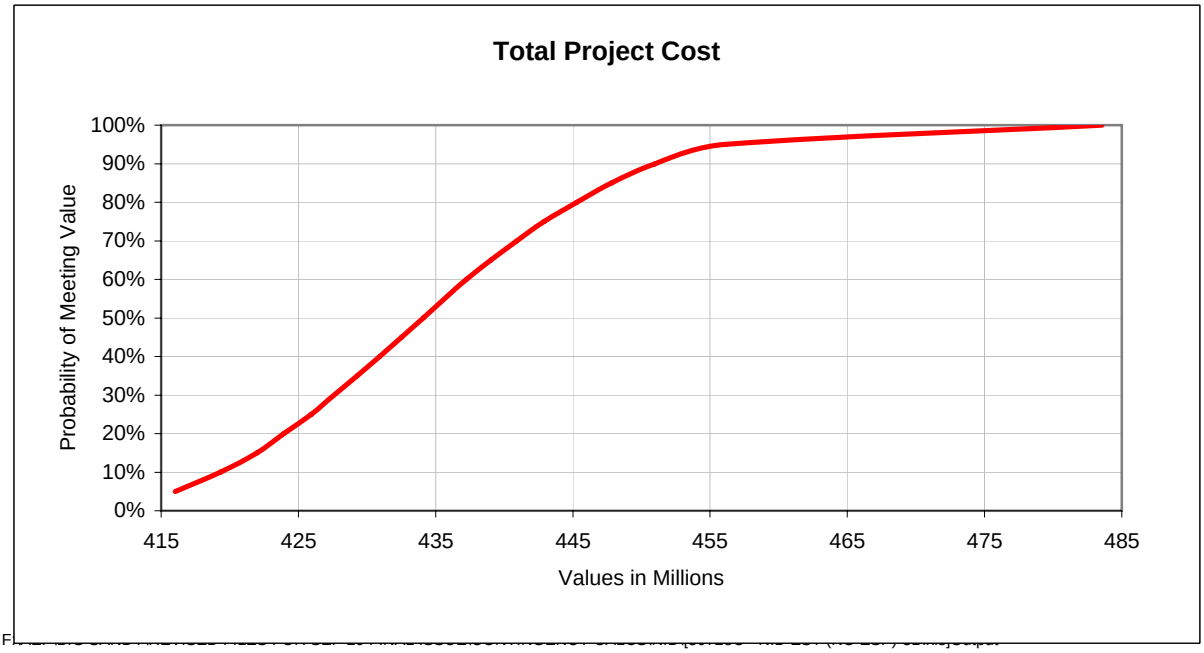
Values in Thousands

Accnt. No.	Cost Elements	Target Value $k	Minimum	Maximum	Minimum	Maximum
1.0	ID FANS	$48,130,300	95%	130%	$45,723,785	$62,569,390
2.0	NID MODULES	$129,296,200	95%	125%	$122,831,390	$161,620,250
3.0	STACK	$19,350,000	95%	130%	$18,382,500	$25,155,000
4.0	LIME HANDLING SYSTEM	$27,761,700	95%	125%	$26,373,615	$34,702,125
6.0	BYPRODUCT WASTE & FLY ASH HANDLING SYSTEMS	$11,338,100	95%	130%	$10,771,195	$14,739,530
8.0	ACTIVATED CARBON INJECTION SYSTEM	$5,381,600	95%	130%	$5,112,520	$6,996,080
9.0	COMPRESSED AIR SYSTEM	$3,981,400	95%	135%	$3,782,330	$5,374,890
10.0	SERVICE WATER SYSTEM	$2,907,200	95%	135%	$2,761,840	$3,924,720
11.1	POTABLE WATER SYSTEM	$800,900	95%	135%	$760,855	$1,081,215
12.0	FGD SUBSTATION	$7,795,100	95%	135%	$7,405,345	$10,523,385
13.0	FGD DCS SYSTEM	$5,016,900	95%	135%	$4,766,055	$6,772,815
14.0	CEM SYSTEM	$2,110,000	95%	130%	$2,004,500	$2,743,000
15.0	TRUCK & RAIL INFRASTRUCTURE	$4,340,800	95%	140%	$4,123,760	$6,077,120
16.0	SITE IMPROVEMENTS - CIVIL WORK	$12,845,200	95%	140%	$12,202,940	$17,983,280
17.0	BOP ITEMS	$3,223,700	95%	160%	$3,062,515	$5,157,920
18.0	CAPITAL REPLACEMENTS - REMOVAL AND RELOCATION OF EXISTING EQUIPMENT AND INFRASTRUCTURE	$3,509,200	95%	200%	$3,333,740	$7,018,400
19.0	ARSENIC, ASBESTOS , LEAD ABATEMENT	$750,000	95%	150%	$712,500	$1,125,000
99.0	OVERALL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS	$64,732,100	95%	140%	$61,495,495	$90,624,940
	OVERALL PROJECT INDIRECT COSTS	$44,898,500	95%	130%	$42,653,575	$58,368,050
	SPARE PARTS	$1,647,500	95%	130%	$1,565,125	$2,141,750
	Total Base Case	**$399,816,400**				

ANALYSIS OUTPUT

Probability of meeting "Total Base Case" value: 399,816,400 0.0%

Total Budget Required ($k)	% Confidence Level	Confidence Level Risk	Contingency % of Base
483,565,714	100.0%	83,749,300	20.947%
456,135,689	95.0%	56,319,300	14.086%
450,985,785	90.0%	51,169,400	12.798%
447,810,807	85.0%	47,994,400	12.004%
445,280,403	80.0%	45,464,000	11.371%
442,904,667	75.0%	43,088,300	10.777%
440,914,190	70.0%	41,097,800	10.279%
439,021,623	65.0%	39,205,200	9.806%
437,236,681	60.0%	37,420,300	9.359%
435,670,911	55.0%	35,854,500	8.968%
434,122,804	50.0%	34,306,400	8.581%
432,516,102	45.0%	32,699,700	8.179%
430,926,622	40.0%	31,110,200	7.781%
429,287,089	35.0%	29,470,700	7.371%
427,613,611	30.0%	27,797,200	6.952%
425,932,047	25.0%	26,115,600	6.532%
423,921,273	20.0%	24,104,900	6.029%
421,983,896	15.0%	22,167,500	5.544%
419,332,671	10.0%	19,516,300	4.881%
416,019,751	5.0%	16,203,400	4.053%



AEP
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FGD PROJECT - NID (N/ESP) - 4B - 7.5 LB/MM BTU

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ANALYSIS INPUT

Values in Thousands

Accnt. No.	Cost Elements	Target Value $k	Minimum	Maximum	Minimum	Maximum
1.0	ID FANS	$48,130,300	95%	130%	$45,723,785	$62,569,390
2.0	NID MODULES	$155,524,200	95%	125%	$147,747,990	$194,405,250
3.0	STACK	$19,350,000	95%	130%	$18,382,500	$25,155,000
4.0	LIME HANDLING SYSTEM	$34,267,700	95%	125%	$32,554,315	$42,834,625
6.0	BYPRODUCT WASTE & FLY ASH HANDLING SYSTEMS	$13,192,700	95%	130%	$12,533,065	$17,150,510
8.0	ACTIVATED CARBON INJECTION SYSTEM	$5,381,600	95%	130%	$5,112,520	$6,996,080
9.0	COMPRESSED AIR SYSTEM	$3,981,400	95%	135%	$3,782,330	$5,374,890
10.0	SERVICE WATER SYSTEM	$2,907,200	95%	135%	$2,761,840	$3,924,720
11.1	POTABLE WATER SYSTEM	$800,900	95%	135%	$760,855	$1,081,215
12.0	FGD SUBSTATION	$7,795,100	95%	135%	$7,405,345	$10,523,385
13.0	FGD DCS SYSTEM	$5,016,900	95%	135%	$4,766,055	$6,772,815
14.0	CEM SYSTEM	$2,110,000	95%	130%	$2,004,500	$2,743,000
15.0	TRUCK & RAIL INFRASTRUCTURE	$4,340,800	95%	140%	$4,123,760	$6,077,120
16.0	SITE IMPROVEMENTS - CIVIL WORK	$12,845,200	95%	140%	$12,202,940	$17,983,280
17.0	BOP ITEMS	$3,278,800	95%	160%	$3,114,860	$5,246,080
18.0	CAPITAL REPLACEMENTS - REMOVAL AND RELOCATION OF EXISTING EQUIPMENT AND INFRASTRUCTURE	$3,509,200	95%	200%	$3,333,740	$7,018,400
19.0	ARSENIC, ASBESTOS , LEAD ABATEMENT	$750,000	95%	150%	$712,500	$1,125,000
99.0	OVERALL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS	$70,906,900	95%	140%	$67,361,555	$99,269,660
	OVERALL PROJECT INDIRECT COSTS	$46,806,300	95%	130%	$44,465,985	$60,848,190
	SPARE PARTS	$1,969,400	95%	130%	$1,870,930	$2,560,220
	Total Base Case	**$442,864,600**				

ANALYSIS OUTPUT

Probability of meeting "Total Base Case" value: 442,864,600 0.0%

Total Budget Required ($k)	% Confidence Level	Confidence Level Risk	Contingency % of Base
538,038,259	100.0%	95,173,700	21.490%
505,477,391	95.0%	62,612,800	14.138%
500,111,060	90.0%	57,246,500	12.926%
496,149,275	85.0%	53,284,700	12.032%
493,159,810	80.0%	50,295,200	11.357%
490,623,020	75.0%	47,758,400	10.784%
488,279,810	70.0%	45,415,200	10.255%
486,051,845	65.0%	43,187,200	9.752%
484,116,162	60.0%	41,251,600	9.315%
482,114,192	55.0%	39,249,600	8.863%
480,253,003	50.0%	37,388,400	8.442%
478,443,375	45.0%	35,578,800	8.034%
476,615,981	40.0%	33,751,400	7.621%
474,706,128	35.0%	31,841,500	7.190%
472,724,355	30.0%	29,859,800	6.742%
470,826,800	25.0%	27,962,200	6.314%
468,650,821	20.0%	25,786,200	5.823%
466,377,154	15.0%	23,512,600	5.309%
463,396,205	10.0%	20,531,600	4.636%
459,283,618	5.0%	16,419,000	3.707%

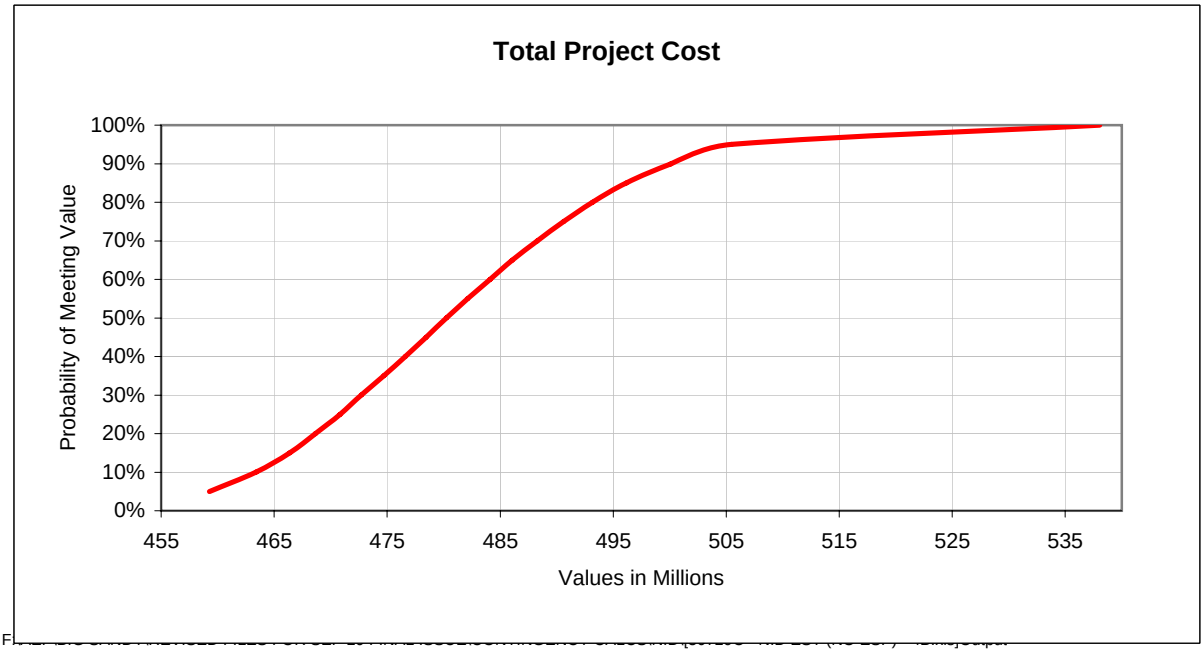


EXHIBIT 5-4
OEM Cost and Capital Cost Estimate Comparison Summaries
NID FGD Options

EXHIBIT 5-4
Capital Cost Estimate Comparison Summary
NID System Options

Attached are the capital cost estimate comparison summaries for the NID system options. The differences between these options are related to the following issues:

- The sulfur content of the coal impacts the following equipment and processes:
    - Based on just the sulfur content of the fuel, an increase in sulfur results in a corresponding increase in lime required for sulfur removal. In addition, for a given removal efficiency, the lime stoichiometric ratio increases with increasing sulfur. Therefore, the lime reagent rates increase quickly with increases in fuel sulfur. The higher lime reagent rates correlate to increases in lime handling equipment costs.
    - To treat the 7.5 lb SO_2/MMBtu fuel, the required lime usage leads to additional lime hydrator requirements. Each lime hydrator has a limited capacity. So as lime rates increase, there are step changes encountered with lime hydrators. To achieve the required lime rate, 14 lime hydrators and accompanying NID modules are required for the 7.5 lb SO_2/MMBtu fuel.
    - The NID module quantities for the other fuels are limited by the actual flue gas flow rates for the fuels. The flue gas rates do not vary appreciably between fuels. Therefore, 12 NID modules are required for the other three fuel options.
    - A higher byproduct rate results from an increase in fuel sulfur because the mass of sulfur removed and the mass of unreacted reagent increases. As more byproduct is produced, the costs for transport, storage and disposal are increased.
- The ESP in-service case versus without ESP in-service will result in the following:

ESP In	ESP Out
• Added cost for flyash transport, storage and blending system to stabilize the FGD byproduct.	• Added cost for the economizer ash handling system. • Slightly larger NID module costs based on an increase in fabric filter area. • Slightly higher electrical capital costs due to higher ID fan motor HP.

Exhibit 5-4. NID OEM Cost Summary (Engineer and Furnish Materials Only)

	1.7 w/o ESP	3.0 w/o ESP	4.5 w/o ESP	7.5 w/o ESP	Comments
NID System	$ 49,600,000	$ 50,231,000	$ 53,973,000	$ 67,447,500	Vendor scope: - Lime day silos and piping to the lime hydrators - Lime hydrators and recycle mixers - J-duct reactors and fabric filter modules (12 for 1.7, 3.0, and 4.5 fuels. 14 for 7.5 fuel) - All internal fabric filter elements such as bags, cages, ash hoppers, 2 broken bag detectors per compartment - Ash recycle system including air slides and ash dischage pipe - All internal piping and ductwork for the various modules. - Structural steel integral to the support of the vendor's equipment - Piping inside buildings to terminal point - All all motors required by vendor scope of supply - Process instruments and control logic - Trolleys and Hoists By others: - Piping from terminal points out to the plant - Conduit, cables, etc… to vendor's motors - Site grading, roads, foundations, etc... - Lime unloading, storage silo, etc... - Byproduct conveying, storage, etc... - Air compressors for the pulse-jet cleaning system - New ID fans - Duct from fabric filter to new ID fans - All required DCS upgrades
	1.7 w/ ESP	3.0 w/ ESP	4.5 w/ ESP	7.5 w/ ESP	Comments
NID System	$ 48,579,000	$ 49,311,000	$ 53,053,000	$ 66,387,200	Vendor scope: - Lime day silos and piping to the lime hydrators - Lime hydrators and recycle mixers - J-duct reactors and fabric filter modules (12 for 1.7, 3.0, and 4.5 fuels. 14 for 7.5 fuel) - All internal fabric filter elements such as bags, cages, ash hoppers, 2 broken bag detectors per compartment - Ash recycle system including air slides and ash dischage pipe - All internal piping and ductwork for the various modules. - Structural steel integral to the support of the vendor's equipment - Piping inside buildings to terminal point - All all motors required by vendor scope of supply - Process instruments and control logic - Trolleys and Hoists By others: - Piping from terminal points out to the plant - Conduit, cables, etc… to vendor's motors - Site grading, roads, foundations, etc... - Lime unloading, storage silo, etc... - Byproduct conveying, storage, etc... - Air compressors for the pulse-jet cleaning system - New ID fans - Duct from fabric filter to new ID fans - All required DCS upgrades

Costs for the NID system are based on a 2009 quote from Alstom. The previous quote was factored for the AEP Big Sandy Unit 2 capacity (865 MW) and adjusted for each sulfur and ESP operation.

Sargent & Lundy, LLC	**30727C** NID Base Estimate 1B N/ESP 3.0 lb SO2/MMBTU	**EXHIBIT 5-4** **CAPITAL COST ESTIMATE COMPARISON SUMMARY** **NID FGD OPTIONS**				30727C	30726C	30728C	30729C	30723C	30722C	30724C	30725C	Est 2B (N/ESP 1.7 lb SO2/MMBTU) Delta Base Est 1B	Est 3B (N/ESP 4.5 lb SO2/MMBTU) Delta Base Est 1B	Est 4B (N/ESP 7.5 lb SO2/MMBTU) Delta Base Est 1B	Est 1A (ESP 3.0 lb SO2/MMBTU) Delta Base Est 1B	Est 2A (ESP 1.7 lb SO2/MMBTU) Delta Base Est 1B	Est 3A (ESP 4.5 lb SO2/MMBTU) Delta Base Est 1B	Est 4A (ESP 7.5 lb SO2/MMBTU) Delta Base Est 1B	Remarks
						Base Est 1B - N/ESP 3.0 lb SO2/MMBTU	Est 2B - N/ESP 1.7 lb SO2/MMBTU	Est 3B - N/ESP 4.5 lb SO2/MMBTU	Est 4B - N/ESP 7.5 lb SO2/MMBTU	Est 1A - ESP 3.0 lb SO2/MMBTU	Est 2A - ESP 1.7 lb SO2/MMBTU	Est 3A - ESP 4.5 lb SO2/MMBTU	Est 4A - ESP 7.5 lb SO2/MMBTU								
Account No.	Item Description	Scope Definition	Total Equipment Cost	Total Material Cost	Total Construction & Erection Cost	Total Projected Cost	Total Projected Cost	Total Projected Cost	Total Projected Cost	Total Projected Cost	Total Projected Cost	Total Projected Cost	Total Projected Cost							
1.0	ID FANS																			
90.00	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS		$ 10,791,200	$ 12,593,600	$ 24,745,500	$ 48,130,300	$ 48,130,300	$ 48,130,300	$ 48,130,300	$ 47,418,600	$ 47,418,600	$ 47,418,600	$ 47,418,600	$ -	$ -	$ -	$ (711,700)	$ (711,700)	$ (711,700)	$ (711,700)	Acct. No. 1.0 - The ID Fans without the ESP are larger (i.e. cost more) because they replace the existing Booster Fans. The main difference in ID Fan account cost between the DFGD and NID is due to GA differences and the allocation of electrical equipment to particular areas.
	SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS		$ 539,600	$ 3,211,400	$ 8,904,700	$ 12,655,600	$ 12,655,600	$ 12,655,600	$ 12,655,600	$ 12,593,800	$ 12,593,800	$ 12,593,800	$ 12,593,800	$ -	$ -	$ -	$ (61,800)	$ (61,800)	$ (61,800)	$ (61,800)	
	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	ID FANS	$ 11,330,800	$ 15,805,000	$ 33,650,200	$ 60,785,900	$ 60,785,900	$ 60,785,900	$ 60,785,900	$ 60,012,400	$ 60,012,400	$ 60,012,400	$ 60,012,400	$ -	$ -	$ -	$ (773,500)	$ (773,500)	$ (773,500)	$ (773,500)	
2.0	NID MODULES																			
90.00	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS		$ 52,952,700	$ 14,819,500	$ 56,350,900	$ 124,123,100	$ 123,042,300	$ 129,296,200	$ 155,524,200	$ 129,091,200	$ 128,071,200	$ 134,918,600	$ 160,126,200	$ (1,080,800)	$ 5,173,100	$ 31,401,100	$ 4,968,100	$ 3,948,100	$ 10,795,500	$ 36,003,100	Acct. No. 2.0 – NID Module costs increase with sulpher based on larger mixers and hydraters until the 7.5lb coal at which point two additional modules are required. The ductwork costs for ESP Out are less as a result of shorter ductwork lengths. There is a closer tie-in location.
	SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS		$ 3,322,600	$ 3,779,000	$ 21,387,300	$ 28,488,900	$ 28,290,500	$ 29,209,100	$ 34,311,300	$ 30,271,800	$ 30,127,400	$ 31,235,300	$ 36,002,600	$ (198,400)	$ 720,200	$ 5,822,400	$ 1,782,900	$ 1,638,500	$ 2,746,400	$ 7,513,700	
	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	NID MODULES	$ 56,275,300	$ 18,598,500	$ 77,738,200	$ 152,612,000	$ 151,332,800	$ 158,505,300	$ 189,835,500	$ 159,363,000	$ 158,198,600	$ 166,153,900	$ 196,128,800	$ (1,279,200)	$ 5,893,300	$ 37,223,500	$ 6,751,000	$ 5,586,600	$ 13,541,900	$ 43,516,800	
3.0	NEW STACK							$													
90.0	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS		$ -	$ -	$ -	$ 19,350,000	$ 19,350,000	$ 19,350,000	$ 19,350,000	$ 19,350,000	$ 19,350,000	$ 19,350,000	$ 19,350,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	
	SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS		$ -	$ -	$ -	$ 2,902,500	$ 2,902,500	$ 2,902,500	$ 2,902,500	$ 2,902,500	$ 2,902,500	$ 2,902,500	$ 2,902,500	$ -	$ -	$ -	$ -	$ -	$ -	$ -	
	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	NEW STACK	$ -	$ -	$ -	$ 22,252,500	$ 22,252,500	$ 22,252,500	$ 22,252,500	$ 22,252,500	$ 22,252,500	$ 22,252,500	$ 22,252,500	$ -	$ -	$ -	$ -	$ -	$ -	$ -	
4.0	LIME HANDLING SYSTEM																			
90.00	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS		$ 9,382,300	$ 4,145,600	$ 8,237,000	$ 21,764,900	$ 17,192,000	$ 27,761,700	$ 34,267,700	$ 21,764,900	$ 17,192,000	$ 27,761,700	$ 34,267,700	$ (4,572,900)	$ 5,996,800	$ 12,502,800	$ -	$ (4,572,900)	$ 5,996,800	$ 12,502,800	Acct No: 4.0 - As fuel sulfur levels increase more lime is required therefore the lime handling system costs are increased.
	SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS		$ 469,100	$ 1,057,100	$ 2,988,100	$ 4,514,400	$ 4,100,500	$ 5,295,100	$ 6,057,800	$ 4,514,400	$ 4,100,500	$ 5,295,100	$ 6,057,800	$ (413,900)	$ 780,700	$ 1,543,400	$ -	$ (413,900)	$ 780,700	$ 1,543,400	
	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	LIME HANDLING SYSTEM	$ 9,851,400	$ 5,202,700	$ 11,225,100	$ 26,279,300	$ 21,292,500	$ 33,056,800	$ 40,325,500	$ 26,279,300	$ 21,292,500	$ 33,056,800	$ 40,325,500	$ (4,986,800)	$ 6,777,500	$ 14,046,200	$ -	$ (4,986,800)	$ 6,777,500	$ 14,046,200	
5.0	LIME SLAKER BUILDING	NOT REQUIRED FOR NID																		
6.0	BYPRODUCT WASTE & FLY ASH HANDLING SYSTEMS																			
90.0	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS		$ 6,246,100	$ 1,198,600	$ 3,371,000	$ 10,815,700	$ 9,313,400	$ 11,338,100	$ 13,192,700	$ 13,688,400	$ 12,064,700	$ 14,007,800	$ 15,801,300	$ (1,502,300)	$ 522,400	$ 2,377,000	$ 2,872,700	$ 1,249,000	$ 3,192,100	$ 4,985,600	Acct. No. 6.0 - With the ESP in service fly ash must be pulled from a cell for blending with FGD byproduct. Significant additional equipment and a silo will be added for fly ash blending. In fact even though the byproduct quantities are increased in the no ESP case, the costs for the ESP options are higher due to this equipment addition.The silo sizes with the ESP in service are significantly smaller than without the ESP. This is a result of the fly ash being removed in the ESP prior to the FF.
	SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS		$ 312,300	$ 305,600	$ 1,251,300	$ 1,869,200	$ 1,720,800	$ 1,919,200	$ 2,207,200	$ 2,574,900	$ 2,342,500	$ 2,613,000	$ 2,878,100	$ (148,400)	$ 50,000	$ 338,000	$ 705,700	$ 473,300	$ 743,800	$ 1,008,900	
	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	BYPRODUCT WASTE & FLY ASH HANDLING SYSTEMS	$ 6,558,400	$ 1,504,200	$ 4,622,300	$ 12,684,900	$ 11,034,200	$ 13,257,300	$ 15,399,900	$ 16,263,300	$ 14,407,200	$ 16,620,800	$ 18,679,400	$ (1,650,700)	$ 572,400	$ 2,715,000	$ 3,578,400	$ 1,722,300	$ 3,935,900	$ 5,994,500	
7.0	ABSORBER ISLAND	NOT REQUIRED FOR NID																		
8.0	ACTIVATED CARBON INJECTION SYSTEM																			
90.0	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS		$ 3,169,500	$ 326,600	$ 1,885,500	$ 5,381,600	$ 5,381,600	$ 5,381,600	$ 5,381,600	$ 5,381,600	$ 5,381,600	$ 5,381,600	$ 5,381,600	$ -	$ -	$ -	$ -	$ -	$ -	$ -	
	SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS		$ 158,500	$ 83,300	$ 694,500	$ 936,300	$ 936,300	$ 936,300	$ 936,300	$ 936,300	$ 936,300	$ 936,300	$ 936,300	$ -	$ -	$ -	$ -	$ -	$ -	$ -	
	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	ACTIVATED CARBON INJECTION SYSTEM	$ 3,328,000	$ 409,900	$ 2,580,000	$ 6,317,900	$ 6,317,900	$ 6,317,900	$ 6,317,900	$ 6,317,900	$ 6,317,900	$ 6,317,900	$ 6,317,900	$ -	$ -	$ -	$ -	$ -	$ -	$ -	
9.0	COMPRESSED AIR SYSTEM																			
90.00	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS		$ 1,184,100	$ 1,261,600	$ 1,535,700	$ 3,981,400	$ 3,981,400	$ 3,981,400	$ 3,981,400	$ 3,981,400	$ 3,981,400	$ 3,981,400	$ 3,981,400	$ -	$ -	$ -	$ -	$ -	$ -	$ -	
	SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS		$ 59,200	$ 321,700	$ 570,900	$ 951,800	$ 951,800	$ 951,800	$ 951,800	$ 951,800	$ 951,800	$ 951,800	$ 951,800	$ -	$ -	$ -	$ -	$ -	$ -	$ -	
	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	COMPRESSED AIR SYSTEM	$ 1,243,300	$ 1,583,300	$ 2,106,600	$ 4,933,200	$ 4,933,200	$ 4,933,200	$ 4,933,200	$ 4,933,200	$ 4,933,200	$ 4,933,200	$ 4,933,200	$ -	$ -	$ -	$ -	$ -	$ -	$ -	
10.0	SERVICE WATER SYSTEM																			
90.0	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS		$ 653,600	$ 764,700	$ 1,488,900	$ 2,907,200	$ 2,907,200	$ 2,907,200	$ 2,907,200	$ 2,907,200	$ 2,907,200	$ 2,907,200	$ 2,907,200	$ -	$ -	$ -	$ -	$ -	$ -	$ -	
	SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS		$ 32,700	$ 195,000	$ 542,900	$ 770,600	$ 770,600	$ 770,600	$ 770,600	$ 770,600	$ 770,600	$ 770,600	$ 770,600	$ -	$ -	$ -	$ -	$ -	$ -	$ -	
	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	SERVICE WATER SYSTEM	$ 686,300	$ 959,700	$ 2,031,800	$ 3,677,800	$ 3,677,800	$ 3,677,800	$ 3,677,800	$ 3,677,800	$ 3,677,800	$ 3,677,800	$ 3,677,800	$ -	$ -	$ -	$ -	$ -	$ -	$ -	
11.0	POTABLE WATER SYSTEM																			
90.0	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS		$ 129,500	$ 195,600	$ 475,800	$ 800,900	$ 800,900	$ 800,900	$ 800,900	$ 800,900	$ 800,900	$ 800,900	$ 800,900	$ -	$ -	$ -	$ -	$ -	$ -	$ -	
	SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS		$ 6,500	$ 49,900	$ 173,400	$ 229,800	$ 229,800	$ 229,800	$ 229,800	$ 229,800	$ 229,800	$ 229,800	$ 229,800	$ -	$ -	$ -	$ -	$ -	$ -	$ -	
	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	POTABLE WATER SYSTEM	$ 136,000	$ 245,500	$ 649,200	$ 1,030,700	$ 1,030,700	$ 1,030,700	$ 1,030,700	$ 1,030,700	$ 1,030,700	$ 1,030,700	$ 1,030,700	$ -	$ -	$ -	$ -	$ -	$ -	$ -	

Sargent & Lundy, LLC	**30727C** NID Base Estimate 1B N/ESP 3.0 lb SO2/MMBTU	**EXHIBIT 5-4** **CAPITAL COST ESTIMATE COMPARISON SUMMARY** **NID FGD OPTIONS**				30727C	30726C	30728C	30729C	30723C	30722C	30724C	30725C	Est 2B (N/ESP 1.7 lb SO2/MMBTU) Delta Base Est 1B	Est 3B (N/ESP 4.5 lb SO2/MMBTU) Delta Base Est 1B	Est 4B (N/ESP 7.5 lb SO2/MMBTU) Delta Base Est 1B	Est 1A (ESP 3.0 lb SO2/MMBTU) Delta Base Est 1B	Est 2A (ESP 1.7 lb SO2/MMBTU) Delta Base Est 1B	Est 3A (ESP 4.5 lb SO2/MMBTU) Delta Base Est 1B	Est 4A (ESP 7.5 lb SO2/MMBTU) Delta Base Est 1B	Remarks
						Base Est 1B - N/ESP 3.0 lb SO2/MMBTU	Est 2B - N/ESP 1.7 lb SO2/MMBTU	Est 3B - N/ESP 4.5 lb SO2/MMBTU	Est 4B - N/ESP 7.5 lb SO2/MMBTU	Est 1A - ESP 3.0 lb SO2/MMBTU	Est 2A - ESP 1.7 lb SO2/MMBTU	Est 3A - ESP 4.5 lb SO2/MMBTU	Est 4A - ESP 7.5 lb SO2/MMBTU								
Account No.	Item Description	Scope Definition	Total Equipment Cost	Total Material Cost	Total Construction & Erection Cost	Total Projected Cost	Total Projected Cost	Total Projected Cost	Total Projected Cost	Total Projected Cost	Total Projected Cost	Total Projected Cost	Total Projected Cost							
12.0	FGD SUBSTATION																			
90.0	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS		$ 3,281,900	$ 776,600	$ 3,736,600	$ 7,795,100	$ 7,795,100	$ 7,795,100	$ 7,795,100	$ 7,694,200	$ 7,694,200	$ 7,694,200	$ 7,694,200	$ -	$ -	$ -	$ (100,900)	$ (100,900)	$ (100,900)	$ (100,900)	Acct. No. 12.0 - Larger auxiliary transformers are required for the ESP Out case due to the ID Fan's increase in size. A larger switchgear is required for the ESP In case due to the increased number of required feeder breakers to accommodate the relocated feeds to the existing booster fans. The net difference results in a higher ESP out cost.
	SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS		$ 164,100	$ 198,000	$ 1,350,783	$ 1,712,900	$ 1,712,900	$ 1,712,900	$ 1,712,900	$ 1,704,100	$ 1,704,100	$ 1,704,100	$ 1,704,100	$ -	$ -	$ -	$ (8,800)	$ (8,800)	$ (8,800)	$ (8,800)	
	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	FGD SUBSTATION	$ 3,446,000	$ 974,600	$ 5,087,400	$ 9,508,000	$ 9,508,000	$ 9,508,000	$ 9,508,000	$ 9,398,300	$ 9,398,300	$ 9,398,300	$ 9,398,300	$ -	$ -	$ -	$ (109,700)	$ (109,700)	$ (109,700)	$ (109,700)	
13.0	FGD DCS SYSTEM																			
90.0	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS		$ 2,700,000	$ 650,400	$ 1,666,500	$ 5,016,900	$ 5,016,900	$ 5,016,900	$ 5,016,900	$ 5,016,900	$ 5,016,900	$ 5,016,900	$ 5,016,900	$ -	$ -	$ -	$ -	$ -	$ -	$ -	
	SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS		$ 135,000	$ 165,900	$ 622,300	$ 923,200	$ 923,200	$ 923,200	$ 923,200	$ 923,200	$ 923,200	$ 923,200	$ 923,200	$ -	$ -	$ -	$ -	$ -	$ -	$ -	
	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	FGD DCS SYSTEM	$ 2,835,000	$ 816,300	$ 2,288,800	$ 5,940,100	$ 5,940,100	$ 5,940,100	$ 5,940,100	$ 5,940,100	$ 5,940,100	$ 5,940,100	$ 5,940,100	$ -	$ -	$ -	$ -	$ -	$ -	$ -	
14.0	CEM SYSTEM																			
90.0	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS		$ 1,260,000	$ 540,000	$ 310,000	$ 2,110,000	$ 2,110,000	$ 2,110,000	$ 2,110,000	$ 2,110,000	$ 2,110,000	$ 2,110,000	$ 2,110,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	
	SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS		$ -	$ -	$ -	$ 316,500	$ 316,500	$ 316,500	$ 316,500	$ 316,500	$ 316,500	$ 316,500	$ 316,500	$ -	$ -	$ -	$ -	$ -	$ -	$ -	
	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	CEM SYSTEM	$ -	$ -	$ -	$ 2,426,500	$ 2,426,500	$ 2,426,500	$ 2,426,500	$ 2,426,500	$ 2,426,500	$ 2,426,500	$ 2,426,500	$ -	$ -	$ -	$ -	$ -	$ -	$ -	
15.0	TRUCK & RAIL INFRASTRUCTURE																			
90.0	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS		$ 212,500	$ 2,044,200	$ 2,084,100	$ 4,340,800	$ 4,340,800	$ 4,340,800	$ 4,340,800	$ 4,340,800	$ 4,340,800	$ 4,340,800	$ 4,340,800	$ -	$ -	$ -	$ -	$ -	$ -	$ -	
	SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS		$ 10,600	$ 521,300	$ 779,600	$ 1,311,500	$ 1,311,500	$ 1,311,500	$ 1,311,500	$ 1,311,500	$ 1,311,500	$ 1,311,500	$ 1,311,500	$ -	$ -	$ -	$ -	$ -	$ -	$ -	
	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	TRUCK & RAIL INFRASTRUCTURE	$ 223,100	$ 2,565,500	$ 2,863,700	$ 5,652,300	$ 5,652,300	$ 5,652,300	$ 5,652,300	$ 5,652,300	$ 5,652,300	$ 5,652,300	$ 5,652,300	$ -	$ -	$ -	$ -	$ -	$ -	$ -	
16.0	SITE IMPROVEMENTS - CIVIL WORK																			
90.0	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS		$ 3,242,500	$ 3,473,700	$ 6,129,000	$ 12,845,200	$ 12,845,200	$ 12,845,200	$ 12,845,200	$ 12,845,200	$ 12,845,200	$ 12,845,200	$ 12,845,200	$ -	$ -	$ -	$ -	$ -	$ -	$ -	
	SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS		$ 162,100	$ 885,800	$ 2,226,600	$ 3,274,500	$ 3,274,500	$ 3,274,500	$ 3,274,500	$ 3,274,500	$ 3,274,500	$ 3,274,500	$ 3,274,500	$ -	$ -	$ -	$ -	$ -	$ -	$ -	
	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	SITE IMPROVEMENTS - CIVIL WORK	$ 3,404,600	$ 4,359,500	$ 8,355,600	$ 16,119,700	$ 16,119,700	$ 16,119,700	$ 16,119,700	$ 16,119,700	$ 16,119,700	$ 16,119,700	$ 16,119,700	$ -	$ -	$ -	$ -	$ -	$ -	$ -	
17.0	BOP ITEMS																			
90.0	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS		$ 180,000	$ 999,300	$ 2,044,400	$ 3,223,700	$ 3,223,700	$ 3,223,700	$ 3,278,800	$ 3,223,700	$ 3,223,700	$ 3,223,700	$ 3,278,800	$ -	$ -	$ 55,100	$ -	$ -	$ -	$ 55,100	Acct. No. 17.0 - Additional costs were included for touch-up painting on the 7.5 lb coals due to the 2 additional NID modules.
	SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS		$ 9,000	$ 254,822	$ 786,346	$ 1,050,167	$ 1,050,167	$ 1,050,167	$ 1,072,031	$ 1,050,167	$ 1,050,167	$ 1,050,167	$ 1,072,031	$ -	$ -	$ 21,864	$ -	$ -	$ -	$ 21,864	
	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	BOP ITEMS	$ 189,000	$ 1,254,100	$ 2,830,700	$ 4,273,900	$ 4,273,900	$ 4,273,900	$ 4,350,800	$ 4,273,900	$ 4,273,900	$ 4,273,900	$ 4,350,800	$ -	$ -	$ 76,900	$ -	$ -	$ -	$ 76,900	
18.0	CAPITAL REPLACEMENTS - REMOVAL AND RELOCATION OF EXISTING EQUIPMENT AND INFRASTRUCTURE																			
90.0	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS		$ -	$ 917,200	$ 2,592,000	$ 3,509,200	$ 3,509,200	$ 3,509,200	$ 3,509,200	$ 3,509,200	$ 3,509,200	$ 3,509,200	$ 3,509,200	$ -	$ -	$ -	$ -	$ -	$ -	$ -	
	SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS		$ -	$ 233,900	$ 927,100	$ 1,161,000	$ 1,161,000	$ 1,161,000	$ 1,161,000	$ 1,161,000	$ 1,161,000	$ 1,161,000	$ 1,161,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	
	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	CAPITAL REPLACEMENTS REMOVAL AND RELOCATION OF EXISTING EQUIPMENT AND INFRASTRUCTURE	$ -	$ 1,151,100	$ 3,519,100	$ 4,670,200	$ 4,670,200	$ 4,670,200	$ 4,670,200	$ 4,670,200	$ 4,670,200	$ 4,670,200	$ 4,670,200	$ -	$ -	$ -	$ -	$ -	$ -	$ -	
19.0	ARSENIC, ASBESTOS , LEAD ABATEMENT																			
90.0	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS		$ -	$ -	$ -	$ 750,000	$ 750,000	$ 750,000	$ 750,000	$ 750,000	$ 750,000	$ 750,000	$ 750,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	
	SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS		$ -	$ -	$ -	$ 112,500	$ 112,500	$ 112,500	$ 112,500	$ 112,500	$ 112,500	$ 112,500	$ 112,500	$ -	$ -	$ -	$ -	$ -	$ -	$ -	
	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	ARSENIC, ASBESTOS , LEAD ABATEMENT	$ -	$ -	$ -	$ 862,500	$ 862,500	$ 862,500	$ 862,500	$ 862,500	$ 862,500	$ 862,500	$ 862,500	$ -	$ -	$ -	$ -	$ -	$ -	$ -	

Sargent & Lundy, LLC	**30727C** NID Base Estimate 1B N/ESP 3.0 lb SO2/MMBTU	**EXHIBIT 5-4** **CAPITAL COST ESTIMATE COMPARISON SUMMARY** **NID FGD OPTIONS**				30727C	30726C	30728C	30729C	30723C	30722C	30724C	30725C	Est 2B (N/ESP 1.7 lb SO2/MMBTU) Delta Base Est 1B	Est 3B (N/ESP 4.5 lb SO2/MMBTU) Delta Base Est 1B	Est 4B (N/ESP 7.5 lb SO2/MMBTU) Delta Base Est 1B	Est 1A (ESP 3.0 lb SO2/MMBTU) Delta Base Est 1B	Est 2A (ESP 1.7 lb SO2/MMBTU) Delta Base Est 1B	Est 3A (ESP 4.5 lb SO2/MMBTU) Delta Base Est 1B	Est 4A (ESP 7.5 lb SO2/MMBTU) Delta Base Est 1B	Remarks
						Base Est 1B - N/ESP 3.0 lb SO2/MMBTU	Est 2B - N/ESP 1.7 lb SO2/MMBTU	Est 3B - N/ESP 4.5 lb SO2/MMBTU	Est 4B - N/ESP 7.5 lb SO2/MMBTU	Est 1A - ESP 3.0 lb SO2/MMBTU	Est 2A - ESP 1.7 lb SO2/MMBTU	Est 3A - ESP 4.5 lb SO2/MMBTU	Est 4A - ESP 7.5 lb SO2/MMBTU								
Account No.	Item Description	Scope Definition	Total Equipment Cost	Total Material Cost	Total Construction & Erection Cost	Total Projected Cost	Total Projected Cost	Total Projected Cost	Total Projected Cost	Total Projected Cost	Total Projected Cost	Total Projected Cost	Total Projected Cost							
99.0	OVERALL - EQUIPMENT, MATERIAL AND LABOR COSTS		$ 95,385,900	$ 44,707,200	$ 116,652,900	$ 276,846,000	$ 269,690,000	$ 288,538,300	$ 323,182,000	$ 283,874,200	$ 276,657,600	$ 296,017,800	$ 329,580,000	$ (7,156,000)	$ 11,692,300	$ 46,336,000	$ 7,028,200	$ (188,400)	$ 19,171,800	$ 52,734,000	
	OVERALL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS		$ 5,381,300	$ 11,343,600	$ 43,205,800	$ 63,181,200	$ 62,420,600	$ 64,732,100	$ 70,906,900	$ 65,599,200	$ 64,808,600	$ 67,381,500	$ 73,198,500	$ (760,600)	$ 1,550,900	$ 7,725,700	$ 2,418,000	$ 1,627,400	$ 4,200,300	$ 10,017,300	
	OVERALL TOTAL DIRECT & CONSTRUCTION INDIRECT COST		$ 100,767,200	$ 56,050,800	$ 159,858,700	$ 340,027,200	$ 332,110,600	$ 353,270,400	$ 394,088,900	$ 349,473,400	$ 341,466,200	$ 363,399,300	$ 402,778,500	$ (7,916,600)	$ 13,243,200	$ 54,061,700	$ 9,446,200	$ 1,439,000	$ 23,372,100	$ 62,751,300	
	OVERALL PROJECT INDIRECT COSTS																			
	ENGINEERING, PROCUREMENT, & PROJECT SERVICES					$ 25,000,000	$ 25,000,000	$ 25,000,000	$ 25,000,000	$ 25,000,000	$ 25,000,000	$ 25,000,000	$ 25,000,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	
	CONSTRUCTION MANAGEMENT					$ 10,200,800	$ 9,963,300	$ 10,598,100	$ 11,822,700	$ 10,484,200	$ 10,244,000	$ 10,902,000	$ 12,083,400	$ (237,500)	$ 397,300	$ 1,621,900	$ 283,400	$ 43,200	$ 701,200	$ 1,882,600	
	S-U / COMMISSIONING					$ 3,400,300	$ 3,321,100	$ 3,532,700	$ 3,940,900	$ 3,494,700	$ 3,414,700	$ 3,634,000	$ 4,027,800	$ (79,200)	$ 132,400	$ 540,600	$ 94,400	$ 14,400	$ 233,700	$ 627,500	
	CRAFT START-UP SUPPORT					$ 1,374,500	$ 1,361,300	$ 1,407,900	$ 1,560,400	$ 1,431,100	$ 1,417,000	$ 1,472,400	$ 1,614,200	$ (13,200)	$ 33,400	$ 185,900	$ 56,600	$ 42,500	$ 97,900	$ 239,700	
	INITIAL FILLS					$ 1,020,100	$ 996,300	$ 1,059,800	$ 1,182,300	$ 1,048,400	$ 1,024,400	$ 1,090,200	$ 1,208,300	$ (23,800)	$ 39,700	$ 162,200	$ 28,300	$ 4,300	$ 70,100	$ 188,200	
	OPERATOR & TRAINING MANUALS					$ 300,000	$ 300,000	$ 300,000	$ 300,000	$ 300,000	$ 300,000	$ 300,000	$ 300,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	
	SUBCONTRACTORS (NOISE & DUCTWORK CONSULTANT, GEOTECHNICAL INVESTIGATION)					$ 400,000	$ 400,000	$ 400,000	$ 400,000	$ 400,000	$ 400,000	$ 400,000	$ 400,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	
	NOISE ABATEMENT FOR 85 DBA REQUIREMENT	FOR ID FAN, NID MODULES, TRANSFORMERS, BOP, DUCTWORK, ACOUSTIC BARRIERS FOR BOUNDARY LIMITS				$ 2,600,000	$ 2,600,000	$ 2,600,000	$ 2,600,000	$ 2,600,000	$ 2,600,000	$ 2,600,000	$ 2,600,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	
	SUBTOTAL - INDIRECT COSTS					$ 44,295,700	$ 43,942,000	$ 44,898,500	$ 46,806,300	$ 44,758,400	$ 44,400,100	$ 45,398,600	$ 47,233,700	$ (353,700)	$ 602,800	$ 2,510,600	$ 462,700	$ 104,400	$ 1,102,900	$ 2,938,000	
	TOTAL PROJECT DIRECT AND INDIRECT COSTS					$ 384,322,900	$ 376,052,600	$ 398,168,900	$ 440,895,200	$ 394,231,800	$ 385,866,300	$ 408,797,900	$ 450,012,200	$ (8,270,300)	$ 13,846,000	$ 56,572,300	$ 9,908,900	$ 1,543,400	$ 24,475,000	$ 65,689,300	
	SPARE PARTS:					$ 1,511,500	$ 1,419,200	$ 1,647,500	$ 1,969,400	$ 1,501,700	$ 1,409,400	$ 1,633,500	$ 1,953,300	$ (92,300)	$ 136,000	$ 457,900	$ (9,800)	$ (102,100)	$ 122,000	$ 441,800	
	SPARE PARTS - CAPITALIZED	0.90				$ 906,900	$ 851,520	$ 988,500	$ 1,221,028	$ 901,020	$ 845,640	$ 980,100	$ 1,171,980	$ (55,380)	$ 81,600	$ 314,128	$ (5,880)	$ (61,260)	$ 73,200	$ 265,080	
	SPARE PARTS - FIRST YEAR OF OPERATION	0.60				$ 604,600	$ 567,680	$ 659,000	$ 748,372	$ 600,680	$ 563,760	$ 653,400	$ 781,320	$ (36,920)	$ 54,400	$ 143,772	$ (3,920)	$ (40,840)	$ 48,800	$ 176,720	
	CONTINGENCY	14.287				$ 55,124,800	$ 53,792,000	$ 56,319,300	$ 62,612,800	$ 55,898,200	$ 54,896,800	$ 57,769,600	$ 63,352,700	$ (1,332,800)	$ 1,194,500	$ 7,488,000	$ 773,400	$ (228,000)	$ 2,644,800	$ 8,227,900	
	ESCALATION					$ 48,734,300	$ 47,501,200	$ 50,762,200	$ 56,776,800	$ 49,816,200	$ 48,570,900	$ 51,924,700	$ 57,746,800	$ (1,233,100)	$ 2,027,900	$ 8,042,500	$ 1,081,900	$ (163,400)	$ 3,190,400	$ 9,012,500	
	EQUIPMENT					$ 16,011,200	$ 15,033,900	$ 17,452,200	$ 20,861,500	$ 15,907,700	$ 14,929,700	$ 17,303,300	$ 20,691,100	$ (977,300)	$ 1,441,000	$ 4,850,300	$ (103,500)	$ (1,081,500)	$ 1,292,100	$ 4,679,900	
	MATERIAL					$ 5,863,300	$ 5,844,400	$ 5,887,100	$ 6,025,000	$ 6,177,000	$ 6,158,000	$ 6,202,100	$ 6,335,100	$ (18,900)	$ 23,800	$ 161,700	$ 313,700	$ 294,700	$ 338,800	$ 471,800	
	LABOR					$ 21,653,900	$ 21,458,600	$ 22,146,200	$ 24,389,300	$ 22,471,200	$ 22,265,100	$ 23,083,800	$ 25,169,400	$ (195,300)	$ 492,300	$ 2,735,400	$ 817,300	$ 611,200	$ 1,429,900	$ 3,515,500	
	INDIRECTS					$ 5,205,900	$ 5,164,300	$ 5,276,700	$ 5,501,000	$ 5,260,300	$ 5,218,100	$ 5,335,500	$ 5,551,200	$ (41,600)	$ 70,800	$ 295,100	$ 54,400	$ 12,200	$ 129,600	$ 345,300	
	TOTAL PROJECT COST					$ 489,693,500	$ 478,765,000	$ 506,897,900	$ 562,254,200	$ 501,447,900	$ 490,743,400	$ 520,125,700	$ 573,065,000	$ (10,928,500)	$ 17,204,400	$ 72,560,700	$ 11,754,400	$ 1,049,900	$ 30,432,200	$ 83,371,500	

EXHIBIT 5-5
NID O&M Cost Estimate Summary

Exhibit 5-5. NID O&M Cost Estimate Summary (2010 dollars)

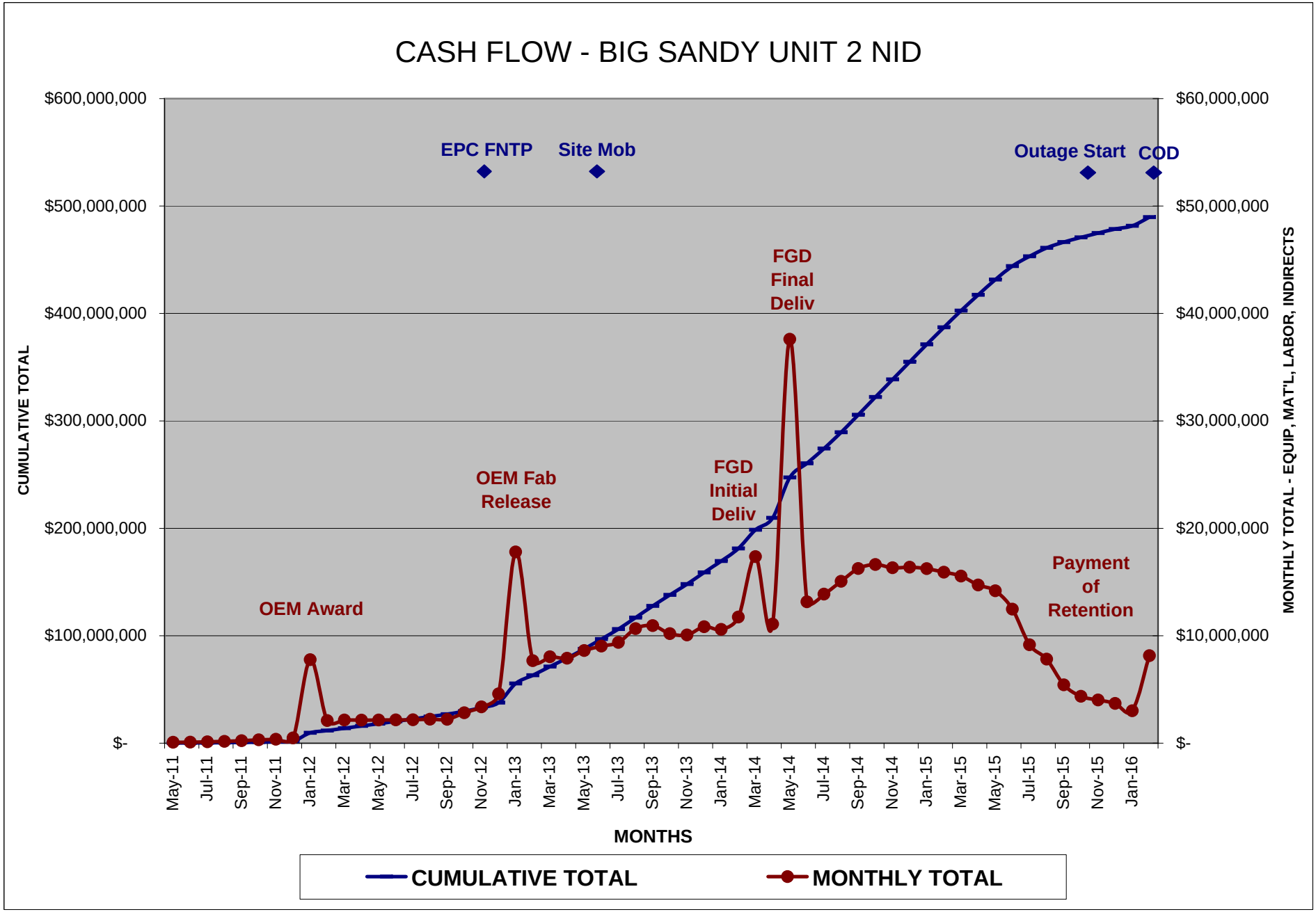
Fuel	NID							
	1.7 w/o ESP	**3.0 w/o ESP**	**4.5 w/o ESP**	**7.5 w/o ESP**	**1.7 w/ ESP**	**3.0 w/ ESP**	**4.5 w/ ESP**	**7.5 w/ ESP**
Fixed O&M ($/year)								
Operating Labor	1,040,000	1,040,000	1,040,000	1,040,000	1,040,000	1,040,000	1,040,000	1,040,000
Maintenance Material	2,284,000	2,350,000	2,416,000	2,548,000	2,284,000	2,350,000	2,416,000	2,548,000
Maintenance Labor	1,522,000	1,566,000	1,610,000	1,698,000	1,522,000	1,566,000	1,610,000	1,698,000
Total Fixed O&M ($/year)	**4,846,000**	**4,956,000**	**5,066,000**	**5,286,000**	**4,846,000**	**4,956,000**	**5,066,000**	**5,286,000**
Variable O&M ($/year)								
Reagent Cost	10,189,000	20,462,000	30,160,000	44,782,000	10,189,000	20,462,000	30,160,000	44,782,000
Activated Carbon	2,344,000	2,319,000	2,315,000	2,293,000	2,267,000	2,243,000	2,239,000	2,218,000
FGD Byproduct Disposal Cost	4,393,000	5,860,000	7,246,000	9,806,000	1,902,000	3,668,000	5,290,000	7,806,000
Makeup Water Cost	523,000	533,000	550,000	572,000	517,000	530,000	547,000	570,000
Wastewater Treatment Chemicals	NA	NA	NA	NA	NA	NA	NA	NA
Bags and Cages Replacement	690,000	690,000	690,000	690,000	690,000	690,000	690,000	690,000
Total Variable O&M excluding Auxiliary Power ($/year)	**18,139,000**	**29,864,000**	**40,961,000**	**58,143,000**	**15,565,000**	**27,593,000**	**38,926,000**	**56,066,000**
Auxiliary Power at Full Load (MW)								
Overall Draft [in WC]	23 [52]	23 [52]	23 [52]	23 [52]	17 [40]	17 [40]	17 [40]	17 [40]
FGD Draft Only [in WC]	10 [18]	10 [18]	10 [18]	10 [18]	10 [18]	10 [18]	10 [18]	10 [18]
FGD Equipment Load	4	5	6	6	4	5	6	6
Existing Booster Fans	-10	-10	-10	-10	0	0	0	0
Existing ESP	-4	-4	-4	-4	0	0	0	0
WESP	NA	NA	NA	NA	NA	NA	NA	NA
Total Auxiliary Power at Full Load (MW)	**13**	**14**	**15**	**15**	**21**	**22**	**23**	**23**

Note: NA = Not Applicable for the technology

EXHIBIT 5-6
NID Project Cash Flow

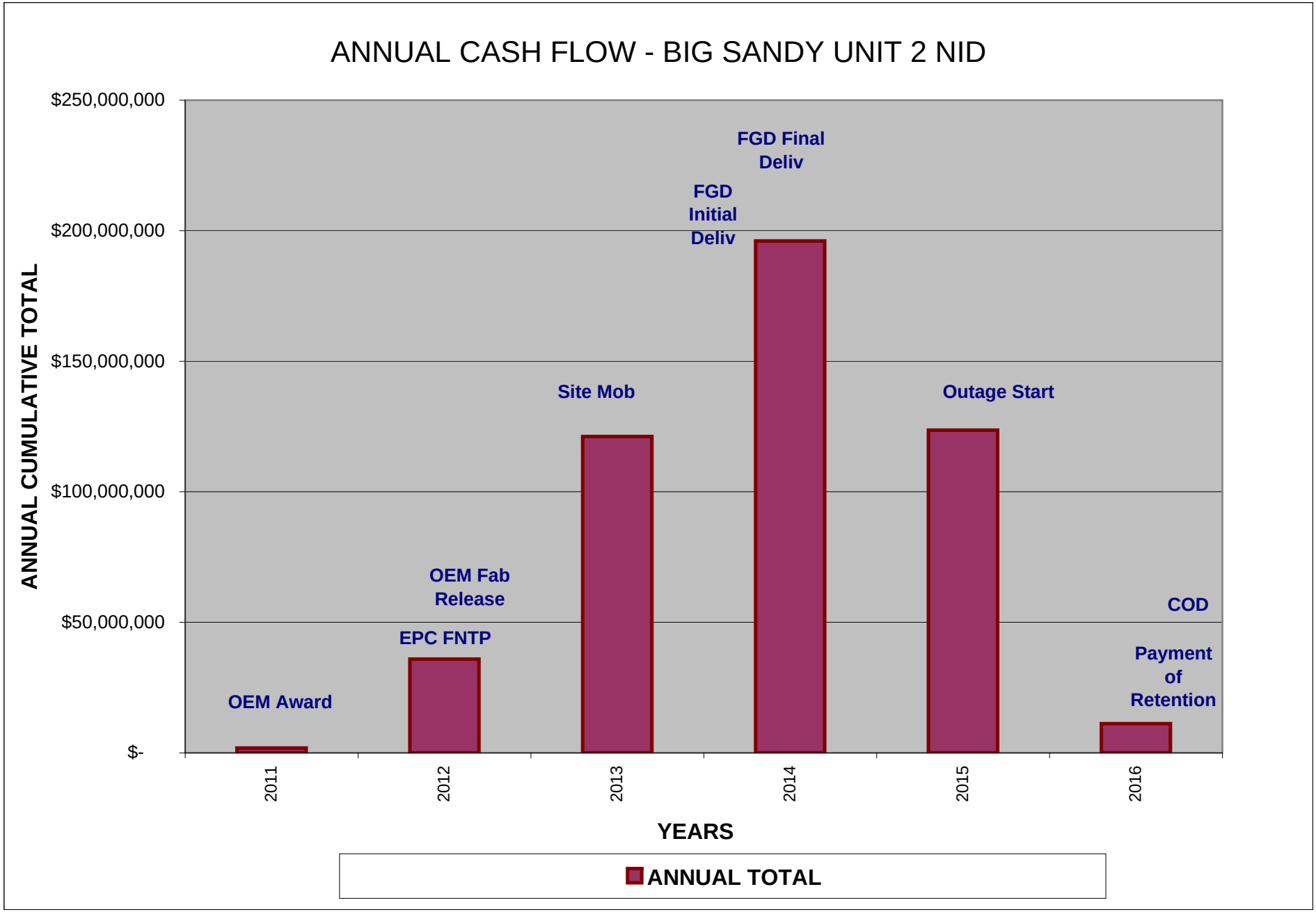
Kentucky Power Company & American Electric Power Service Corporation
Big Sandy Unit 2
NID Base (N/ESP - 3.0 Lb/MMBtu)
Cash Flows - Cumulative Total and Monthly Totals

Sargent & Lundy
Date: 9/29/10
Rev: 0



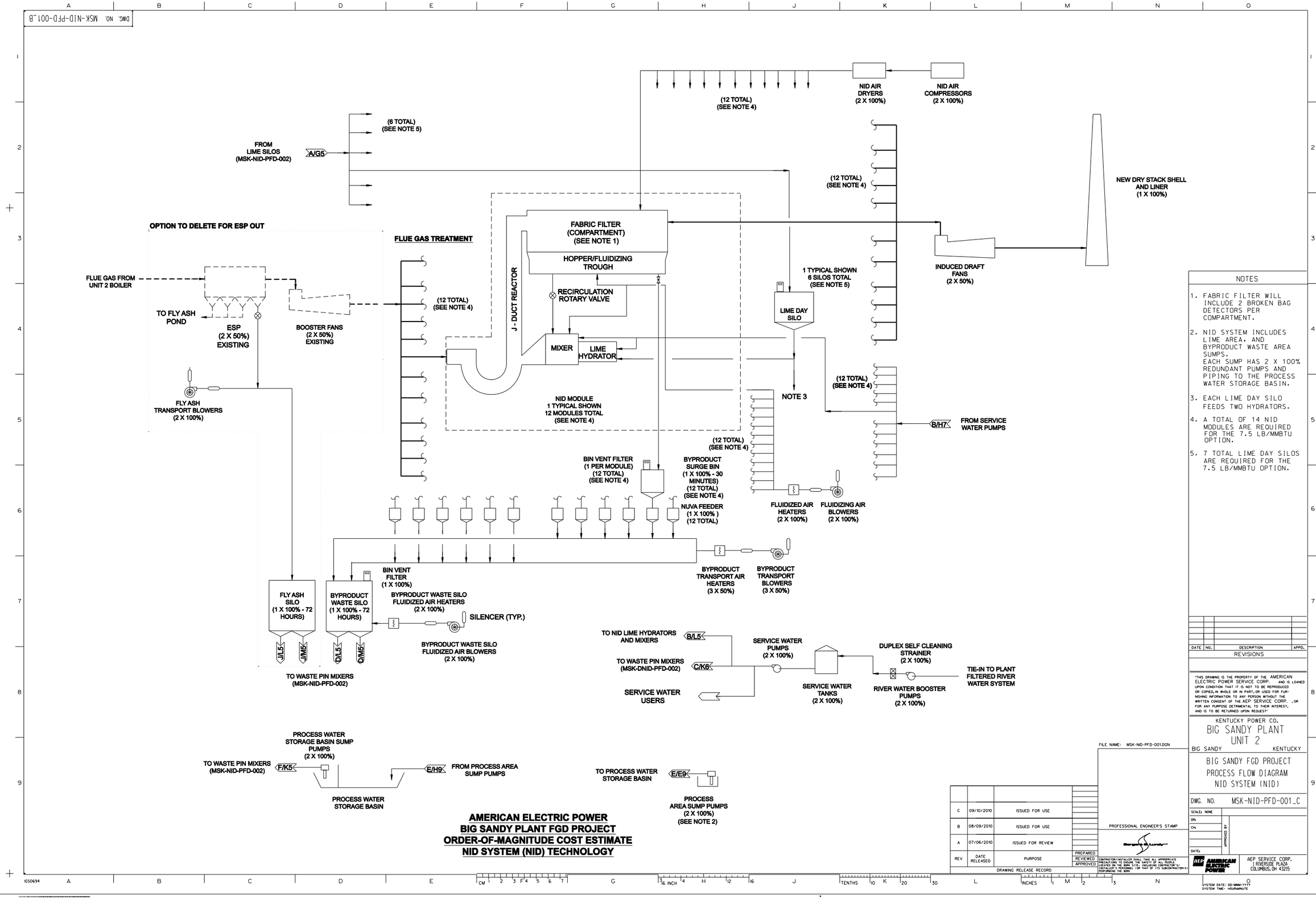
Kentucky Power Company & American Electric Power Service Corporation
Big Sandy Unit 2
NID Base (N/ESP - 3.0 Lb/MMBtu)
Cash Flows - Cumulative Total and Monthly Totals

Sargent & Lundy
Date: 9/29/10
Rev: 0



ATTACHMENT 5-1
NID Process Flow Diagrams

DWG. NO. MSK-NID-PFD-001_B



AMERICAN ELECTRIC POWER
BIG SANDY PLANT FGD PROJECT
ORDER-OF-MAGNITUDE COST ESTIMATE
NID SYSTEM (NID) TECHNOLOGY

NOTES

1. FABRIC FILTER WILL INCLUDE 2 BROKEN BAG DETECTORS PER COMPARTMENT.
2. NID SYSTEM INCLUDES LIME AREA. AND BYPRODUCT WASTE AREA SUMPS. EACH SUMP HAS 2 X 100% REDUNDANT PUMPS AND PIPING TO THE PROCESS WATER STORAGE BASIN.
3. EACH LIME DAY SILO FEEDS TWO HYDRATORS.
4. A TOTAL OF 14 NID MODULES ARE REQUIRED FOR THE 7.5 LB/MMBTU OPTION.
5. 7 TOTAL LIME DAY SILOS ARE REQUIRED FOR THE 7.5 LB/MMBTU OPTION.

REV	DATE RELEASED	PURPOSE
C	09/10/2010	ISSUED FOR USE
B	08/09/2010	ISSUED FOR USE
A	07/06/2010	ISSUED FOR REVIEW

DRAWING RELEASE RECORD

PREPARED / REVIEWED / APPROVED

DATE	NO.	DESCRIPTION	APPD.

REVISIONS

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KENTUCKY POWER CO.
BIG SANDY PLANT
UNIT 2
BIG SANDY KENTUCKY

BIG SANDY FGD PROJECT
PROCESS FLOW DIAGRAM
NID SYSTEM (NID)

DWG. NO. MSK-NID-PFD-001_C

SCALE: NONE
DR:
CH:
APPROVED BY:
DATE:

PROFESSIONAL ENGINEER'S STAMP

CONTRACTOR/INSTALLER SHALL TAKE ALL APPROPRIATE SAFETY PRECAUTIONS AND SHALL BE RESPONSIBLE FOR SAFETY ON THE WORK SITE, INCLUDING CONTRACTOR'S/INSTALLER'S PERSONNEL FOR THAT OF ITS SUBCONTRACTORS PERFORMING THE WORK.

AEP AMERICAN ELECTRIC POWER
AEP SERVICE CORP.
1 RIVERSIDE PLAZA
COLUMBUS, OH 43215

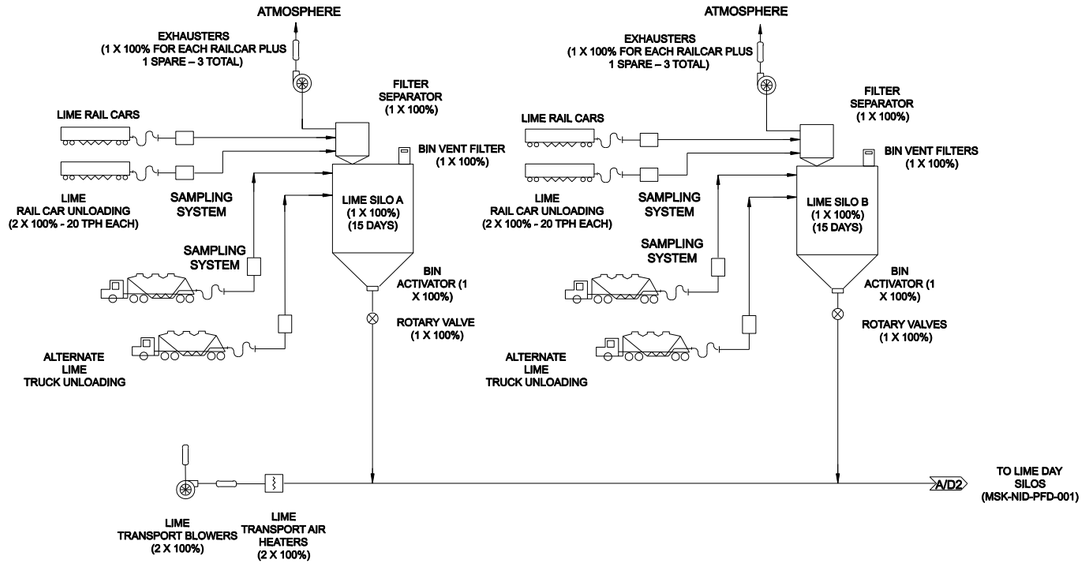
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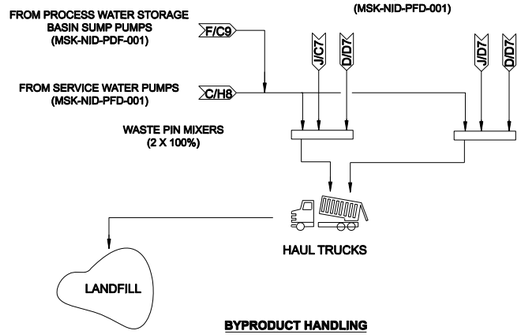
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SYSTEM TIME: HOUR:MINUTE

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DWG. NO. MSK-NID-PFD-002_B



CRUSHED LIME UNLOADING & STORAGE



BYPRODUCT HANDLING

NOTES

AMERICAN ELECTRIC POWER
BIG SANDY PLANT FGD PROJECT
ORDER-OF-MAGNITUDE COST ESTIMATE
NID SYSTEM (NID) TECHNOLOGY

REV	DATE RELEASED	PURPOSE	
C	09/10/2010	ISSUED FOR USE	PREPARED
B	08/09/2010	ISSUED FOR USE	REVIEWED
A	07/06/2010	ISSUED FOR REVIEW	APPROVED

DRAWING RELEASE RECORD

CONTRACTOR/INSTALLER SHALL TAKE ALL APPROPRIATE PRECAUTIONS TO ENSURE THE SAFETY OF ALL PEOPLE LOCATED ON THE WORK SITE, INCLUDING CONTRACTOR'S/ INSTALLER'S PERSONNEL OR THAT OF ITS SUBCONTRACTORS PERFORMING THE WORK

PROFESSIONAL ENGINEER'S STAMP

DATE	NO.	DESCRIPTION	APPD.

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KENTUCKY POWER CO.
BIG SANDY PLANT
UNIT 2
BIG SANDY KENTUCKY

BIG SANDY FGD PROJECT
PROCESS FLOW DIAGRAM
NID SYSTEM (NID)

DWG. NO. MSK-NID-PFD-002_C

SCALE: NONE

DR:
CH:
APPROVED BY:
DATE:

FILE NAME: MSK-NID-PFD-002.DGN

AEP AMERICAN ELECTRIC POWER
AEP SERVICE CORP.
1 RIVERSIDE PLAZA
COLUMBUS, OH 43215

SYSTEM DATE: DD-MMM-YYYY
SYSTEM TIME: HOUR:MINUTE

IGS0694

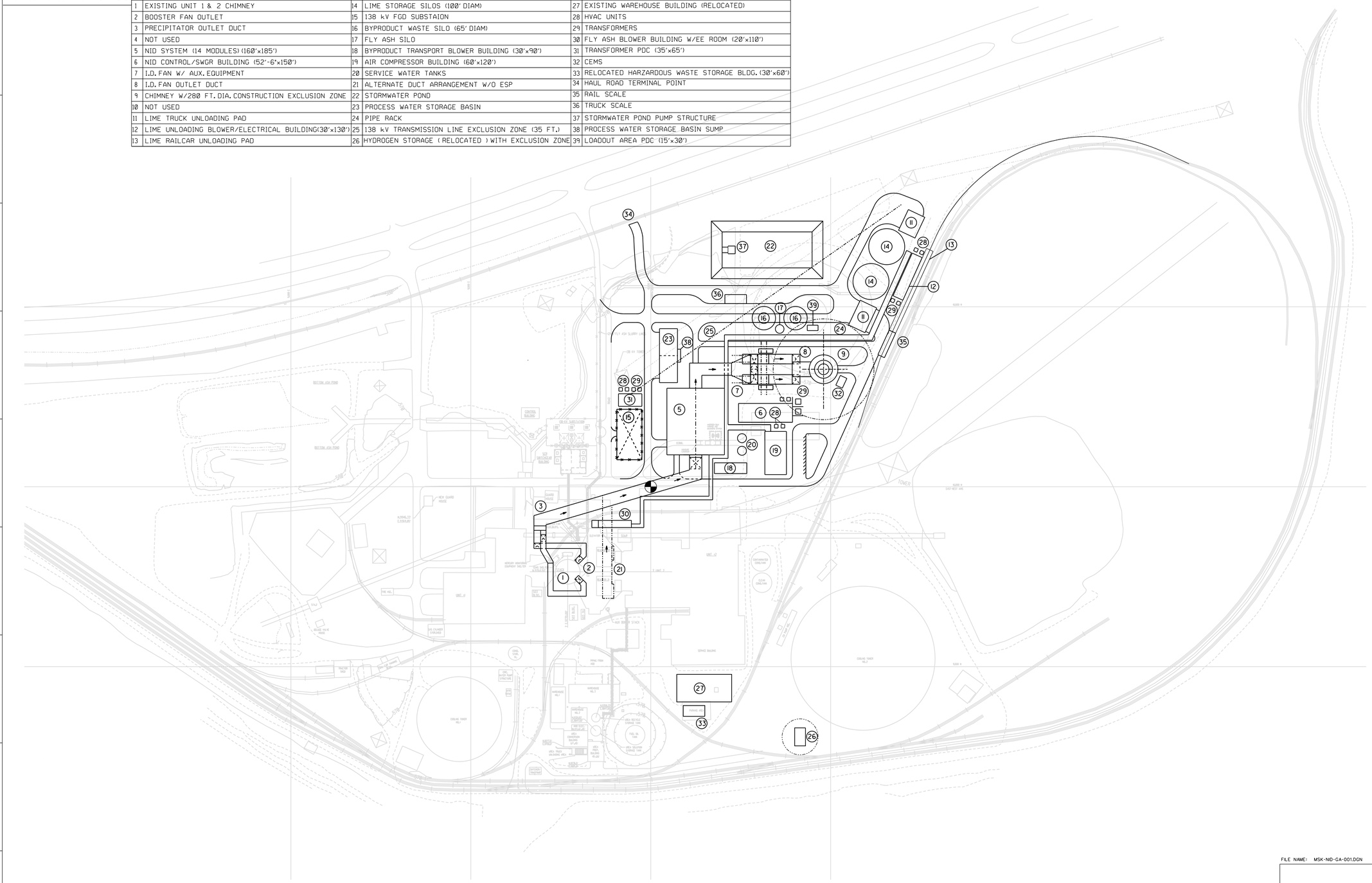
...\PFDs\MSK-NID-PFD-002.dgn 9/9/2010 2:16:06 PM

ATTACHMENT 5-2
NID Site Plan and General Arrangement Drawings

DWG. NO. MSK-NID-GA-001_C

FACILITIES LEGEND

1	EXISTING UNIT 1 & 2 CHIMNEY	14	LIME STORAGE SILOS (100' DIAM)	27	EXISTING WAREHOUSE BUILDING (RELOCATED)
2	BOOSTER FAN OUTLET	15	138 kV FGD SUBSTAION	28	HVAC UNITS
3	PRECIPITATOR OUTLET DUCT	16	BYPRODUCT WASTE SILO (65' DIAM)	29	TRANSFORMERS
4	NOT USED	17	FLY ASH SILO	30	FLY ASH BLOWER BUILDING W/EE ROOM (20'x110')
5	NID SYSTEM (14 MODULES) (160'x185')	18	BYPRODUCT TRANSPORT BLOWER BUILDING (30'x90')	31	TRANSFORMER PDC (35'x65')
6	NID CONTROL/SWGR BUILDING (52'-6"x150')	19	AIR COMPRESSOR BUILDING (60'x120')	32	CEMS
7	I.D. FAN W/ AUX. EQUIPMENT	20	SERVICE WATER TANKS	33	RELOCATED HARZARDOUS WASTE STORAGE BLDG. (30'x60')
8	I.D. FAN OUTLET DUCT	21	ALTERNATE DUCT ARRANGEMENT W/O ESP	34	HAUL ROAD TERMINAL POINT
9	CHIMNEY W/280 FT. DIA. CONSTRUCTION EXCLUSION ZONE	22	STORMWATER POND	35	RAIL SCALE
10	NOT USED	23	PROCESS WATER STORAGE BASIN	36	TRUCK SCALE
11	LIME TRUCK UNLOADING PAD	24	PIPE RACK	37	STORMWATER POND PUMP STRUCTURE
12	LIME UNLOADING BLOWER/ELECTRICAL BUILDING(30'x130')	25	138 kV TRANSMISSION LINE EXCLUSION ZONE (35 FT.)	38	PROCESS WATER STORAGE BASIN SUMP
13	LIME RAILCAR UNLOADING PAD	26	HYDROGEN STORAGE (RELOCATED) WITH EXCLUSION ZONE	39	LOADOUT AREA PDC (15'x30')



THIS SYMBOL DENOTES THE BASE COORDINATE OF THE PLANT GRID SYSTEM.

GRAPHIC SCALE: 1"= 100'-0"

PLANT NORTH

NOTES

1. EQUIPMENT SHOWN ON GA HAS BEEN SIZED FOR WORST CASE COAL: 7.5 LBS SO2/MMBTU.
2. FOR OPTION W/O ESP, DUCT SEGMENT 21S ADDED AND ITEMS 2, 30 AND 17 ARE REMOVED.

DATE	NO.	DESCRIPTION	APPD.

REVISIONS

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KENTUCKY POWER CO.

BIG SANDY PLANT UNIT 2

BIG SANDY KENTUCKY

BIG SANDY FGD PROJECT

NID SITE PLAN

DWG. NO. MSK-NID-GA-001_C

SCALE: 1"=100'-0"

DR:

CH:

APPROVED BY

DATE:

FILE NAME: MSK-NID-GA-001.DGN

C	09/10/2010	ISSUED FOR USE	
B	08/09/2010	ISSUED FOR USE	
A	07/14/2010	ISSUED FOR REVIEW	
REV	DATE RELEASED	PURPOSE	PREPARED / REVIEWED / APPROVED

DRAWING RELEASE RECORD

PROFESSIONAL ENGINEER'S STAMP

Burns & Lundy

CONTRACTOR/INSTALLER SHALL TAKE ALL APPROPRIATE PRECAUTIONS FOR THE SAFETY OF ALL PERSONNEL LOCATED ON THE WORK SITE. THIS SHALL INCLUDE CONTRACTOR'S/INSTALLER'S PERSONNEL (OR THAT OF ITS SUBCONTRACTORS) PERFORMING THE WORK.

AEP AMERICAN ELECTRIC POWER

AEP SERVICE CORP.
1 RIVERSIDE PLAZA
COLUMBUS, OH 43215

SYSTEM DATE= DD-MMM-YYYY
SYSTEM TIME= HOURMINUTE

IGS0694

DWG. NO. MSK-NID-GA-002_B

FACILITIES LEGEND

1	EXISTING UNIT 1 & 2 CHIMNEY	14	LIME STORAGE SILOS (100' DIAM)	27	SEE DRAWING MSK-NID-GA-001	35	RAIL SCALE
2	BOOSTER FAN OUTLET	15	138 kV FGD SUBSTAION	28	HVAC UNITS	36	TRUCK SCALE
3	PRECIPITATOR OUTLET DUCT	16	BYPRODUCT WASTE SILO (65' DIAM)	29	TRANSFORMERS	37	STORMWATER POND PUMP STRUCTURE
4	NOT USED	17	FLY ASH SILO	30	FLY ASH BLOWER BUILDING W/EE ROOM (20'x110')	38	PROCESS WATER STORAGE BASIN SUMP
5	NID SYSTEM (14 MODULES) (160'x185')	18	BYPRODUCT TRANSPORT BLOWER BUILDING (30'x90')	31	TRANSFORMER PDC (35'x65')	39	LOADOUT AREA PDC (15'x30')
6	NID CONTROL/SWGR BUILDING (52'-6"x150')	19	AIR COMPRESSOR BUILDING (60'x120')	32	CEMS		
7	I.D. FAN W/ AUX. EQUIPMENT	20	SERVICE WATER TANKS	33	SEE DRAWING MSK-NID-GA-001		
8	I.D. FAN OUTLET DUCT	21	ALTERNATE DUCT ARRANGEMENT W/O ESP	34	HAUL ROAD TERMINAL POINT		
9	CHIMNEY W/280 FT. DIA. CONSTRUCTION EXCLUSION ZONE	22	STORMWATER POND				
10	NOT USED	23	PROCESS WATER STORAGE BASIN				
11	LIME TRUCK UNLOADING PAD	24	PIPE RACK				
12	LIME UNLOADING BLOWER/ELECTRICAL BUILDING(30'x130')	25	138 kV TRANSMISSION LINE EXCLUSION ZONE (35 FT.)				
13	LIME RAILCAR UNLOADING PAD	26	SEE DRAWING MSK-NID-GA-001				

310'-0"
160'-0"
50'-0"
150'-0"
160'-0"
185'-0"
326'-6"
125'-0"
480'-0"
711'-0"
(MSK-NID-GA-003)
(MSK-NID-GA-003)
(MSK-NID-GA-003)
(MSK-NID-GA-003)
(MSK-NID-GA-003)
(MSK-NID-GA-003)
℄ NID SYSTEM
℄ NEW UNIT 2 CHIMNEY
℄ EXISTING UNIT 1 & UNIT 2 CHIMNEY
THIS SYMBOL DENOTES THE BASE COORDINATE OF THE PLANT GRID SYSTEM.
GRAPHIC SCALE: 1"= 50'-0"
PLANT NORTH

NOTES

1. EQUIPMENT SHOWN ON GA HAS BEEN SIZED FOR WORST CASE COAL: 7.5 LBS SO2/MMBTU.
2. FOR OPTION W/O ESP, DUCT SEGMENT 21 IS ADDED AND ITEMS 2, 30 AND 17 ARE REMOVED.

DATE	NO.	DESCRIPTION	APPD.

REVISIONS

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KENTUCKY POWER CO.

BIG SANDY PLANT

BIG SANDY KENTUCKY

BIG SANDY FGD PROJECT

NID SITE PLAN

DWG. NO. MSK-NID-GA-002_B

SCALE: 1"=50'-0"

DR:

CH:

APPROVED BY:

DATE:

FILE NAME: MSK-NID-GA-002.DGN

REV	DATE RELEASED	PURPOSE	
			PREPARED
B	09/10/2010	ISSUED FOR USE	REVIEWED
A	08/09/2010	ISSUED FOR REVIEW	APPROVED

DRAWING RELEASE RECORD

PROFESSIONAL ENGINEER'S STAMP

Burns & Lundy

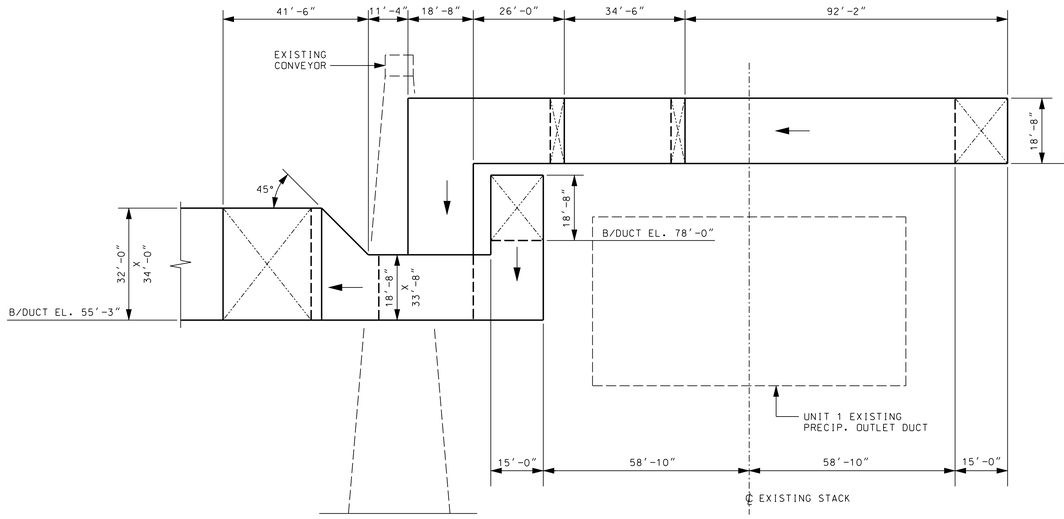
CONTRACTOR/INSTALLER SHALL TAKE ALL APPROPRIATE PRECAUTIONS TO ENSURE THE SAFETY OF ALL PEOPLE LOCATED ON THE WORK SITE, INCLUDING CONTRACTOR'S, AND SHALL BE RESPONSIBLE FOR THAT OF ITS SUBCONTRACTOR(S) PERFORMING THE WORK.

AEP AMERICAN ELECTRIC POWER

AEP SERVICE CORP.
1 RIVERSIDE PLAZA
COLUMBUS, OH 43215

IGS0694

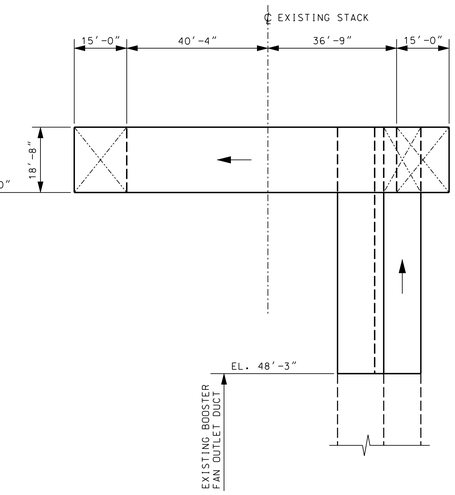
SYSTEM DATE: DD-MMM-YYYY
SYSTEM TIME: HOURMINUTE



SECTION A-A (LOOKING EAST)

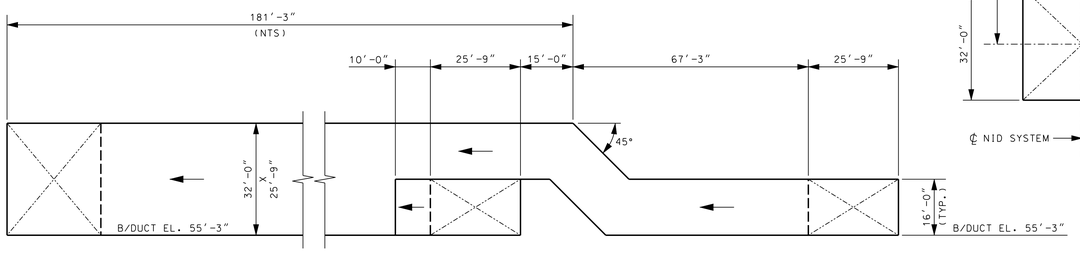
(ESP IN)

MSK-NID-GA-002



SECTION B-B (LOOKING NORTH)

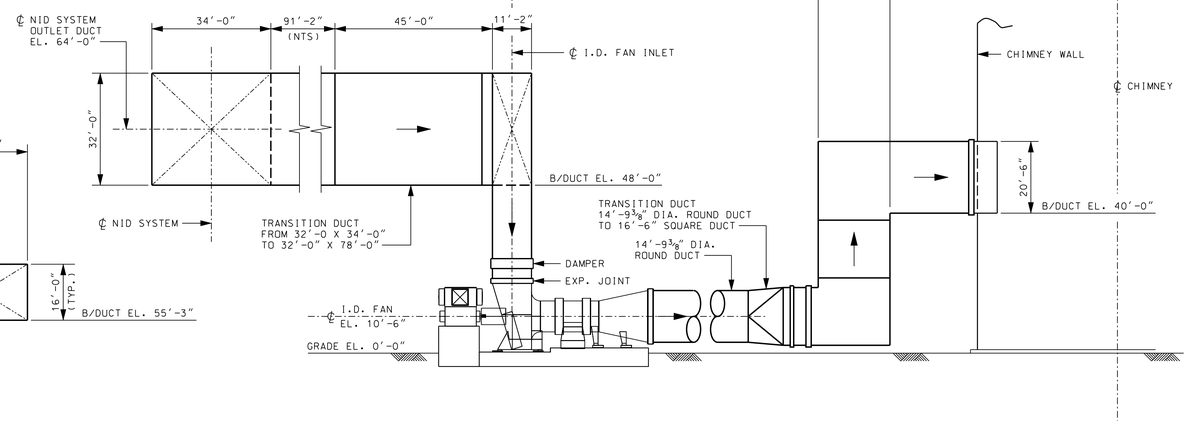
MSK-NID-GA-002



SECTION C-C (LOOKING EAST)

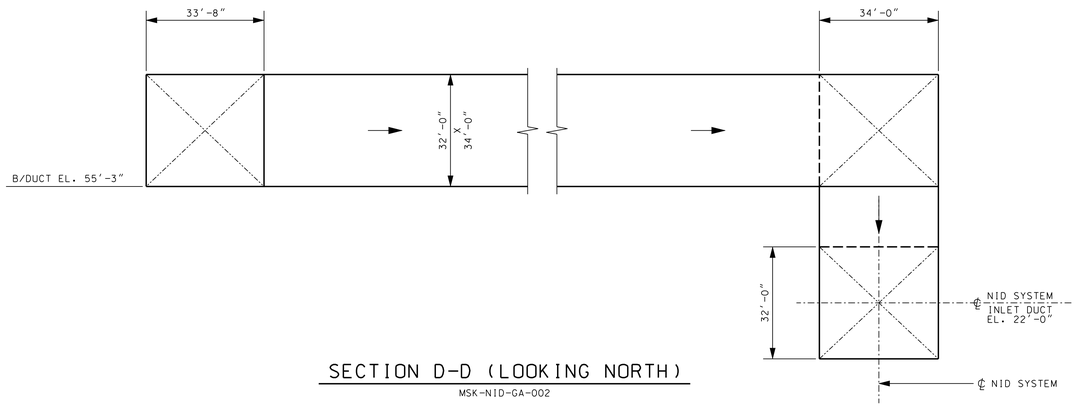
(ESP OUT)

MSK-NID-GA-002



SECTION E-E (LOOKING NORTH)

MSK-NID-GA-002



SECTION D-D (LOOKING NORTH)

MSK-NID-GA-002

NOTES

1. ALL DIMENSIONS AND ELEVATIONS SHOWN ARE PRELIMINARY AND FOR USE IN THE BIG SANDY FGD ORDER-OF-MAGNITUDE ESTIMATE ONLY.

DATE	NO.	DESCRIPTION	APPD.
		REVISIONS	

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KENTUCKY POWER CO.

BIG SANDY PLANT
UNIT 2

BIG SANDY KENTUCKY

BIG SANDY FGD PROJECT
NID GA DUCT LAYOUT
SECTIONS

DWG. NO. MSK-NID-GA-003_B

SCALE: 3/16″ = 1′-0″

DR: CH: APPROVED BY:

DATE:

FILE NAME: MSK-NID-GA-003.DGN

PROFESSIONAL ENGINEER'S STAMP

Burgess & Lundy

REV	DATE RELEASED	PURPOSE	
B	09/10/2010	ISSUED FOR USE	
A	08/09/2010	ISSUED FOR REVIEW	
			PREPARED
			REVIEWED
			APPROVED

DRAWING RELEASE RECORD

CONTRACTOR/INSTALLER SHALL TAKE ALL APPROPRIATE PRECAUTIONS TO ENSURE THE SAFETY OF ALL PEOPLE LOCATED ON THE WORK SITE, INCLUDING CONTRACTOR'S/ INSTALLER'S PERSONNEL, FOR THAT OF ITS SUBCONTRACTOR(S) PERFORMING THE WORK.

AEP AMERICAN ELECTRIC POWER

AEP SERVICE CORP.
1 RIVERSIDE PLAZA
COLUMBUS, OH 43215

SYSTEM DATE: DD-MMM-YYYY
SYSTEM TIME: HOUR#MINUTE

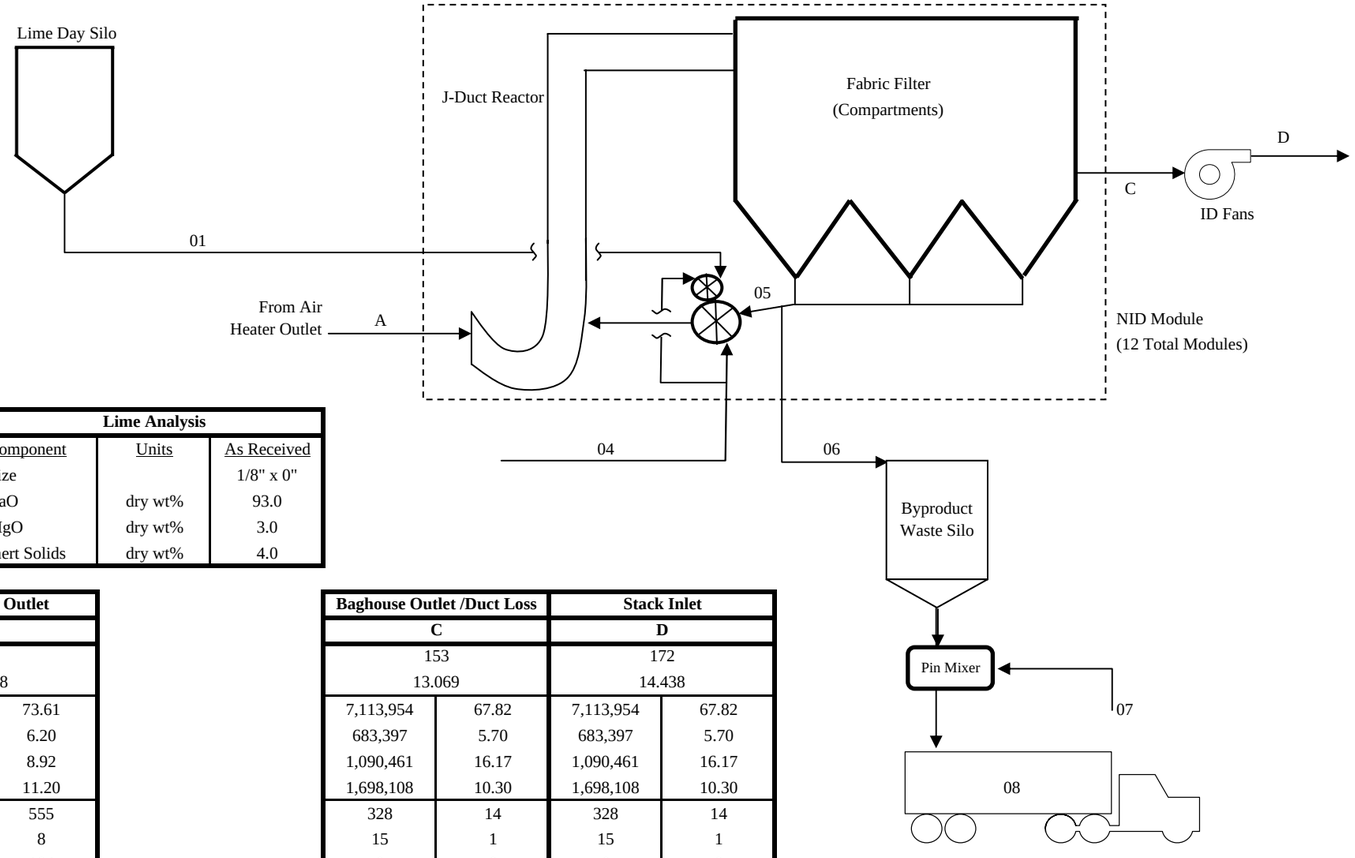
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ATTACHMENT 5-3
NID Mass Balances

Client: AEP
Station: Big Sandy - Unit 2

Mass Balance NID System -
1.7 lb SO_2/MMBtu Coal (w/o ESP)

Project No.12721-000
9/29/2010
Revision B



Plant Production		
MCR Output	MW	865
Heat Input	MMBtu/hr	8180
Fuel Flow	lb/hr	668,191

Coal Analysis		
Component	Units	As Received
Carbon	wt%	69.41
Hydrogen	wt%	4.69
Nitrogen	wt%	1.31
Sulfur	wt%	0.94
Oxygen	wt%	5.66
Chlorine	wt%	0.19
Moisture	wt%	6.20
Ash	wt%	11.60
Calc. HHV	Btu/lb	12,242

Lime Analysis		
Component	Units	As Received
Size		1/8" x 0"
CaO	dry wt%	93.0
MgO	dry wt%	3.0
Inert Solids	dry wt%	4.0

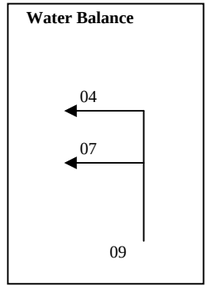
FGD Process Parameters		
Inlet Stoich.	Ca:S Inlet	1.5
Internal Stoich.	Ca:S Inlet	31
Approach to Saturation	°F	25
Saturation Temperature	°F	128
Saturation Humidity	lb/lb dry air	0.118
Outlet Particulates	lb/MMBtu	0.014
Sulfur Levels		
SO_2 In	lb/MMBtu	1.500
SO_2 Out	lb/MMBtu	0.040
SO_3 In	lb/MMBtu	0.027
SO_3 Out	lb/MMBtu	0.002

Stream Characteristics		Air Heater Outlet	
		A	
Temperature	°F	350	
Pressure	psia	13.718	
N_2	lb/hr-vol%	7,113,954	73.61
O_2	lb/hr-vol%	684,611	6.20
H_2O	lb/hr-vol%	554,288	8.92
CO_2	lb/hr-vol%	1,700,570	11.20
SO_2	lb/hr-ppmv	12,267	555
SO_3	lb/hr-ppmv	221	8
HCl	lb/hr-ppmv	1,305	104
HF	lb/hr-ppmv	0	0
Total Flow	lb/hr-acfm	10,067,216	3,643,280
MW - Moist.	lb/lbmol-lb/lb	29.169	0.058
Ash	lb/hr-gr/acf	62,008	1.986

Stream Characteristics		Fresh Lime
		01
Inert Solids	lb/hr	788
CaO	lb/hr	18,311
$Ca(OH)_2$	lb/hr	0
MgO	lb/hr	591
$CaSO_3*0.5H_2O$	lb/hr	0
$CaSO_4*2H_2O$	lb/hr	0
$CaCO_3$	lb/hr	0
CaCl2 + CaF2	lb/hr	0
Total Solids	lb/hr	19,689
Water	lb/hr	0
Total Flow	lb/hr	19,689
Total Flow	gpm	---
Solids	wt%	100

Baghouse Outlet /Duct Loss		Stack Inlet	
C		D	
153		172	
13.069		14.438	
7,113,954	67.82	7,113,954	67.82
683,397	5.70	683,397	5.70
1,090,461	16.17	1,090,461	16.17
1,698,108	10.30	1,698,108	10.30
328	14	328	14
15	1	15	1
0	0	0	0
0	0	0	0
10,586,262	3,142,016	10,586,262	2,932,146
28.260	0.115	28.260	0.111
114	0.004	114	0.005

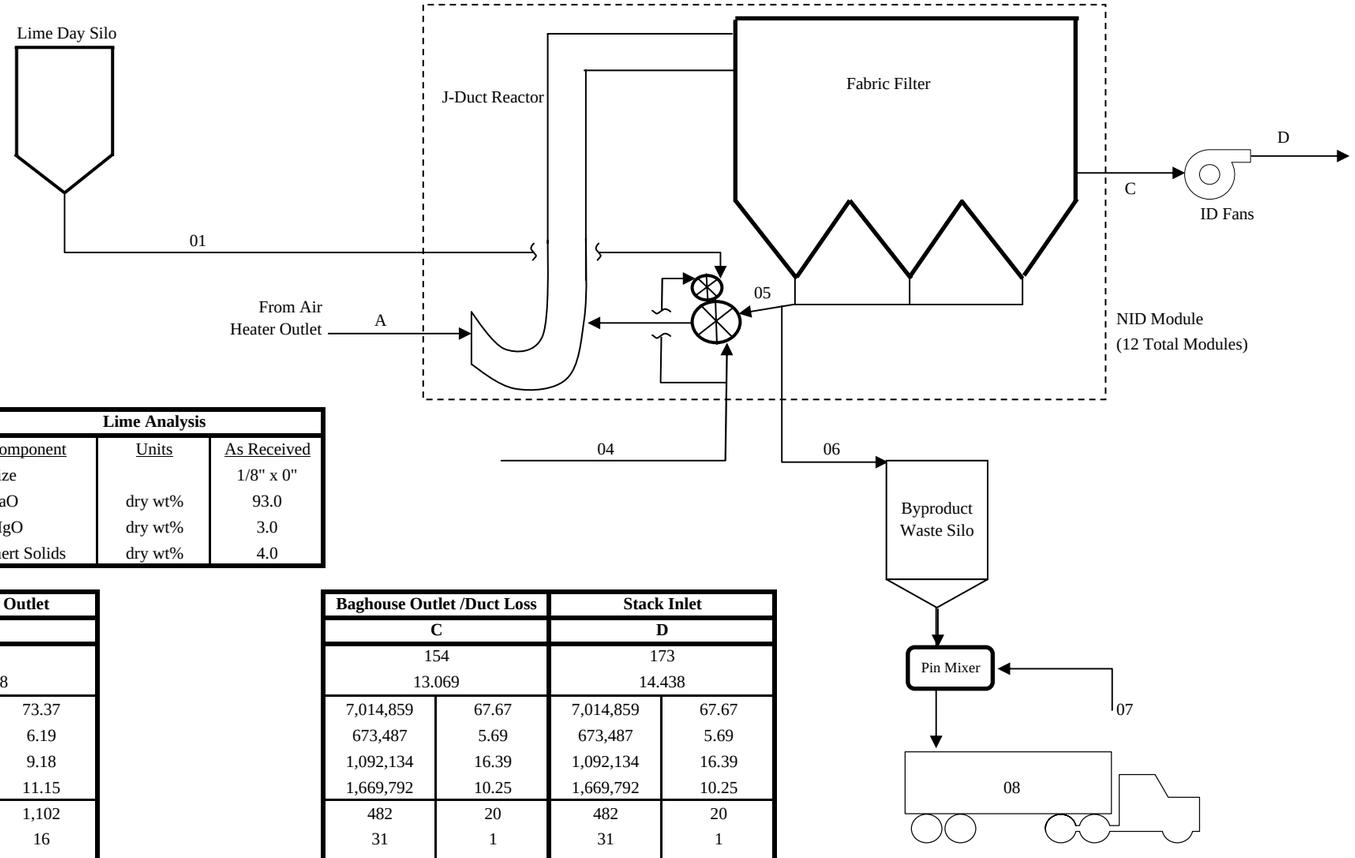
Sat. H2O	Recycle	Waste Solids	Dust Control	Landfill	Total Water
04	05	06	07	08	09
0	6,268,177	62,682	0	62,682	0
0	0	0	0	0	0
0	473,768	4,738	0	4,738	0
0	59,067	591	0	591	0
0	1,463,862	14,639	0	14,639	0
0	1,301,210	13,012	0	13,012	0
0	559,422	5,594	0	5,594	0
0	198,481	1,985	0	1,985	0
0	10,323,986	103,240	0	103,240	0
552,541	1,147,110	11,471	32,775	44,246	585,316
552,541	11,471,095	114,711	32,775	147,486	585,316
1,104	---	---	65	---	1,170
0	90	90	0	70	0



Client: AEP
Station: Big Sandy - Unit 2

Mass Balance NID System -
3.0 lb SO_2/MMBtu Coal (Base Case w/o ESP)

Project No.12721-000
8/5/2010
Revision B



Plant Production		
MCR Output	MW	865
Heat Input	MMBtu/hr	8180
Firing Rate	lb/hr	681,269

Coal Analysis		
Component	Units	As Received
Carbon	wt%	67.04
Hydrogen	wt%	4.56
Nitrogen	wt%	1.32
Sulfur	wt%	1.81
Oxygen	wt%	6.49
Chlorine	wt%	0.12
Moisture	wt%	8.35
Ash	wt%	10.31
Calc. HHV	Btu/lb	12,007

Lime Analysis		
Component	Units	As Received
Size		1/8" x 0"
CaO	dry wt%	93.0
MgO	dry wt%	3.0
Inert Solids	dry wt%	4.0

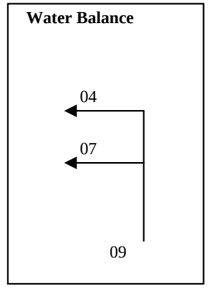
FGD Process Parameters		
Inlet Stoich.	Ca:S Inlet	1.7
Internal Stoich.	Ca:S Inlet	39
Approach to Saturation	°F	25
Saturation Temperature	°F	129
Saturation Humidity	lb/lb dry air	0.120
Outlet Particulates	lb/MMBtu	0.014
Sulfur Levels		
SO_2 In	lb/MMBtu	2.944
SO_2 Out	lb/MMBtu	0.059
SO_3 In	lb/MMBtu	0.053
SO_3 Out	lb/MMBtu	0.004

Stream Characteristics		Air Heater Outlet	
		A	
Temperature	°F	350	
Pressure	psia	13.718	
N_2	lb/hr-vol%	7,014,859	73.37
O_2	lb/hr-vol%	675,888	6.19
H_2O	lb/hr-vol%	564,179	9.18
CO_2	lb/hr-vol%	1,674,651	11.15
SO_2	lb/hr-ppmv	24,079	1,102
SO_3	lb/hr-ppmv	437	16
HCl	lb/hr-ppmv	841	67
HF	lb/hr-ppmv	0	0
Total Flow	lb/hr-acfm	9,954,933	3,604,468
MW - Moist.	lb/lbmol-lb/lb	29.154	0.060
Ash	lb/hr-gr/acf	56,191	1.819

Stream Characteristics		Fresh Lime
		01
Inert Solids	lb/hr	1,582
CaO	lb/hr	36,773
$Ca(OH)_2$	lb/hr	0
MgO	lb/hr	1,186
$CaSO_3*0.5H_2O$	lb/hr	0
$CaSO_4*2H_2O$	lb/hr	0
$CaCO_3$	lb/hr	0
CaCl2 + CaF2	lb/hr	0
Total Solids	lb/hr	39,541
Water	lb/hr	0
Total Flow	lb/hr	39,541
Total Flow	gpm	---
Solids	wt%	100

Baghouse Outlet /Duct Loss		Stack Inlet	
C		D	
154		173	
13.069		14.438	
7,014,859	67.67	7,014,859	67.67
673,487	5.69	673,487	5.69
1,092,134	16.39	1,092,134	16.39
1,669,792	10.25	1,669,792	10.25
482	20	482	20
31	1	31	1
0	0	0	0
0	0	0	0
10,450,784	3,108,184	10,450,784	2,900,489
28.229	0.117	28.229	0.113
116	0.004	116	0.005

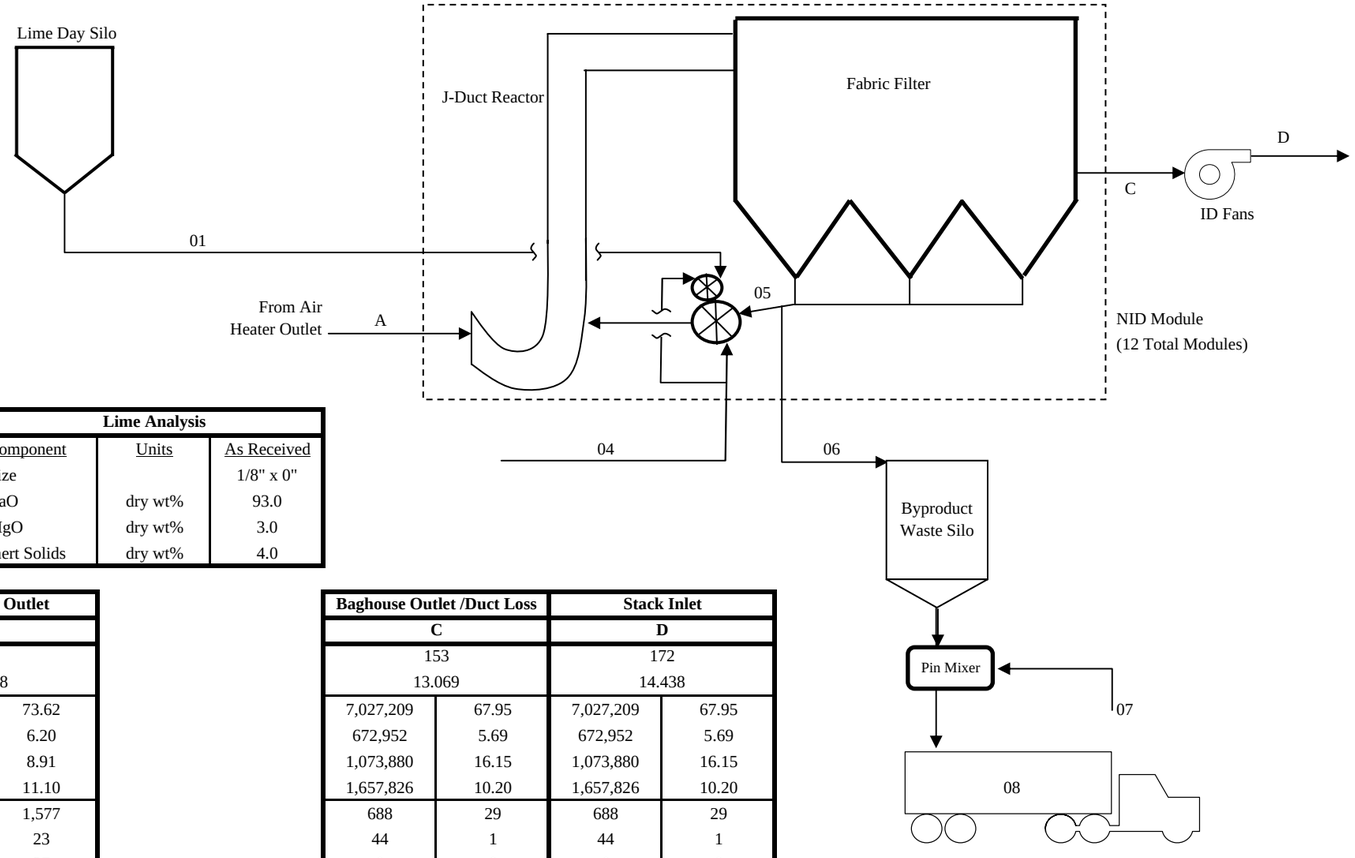
Sat. H2O	Recycle	Waste Solids	Dust Control	Landfill	Total Water
04	05	06	07	08	09
0	5,765,628	57,656	0	57,656	0
0	0	0	0	0	0
0	1,190,859	11,909	0	11,909	0
0	118,624	1,186	0	1,186	0
0	2,893,162	28,932	0	28,932	0
0	2,571,699	25,717	0	25,717	0
0	1,104,345	11,043	0	11,043	0
0	127,810	1,278	0	1,278	0
0	13,772,126	137,721	0	137,721	0
553,555	1,530,236	15,302	43,721	59,023	597,276
553,555	15,302,362	153,024	43,721	196,745	597,276
1,106	---	---	87	---	1,193
0	90	90	0	70	0



Client: AEP
Station: Big Sandy - Unit 2

Mass Balance NID System -
4.5 lb SO_2/MMBtu Coal (w/o ESP)

Project No.12721-000
8/5/2010
Revision B



Plant Production		
MCR Output	MW	865
Heat Input	MMBtu/hr	8180
Firing Rate	lb/hr	654,924

Coal Analysis		
Component	Units	As Received
Carbon	wt%	69.33
Hydrogen	wt%	4.67
Nitrogen	wt%	1.34
Sulfur	wt%	2.69
Oxygen	wt%	5.41
Chlorine	wt%	0.05
Moisture	wt%	6.63
Ash	wt%	9.89
Calc. HHV	Btu/lb	12,490

Lime Analysis		
Component	Units	As Received
Size		1/8" x 0"
CaO	dry wt%	93.0
MgO	dry wt%	3.0
Inert Solids	dry wt%	4.0

FGD Process Parameters		
Inlet Stoich.	Ca:S Inlet	1.8
Internal Stoich.	Ca:S Inlet	45
Approach to Saturation	°F	25
Saturation Temperature	°F	128
Saturation Humidity	lb/lb dry air	0.118
Outlet Particulates	lb/MMBtu	0.014
Sulfur Levels		
SO_2 In	lb/MMBtu	4.205
SO_2 Out	lb/MMBtu	0.084
SO_3 In	lb/MMBtu	0.077
SO_3 Out	lb/MMBtu	0.005

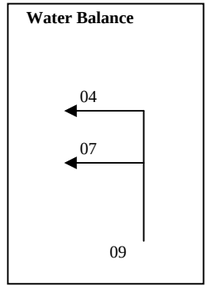
Stream Characteristics		Air Heater Outlet	
		A	
Temperature	°F	350	
Pressure	psia	13.718	
N_2	lb/hr-vol%	7,027,209	73.62
O_2	lb/hr-vol%	676,381	6.20
H_2O	lb/hr-vol%	546,919	8.91
CO_2	lb/hr-vol%	1,664,882	11.10
SO_2	lb/hr-ppmv	34,399	1,577
SO_3	lb/hr-ppmv	627	23
HCl	lb/hr-ppmv	337	27
HF	lb/hr-ppmv	0	0
Total Flow	lb/hr-acfm	9,950,754	3,598,402
MW - Moist.	lb/lbmol-lb/lb	29.191	0.058
Ash	lb/hr-gr/acf	51,818	1.680

Stream Characteristics		Fresh Lime
		01
Inert Solids	lb/hr	2,331
CaO	lb/hr	54,201
$Ca(OH)_2$	lb/hr	0
MgO	lb/hr	1,748
$CaSO_3*0.5H_2O$	lb/hr	0
$CaSO_4*2H_2O$	lb/hr	0
$CaCO_3$	lb/hr	0
CaCl2 + CaF2	lb/hr	0
Total Solids	lb/hr	58,281
Water	lb/hr	0
Total Flow	lb/hr	58,281
Total Flow	gpm	---
Solids	wt%	100

Baghouse Outlet /Duct Loss		Stack Inlet	
C		D	
153		172	
13.069		14.438	
7,027,209	67.95	7,027,209	67.95
672,952	5.69	672,952	5.69
1,073,880	16.15	1,073,880	16.15
1,657,826	10.20	1,657,826	10.20
688	29	688	29
44	1	44	1
0	0	0	0
0	0	0	0
10,432,598	3,097,758	10,432,598	2,890,849
28.246	0.115	28.246	0.111
115	0.004	115	0.005

Sat. H2O	Recycle	Waste Solids	Dust Control	Landfill	Total Water
04	05	06	07	08	09
0	5,403,421	54,034	0	54,034	0
0	0	0	0	0	0
0	1,989,684	19,897	0	19,897	0
0	174,842	1,748	0	1,748	0
0	4,133,316	41,333	0	41,333	0
0	3,674,058	36,741	0	36,741	0
0	1,603,695	16,037	0	16,037	0
0	51,195	512	0	512	0
0	17,030,211	170,302	0	170,302	0
561,297	1,892,246	18,922	54,064	72,987	615,361
561,297	18,922,456	189,225	54,064	243,289	615,361
1,122	---	---	108	---	1,230
0	90	90	0	70	0

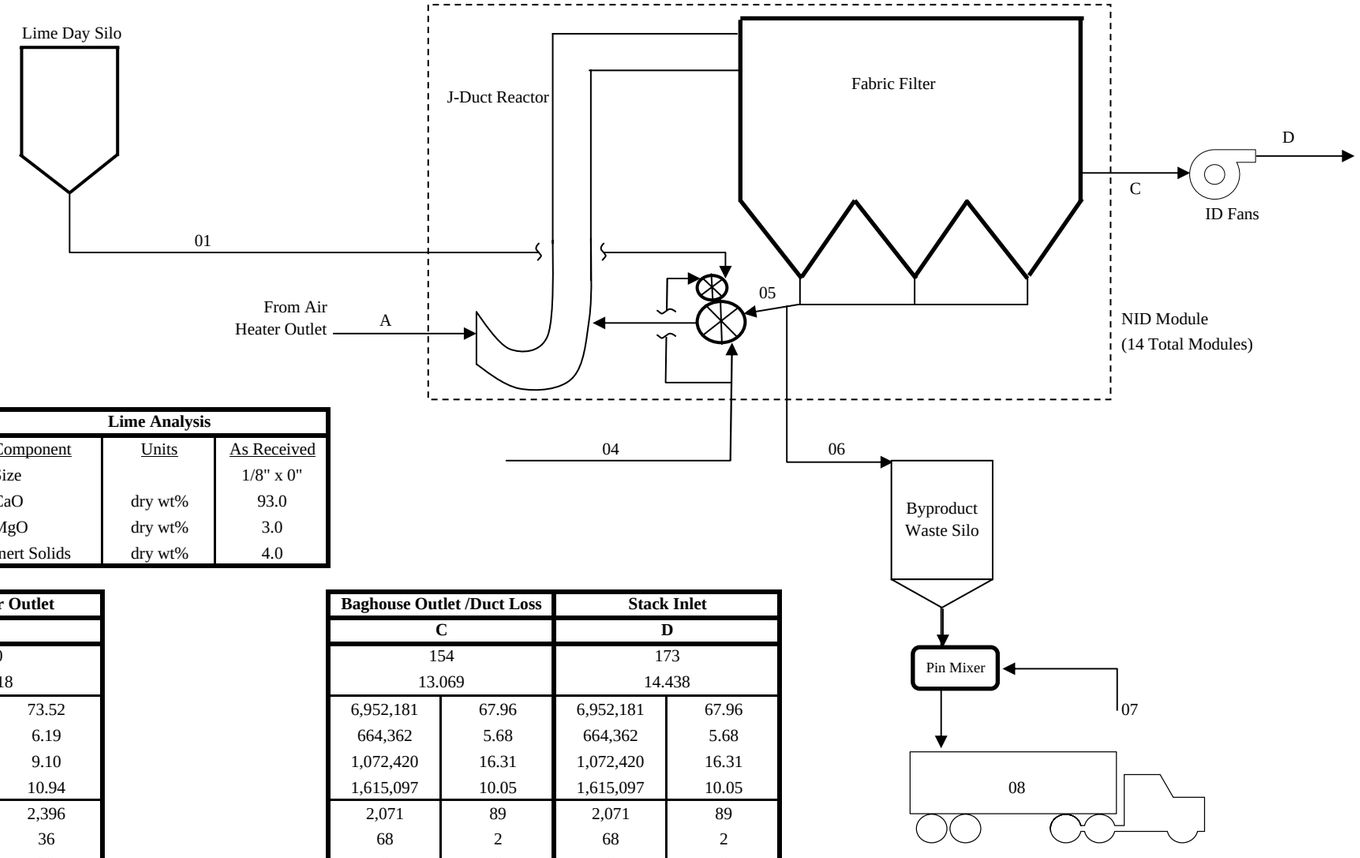
Water Balance



Client: AEP
Station: Big Sandy - Unit 2

Mass Balance NID System -
7.5 lb SO_2/MMBtu Coal (w/o ESP)

Project No.12721-000
8/5/2010
Revision B



Plant Production		
MCR Output	MW	865
Heat Input	MMBtu/hr	8180
Firing Rate	lb/hr	660,210

Coal Analysis		
Component	Units	As Received
Carbon	wt%	67.15
Hydrogen	wt%	4.76
Nitrogen	wt%	1.16
Sulfur	wt%	4.02
Oxygen	wt%	5.74
Chlorine	wt%	0.05
Moisture	wt%	6.73
Ash	wt%	10.40
Calc. HHV	Btu/lb	12,390

Lime Analysis		
Component	Units	As Received
Size		1/8" x 0"
CaO	dry wt%	93.0
MgO	dry wt%	3.0
Inert Solids	dry wt%	4.0

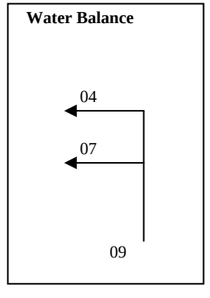
FGD Process Parameters		
Inlet Stoich.	Ca:S Inlet	1.7
Internal Stoich.	Ca:S Inlet	46
Approach to Saturation	°F	25
Saturation Temperature	°F	129
Saturation Humidity	lb/lb dry air	0.119
Outlet Particulates	lb/MMBtu	0.014
Sulfur Levels		
SO_2 In	lb/MMBtu	6.331
SO_2 Out	lb/MMBtu	0.253
SO_3 In	lb/MMBtu	0.119
SO_3 Out	lb/MMBtu	0.008

Stream Characteristics		Air Heater Outlet	
		A	
Temperature	°F	350	
Pressure	psia	13.718	
N_2	lb/hr-vol%	6,952,181	73.52
O_2	lb/hr-vol%	669,424	6.19
H_2O	lb/hr-vol%	553,094	9.10
CO_2	lb/hr-vol%	1,625,547	10.94
SO_2	lb/hr-ppmv	51,784	2,396
SO_3	lb/hr-ppmv	973	36
HCl	lb/hr-ppmv	339	28
HF	lb/hr-ppmv	0	0
Total Flow	lb/hr-acfm	9,853,342	3,564,920
MW - Moist.	lb/lbmol-lb/lb	29.177	0.059
Ash	lb/hr-gr/acf	54,929	1.798

Stream Characteristics		Fresh Lime
		01
Inert Solids	lb/hr	3,461
CaO	lb/hr	80,479
$Ca(OH)_2$	lb/hr	0
MgO	lb/hr	2,596
$CaSO_3*0.5H_2O$	lb/hr	0
$CaSO_4*2H_2O$	lb/hr	0
$CaCO_3$	lb/hr	0
CaCl2 + CaF2	lb/hr	0
Total Solids	lb/hr	86,536
Water	lb/hr	0
Total Flow	lb/hr	86,536
Total Flow	gpm	---
Solids	wt%	100

Baghouse Outlet /Duct Loss		Stack Inlet	
C		D	
154		173	
13.069		14.438	
6,952,181	67.96	6,952,181	67.96
664,362	5.68	664,362	5.68
1,072,420	16.31	1,072,420	16.31
1,615,097	10.05	1,615,097	10.05
2,071	89	2,071	89
68	2	68	2
0	0	0	0
0	0	0	0
10,306,200	3,066,569	10,306,200	2,861,683
28.207	0.116	28.207	0.113
118	0.004	118	0.005

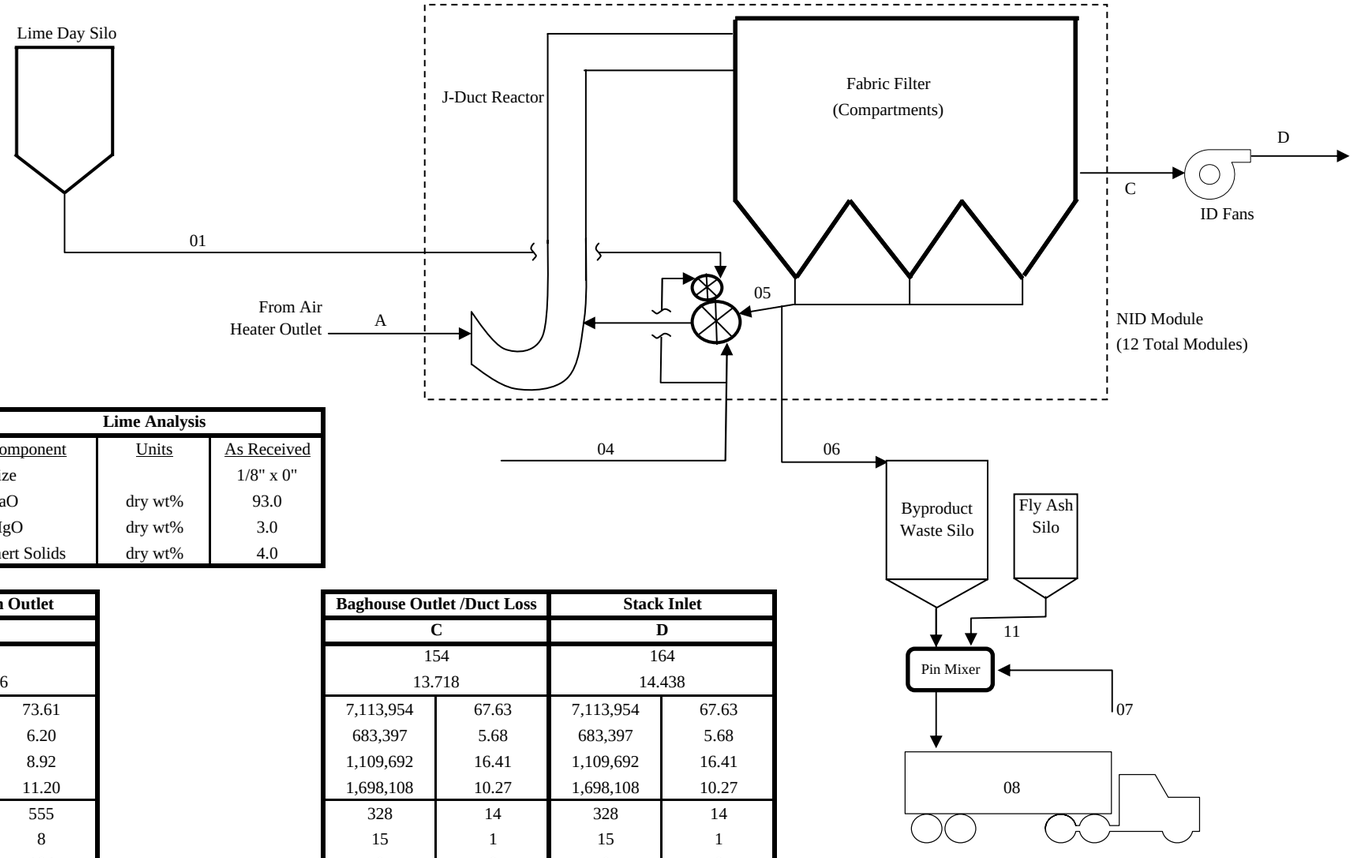
Sat. H2O	Recycle	Waste Solids	Dust Control	Landfill	Total Water
04	05	06	07	08	09
0	5,827,321	58,273	0	58,273	0
0	0	0	0	0	0
0	3,011,094	30,111	0	30,111	0
0	259,609	2,596	0	2,596	0
0	6,099,641	60,996	0	60,996	0
0	5,421,903	54,219	0	54,219	0
0	2,375,017	23,750	0	23,750	0
0	51,608	516	0	516	0
0	23,046,194	230,462	0	230,462	0
567,861	2,560,688	25,607	73,163	98,769	641,024
567,861	25,606,882	256,069	73,163	329,231	641,024
1,135	---	---	146	---	1,281
0	90	90	0	70	0



Client: AEP
Station: Big Sandy - Unit 2

Mass Balance NID System -
1.7 lb SO_2/MMBtu Coal (w/ESP)

Project No.12721-000
9/29/2010
Revision B



Plant Production		
MCR Output	MW	865
Heat Input	MMBtu/hr	8180
Fuel Flow	lb/hr	668,191

Coal Analysis		
Component	Units	As Received
Carbon	wt%	69.41
Hydrogen	wt%	4.69
Nitrogen	wt%	1.31
Sulfur	wt%	0.94
Oxygen	wt%	5.66
Chlorine	wt%	0.19
Moisture	wt%	6.20
Ash	wt%	11.60
Calc. HHV	Btu/lb	12,242

Lime Analysis		
Component	Units	As Received
Size		1/8" x 0"
CaO	dry wt%	93.0
MgO	dry wt%	3.0
Inert Solids	dry wt%	4.0

FGD Process Parameters		
Inlet Stoich.	Ca:S Inlet	1.5
Internal Stoich.	Ca:S Inlet	26
Approach to Saturation	°F	25
Saturation Temperature	°F	129
Saturation Humidity	lb/lb dry air	0.120
Outlet Particulates	lb/MMBtu	0.012
Sulfur Levels		
SO_2 In	lb/MMBtu	1.500
SO_2 Out	lb/MMBtu	0.040
SO_3 In	lb/MMBtu	0.027
SO_3 Out	lb/MMBtu	0.002

Stream Characteristics		Booster Fan Outlet	
		A	
Temperature	°F	361	
Pressure	psia	14.366	
N_2	lb/hr-vol%	7,113,954	73.61
O_2	lb/hr-vol%	684,611	6.20
H_2O	lb/hr-vol%	554,288	8.92
CO_2	lb/hr-vol%	1,700,570	11.20
SO_2	lb/hr-ppmv	12,267	555
SO_3	lb/hr-ppmv	221	8
HCl	lb/hr-ppmv	1,305	104
HF	lb/hr-ppmv	0	0
Total Flow	lb/hr-acfm	10,067,216	3,523,878
MW - Moist.	lb/lbmol-lb/lb	29.169	0.058
Ash	lb/hr-gr/acf	1,930	0.064

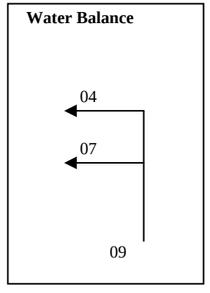
Stream Characteristics		Fresh Lime
		01
Inert Solids	lb/hr	788
CaO	lb/hr	18,311
$Ca(OH)_2$	lb/hr	0
MgO	lb/hr	591
$CaSO_3*0.5H_2O$	lb/hr	0
$CaSO_4*2H_2O$	lb/hr	0
$CaCO_3$	lb/hr	0
CaCl2 + CaF2	lb/hr	0
Total Solids	lb/hr	19,689
Water	lb/hr	0
Total Flow	lb/hr	19,689
Total Flow	gpm	---
Solids	wt%	100

Baghouse Outlet /Duct Loss		Stack Inlet	
C		D	
154		164	
13.718		14.438	
7,113,954	67.63	7,113,954	67.63
683,397	5.68	683,397	5.68
1,109,692	16.41	1,109,692	16.41
1,698,108	10.27	1,698,108	10.27
328	14	328	14
15	1	15	1
0	0	0	0
0	0	0	0
10,605,493	3,005,626	10,605,493	2,902,109
28.231	0.117	28.231	0.113
95	0.004	95	0.004

Sat. H2O	Recycle	Waste Solids	Pin Mixer H2O	Landfill	Total Water
04	05	06	07	08	09
0	222,979	2,623	0	4,782	0
0	0	0	0	0	0
0	402,702	4,738	0	4,738	0
0	50,207	591	0	591	0
0	1,244,282	14,639	0	14,639	0
0	1,106,029	13,012	0	13,012	0
0	475,509	5,594	0	5,594	0
0	168,709	1,985	0	1,985	0
0	3,670,416	43,181	0	45,340	0
565,099	407,824	4,798	13,708	18,506	578,807
565,099	4,078,240	47,979	13,708	63,847	578,807
1,129	---	---	27	---	1,157
0	90	90	0	71	0

Stabilization
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0
0
0
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2,159
0
2,159

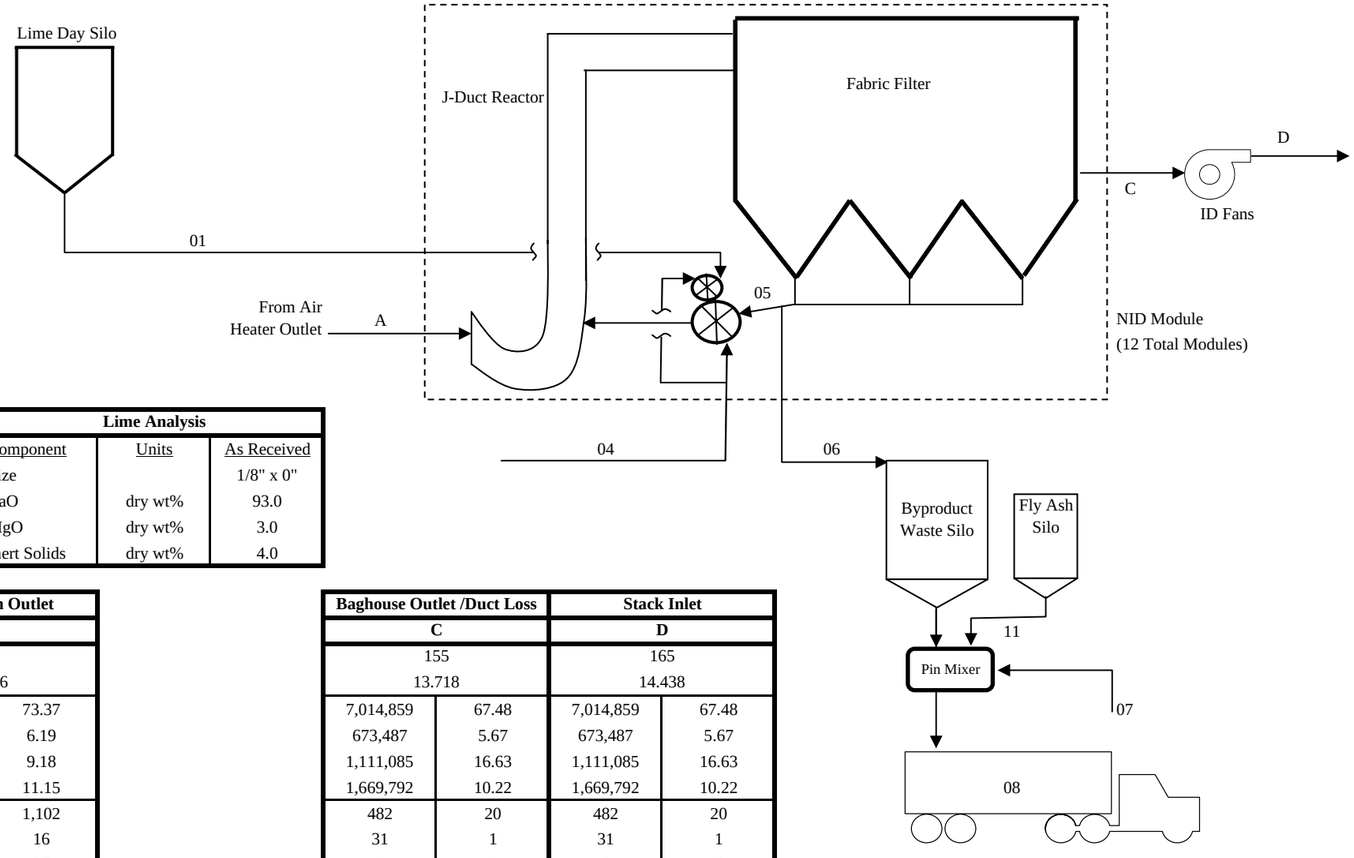
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Client: AEP
Station: Big Sandy - Unit 2

Mass Balance NID System -
3.0 lb SO_2/MMBtu Coal (Base Case w/ESP)

Project No.12721-000
8/5/2010
Revision B



Plant Production		
MCR Output	MW	865
Heat Input	MMBtu/hr	8180
Firing Rate	lb/hr	681,269

Coal Analysis		
Component	Units	As Received
Carbon	wt%	67.04
Hydrogen	wt%	4.56
Nitrogen	wt%	1.32
Sulfur	wt%	1.81
Oxygen	wt%	6.49
Chlorine	wt%	0.12
Moisture	wt%	8.35
Ash	wt%	10.31
Calc. HHV	Btu/lb	12,007

Lime Analysis		
Component	Units	As Received
Size		1/8" x 0"
CaO	dry wt%	93.0
MgO	dry wt%	3.0
Inert Solids	dry wt%	4.0

FGD Process Parameters		
Inlet Stoich.	Ca:S Inlet	1.7
Internal Stoich.	Ca:S Inlet	33
Approach to Saturation	°F	25
Saturation Temperature	°F	130
Saturation Humidity	lb/lb dry air	0.122
Outlet Particulates	lb/MMBtu	0.012
Sulfur Levels		
SO_2 In	lb/MMBtu	2.944
SO_2 Out	lb/MMBtu	0.059
SO_3 In	lb/MMBtu	0.053
SO_3 Out	lb/MMBtu	0.004

Stream Characteristics		Booster Fan Outlet	
		A	
Temperature	°F	361	
Pressure	psia	14.366	
N_2	lb/hr-vol%	7,014,859	73.37
O_2	lb/hr-vol%	675,888	6.19
H_2O	lb/hr-vol%	564,179	9.18
CO_2	lb/hr-vol%	1,674,651	11.15
SO_2	lb/hr-ppmv	24,079	1,102
SO_3	lb/hr-ppmv	437	16
HCl	lb/hr-ppmv	841	67
HF	lb/hr-ppmv	0	0
Total Flow	lb/hr-acfm	9,954,933	3,486,338
MW - Moist.	lb/lbmol-lb/lb	29.154	0.060
Ash	lb/hr-gr/acf	1,749	0.059

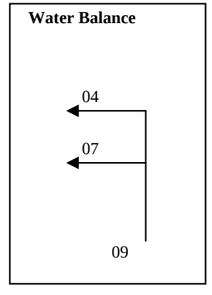
Stream Characteristics		Fresh Lime
		01
Inert Solids	lb/hr	1,582
CaO	lb/hr	36,773
$Ca(OH)_2$	lb/hr	0
MgO	lb/hr	1,186
$CaSO_3*0.5H_2O$	lb/hr	0
$CaSO_4*2H_2O$	lb/hr	0
$CaCO_3$	lb/hr	0
CaCl2 + CaF2	lb/hr	0
Total Solids	lb/hr	39,541
Water	lb/hr	0
Total Flow	lb/hr	39,541
Total Flow	gpm	---
Solids	wt%	100

Baghouse Outlet /Duct Loss		Stack Inlet	
C		D	
155		165	
13.718		14.438	
7,014,859	67.48	7,014,859	67.48
673,487	5.67	673,487	5.67
1,111,085	16.63	1,111,085	16.63
1,669,792	10.22	1,669,792	10.22
482	20	482	20
31	1	31	1
0	0	0	0
0	0	0	0
10,469,735	2,973,235	10,469,735	2,870,788
28.200	0.119	28.200	0.115
97	0.004	97	0.004

Sat. H2O	Recycle	Waste Solids	Pin Mixer H2O	Landfill	Total Water
04	05	06	07	08	09
0	274,864	3,234	0	7,399	0
0	0	0	0	0	0
0	1,012,230	11,909	0	11,909	0
0	100,830	1,186	0	1,186	0
0	2,459,187	28,932	0	28,932	0
0	2,185,944	25,717	0	25,717	0
0	938,693	11,043	0	11,043	0
0	108,638	1,278	0	1,278	0
0	7,080,388	83,299	0	87,464	0
566,460	786,710	9,255	26,444	35,699	592,904
566,460	7,867,097	92,554	26,444	123,163	592,904
1,132	---	---	53	---	1,185
0	90	90	0	71	0

Stabilization
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4,165
0
4,165

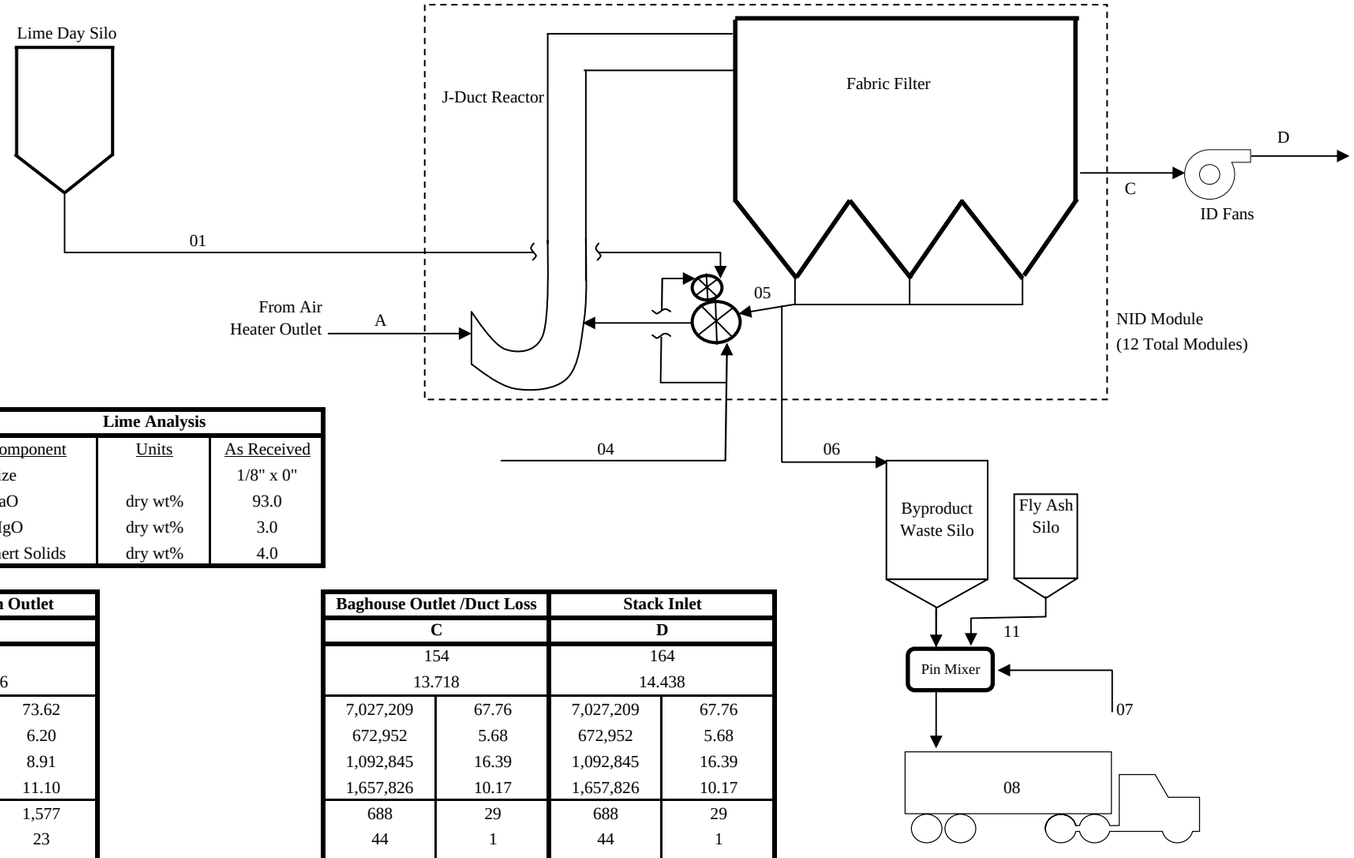
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Client: AEP
Station: Big Sandy - Unit 2

Mass Balance NID System -
4.5 lb SO_2/MMBtu Coal (w/ESP)

Project No.12721-000
8/5/2010
Revision B



Plant Production		
MCR Output	MW	865
Heat Input	MMBtu/hr	8180
Firing Rate	lb/hr	654,924

Coal Analysis		
Component	Units	As Received
Carbon	wt%	69.33
Hydrogen	wt%	4.67
Nitrogen	wt%	1.34
Sulfur	wt%	2.69
Oxygen	wt%	5.41
Chlorine	wt%	0.05
Moisture	wt%	6.63
Ash	wt%	9.89
Calc. HHV	Btu/lb	12,490

Lime Analysis		
Component	Units	As Received
Size		1/8" x 0"
CaO	dry wt%	93.0
MgO	dry wt%	3.0
Inert Solids	dry wt%	4.0

FGD Process Parameters		
Inlet Stoich.	Ca:S Inlet	1.8
Internal Stoich.	Ca:S Inlet	39
Approach to Saturation	°F	25
Saturation Temperature	°F	129
Saturation Humidity	lb/lb dry air	0.120
Outlet Particulates	lb/MMBtu	0.012
Sulfur Levels		
SO_2 In	lb/MMBtu	4.205
SO_2 Out	lb/MMBtu	0.084
SO_3 In	lb/MMBtu	0.077
SO_3 Out	lb/MMBtu	0.005

Stream Characteristics		Booster Fan Outlet	
		A	
Temperature	°F	361	
Pressure	psia	14.366	
N_2	lb/hr-vol%	7,027,209	73.62
O_2	lb/hr-vol%	676,381	6.20
H_2O	lb/hr-vol%	546,919	8.91
CO_2	lb/hr-vol%	1,664,882	11.10
SO_2	lb/hr-ppmv	34,399	1,577
SO_3	lb/hr-ppmv	627	23
HCl	lb/hr-ppmv	337	27
HF	lb/hr-ppmv	0	0
Total Flow	lb/hr-acfm	9,950,754	3,480,472
MW - Moist.	lb/lbmol-lb/lb	29.191	0.058
Ash	lb/hr-gr/acf	1,613	0.054

Stream Characteristics		Fresh Lime
		01
Inert Solids	lb/hr	2,331
CaO	lb/hr	54,201
$Ca(OH)_2$	lb/hr	0
MgO	lb/hr	1,748
$CaSO_3*0.5H_2O$	lb/hr	0
$CaSO_4*2H_2O$	lb/hr	0
$CaCO_3$	lb/hr	0
CaCl2 + CaF2	lb/hr	0
Total Solids	lb/hr	58,281
Water	lb/hr	0
Total Flow	lb/hr	58,281
Total Flow	gpm	---
Solids	wt%	100

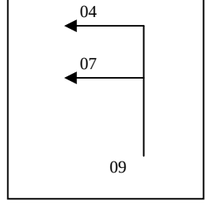
Baghouse Outlet /Duct Loss		Stack Inlet	
C		D	
154		164	
13.718		14.438	
7,027,209	67.76	7,027,209	67.76
672,952	5.68	672,952	5.68
1,092,845	16.39	1,092,845	16.39
1,657,826	10.17	1,657,826	10.17
688	29	688	29
44	1	44	1
0	0	0	0
0	0	0	0
10,451,564	2,963,291	10,451,564	2,861,235
28.217	0.117	28.217	0.113
99	0.004	99	0.004

Sat. H2O	Recycle	Waste Solids	Pin Mixer H2O	Landfill	Total Water
04	05	06	07	08	09
0	326,846	3,845	0	9,851	0
0	0	0	0	0	0
0	1,691,231	19,897	0	19,897	0
0	148,616	1,748	0	1,748	0
0	3,513,318	41,333	0	41,333	0
0	3,122,950	36,741	0	36,741	0
0	1,363,141	16,037	0	16,037	0
0	43,516	512	0	512	0
0	10,209,617	120,113	0	126,119	0
574,686	1,134,402	13,346	38,131	51,477	612,817
574,686	11,344,019	133,459	38,131	177,596	612,817
1,148	---	---	76	---	1,224
0	90	90	0	71	0

Stabilization
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6,006
0
6,006

100

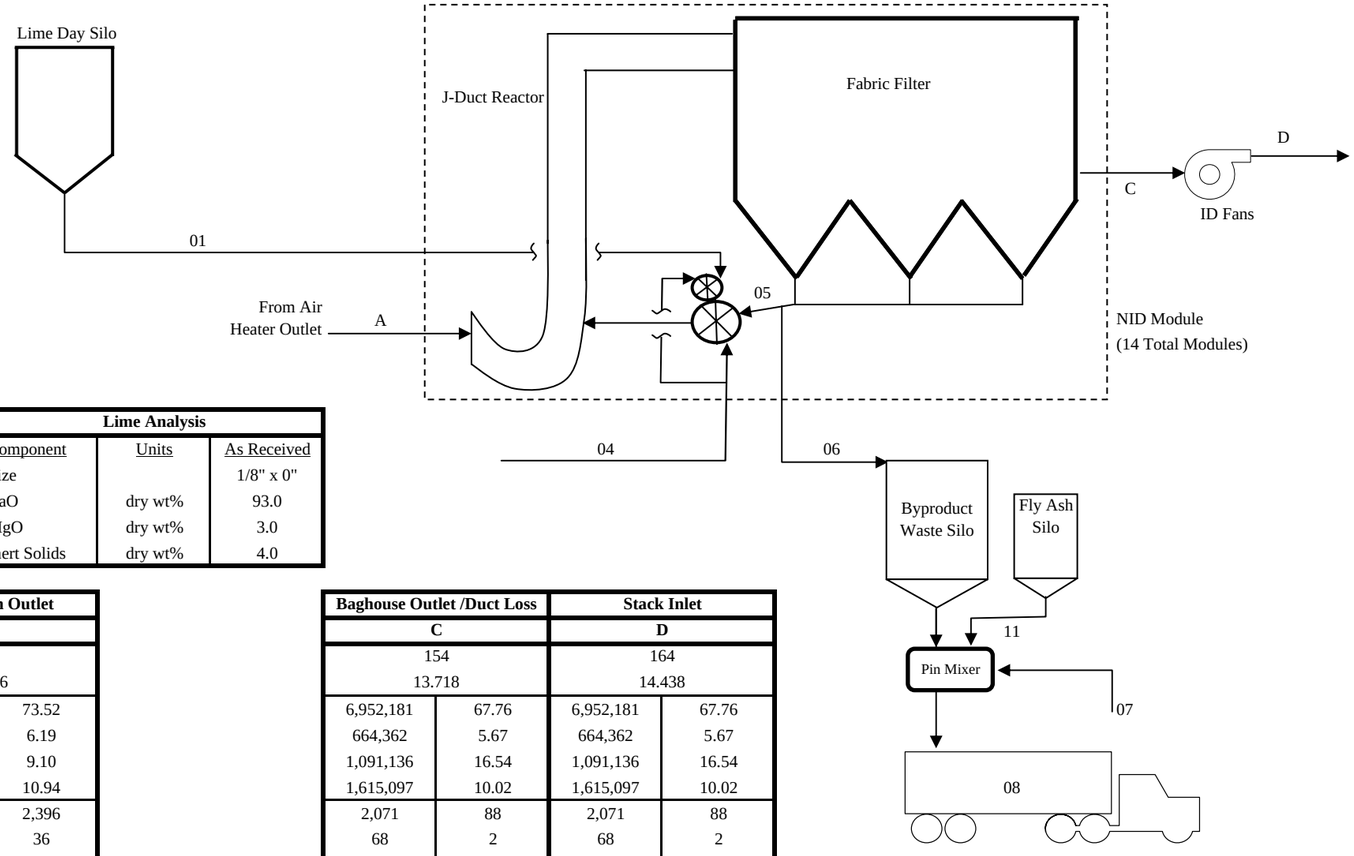
Water Balance



Client: AEP
Station: Big Sandy - Unit 2

Mass Balance NID System -
7.5 lb SO_2/MMBtu Coal (w/ESP)

Project No.12721-000
8/5/2010
Revision B



Plant Production		
MCR Output	MW	865
Heat Input	MMBtu/hr	8180
Firing Rate	lb/hr	660,210

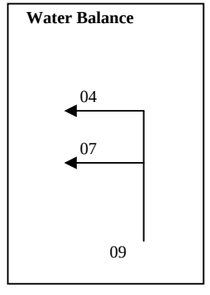
Coal Analysis		
Component	Units	As Received
Carbon	wt%	67.15
Hydrogen	wt%	4.76
Nitrogen	wt%	1.16
Sulfur	wt%	4.02
Oxygen	wt%	5.74
Chlorine	wt%	0.05
Moisture	wt%	6.73
Ash	wt%	10.40
Calc. HHV	Btu/lb	12,390

Lime Analysis		
Component	Units	As Received
Size		1/8" x 0"
CaO	dry wt%	93.0
MgO	dry wt%	3.0
Inert Solids	dry wt%	4.0

FGD Process Parameters		
Inlet Stoich.	Ca:S Inlet	1.7
Internal Stoich.	Ca:S Inlet	39
Approach to Saturation	°F	25
Saturation Temperature	°F	129
Saturation Humidity	lb/lb dry air	0.122
Outlet Particulates	lb/MMBtu	0.012
Sulfur Levels		
SO_2 In	lb/MMBtu	6.331
SO_2 Out	lb/MMBtu	0.253
SO_3 In	lb/MMBtu	0.119
SO_3 Out	lb/MMBtu	0.008

Stream Characteristics		Booster Fan Outlet	
		A	
Temperature	°F	361	
Pressure	psia	14.366	
N_2	lb/hr-vol%	6,952,181	73.52
O_2	lb/hr-vol%	669,424	6.19
H_2O	lb/hr-vol%	553,094	9.10
CO_2	lb/hr-vol%	1,625,547	10.94
SO_2	lb/hr-ppmv	51,784	2,396
SO_3	lb/hr-ppmv	973	36
HCl	lb/hr-ppmv	339	28
HF	lb/hr-ppmv	0	0
Total Flow	lb/hr-acfm	9,853,342	3,448,087
MW - Moist.	lb/lbmol-lb/lb	29.177	0.059
Ash	lb/hr-gr/acf	1,710	0.058

Baghouse Outlet /Duct Loss		Stack Inlet	
C		D	
154		164	
13.718		14.438	
6,952,181	67.76	6,952,181	67.76
664,362	5.67	664,362	5.67
1,091,136	16.54	1,091,136	16.54
1,615,097	10.02	1,615,097	10.02
2,071	88	2,071	88
68	2	68	2
0	0	0	0
0	0	0	0
10,324,915	2,933,434	10,324,915	2,832,373
28.178	0.118	28.178	0.115
100	0.004	100	0.004



Stream Characteristics		Fresh Lime
		01
Inert Solids	lb/hr	3,461
CaO	lb/hr	80,479
$Ca(OH)_2$	lb/hr	0
MgO	lb/hr	2,596
$CaSO_3*0.5H_2O$	lb/hr	0
$CaSO_4*2H_2O$	lb/hr	0
$CaCO_3$	lb/hr	0
CaCl2 + CaF2	lb/hr	0
Total Solids	lb/hr	86,536
Water	lb/hr	0
Total Flow	lb/hr	86,536
Total Flow	gpm	---
Solids	wt%	100

Sat. H2O	Recycle	Waste Solids	Pin Mixer H2O	Landfill	Total Water	Stabilization
04	05	06	07	08	09	11
0	431,056	5,071	0	13,934	0	8,863
0	0	0	0	0	0	0
0	2,559,430	30,111	0	30,111	0	0
0	220,668	2,596	0	2,596	0	0
0	5,184,695	60,996	0	60,996	0	0
0	4,608,618	54,219	0	54,219	0	0
0	2,018,764	23,750	0	23,750	0	0
0	43,867	516	0	516	0	0
0	15,067,098	177,260	0	186,123	0	8,863
580,665	1,674,122	19,696	56,273	75,969	636,938	0
580,665	16,741,221	196,956	56,273	262,092	636,938	8,863
1,160	---	---	112	---	1,273	---
0	90	90	0	71	0	100

ATTACHMENT 5-4
NID Water Balances

NID Water Balance Assumptions

1. Service Water within the NID Island (to waste pin mixers and lime hydrators and mixers) are from Mass Balances dated 9/10/2010.

2. Water for wash-down and flushes are based on assumed instantaneous flow rates and usages of 288 GPM seven times a week for 15 minutes and will be drained/pumped to the process water storage basin.

3. Water from the process water storage basin will be used in the waste pin mixers as an alternative to using service water. A filtering system will be in place in the basin to limit particle size to 1/32".

4. 10% of the water sprayed for dust suppression is lost to evaporation

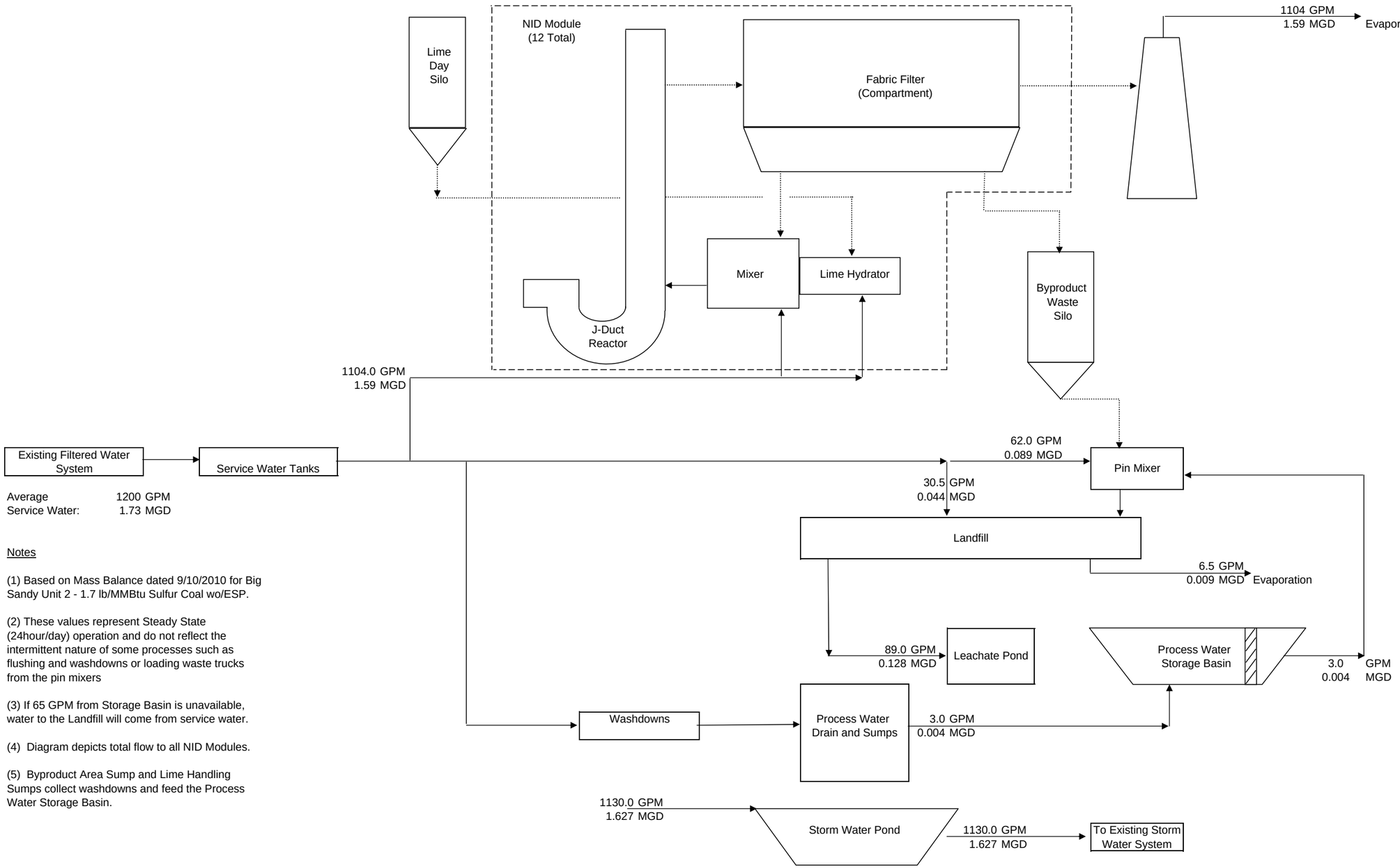
Steady State vs. Instantaneous Service Water Requirements

The average service water required is a steady state (or average) amount over the course of a year. Actual operation will occur in more of a batch mode, and as such, higher demands of service water will be needed over the course of a day.

American Electric Power
Big Sandy Unit 2

Big Sandy NID Water Balance
1.7 lb/mmbtu Sulfur Coal wo/ESP

Project No. 12721-000
09-29-2010
Revision D



Average Service Water: 1200 GPM, 1.73 MGD

Notes

(1) Based on Mass Balance dated 9/10/2010 for Big Sandy Unit 2 - 1.7 lb/MMBtu Sulfur Coal wo/ESP.

(2) These values represent Steady State (24hour/day) operation and do not reflect the intermittent nature of some processes such as flushing and washdowns or loading waste trucks from the pin mixers

(3) If 65 GPM from Storage Basin is unavailable, water to the Landfill will come from service water.

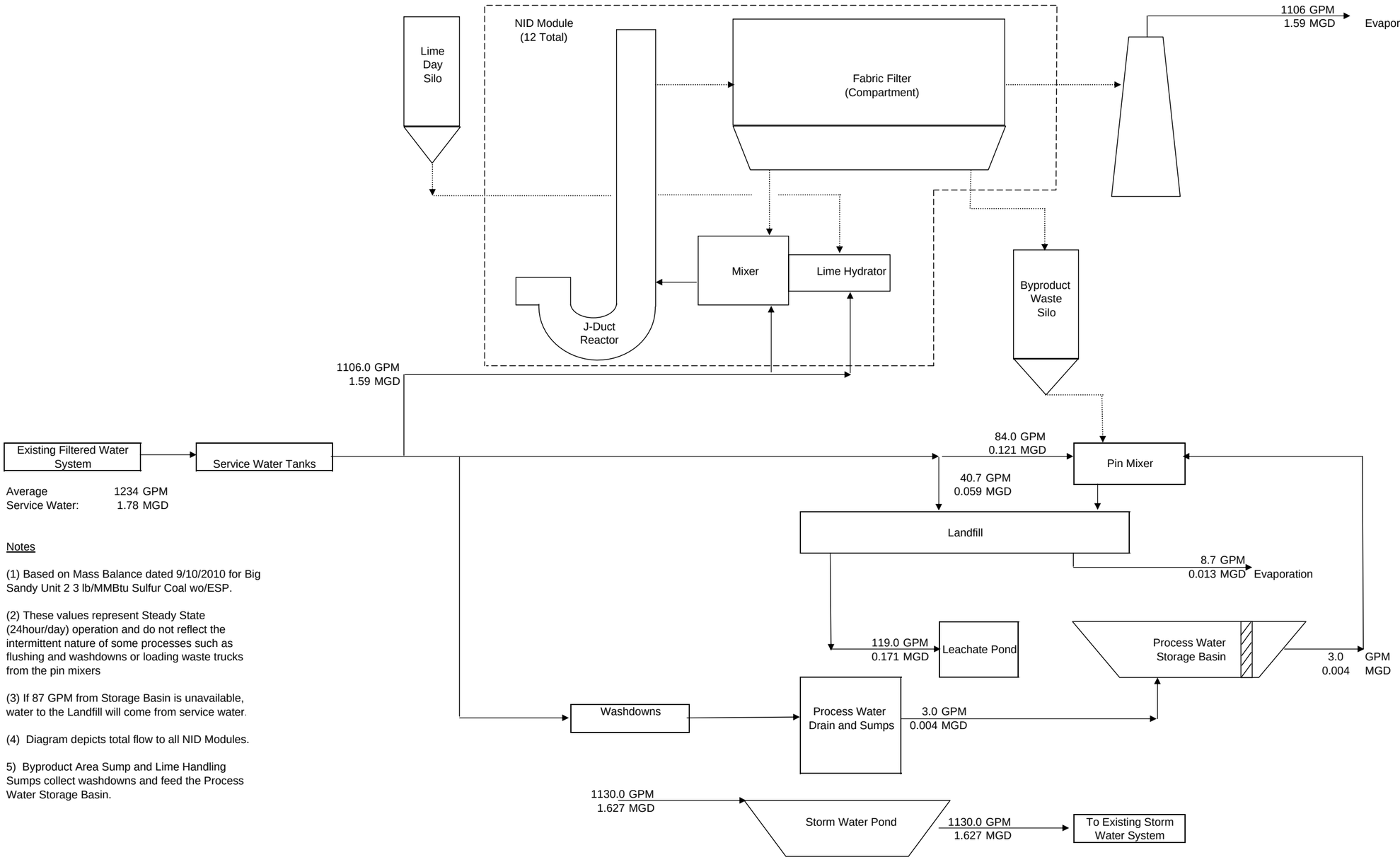
(4) Diagram depicts total flow to all NID Modules.

(5) Byproduct Area Sump and Lime Handling Sumps collect washdowns and feed the Process Water Storage Basin.

American Electric Power
Big Sandy Unit 2

Big Sandy NID Water Balance
3 lb/mmbtu Sulfur Coal wo/ESP

Project No. 12721-000
09-10-2010
Revision C



Average Service Water: 1234 GPM, 1.78 MGD

Notes

(1) Based on Mass Balance dated 9/10/2010 for Big Sandy Unit 2 3 lb/MMBtu Sulfur Coal wo/ESP.

(2) These values represent Steady State (24hour/day) operation and do not reflect the intermittent nature of some processes such as flushing and washdowns or loading waste trucks from the pin mixers

(3) If 87 GPM from Storage Basin is unavailable, water to the Landfill will come from service water.

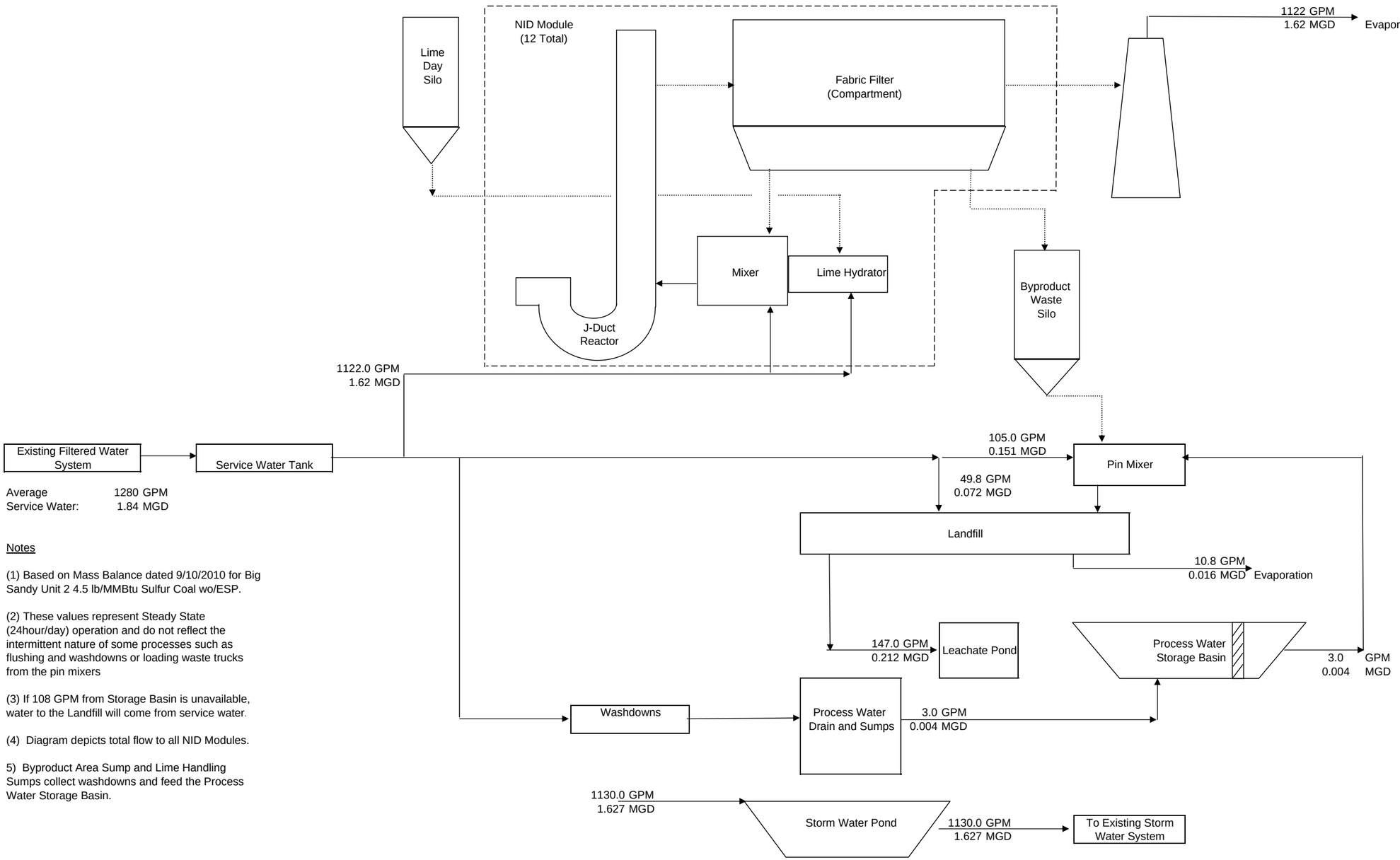
(4) Diagram depicts total flow to all NID Modules.

5) Byproduct Area Sump and Lime Handling Sumps collect washdowns and feed the Process Water Storage Basin.

American Electric Power
Big Sandy Unit 2

Big Sandy NID Water Balance
4.5 lb/mmbtu Sulfur Coal wo/ESP

Project No. 12721-000
09-10-2010
Revision c



Average Service Water: 1280 GPM, 1.84 MGD

Notes

(1) Based on Mass Balance dated 9/10/2010 for Big Sandy Unit 2 4.5 lb/MMBtu Sulfur Coal wo/ESP.

(2) These values represent Steady State (24hour/day) operation and do not reflect the intermittent nature of some processes such as flushing and washdowns or loading waste trucks from the pin mixers

(3) If 108 GPM from Storage Basin is unavailable, water to the Landfill will come from service water.

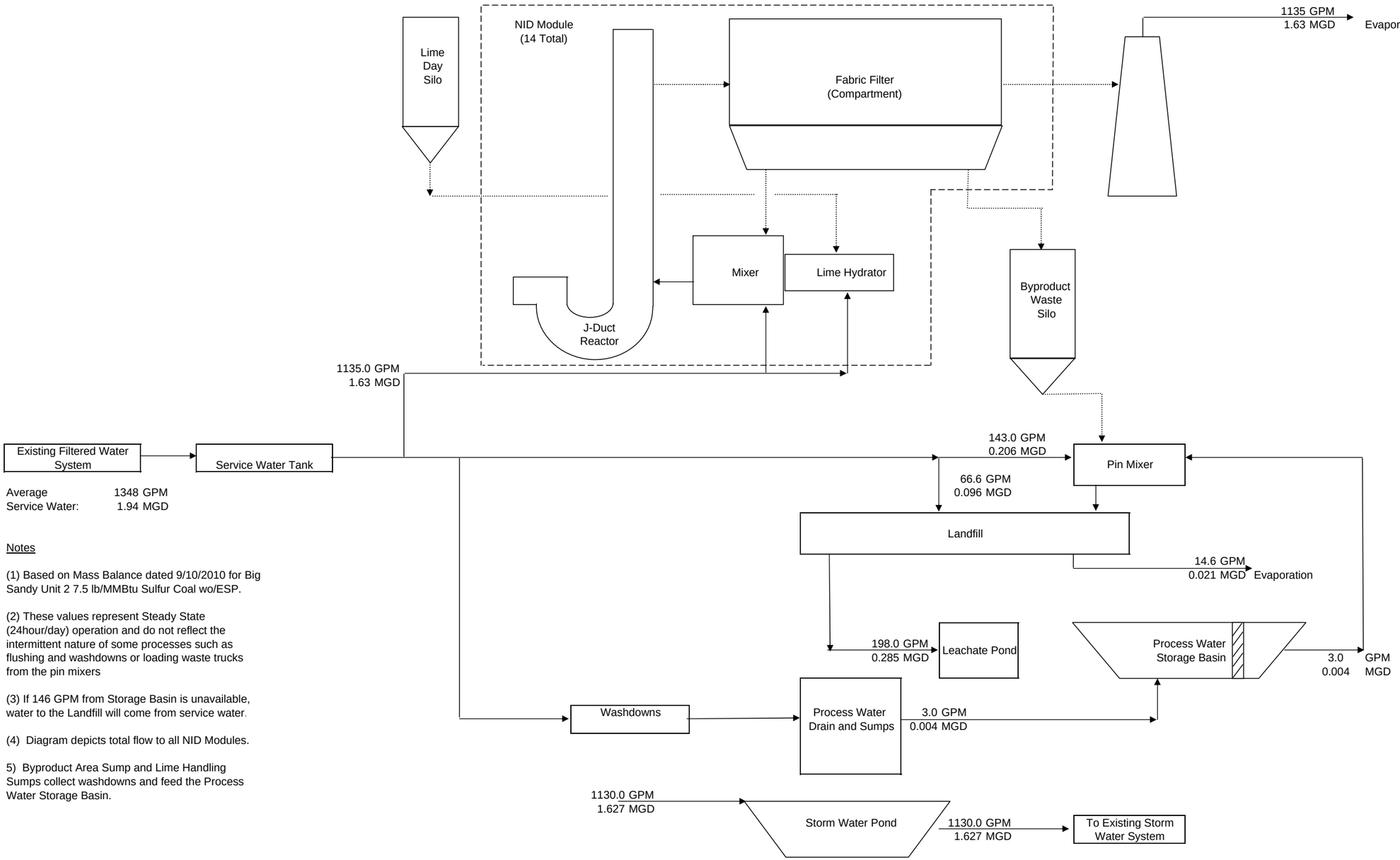
(4) Diagram depicts total flow to all NID Modules.

5) Byproduct Area Sump and Lime Handling Sumps collect washdowns and feed the Process Water Storage Basin.

American Electric Power
Big Sandy Unit 2

Big Sandy NID Water Balance
7.5 lb/mmbtu Sulfur Coal wo/ESP

Project No. 12721-000
09-10-2010
Revision C



Average Service Water: 1348 GPM, 1.94 MGD

Notes

(1) Based on Mass Balance dated 9/10/2010 for Big Sandy Unit 2 7.5 lb/MMBtu Sulfur Coal wo/ESP.

(2) These values represent Steady State (24hour/day) operation and do not reflect the intermittent nature of some processes such as flushing and washdowns or loading waste trucks from the pin mixers

(3) If 146 GPM from Storage Basin is unavailable, water to the Landfill will come from service water.

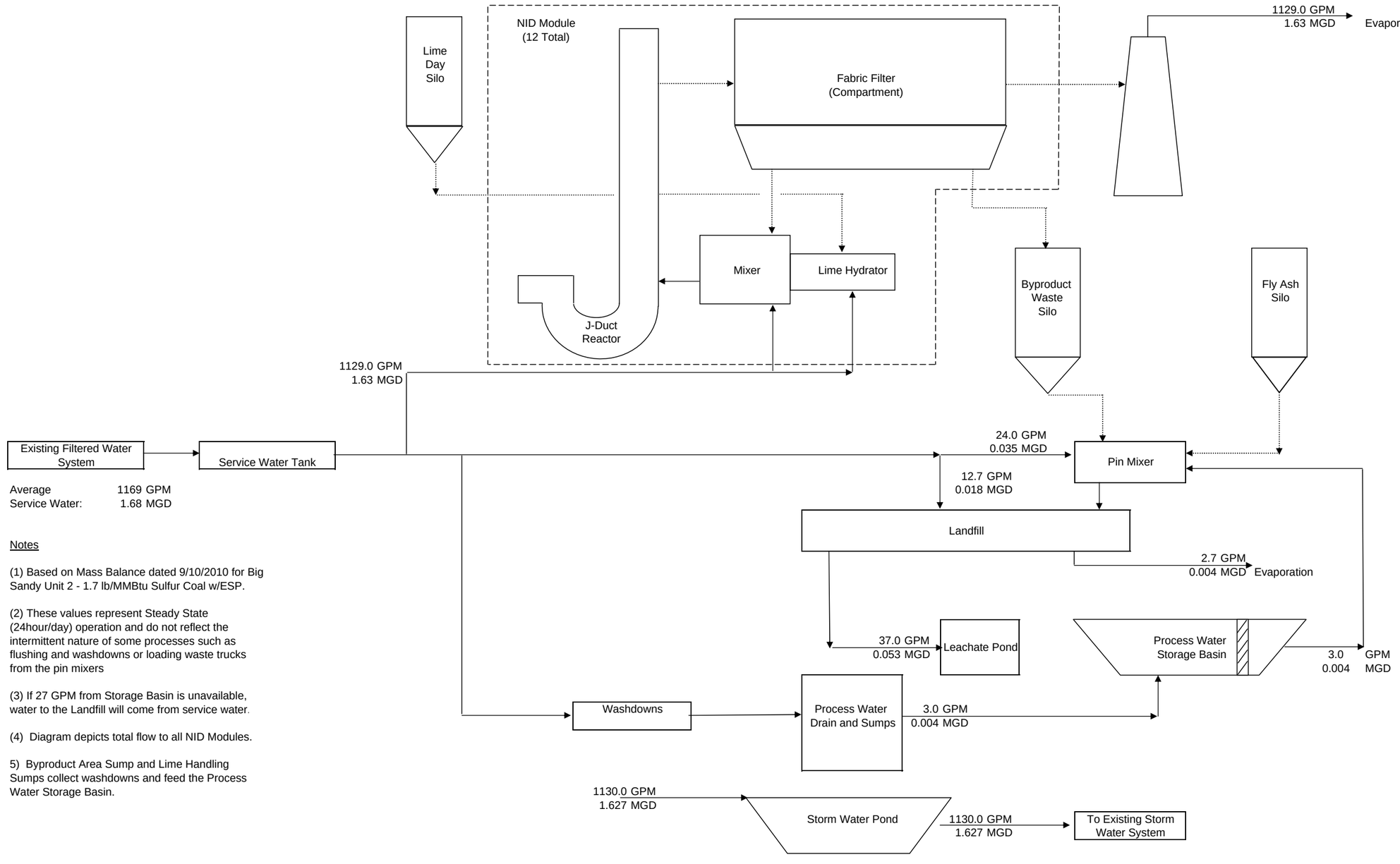
(4) Diagram depicts total flow to all NID Modules.

5) Byproduct Area Sump and Lime Handling Sumps collect washdowns and feed the Process Water Storage Basin.

American Electric Power
Big Sandy Unit 2

Big Sandy NID Water Balance
1.7 lb/mmbtu Sulfur Coal w/ESP

Project No. 12721-000
09-29-2010
Revision D



Average Service Water: 1169 GPM, 1.68 MGD

Notes

(1) Based on Mass Balance dated 9/10/2010 for Big Sandy Unit 2 - 1.7 lb/MMBtu Sulfur Coal w/ESP.

(2) These values represent Steady State (24hour/day) operation and do not reflect the intermittent nature of some processes such as flushing and washdowns or loading waste trucks from the pin mixers

(3) If 27 GPM from Storage Basin is unavailable, water to the Landfill will come from service water.

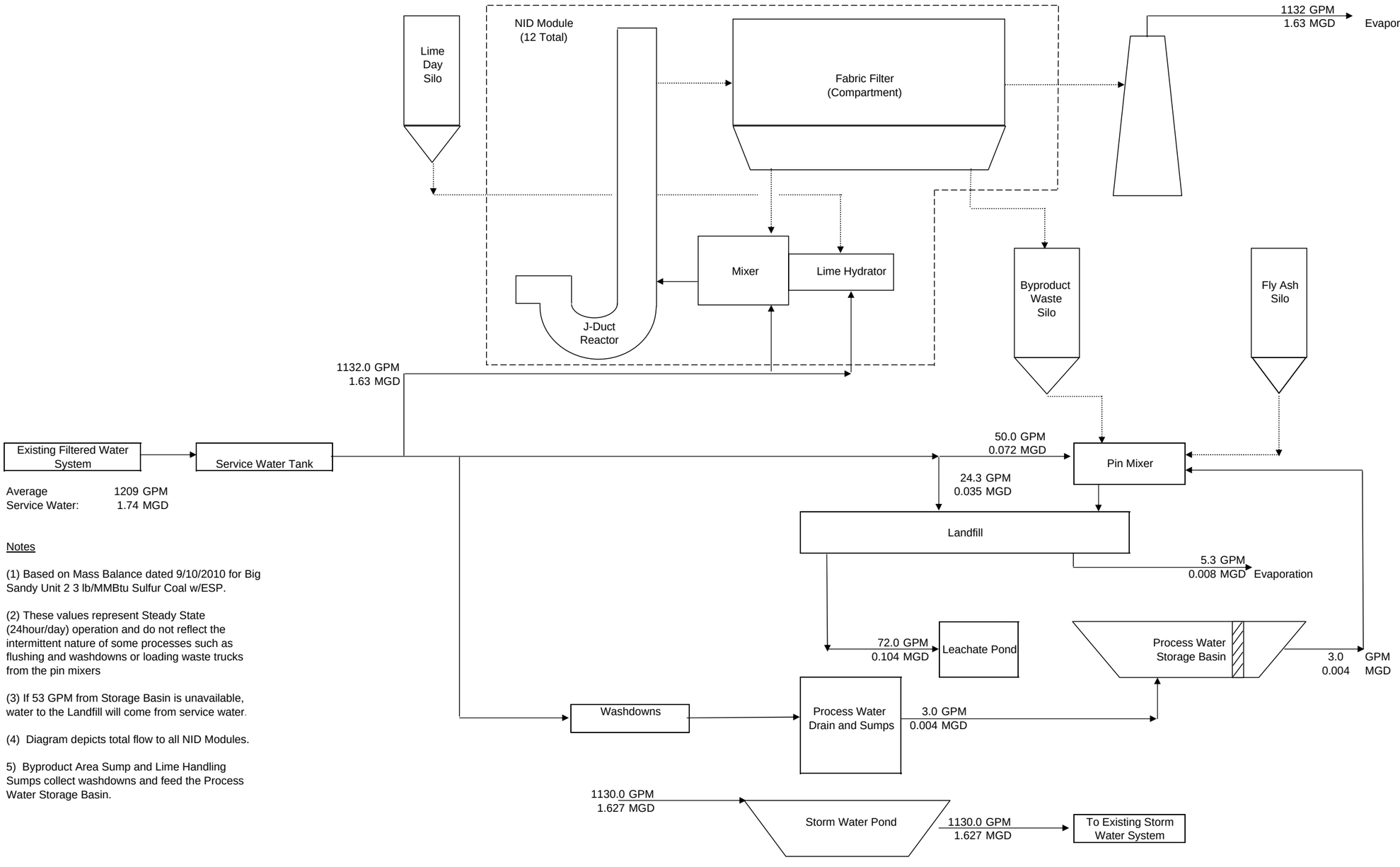
(4) Diagram depicts total flow to all NID Modules.

5) Byproduct Area Sump and Lime Handling Sumps collect washdowns and feed the Process Water Storage Basin.

American Electric Power
Big Sandy Unit 2

Big Sandy NID Water Balance
3 lb/mmbtu Sulfur Coal w/ESP

Project No. 12721-000
09-10-2010
Revision C



Average Service Water: 1209 GPM 1.74 MGD

Notes

(1) Based on Mass Balance dated 9/10/2010 for Big Sandy Unit 2 3 lb/MMBtu Sulfur Coal w/ESP.

(2) These values represent Steady State (24hour/day) operation and do not reflect the intermittent nature of some processes such as flushing and washdowns or loading waste trucks from the pin mixers

(3) If 53 GPM from Storage Basin is unavailable, water to the Landfill will come from service water.

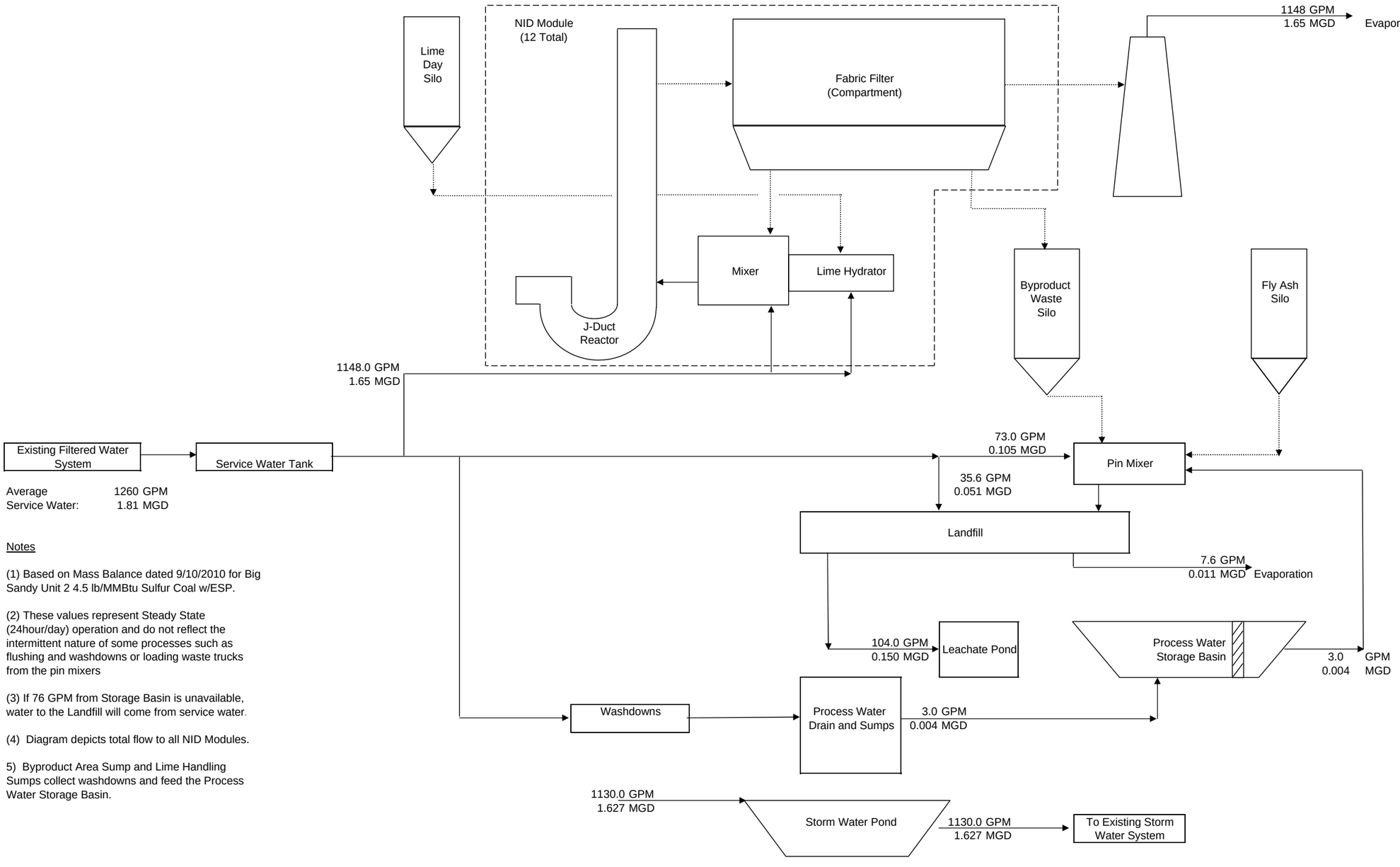
(4) Diagram depicts total flow to all NID Modules.

5) Byproduct Area Sump and Lime Handling Sumps collect washdowns and feed the Process Water Storage Basin.

American Electric Power
Big Sandy Unit 2

Big Sandy NID Water Balance
4.5 lb/mmbtu Sulfur Coal w/ESP

Project No. 12721-000
09-10-2010
Revision C



Average Service Water: 1260 GPM 1.81 MGD

Notes

(1) Based on Mass Balance dated 9/10/2010 for Big Sandy Unit 2 4.5 lb/MMBtu Sulfur Coal w/ESP.

(2) These values represent Steady State (24hour/day) operation and do not reflect the intermittent nature of some processes such as flushing and washdowns or loading waste trucks from the pin mixers

(3) If 76 GPM from Storage Basin is unavailable, water to the Landfill will come from service water.

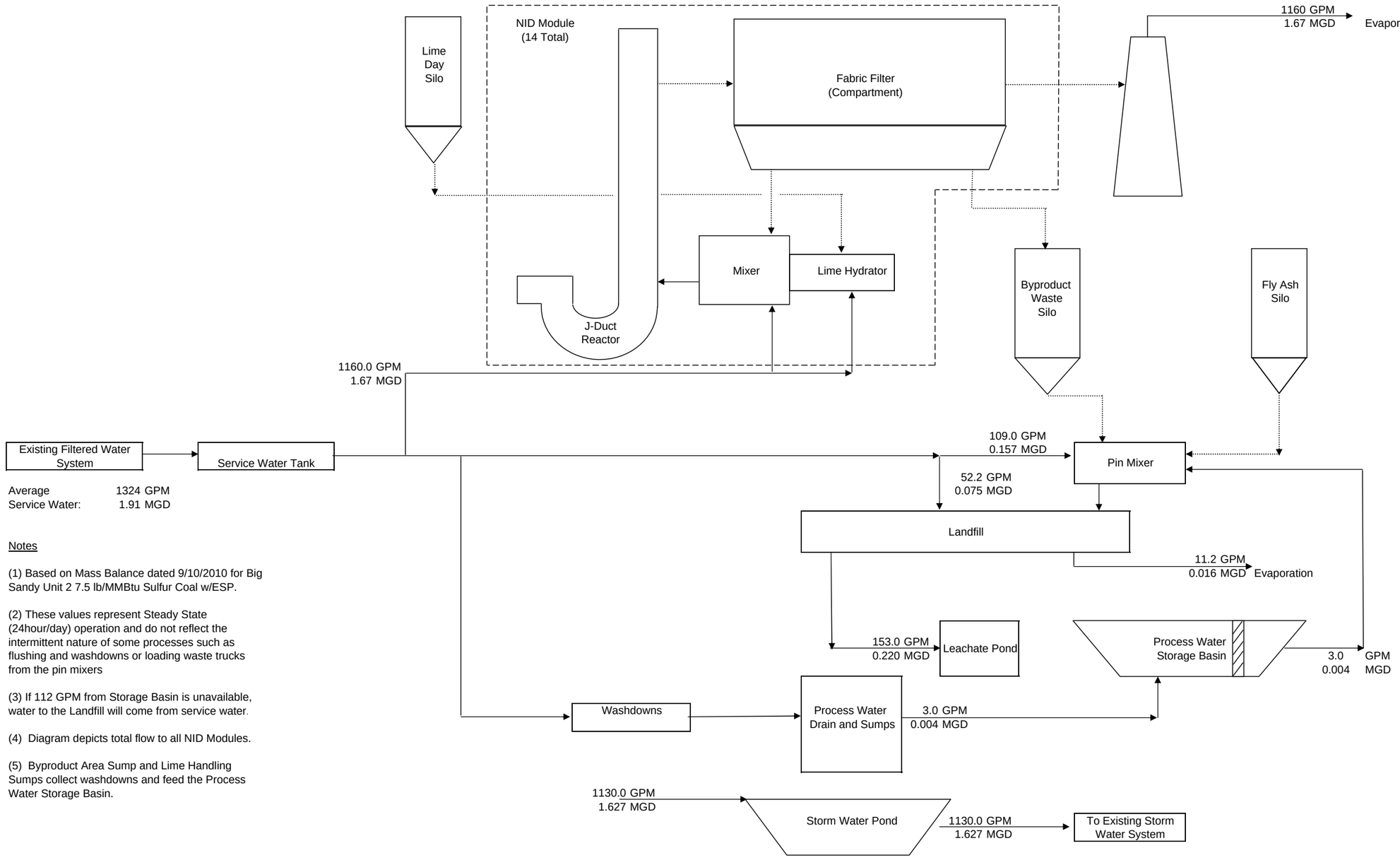
(4) Diagram depicts total flow to all NID Modules.

5) Byproduct Area Sump and Lime Handling Sumps collect washdowns and feed the Process Water Storage Basin.

American Electric Power
Big Sandy Unit 2

Big Sandy NID Water Balance
7.5 lb/mmbtu Sulfur Coal w/ESP

Project No. 12721-000
09-10-2010
Revision C



Average Service Water: 1324 GPM 1.91 MGD

Notes

(1) Based on Mass Balance dated 9/10/2010 for Big Sandy Unit 2 7.5 lb/MMBtu Sulfur Coal w/ESP.

(2) These values represent Steady State (24hour/day) operation and do not reflect the intermittent nature of some processes such as flushing and washdowns or loading waste trucks from the pin mixers

(3) If 112 GPM from Storage Basin is unavailable, water to the Landfill will come from service water.

(4) Diagram depicts total flow to all NID Modules.

(5) Byproduct Area Sump and Lime Handling Sumps collect washdowns and feed the Process Water Storage Basin.

ATTACHMENT 5-5
NID Electrical One-Lines

Big Sandy Plant Unit 2
Big Sandy EPC Cost Estimate Project

ESK-NID-NOTES-001_B

August 9, 2010

BASIC DESCRIPTION OF ONE LINES - NID

A. NID FGD SYSTEM (ESP OUT)

1. The preliminary ID fan size on which the one line has been developed is 19,500 HP.
2. The 138 kV voltage used in the study is 1.009 PU based on information received from the system planning group.
3. The 138 kV line to the existing SCR transformers will be tapped to feed new 138 kV – 13.8 kV FGD transformers.
4. The existing SCR switchgear which is fed from existing 138 kV – 13.8 kV transformers will be modified to include a tie breaker and will feed the 4.16 kV and 480 volt FGD loads.

B. NID FGD SYSTEM (ESP IN)

1. The preliminary ID fan size on which the one line has been developed is 14,000 HP.
2. The existing ID Booster Fans will be retained. Due to loading considerations, the existing ID booster fans will be fed from the new ID fan switchgear.
3. The 138 kV voltage used in the study is 1.009 PU based on information received from the system planning group.
4. The 138 kV line to the SCR transformers will be tapped to feed new 138 kV – 13.8 kV FGD transformers.
5. The existing SCR switchgear which is fed from existing 138 kV – 13.8 kV transformers will be modified to include a tie breaker and will feed the 4.16 kV and 480 volt FGD loads.

DWG. NO.

138 KV BUS NO. 2
DWG E-1200

138 KV BUS NO. 1
DWG E-1200

138KV CONNECTION 1

138KV CONNECTION 2

138KV SCR SUBSTATION

TR 2SCR-2F
135.6-13.8 KV
15/20/25 MVA
Z=6.0%

TR 2SCR-2FR
135.6-13.8 KV
15/20/25 MVA
Z=6.0%

2000A

13.8 KV BUS 2F

13.8 KV BUS 2FR

2000A
NO
SWGR MODFICATION
(NEW)

1200A

F

G

TR 2SCR-2J
13.8-4.16 KV
5.6/7.0 MVA
Z = 4.0%

TR 3SCR-2JR
13.8-4.16 KV
5.6/7.0 MVA
Z = 4.0

4.16KV BUS 2J

SPARE

SEAL AIR FAN

SEAL AIR FAN

SPARE

TR 2SCR-2L
4.16-600V
1.5/2.0 MVA

TR 2SCR-2M
4.16-600V
1.5/2.0 MVA

600V
BUS 2SCRL

600V
BUS 2SCRM

SCR SWITCHGEAR BUILDING
(EXISTING)

13.8KV BUS 13F

1200A
40KA
NC

SPARE

TRF-31F
13.8-0.48KV
2/2.67 MVA
Z = 5.0% @2MVA
AN/AF

TRF-21F
13.8-4.16KV
10/14 MVA
Z = 6% @ 10 MVA
ONAN/ONAF

2000A
31.5KA
NC

4.16 KV SWG-21F

TYPICAL MOTOR
FEEDER

SPARE

2000A
31.5KA
NO

SPARE

TYPICAL MOTOR
FEEDER

4.16 KV SWG-21G

TRF-21G
13.8-4.16KV
10/14 MVA
Z = 6% @ 10 MVA
ONAN/ONAF

TRF-31G
13.8-0.48KV
2/2.67 MVA
Z = 5.0% @2MVA
AN/AF

NID CONTROL/SWGR BUILDING

4000A
65KA
NC

480V BUS SWG-31F

4000A
65KA
NO

480V BUS SWG-31G

TRF-33F
13.8-0.48KV
2/2.67 MVA
Z = 5.0% @2MVA
AN/AF

TRF-32F
13.8-0.48KV
2/2.67 MVA
Z = 5.0% @2MVA
AN/AF

NID MCC A

ID FAN
MCC A

NID MCC C

ID FAN
MCC B

NID MCC B

SPARE

TRF-32G
13.8-0.48KV
2/2.67 MVA
Z = 5.0% @2MVA
AN/AF

TRF-33G
13.8-0.48KV
2/2.67 MVA
Z = 5.0% @2MVA
AN/AF

NID CONTROL/SWGR BUILDING

480V BUS SWG-32F

480V BUS SWG-32G

XFMR MCC A

SPARE

ACI MCC A

FLY ASH MCC A

ACI AREA

FLY ASH
BLOWER BUILDING

TRANSFORMER PDC

FLY ASH MCC B

ACI MCC B

XFMR MCC B

FLY ASH
BLOWER BUILDING

ACI AREA

480V BUS SWG-33F

480V BUS SWG-33G

SPARE

LIME UNLOADING
MCC A

ASH BLOWER
MCC A

LOAD OUT
AREA PDC

ASH BLOWER
MCC B

LIME UNLOADING
MCC B

SPARE

LOAD OUT
AREA PDC

LIME UNLOADING BLOWER/ELECTRICAL BLDG

G
1200A
40KA
NC

13.8KV BUS 13G

SPARE

138KV FGD SUBSTATION

S A
84KV MCOV

TRF-11A
138-13.8KV
50/66.7 MVA
Z= 5.0% @ 50MVA
ONAN/ONAF

TRF-11B
138-13.8KV
50/66.7 MVA
Z= 5.0% @ 50MVA
ONAN/ONAF

2000A
50KA
NC

2000A
50KA
NO

2000A
50KA
NO

2000A
50KA
NC

13.8KV BUS 11A

13.8KV BUS 11B

SPARE

SPARE

1950 HP
ID FAN A

1950 HP
ID FAN B

TRANSFORMER PDC

NOTES:
1. - - - - - - INDICATES EXISTING EQUIPMENT.
2. ———— INDICATES NEW EQUIPMENT.

DATE	NO.	DESCRIPTION	APPD.
		REVISIONS	

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PRELIMINARY

KENTUCKY POWER CO.
BIG SANDY PLANT
UNIT 2
BIG SANDY KENTUCKY

AUXILIARY
ONE LINE DIAGRAM
NID (ESP OUT)
UNIT 2

DWG. NO. ESK-NID-001_B

FILE NAME: ESK-NID-001

REV	DATE RELEASED	PURPOSE	
B	08/09/2010	ISSUED FOR USE	K. DAYE
A	07/26/2010	FOR REVIEW	K. NOMANBHOY
			PREPARED
			REVIEWED
			APPROVED

PROFESSIONAL ENGINEER'S STAMP

"Georgia Licensed"

CONTRACTOR/INSTALLER SHALL TAKE ALL APPROPRIATE PRECAUTIONS TO ENSURE THE SAFETY OF ALL PERSONNEL INCLUDING EMPLOYEES AND THAT OF ITS SUBCONTRACTORS(S) PERFORMING THE WORK

SCALE:	ELECTRICAL & CONTROLS ENGINEERING DIV.
DR:	
CH:	
SUPV:	
ENGR:	
DATE:	

AEP DIVISION APPROVAL

AEP SERVICE CORP
1 RIVERSIDE PLAZA
COLUMBUS, OH 43215

SYSTEM DATE- DD-MMM-YYYY
SYSTEM TIME- HOURMINUTE

IGS0694

DWG. NO.

138 KV BUS NO. 2
DWG E-1200

138 KV BUS NO. 1
DWG E-1200

138KV CONNECTION 1

138KV CONNECTION 2

138KV SCR SUBSTATION

TR 2SCR-2F
135.6-13.8 KV
15/20/25 MVA
Z=6.0%

TR 2SCR-2FR
135.6-13.8 KV
15/20/25 MVA
Z=6.0%

2000A

13.8 KV BUS 2F

13.8 KV BUS 2FR

2000A
NO
SWGR MODIFICATION (NEW)

1200A

TR 2SCR-2J
13.8-4.16 KV
5.6/7.0 MVA
Z = 4.0%

TR 3SCR-2JR
13.8-4.16 KV
5.6/7.0 MVA
Z = 4.0

4.16KV BUS 2J

SPARE

SEAL AIR FAN

TR 2SCR-2L
4.16-600V
1.5/2.0 MVA

TR 2SCR-2M
4.16-600V
1.5/2.0 MVA

600V BUS 2SCRL

600V BUS 2SCRM

SCR SWITCHGEAR BUILDING (EXISTING)

13.8KV BUS 13F

1200A 40KA NC

SPARE

13.8KV BUS 13G

TRF-31F
13.8-0.48KV
2/2.67 MVA
Z = 5.0% @2MVA
AN/AF

TRF-21F
13.8-4.16KV
10/14 MVA
Z = 6% @ 10 MVA
ONAN/ONAF

2000A 31.5KA NC

4.16 KV SWG-21F

2000A 31.5KA NO

4.16 KV SWG-21G

TRF-21G
13.8-4.16KV
10/14 MVA
Z = 6% @ 10 MVA
ONAN/ONAF

TRF-31G
13.8-0.48KV
2/2.67 MVA
Z = 5% @2MVA
AN/AF

TYPICAL MOTOR FEEDER

SPARE

NID CONTROL/SWGR BUILDING

4000A 65KA NC

480V BUS SWG-31F

4000A 65KA NO

480V BUS SWG-31G

TRF-33F
13.8-0.48KV
2/2.67 MVA
Z = 5.0% @2MVA
AN/AF

TRF-32F
13.8-0.48KV
2/2.67 MVA
Z = 5.0% @2MVA
AN/AF

NID MCC A

ID FAN MCC A

NID MCC C

ID FAN MCC B

NID MCC B

SPARE

TRF-32G
13.8-0.48KV
2/2.67 MVA
Z = 5.0% @2MVA
AN/AF

TRF-33G
13.8-0.48KV
2/2.67 MVA
Z = 5.0% @2MVA
AN/AF

NID CONTROL/SWGR BUILDING

480V BUS SWG-32F

480V BUS SWG-32G

XFMR MCC A

SPARE

ACI MCC A

FLY ASH MCC A

ACI AREA

FLY ASH BLOWER BUILDING

TRANSFORMER PDC

FLY ASH MCC B

ACI MCC B

XFMR MCC B

480V BUS SWG-33F

480V BUS SWG-33G

SPARE

LIME UNLOADING MCC A

ASH BLOWER MCC A

LOAD OUT AREA PDC

ASH BLOWER MCC B

LIME UNLOADING MCC B

SPARE

LIME UNLOADING BLOWER/ELECTRICAL BLDG

138KV FGD SUBSTATION

TRF-11A
138-13.8KV
40/53 MVA
Z= 5.0% @ 40MVA
ONAN/ONAF

TRF-11B
138-13.8KV
40/53 MVA
Z= 5.0% @ 40MVA
ONAN/ONAF

84KV MCOV

2000A 50KA NC

2000A 50KA NO

13.8KV BUS 11A

13.8KV BUS 11B

SPARE

7000 HP
EXISTING BOOSTER FAN A

14000 HP
ID FAN A

14000 HP
ID FAN B

7000 HP
EXISTING BOOSTER FAN B

TRANSFORMER PDC

NOTES:
1. - - - - - - INDICATES EXISTING EQUIPMENT.
2. ———— INDICATES NEW EQUIPMENT.

DATE	NO.	DESCRIPTION	APPD.
B	08/09/2010	ISSUED FOR USE	K. DAVE / K. NOWAKOWSKI
A	07/26/2010	FOR REVIEW	K. DAVE / K. NOWAKOWSKI
REV	DATE RELEASED	PURPOSE	PREPARED / REVIEWED / APPROVED

REVISIONS

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PRELIMINARY

PROFESSIONAL ENGINEER'S STAMP

CONTRACTOR/INSTALLER SHALL TAKE ALL APPROPRIATE PRECAUTIONS TO ENSURE THE SAFETY OF ALL PEOPLE INSTALLER'S PERSONNEL (OR THAT OF ITS SUBCONTRACTORS) PERFORMING THE WORK

KENTUCKY POWER CO.
BIG SANDY PLANT
UNIT 2
BIG SANDY KENTUCKY

AUXILIARY
ONE LINE DIAGRAM
NID (ESP IN)
UNIT 2

DWG. NO. ESK-NID-002_B

FILE NAME: ESK-NID-002

SCALE: -
DR: -
CH: -
SUPV: -
ENGR: -
DATE: -

APPROVED BY

ELECTRICAL & CONTROLS ENGINEERING DIV.

AEP AMERICAN ELECTRIC POWER
AEP SERVICE CORP
1 RIVERSIDE PLAZA
COLUMBUS, OH 43215

SYSTEM DATE= DD-MMM-YYYY
SYSTEM TIME= HOUR:MINUTE

IGS0694

ATTACHMENT 5-6
NID Detailed Capital Cost Estimate No. 30723 Base Est-1A ESP in Service (3.0 lb SO_2/MMbtu)

				AEP										Estimate No.:	30723C
				BIG SANDY UNIT 2										Project No.:	12721-000
				FGD PROJECT - NID BASE EST (ESP)-1A - 3.0 LB/MM BTU										Date:	9/29/2010
				ORDER OF MAGNITUDE COST ESTIMATE										Preparer:	MNO
		Cost Type:												Reviewer:	JMK
		Est=Estimated												Approver:	PEF
		Allow.=Allowance								Wage Rates Based on:		BIG SANDY			
		Q=Vendor Quote								Labor Productivity =		1.15			

Account No.	Item Description	Scope Definition	Cost Type	Quantity	Unit of Measure	Unit Equip.Cost	Unit Material Cost	Total Equipment Cost	Total Material Cost	Unit Man-hours (Base)	Total Man-hours (w/ productivity)	Crew Code	Crew Wage Rate	Total Construction & Erection Cost	Total Projected Cost
1.0	ID FANS														
1.1	ID FANS - OEM EQUIPMENT	1,795,000 ACFM WITH 14,600 HP MOTORS ($625,000 EACH). INCLUDES HYDRAULIC OIL UNITS, SEAL AIR FAN SKIDS, VIBRATION MONITORING EQUIPMENT, FAN STALL EQUIPMENT, FIELD SERVICE REP FOR 140 DAYS	EST	2	EA	3,144,000		6,288,000	0	7800.00	17,940	MECH	88.89	1,594,700	7,882,700
1.2	PIPING & SUPPORTS - MECHANICAL							21,800	28,700					120,500	171,000
	LARGE BORE PIPING	6" CS, SCH 40 WELDED	EST	200	LF		41.7	0	8,300	1.61	370	SPNG	94.41	35,000	43,300
	SMALL BORE PIPING	2" CS, SCH 80 WELDED	EST	50	LF		22.20	0	1,100	1.26	72	SPNG	94.41	6,800	7,900
	SMALL BORE PIPING	2" SS, SCH 80 WELDED	EST	250	LF		48.80	0	12,200	1.44	414	SPNG	94.41	39,100	51,300
	SMALL BORE PIPING	ALLOWANCE FOR MISC SIZE <2" SS, SCH 80 WELDED	EST	100	LF		33.70	0	3,400	1.32	152	SPNG	94.41	14,300	17,700
	VALVE	2" GLOBE, 150# SS, WELDED	EST	15	EA	1,450		21,800	0	5.64	97	SPNG	94.41	9,200	31,000
	PIPE SUPPORTS		EST	105	EA		35.00	0	3,700	1.50	181	MECH	88.89	16,100	19,800
1.3	DAMPERS							781,000	0					352,600	1,133,600
	INLET DAMPERS	2X50% DOUBLE LOUVER TYPE WITH SEAL AIR FANS TOTAL FOR TWO FANS	EST	580	SF	450		261,000	0	2.50	1,668	MECH	88.89	148,200	409,200
	OUTLET DAMPERS	2X50% GUILLOTINE DAMPERS, WITH SEAL AIR FANS TOTAL FOR TWO FANS	EST	800	SF	650		520,000	0	2.50	2,300	MECH	88.89	204,400	724,400
1.4	EXPANSION JOINTS		EST	570	LF		230.00	0	131,100	2.00	1,311	MECH	88.89	116,500	247,600
1.5	DUCTWORK	NID MODULE OUTLET TO ID FANS AND FROM ID FANS TO STACK - INCLUDES INTERNAL BRACING AND TURNING VANES	EST	800	TN		3,250.00	0	2,600,000	50.00	46,000	FLDU	107.96	4,966,200	7,566,200
1.6	DUCT SUPPORT STEEL	THREE COAT SHOP PAINT	EST	400	TN		2,900.00	0	1,160,000	24.00	11,040	STST	105.71	1,167,000	2,327,000
1.7	ID FAN INSULATION & LAGGING	TOTAL FOR TWO FANS. PRICING REFLECTS STANDARD ACOUSTICAL INSULATION	EST	4,200	SF		40.00	0	168,000	0.55	2,657	DINS	81.75	217,200	385,200
1.8	DUCTWORK INSULATION & LAGGING	INCLUDES INSULATION FOR SPRAY DRYER OUTLET DUCT TO NID MODULES SUPPLIED WITH THE OEM EQUIPMENT	EST	72,000	SF		12.00	0	864,000	0.25	20,700	DINS	81.75	1,692,200	2,556,200
1.9	DUCT SUPPORT STEEL - FOUNDATIONS							0	295,500					574,000	869,500
	EXCAVATION / BACKFILL		EST	1,900	CY			0	0	0.36	787	EXFD	90.00	70,800	70,800
	REINFORCING		EST	110	TN		1,150.00	0	126,500	20.00	2,530	REIN	78.27	198,000	324,500
	FORMWORK		EST	6,200	SF		2.50	0	15,500	0.14	998	FORM	99.43	99,300	114,800
	CONCRETE		EST	1,200	CY		105.00	0	126,000	1.50	2,070	CONP	79.64	164,900	290,900
	MUD MAT		EST	190	CY		105.00	0	20,000	1.50	328	CONP	79.64	26,100	46,100
	EMBEDDED STEEL		EST	3,000	LB		2.50	0	7,500	0.06	207	CARP	71.88	14,900	22,400
1.10	ID FAN FOUNDATIONS INCLUDING ID FAN AUX EQUIPMENT							0	106,000					198,700	304,700
	EXCAVATION / BACKFILL		EST	600	CY			0	0	0.36	248	EXFD	90.00	22,400	22,400
	REINFORCING		EST	40	TN		1,150.00	0	46,000	20.00	920	REIN	78.27	72,000	118,000
	FORMWORK		EST	1,500	SF		2.50	0	3,800	0.14	242	FORM	99.43	24,000	27,800
	CONCRETE		EST	400	CY		105.00	0	42,000	1.50	690	CONP	79.64	55,000	97,000
	MUD MAT		EST	40	CY		105.00	0	4,200	1.50	69	CONP	79.64	5,500	9,700
	EMBEDDED STEEL		EST	4,000	LB		2.50	0	10,000	0.06	276	CARP	71.88	19,800	29,800
1.11	NID CONTROL & SWITCHGEAR BUILDING - FOUNDATIONS							0	273,800					458,900	732,700
	EXCAVATION / BACKFILL		EST	1,160	CY			0	0	0.36	480	EXFD	90.00	43,200	43,200
	REINFORCING		EST	111	TN		1,150.00	0	127,700	20.00	2,553	REIN	78.27	199,800	327,500

AEP
BIG SANDY UNIT 2
FGD PROJECT - NID BASE EST (ESP)-1A - 3.0 LB/MM BTU
ORDER OF MAGNITUDE COST ESTIMATE

Estimate No.: 30723C
Project No.: 12721-000
Date: 9/29/2010
Preparer: MNO
Reviewer: JMK
Approver: PEF

Cost Type:
Est=Estimated
Allow.=Allowance
Q=Vendor Quote

Wage Rates Based on: BIG SANDY
Labor Productivity = 1.15

Account No.	Item Description	Scope Definition	Cost Type	Quantity	Unit of Measure	Unit Equip.Cost	Unit Material Cost	Total Equipment Cost	Total Material Cost	Unit Man-hours (Base)	Total Man-hours (w/ productivity)	Crew Code	Crew Wage Rate	Total Construction & Erection Cost	Total Projected Cost
	FORMWORK		EST	1,624	SF		2.50	0	4,100	0.14	261	FORM	99.43	26,000	30,100
	CONCRETE		EST	1,178	CY		105.00	0	123,700	1.50	2,032	CONP	79.64	161,800	285,500
	MUD MAT		EST	114	CY		105.00	0	12,000	1.50	197	CONP	79.64	15,700	27,700
	EMBEDDED STEEL		EST	2,500	LB		2.50	0	6,300	0.06	173	CARP	71.88	12,400	18,700
1.12	NID CONTROL & SWITCHGEAR BUILDING	SUBCONTRACT PRICE INCLUDES LABOR. COMPLETE WITH HVAC, FINISHES AND SANITARY FACILITIES	EST	7,875	SF		500.00	0	3,937,500	0.00	0	STST	105.71	0	3,937,500
1.13	TRANSFORMERS							770,000	0					145,600	915,600
	SST TRANSFORMERS: 21F & 21G	13.8KV-4160V, 3 PHASE, 2 WINDING	EST	2	EA	300000		600,000	0	500.00	1,150	EHEA	79.16	91,000	691,000
	SUS TRANSFORMERS: 31F, 31G	13.8KV-4160V, 3 PHASE, CAST COIL	EST	2	EA	85000		170,000	0	300.00	690	EHEA	79.16	54,600	224,600
1.14	SWITCHGEAR							1,082,000	0		0			569,000	1,651,000
	13KV MEDIUM VOLTAGE	PRICE PER SECTION	EST	10	EA	50000		500,000	0	230.00	2,645	EHEA	79.16	209,400	709,400
	4.16 KV MEDIUM VOLTAGE (21F/G)	PRICE PER SECTION	EST	10	EA	39200		392,000	0	280.00	3,220	EHEA	79.16	254,900	646,900
	480V LOW VOLTAGE (31F/G)	PRICE PER SECTION	EST	5	EA	38000		190,000	0	230.00	1,323	EHEA	79.16	104,700	294,700
1.15	CABLE BUS & TERMINATIONS							756,300	35,800		0			1,316,200	2,108,300
	15KV CABLE BUS TO 13F/G)	CABLE BUS	EST	1,300	FT	466		605,800	0	6.75	10,091	WIRE	98.84	997,400	1,603,200
	5KV CABLE BUS	CABLE BUS	EST	150	FT	385		57,800	0	4.70	811	WIRE	98.84	80,100	137,900
	480V CABLE BUS	CABLE BUS	EST	150	FT	618		92,700	0	10.30	1,777	WIRE	98.84	175,600	268,300
	CABLE BUS TERMINATION	500MCM- 15KV TERMINATIONS	EST	4	EA		1,800.00	0	7,200	33.00	152	WIRE	98.84	15,000	22,200
	CABLE BUS TERMINATION	1000MCM- 5KV TERMINATIONS	EST	4	EA		4,440.00	0	17,800	51.60	237	WIRE	98.84	23,500	41,300
	CABLE BUS TERMINATION	750MCM- 480V TERMINATIONS	EST	4	EA		2,700.00	0	10,800	54.00	248	WIRE	98.84	24,600	35,400
1.16	MCC							120,000	0					7,200	127,200
	480V MCC	PER LINE UP	EST	2	EA	30,000		60,000	0	16.00	37	WIRE	98.84	3,600	63,600
	DC MCC	PER LINE UP	EST	2	EA	30,000		60,000	0	16.00	37	WIRE	98.84	3,600	63,600
1.17	MIMIC PANELS		EST	1	EA	17500		17,500	0	40.00	46	WIRE	98.84	4,500	22,000
1.18	EMERGENCY POWER SYSTEM							285,500	0					38,900	324,400
	DC PANEL BOARD		EST	1	EA	15500		15,500	0	40.00	46	WIRE	98.84	4,500	20,000
	UPS PANEL BOARDS		EST	2	EA	15500		31,000	0	40.00	92	WIRE	98.84	9,100	40,100
	UPS		EST	1	EA	60000		60,000	0	32.00	37	WIRE	98.84	3,600	63,600
	SWITCHBOARD		EST	1	EA	40000		40,000	0	40.00	46	WIRE	98.84	4,500	44,500
	BYPASS TRANSFORMERS		EST	1	EA	25000		25,000	0	40.00	46	WIRE	98.84	4,500	29,500
	BATTERY CHARGER		EST	2	EA	32000		64,000	0	16.00	37	WIRE	98.84	3,600	67,600
	BATTERIES		EST	1	LT	50000		50,000	0	80.00	92	WIRE	98.84	9,100	59,100
1.19	HIGH VOLTAGE POWER CABLE & TERMINATION	1/C 750KCMIL- 13.8KV	EST	3,600	LF		51.75	0	186,300	0.69	2,865	WIRE	98.84	283,200	469,500
1.20	MEDIUM VOLTAGE POWER CABLE & TERMINATION							0	91,600		0			393,700	485,300
	1/C # 350KCMIL-5KV		EST	14,600	LF		6.13	0	89,500	0.23	3,862	WIRE	98.84	381,700	471,200
	1/C # 2/0-5KV		EST	900	LF		2.35	0	2,100	0.12	121	WIRE	98.84	12,000	14,100
1.21	LOW VOLTAGE POWER CABLE & TERMINATION							0	543,000		0			794,800	1,337,800
	3/C # 500KCMIL- 600V		EST	2,600	LF		26.12	0	67,900	0.69	2,063	WIRE	98.84	203,900	271,800

				AEP										Estimate No.:	30723C
				BIG SANDY UNIT 2										Project No.:	12721-000
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Account No.	Item Description	Scope Definition	Cost Type	Quantity	Unit of Measure	Unit Equip.Cost	Unit Material Cost	Total Equipment Cost	Total Material Cost	Unit Man-hours (Base)	Total Man-hours (w/ productivity)	Crew Code	Crew Wage Rate	Total Construction & Erection Cost	Total Projected Cost
	#4/0 - #12 AWG-600V		EST	65,800	LF		7.22	0	475,100	0.08	5,978	WIRE	98.84	590,900	1,066,000
1.22	CONTROL & INSTRUMENT CABLE	#14, #16 & PR # 20 & SHLD WIRE	EST	107,800	LF		3.20	0	345,000	0.08	9,794	WIRE	98.84	968,000	1,313,000
1.23	GROUNDING							11,100	0					37,200	48,300
	GROUND ROD	3/4" - 20' LONG EACH	EST	16	EA	150		2,400	0	4.00	74	WIRE	98.84	7,300	9,700
	500 MCM	BARE COPPER WIRE	EST	1,000	FT	7.65		7,700	0	0.12	138	WIRE	98.84	13,600	21,300
	CADWELD		EST	64	EA	15		1,000	0	2.00	147	WIRE	98.84	14,500	15,500
	GROUNDING TEST	TEST & DOCUMENTATION	EST	1	LT			0	0	16.00	18	WIRE	98.84	1,800	1,800
1.24	LIGHTING/ TRANSFORMERS & PANELS							26,000	30,000					29,500	85,500
	LIGHT FIXTURES		EST	40	EA		750	0	30,000	4.00	184	WIRE	98.84	18,200	48,200
	45KVA, 480V, 3 PHASE	LOW VOLTAGE XFMR	EST	1	EA	10000		10,000	0	40.00	46	WIRE	98.84	4,500	14,500
	37.7KVA, 480V, 3 PHASE	LOW VOLTAGE XFMR	EST	1	EA	7500		7,500	0	32.00	37	WIRE	98.84	3,600	11,100
	200A, 480-277V, 3 PHASE- RECEPTACLE PANEL	INCLUDING BREAKERS	EST	1	EA	5000		5,000	0	16.00	18	WIRE	98.84	1,800	6,800
	200A, 277V-120V, 3 PHASE- LIGHTING PANELS	INCLUDING BREAKERS	EST	1	EA	3500		3,500	0	12.00	14	WIRE	98.84	1,400	4,900
1.25	RACEWAY, CABLE TRAY, & CONDUIT							0	1,651,700		0			8,113,100	9,764,800
	12" X 6" AL CABLE TRAY	INCLUDING SUPPORT & FITTINGS	EST	5,120	LF		18.25	0	93,400	1.10	6,477	WIRE	98.84	640,200	733,600
	18" X 6" AL CABLE TRAY	INCLUDING SUPPORT & FITTINGS	EST	3,000	LF		21.50	0	64,500	1.45	5,003	WIRE	98.84	494,400	558,900
	24" X 6" AL CABLE TRAY	INCLUDING SUPPORT & FITTINGS	EST	9,200	LF		27.10	0	249,300	1.75	18,515	WIRE	98.84	1,830,000	2,079,300
	36" X 6" AL CABLE TRAY	INCLUDING SUPPORT & FITTINGS	EST	2,400	LF		30.30	0	72,700	1.95	5,382	WIRE	98.84	532,000	604,700
	5" RGS CONDUIT	INCLUDING SUPPORT & FITTINGS	EST	4,000	LF		61.00	0	244,000	1.13	5,184	WIRE	98.84	512,400	756,400
	4" RGS CONDUIT	INCLUDING SUPPORT & FITTINGS	EST	8,600	LF		31.00	0	266,600	0.81	7,981	WIRE	98.84	788,900	1,055,500
	3" RGS CONDUIT	INCLUDING SUPPORT & FITTINGS	EST	8,000	LF		21.50	0	172,000	0.65	5,934	WIRE	98.84	586,500	758,500
	2" RGS CONDUIT	INCLUDING SUPPORT & FITTINGS	EST	12,000	LF		9.25	0	111,000	0.35	4,858	WIRE	98.84	480,100	591,100
	1-1/2" RGS CONDUIT	INCLUDING SUPPORT & FITTINGS	EST	15,000	LF		7.15	0	107,300	0.28	4,899	WIRE	98.84	484,200	591,500
	1" RGS CONDUIT	INCLUDING SUPPORT & FITTINGS	EST	27,000	LF		4.44	0	119,900	0.24	7,421	WIRE	98.84	733,500	853,400
	3/4" RGS CONDUIT	INCLUDING SUPPORT & FITTINGS	EST	46,750	LF		3.23	0	151,000	0.19	10,430	WIRE	98.84	1,030,900	1,181,900
1.26	DUCT BANK							0	40,800					280,000	320,800
	DUCT BANK WITH 3-5" & 3-3" CONDUITS		EST	300	LF		142.42	0	14,200	3.17	1,094	ECND	75.97	83,100	97,300
	DUCT BANK WITH 6-5" & 6-3" CONDUITS		EST	375	LF		265.88	0	26,600	6.01	2,592	ECND	75.97	196,900	223,500
1.27	FOUNDATION FOR TRANSFORMERS							0	64,600		0			188,900	253,500
	EXCAVATION / BACKFILL		EST	950	CY			0	0	0.36	393	EXFD	90.00	35,400	35,400
	REINFORCING		EST	18	TN		1,150.00	0	20,700	20.00	414	REIN	78.27	32,400	53,100
	FORMWORK		EST	4,500	SF		2.50	0	11,300	0.14	725	FORM	99.43	72,000	83,300
	CONCRETE		EST	178	CY		105.00	0	18,700	1.50	307	CONP	79.64	24,500	43,200
	MUD MAT		EST	42	CY		105.00	0	4,400	1.50	72	CONP	79.64	5,800	10,200
	EMBEDDED STEEL		EST	3,800	LB		2.50	0	9,500	0.06	262	CARP	71.88	18,800	28,300
1.28	FIREWALL FOR TRANSFORMERS							0	3,200					8,300	11,500
	REINFORCING		EST	1.2	TN		1,150.00	0	1,400	20.00	28	REIN	78.27	2,200	3,600
	FORMWORK		EST	80	SF		2.50	0	200	0.14	13	FORM	99.43	1,300	1,500
	CONCRETE		EST	15	CY		105.00	0	1,600	3.50	60	CONP	79.64	4,800	6,400
1.29	COMMUNICATIONS		EST	1	LT		17,000.00	0	17,000	114.00	131	WIRE	98.84	13,000	30,000
1.30	LIGHTNING PROTECTION		EST	1	LT		12,000.00	0	12,000	81.00	93	WIRE	98.84	9,200	21,200

AEP

BIG SANDY UNIT 2

FGD PROJECT - NID BASE EST (ESP)-1A - 3.0 LB/MM BTU

ORDER OF MAGNITUDE COST ESTIMATE

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1.31	SECURITY SYSTEM		EST	1	LT		8,000.00	0	8,000	62.00	71	WIRE	98.84	7,000	15,000
90.00	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS							10,159,200	12,593,600		256,519			24,665,800	47,418,600
	OTHER DIRECT & CONSTRUCTION INDIRECT COSTS														
	ADDITIONAL CRANE ALLOWANCE								0					0	0
	MOBILIZATION / DEMOBILIZATION - INCLUDED IN WAGE RATES ABOVE														0
	COST DUE TO OVERTIME WORKING 5 X10 HOUR DAYS			1	LS										3,817,995
	COST DUE TO OVERTIME INEFFICIENCY - SPECIFY % INEFFICIENCY			8.00	%						22,306		83.48	1,862,000	1,862,000
	COST DUE TO OVERTIME PAY @1.5 TIMES OVERTIME PAY RATE SPECIFY % ADDITIONAL HOURS PAID ON ACTUAL HOURS WORKED			10.00	%						27,883			1,955,995	1,955,995
	PER DIEM	NONE		0.00	HR						306,708			0	0
	CONSUMABLES - % of ACCT NO. 90			0.5	%				62,968					123,329	186,297
	FREIGHT ON MATERIAL - % of ACCT NO. 90			5.0	%				629,680						629,680
	FREIGHT ON EQUIPMENT - % of ACCT NO. 90			5.0	%			507,960							507,960
	SCAFFOLDING - % OF ACCT NO. 90			5.0	%				629,680					1,233,290	1,862,970
	CONTRACTOR'S GENERAL AND ADMINISTRATION & PROFIT			15	%				1,889,040					3,699,870	5,588,910
	SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS							508,000	3,211,400					8,874,500	12,593,800
	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	ID FANS						10,667,200	15,805,000					33,540,300	60,012,400
2.0	NID MODULES														
2.1	MECHANICAL EQUIPMENT	A 12-MODULE NID SYSTEM (160' X 160') INCLUDING LIME DAY SILOS, HYDRATORS, MIXERS, J-DUCTS, FABRIC FILTER MODULES, ALL INTERNAL ELEMENTS (BAGS, CAGES, ASH HOPPERS, 2 BROKEN BAG DETECTORS/COMPARTMENT), ASH RECYCLE SYSTEM, VACUUM PIPING, AND ALL INTERNAL PIPING & DUCTWORK FOR THE VARIOUS MODULES.	EST	1	LT	49,311,000		49,311,000	0	311600.00	358,340	MECH	88.89	31,852,800	81,163,800
2.2	INSULATION FOR NID MODULES	SUBCONTRACT COST INCLUDES LABOR	EST	80,640	SF	30		2,419,200	0	0.00	0	DINS	81.75	0	2,419,200
2.3	PENTHOUSE FOR NID MODULES	14 FT HIGH, 25600 SF						58,100	1,316,900					1,747,600	3,122,600
	SUPPORT STEEL AND PURLINS	THREE COAT PAINT	EST	200	TN		2,900.00	0	580,000	24.00	5,520	STST	105.71	583,500	1,163,500
	SIDING FOR PENTHOUSE		EST	8,960	SF		12.00	0	107,500	0.11	1,133	SDNG	93.41	105,900	213,400
	CONCRETE FLOOR FOR PENTHOUSE		EST	632	CY		230.00	0	145,400	7.50	5,451	SDNG	93.41	509,200	654,600
	ROOFING FOR PENTHOUSE		EST	25,600	SF		18.00	0	460,800	0.22	6,477	ROOF	69.12	447,700	908,500
	H&V		EST	1	LT	58100	23240	58,100	23,200	1084.00	1,247	HVAC	81.24	101,300	182,600
2.4	BOTTOM ENCLOSURE FOR NID MODULES	40 FT HIGH						92,200	2,428,900					2,544,900	5,066,000
	SUPPORT STEEL AND PURLINS	THREE COAT PAINT	EST	560	TN		2,900.00	0	1,624,000	24.00	15,456	STST	105.71	1,633,900	3,257,900
	SIDING FOR BOTTOM ENCLOSURE		EST	25,600	SF		12.00	0	307,200	0.11	3,238	SDNG	93.41	302,500	609,700
	ROOFING FOR BOTTOM ENCLOSURE		EST	25,600	SF		18.00	0	460,800	0.22	6,477	ROOF	69.12	447,700	908,500
	H&V		EST	1	LT	92200	36880	92,200	36,900	1721.33	1,980	HVAC	81.24	160,800	289,900
2.5	PIPING & SUPPORTS - MECHANICAL							125,200	174,500					385,900	685,600
	LARGE BORE PIPING	4" CS, SCHEDULE 40, WELDED	EST	300	LF		23.0	0	6,900	1.48	511	SPNG	94.41	48,200	55,100
	LARGE BORE PIPING	6" SS, SCH 40 WELDED	EST	400	LF		111.00	0	44,400	2.02	929	SPNG	94.41	87,700	132,100
	LARGE BORE PIPING	18" CS, STD WELDED	EST	400	LF		234.10	0	93,600	2.34	1,076	SPNG	94.41	101,600	195,200
	SMALL BORE PIPING	2" CS, SCH 80 WELDED	EST	150	LF		22.20	0	3,300	1.26	217	SPNG	94.41	20,500	23,800
	SMALL BORE PIPING	2" SS, SCH 80 WELDED	EST	100	LF		48.80	0	4,900	1.44	166	SPNG	94.41	15,600	20,500

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	SMALL BORE PIPING	ALLOWANCE FOR MISC SIZE <2" SS, SCH 80 WELDED	EST	300	LF		33.70	0	10,100	1.32	455	SPNG	94.41	43,000	53,100
	VALVE	18" GATE, 150 #, CS, WELDED	EST	4	EA	17,500		70,000	0	28.30	130	SPNG	94.41	12,300	82,300
	VALVE	6" GATE, 150 #, SS, WELDED	EST	6	EA	4,700		28,200	0	12.96	89	SPNG	94.41	8,400	36,600
	VALVE	4" GATE, 150 #, CS, WELDED	EST	5	EA	2,500		12,500	0	7.70	44	SPNG	94.41	4,200	16,700
	VALVE	2" GLOBE, 150# SS, WELDED	EST	10	EA	1,450		14,500	0	5.64	65	SPNG	94.41	6,100	20,600
	PIPE SUPPORTS		EST	150	EA		75.00	0	11,300	2.50	431	MECH	88.89	38,300	49,600
2.6	DUCTWORK							0	6,175,000					11,794,600	17,969,600
	NID MODULE INLET	INCLUDES INTERNAL BRACING AND TURNING VANES	EST	1,900	TN		3,250.00	0	6,175,000	50.00	109,250	FLDU	107.96	11,794,600	17,969,600
2.7	DUCT SUPPORT STEEL	THREE COAT SHOP PAINT	EST	950	TN		2,900.00	0	2,755,000	24.00	26,220	STST	105.71	2,771,700	5,526,700
2.8	DUCTWORK INSULATION & LAGGING		EST	170,000	SF		12.00	0	2,040,000	0.25	48,875	DINS	81.75	3,995,500	6,035,500
2.9	NID MODULE- FOUNDATIONS							0	1,087,000					1,778,100	2,865,100
	EXCAVATION / BACKFILL		EST	4,400	CY			0	0	0.36	1,822	EXFD	90.00	163,900	163,900
.	REINFORCING		EST	450	TN		1,150.00	0	517,500	20.00	10,350	REIN	78.27	810,100	1,327,600
	FORMWORK		EST	3,200	SF		2.50	0	8,000	0.14	515	FORM	99.43	51,200	59,200
	CONCRETE		EST	4,750	CY		105.00	0	498,800	1.50	8,194	CONP	79.64	652,600	1,151,400
	MUD MAT		EST	340	CY		105.00	0	35,700	1.50	587	CONP	79.64	46,700	82,400
	EMBEDDED STEEL		EST	10,800	LB		2.50	0	27,000	0.06	745	CARP	71.88	53,600	80,600
2.10	NID MODULE - SUPPORT STEEL AND ACCESS GALLERY							0	1,152,000					2,863,700	4,015,700
	SUPPORT STEEL	MATERIAL INCLUDED WITH OEM EQUIPMENT	EST	640	TN			0	0	24.00	17,664	STST	105.71	1,867,300	1,867,300
	ACCESS GALLERY		EST	25,600	SF		45.00	0	1,152,000	0.40	11,776	GALL	84.61	996,400	2,148,400
2.11	GROUNDING							0	16,000		0			46,100	62,100
	GROUND ROD	3/4" - 20' LONG	EST	16	EA		150	0	2,400	4.00	74	WIRE	98.84	7,300	9,700
	500 MCM	BARE COPPER WIRE	EST	1,650	FT		7.65	0	12,600	0.12	228	WIRE	98.84	22,500	35,100
	CADWELD		EST	64	EA		15	0	1,000	2.00	147	WIRE	98.84	14,500	15,500
	GROUNDING TEST	TEST & DOCUMENTATION	EST	1	LT			0	0	16.00	18	WIRE	98.84	1,800	1,800
2.12	LIGHTING/ TRANSFORMERS & PANELS							27,000	75,000		0			57,300	159,300
	LIGHT FIXTURES		EST	100	EA		750	0	75,000	4.00	460	WIRE	98.84	45,500	120,500
	45KVA, 480V, 3 PHASE	LOW VOLTAGE XFMR	EST	2	EA	10000		20,000	0	40.00	92	WIRE	98.84	9,100	29,100
	200A, 277V-120V, 3 PHASE- LIGHTING PANELS	INCLUDING BREAKERS	EST	2	EA	3500		7,000	0	12.00	28	WIRE	98.84	2,700	9,700
2.13	RACEWAY, CABLE TRAY, & CONDUIT	INCLUDED IN ID FANS, 1.0													
90.00	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS							52,032,700	17,220,300		646,477			59,838,200	129,091,200
	OTHER DIRECT & CONSTRUCTION INDIRECT COSTS														
	ADDITIONAL CRANE ALLOWANCE			9	MN	75000		675,000		720.00	7,452	MECH	88.89	662400	1,337,400
	MOBILIZATION / DEMOBILIZATION - INCLUDED IN WAGE RATES ABOVE														0
	COST DUE TO OVERTIME WORKING 5 X10 HOUR DAYS			1	LS										9,674,751
	COST DUE TO OVERTIME INEFFICIENCY - SPECIFY % INEFFICIENCY			8.00	%						56,215		83.48	4,693,000	4,693,000
	COST DUE TO OVERTIME PAY @1.5 TIMES OVERTIME PAY RATE SPECIFY % ADDITIONAL HOURS PAID ON ACTUAL HOURS WORKED			10.00	%						71,014			4,981,751	4,981,751
	PER DIEM	NONE		0.00	HR						781,159			0	0
	CONSUMABLES - % of ACCT NO. 90			0.5	%				86,102					299,191	385,293
	FREIGHT ON MATERIAL - % of ACCT NO. 90			5.0	%				861,015						861,015
	FREIGHT ON EQUIPMENT - % of ACCT NO. 90			5.0	%			2,601,635							2,601,635
	SCAFFOLDING - % OF ACCT NO. 90			5.0	%				861,015					2,991,910	3,852,925

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	CONTRACTOR'S GENERAL AND ADMINISTRATION & PROFIT EXPENSE - % of ACCT NO. 90			15	%				2,583,045					8,975,730	11,558,775
	SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS							3,276,600	4,391,200					22,604,000	30,271,800
	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	NID MODULES						55,309,300	21,611,500					82,442,200	159,363,000
3.0	NEW STACK														
3.1	CONCRETE STACK (DRY)	PROVIDED BY AEP													19,350,000
90.00	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS														19,350,000
	CONTRACTOR'S GENERAL AND ADMINISTRATION EXPENSE & PROFIT			15	%				0						2,902,500
	SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS														2,902,500
	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	NEW STACK													22,252,500
4.0	LIME HANDLING SYSTEM														
4.1	LIME STORAGE SILO							6,770,000	0					0	6,770,000
	SILO	CONCRETE SILO 65' DIA X 126' H - 8100 TONS -SUBCONTRACT COST INCLUDES LABOR	EST	2	EA	3,240,000.00		6,480,000	0	0.00	0	CONP	79.64	0	6,480,000
	ELEVATOR	MAINTENANCE ELEVATOR COMMON FOR BOTH SILOS - SUBCONTRACT COST INCLUDES LABOR	EST	1	EA	290,000.00		290,000	0	0.00	0	MECH	88.89	0	290,000
4.2	LIME UNLOADING SYSTEM	INCLUDE PNEUMATIC HANDLING SYSTEM, THREE VACUUM EXHAUSTERS, TWO FILTER SEPARATORS	EST	1	LT	595,000		595,000	0	4675.00	5,376	MECH	88.89	477,900	1,072,900
4.3	LIME TRANSPORT SYSTEM TO DAY BINS	INCLUDE PNEUMATIC HANDLING SYSTEM, THREE VACUUM EXHAUSTERS, TWO FILTER SEPARATORS	EST	1	LT	1,100,000		1,100,000	0	6400.00	7,360	MECH	88.89	654,200	1,754,200
4.4	PIPING - MECHANICAL							88,700	130,300					342,600	561,600
	LARGE BORE PIPING	14" CS, SCH 40 WELDED - ON PIPE RACK	EST	500	LF		163.1	0	81,600	1.67	960	SPNG	94.41	90,700	172,300
	LARGE BORE PIPING	8" HDPE (UNDERGROUND)	EST	1,200	LF		14.1	0	16,900	0.83	1,145	SPNG	94.41	108,100	125,000
	LARGE BORE PIPING	6" CS, SCH 40 WELDED	EST	200	LF		41.7	0	8,300	1.61	370	SPNG	94.41	35,000	43,300
	SMALL BORE PIPING	2" CS, SCH 80 WELDED	EST	50	LF		22.20	0	1,100	1.26	72	SPNG	94.41	6,800	7,900
	SMALL BORE PIPING	2" SS, SCH 80 WELDED	EST	50	LF		48.80	0	2,400	1.44	83	SPNG	94.41	7,800	10,200
	SMALL BORE PIPING	ALLOWANCE FOR MISC SIZE <2" SS, SCH 80 WELDED	EST	100	LF		33.70	0	3,400	1.32	152	SPNG	94.41	14,300	17,700
	VALVE	2" GLOBE, 150# SS, WELDED	EST	6	EA	1,450		8,700	0	5.64	39	SPNG	94.41	3,700	12,400
	VALVE	8" AIR OPERATED, 150 #, CS, FLANGED	EST	4	EA	17,000		68,000	0	19.30	89	SPNG	94.41	8,400	76,400
	VALVE	14" BFLY 150# CS, FLANGED	EST	4	EA	3,000		12,000	0	16.60	76	SPNG	94.41	7,200	19,200
	EXCAVATION / BACKFILL	FOR UNDERGROUND PIPING	EST	1,000	CY			0	0	0.20	230	EXFD	90.00	20,700	20,700
	BEDDING	FOR UNDERGROUND PIPING	EST	133	CY		35.0	0	4,700	0.25	38	EXFD	90.00	3,500	8,200
	PIPE SUPPORTS		EST	238	EA		50.00	0	11,900	1.50	410	MECH	88.89	36,400	48,300
4.5	LIME STORAGE SILO ACCESS STAIR TOWER	INCLUDES CATWALK TO THE SECOND SILO - THREE COAT SHOP PAINT	EST	55	TN		2,900.00	0	159,500	24.00	1,518	STST	105.71	160,500	320,000
4.6	PIPE RACK FOR LIME HANDLING, WASTE HANDLING AND MISC MECHANICAL PIPING	THREE COAT SHOP PAINT	EST	650	TN		2,900.00	0	1,885,000	24.00	17,940	STST	105.71	1,896,400	3,781,400
4.7	RAIL CAR UNLOADING AREA - FOUNDATIONS	20' X 120' - NO SIDING						0	42,700					90,100	132,800
	EXCAVATION / BACKFILL		EST	500	CY			0	0	0.36	207	EXFD	90.00	18,600	18,600
	REINFORCING		EST	15	TN		1,150.00	0	17,300	20.00	345	REIN	78.27	27,000	44,300
	FORMWORK		EST	750	SF		2.50	0	1,900	0.14	121	FORM	99.43	12,000	13,900

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	CONCRETE		EST	200	CY		105.00	0	21,000	1.50	345	CONP	79.64	27,500	48,500
	MUD MAT		EST	0	CY		105.00	0	0	1.50	0	CONP	79.64	0	0
	EMBEDDED STEEL		EST	1,000	LB		2.50	0	2,500	0.06	69	CARP	71.88	5,000	7,500
4.8	LIME UNLOADING BLOWER / ELECTRICAL BUILDING - FOUNDATIONS							0	69,600					147,600	217,200
	EXCAVATION / BACKFILL		EST	800	CY			0	0	0.36	331	EXFD	90.00	29,800	29,800
	REINFORCING		EST	25	TN		1,150.00	0	28,800	20.00	575	REIN	78.27	45,000	73,800
	FORMWORK		EST	1,200	SF		2.50	0	3,000	0.14	193	FORM	99.43	19,200	22,200
	CONCRETE		EST	300	CY		105.00	0	31,500	1.50	518	CONP	79.64	41,200	72,700
	MUD MAT		EST	0	CY		105.00	0	0	1.50	0	CONP	79.64	0	0
	EMBEDDED STEEL		EST	2,500	LB		2.50	0	6,300	0.06	173	CARP	71.88	12,400	18,700
4.9	LIME UNLOADING BLOWER / ELECTRICAL BUILDING	100' L X 30' W X 30' H						75,000	335,000					24,400	434,400
	PRE-ENGINEERED BUILDING INCLUDING H&V AND LIGHTING	SUBCONTRACT PRICE, INCLUDES LABOR	EST	3,000	SF		105	0	315,000	0.00	0	STST	105.71	0	315,000
	ADDITIONAL HVAC UNIT FOR ELECTRICAL ROOM & CONTROLS	40T PACKAGED UNIT FOR ELECTRICAL EQUIPMENT ROOM. INCLUDES ALLOWANCE FOR CONCRETE PAD AND ELECTRICAL WORK	EST	1	LT	75000	20000	75,000	20,000	350.00	300	HVAC	81.24	24,400	119,400
4.10	CONCRETE PIT FOR THE ELEVATOR		EST	10	CY		230.00	0	2,300	7.50	86	CONP	79.64	6,900	9,200
4.11	LIME STORAGE SILO - FOUNDATIONS	INCLUDES FOUNDATIONS FOR LIME TRANSPORT SYSTEM PRESSURE BLOWERS						0	368,100					676,300	1,044,400
	EXCAVATION / BACKFILL		EST	2,900	CY			0	0	0.36	1,201	EXFD	90.00	108,100	108,100
	REINFORCING		EST	147.0	TN		1,150.00	0	169,100	20.00	3,381	REIN	78.27	264,600	433,700
	FORMWORK		EST	2,600	SF		2.50	0	6,500	0.14	419	FORM	99.43	41,600	48,100
	CONCRETE		EST	1,600	CY		105.00	0	168,000	1.50	2,760	CONP	79.64	219,800	387,800
	MUD MAT		EST	90	CY		105.00	0	9,500	1.50	155	CONP	79.64	12,400	21,900
	EMBEDDED STEEL		EST	6,000	LB		2.50	0	15,000	0.06	414	CARP	71.88	29,800	44,800
4.12	LIME STORAGE SILO ACCESS STAIR TOWER - FOUNDATIONS							0	14,200					28,600	42,800
	EXCAVATION / BACKFILL		EST	110	CY			0	0	0.36	46	EXFD	90.00	4,100	4,100
	REINFORCING		EST	4.8	TN		1,150.00	0	5,500	20.00	110	REIN	78.27	8,600	14,100
	FORMWORK		EST	320	SF		2.50	0	800	0.14	52	FORM	99.43	5,100	5,900
	CONCRETE		EST	60	CY		105.00	0	6,300	1.50	104	CONP	79.64	8,200	14,500
	MUD MAT		EST	8	CY		105.00	0	800	1.50	14	CONP	79.64	1,100	1,900
	EMBEDDED STEEL		EST	300	LB		2.50	0	800	0.06	21	CARP	71.88	1,500	2,300
4.13	PIPE RACK - FOUNDATIONS							0	239,600					588,600	828,200
	EXCAVATION / BACKFILL		EST	3,200	CY			0	0	0.36	1,325	EXFD	90.00	119,200	119,200
	REINFORCING		EST	90.0	TN		1,150.00	0	103,500	20.00	2,070	REIN	78.27	162,000	265,500
	FORMWORK		EST	9,500	SF		2.50	0	23,800	0.14	1,530	FORM	99.43	152,100	175,900
	CONCRETE		EST	950	CY		105.00	0	99,800	1.50	1,639	CONP	79.64	130,500	230,300
	MUD MAT		EST	0	CY		105.00	0	0	1.50	0	CONP	79.64	0	0
	EMBEDDED STEEL		EST	5,000	LB		2.50	0	12,500	0.06	345	CARP	71.88	24,800	37,300
4.14	TRANSFORMERS	SUS TRANSFORMERS: 33F, 33G, 13.8KV-480V,3PHASE, 3 WINDING XFMR	EST	2	EA	85000		170,000	0	300.00	690	EHEA	79.16	54,600	224,600
4.15	SWITCHGEAR	480V LOW VOLTAGE (33F/G), SWITCHGEAR	EST	5	EA	39200		196,000	0	230.00	1,323	EHEA	79.16	104,700	300,700
4.16	CABLE BUS DUCT							134,700	10,800					200,200	345,700
	480V CABLE BUS	BUST DUCT ONLY	EST	150	FT	898		134,700	0	10.30	1,777	WIRE	98.84	175,600	310,300
	CABLE BUS TERMINATION	750MCM- 480V TERMINATIONS	EST	4	EA		2,700.00	0	10,800	54.00	248	WIRE	98.84	24,600	35,400

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4.17	MCC							61,800	0					3,600	65,400
	480V MCC	PER LINE UP	EST	2	EA	30900		61,800	0	16.00	37	WIRE	98.84	3,600	65,400
4.18	MIMIC PANELS		EST	1	EA	17500		17,500	0	12.00	14	WIRE	98.84	1,400	18,900
4.19	EMERGENCY POWER SYSTEM							108,300	0					24,400	132,700
	DC PANEL BOARD		EST	1	EA	15450		15,500	0	40.00	46	WIRE	98.84	4,500	20,000
	UPS PANEL BOARDS		EST	1	EA	15450		15,500	0	40.00	46	WIRE	98.84	4,500	20,000
	SATELLITE UPS		EST	1	EA	41200		41,200	0	16.00	18	WIRE	98.84	1,800	43,000
	VRLA BATTERIES		EST	1	LT	36050		36,100	0	120.00	138	WIRE	98.84	13,600	49,700
4.20	GROUNDING							13,300	0					41,300	54,600
	GROUND ROD	3/4" - 20' LONG	EST	16	EA	150		2,400	0	4.00	74	WIRE	98.84	7,300	9,700
	500 MCM	BARE COPPER WIRE	EST	1,300	FT	7.65		9,900	0	0.12	179	WIRE	98.84	17,700	27,600
	CADWELD		EST	64	EA	15		1,000	0	2.00	147	WIRE	98.84	14,500	15,500
	GROUNDING TEST	TEST & DOCUMENTATION	EST	1	LT			0	0	16.00	18	WIRE	98.84	1,800	1,800
4.21	LIGHTING/ TRANSFORMERS & PANELS							52,000	135,000					104,500	291,500
	LIGHT FIXTURES		EST	180	EA		750	0	135,000	4.00	828	WIRE	98.84	81,800	216,800
	45KVA, 480V, 3 PHASE	LOW VOLTAGE XFMR	EST	2	EA	10000		20,000	0	40.00	92	WIRE	98.84	9,100	29,100
	37.7KVA, 480V, 3 PHASE	LOW VOLTAGE XFMR	EST	2	EA	7500		15,000	0	32.00	74	WIRE	98.84	7,300	22,300
	200A, 480-277V, 3 PHASE- RECEPTACLE PANEL	INCLUDING BREAKERS	EST	2	EA	5000		10,000	0	16.00	37	WIRE	98.84	3,600	13,600
	200A, 277V-120V, 3 PHASE- LIGHTING PANELS	INCLUDING BREAKERS	EST	2	EA	3500		7,000	0	12.00	28	WIRE	98.84	2,700	9,700
4.22	RACEWAY, CABLE TRAY, & CONDUIT							0	310,900					1,537,100	1,848,000
	12" X 6" AL CABLE TRAY	INCLUDING SUPPORT & FITTINGS	EST	1,050	LF		18.25	0	19,200	1.10	1,328	WIRE	98.84	131,300	150,500
	18" X 6" AL CABLE TRAY	INCLUDING SUPPORT & FITTINGS	EST	600	LF		21.50	0	12,900	1.45	1,001	WIRE	98.84	98,900	111,800
	24" X 6" AL CABLE TRAY	INCLUDING SUPPORT & FITTINGS	EST	1,700	LF		27.10	0	46,100	1.75	3,421	WIRE	98.84	338,200	384,300
	36" X 6" AL CABLE TRAY	INCLUDING SUPPORT & FITTINGS	EST	500	LF		30.30	0	15,200	1.95	1,121	WIRE	98.84	110,800	126,000
	5" RGS CONDUIT	INCLUDING SUPPORT & FITTINGS	EST	750	LF		61.00	0	45,800	1.13	972	WIRE	98.84	96,100	141,900
	4" RGS CONDUIT	INCLUDING SUPPORT & FITTINGS	EST	1,450	LF		31.00	0	45,000	0.81	1,346	WIRE	98.84	133,000	178,000
	3" RGS CONDUIT	INCLUDING SUPPORT & FITTINGS	EST	1,550	LF		21.50	0	33,300	0.65	1,150	WIRE	98.84	113,600	146,900
	2" RGS CONDUIT	INCLUDING SUPPORT & FITTINGS	EST	2,400	LF		9.25	0	22,200	0.35	972	WIRE	98.84	96,000	118,200
	1-1/2" RGS CONDUIT	INCLUDING SUPPORT & FITTINGS	EST	3,050	LF		7.15	0	21,800	0.28	996	WIRE	98.84	98,500	120,300
	1" RGS CONDUIT	INCLUDING SUPPORT & FITTINGS	EST	5,150	LF		4.44	0	22,900	0.24	1,415	WIRE	98.84	139,900	162,800
	3/4" RGS CONDUIT	INCLUDING SUPPORT & FITTINGS	EST	8,200	LF		3.23	0	26,500	0.19	1,829	WIRE	98.84	180,800	207,300
4.23	HIGH VOLTAGE POWER CABLE & TERMINATION	1/C # 500KCMIL- 15KV	EST	15,600	LF		9.27	0	144,600	0.23	4,126	WIRE	98.84	407,800	552,400
4.24	MEDIUM VOLTAGE POWER CABLE & TERMINATION	1/C 350KCMIL-15KV	EST	10,800	LF		6.13	0	66,200	0.23	2,857	WIRE	98.84	282,300	348,500
4.25	LOW VOLTAGE POWER CABLE & TERMINATION							0	93,000					143,200	236,200
	3/C # 500KCMIL- 600V		EST	600	LF		26.12	0	15,700	0.69	476	WIRE	98.84	47,100	62,800
	#4/0 - #12 AWG-600V		EST	10,700	LF		7.22	0	77,300	0.08	972	WIRE	98.84	96,100	173,400
4.26	CONTROL & INSTRUMENT CABLE	#14, #16 & PR # 20 & SHLD WIRE	EST	8,200	LF		3.20	0	26,200	0.08	745	WIRE	98.84	73,600	99,800
4.27	DUCT BANK	DUCT BANK WITH 4-5" & 4-3" CONDUITS, 2.38' H X 3.79' W	EST	350	LF		174.67	0	61,100	3.80	1,530	ECND	75.97	116,200	177,300

				AEP										Estimate No.:	30723C
				BIG SANDY UNIT 2										Project No.:	12721-000
				FGD PROJECT - NID BASE EST (ESP)-1A - 3.0 LB/MM BTU										Date:	9/29/2010
				ORDER OF MAGNITUDE COST ESTIMATE										Preparer:	MNO
		Cost Type:												Reviewer:	JMK
		Est=Estimated												Approver:	PEF
		Allow.=Allowance								Wage Rates Based on:		BIG SANDY			
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4.28	FOUNDATIONS FOR TRANSFORMERS	FOR XFMR 33F, 33G, INCLUDES MUD MAT	EST	14.0	CY		250	0	3,500	8.00	129	CONP	79.64	10,300	13,800
4.29	COMMUNICATIONS		EST	1	LT		34,000.00	0	34,000	229.00	263	WIRE	98.84	26,000	60,000
4.30	LIGHTNING PROTECTION		EST	1	LT		6,000.00	0	6,000	41.00	47	WIRE	98.84	4,700	10,700
4.31	SECURITY SYSTEM		EST	1	LT		8,000.00	0	8,000	62.00	71	WIRE	98.84	7,000	15,000
90.00	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS							9,382,300	4,145,600		87,285			8,237,000	21,764,900
	OTHER DIRECT & CONSTRUCTION INDIRECT COSTS														
	ADDITIONAL CRANE ALLOWANCE								0					0	0
	MOBILIZATION / DEMOBILIZATION - INCLUDED IN WAGE RATES ABOVE														0
	COST DUE TO OVERTIME WORKING 5 X10 HOUR DAYS			1	LS										1,299,562
	COST DUE TO OVERTIME INEFFICIENCY - SPECIFY % INEFFICIENCY			8.00	%						7,590		83.48	634,000	634,000
	COST DUE TO OVERTIME PAY @1.5 TIMES OVERTIME PAY RATE SPECIFY % ADDITIONAL HOURS PAID ON ACTUAL HOURS WORKED			10.00	%						9,488			665,562	665,562
	PER DIEM	NONE		0.00	HR						104,363			0	0
	CONSUMABLES - % of ACCT NO. 90			0.5	%				20,728					41,185	61,913
	FREIGHT ON MATERIAL - % of ACCT NO. 90			5.0	%				207,280						207,280
	FREIGHT ON EQUIPMENT - % of ACCT NO. 90			5.0	%			469,115							469,115
	SCAFFOLDING - % OF ACCT NO. 90			5.0	%				207,280					411,850	619,130
	CONTRACTOR'S GENERAL AND ADMINISTRATION & PROFIT EXPENSE - % of ACCT NO. 90			15	%				621,840					1,235,550	1,857,390
	SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS							469,100	1,057,100					2,988,100	4,514,400
	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	LIME HANDLING SYSTEM						9,851,400	5,202,700					11,225,100	26,279,300
5.0	LIME SLAKER BUILDING	NOT REQUIRED FOR NID													0
6.0	BYPRODUCT WASTE & FLY ASH HANDLING SYSTEMS														0
6.1	BYPRODUCT WASTE HANDLING - MECHANICAL EQUIPMENT	INCLUDES PNEUMATIC HANDLING SYSTEM, THREE PRESSURE BLOWERS, ONE BIN VENT FILTER, ASH UNLOADING SYSTEM	EST	1	LT	2,386,000		2,386,000	0	14200.00	16,330	MECH	88.89	1,451,600	3,837,600
6.2	FLY ASH HANDLING - MECHANICAL EQUIPMENT	INCLUDES PNEUMATIC HANDLING SYSTEM, TWO PRESSURE EXHAUSTERS, TRANSFER STATION, ONE BIN VENT FILTER, ASH UNLOADING SYSTEM	EST	1	LT	2,285,000		2,285,000	0	14000.00	16,100	MECH	88.89	1,431,100	3,716,100
6.3	BUILDING SUMP PUMPS	FOR BUILDINGS - DUPLEX. INCLUDES CHECK & ISOLATION VALVES.		2	EA	14,000		28,000	0	60.00	138	MECH	88.89	12,300	40,300
6.4	AGITATOR FOR SUMP PUMPS	5 HP		1	EA	12,000		12,000	0	45.00	52	MECH	88.89	4,600	16,600
6.5	PIPING - MECHANICAL		EST	1	LT			142,800	131,000					408,700	682,500
	LARGE BORE PIPING	4" SS, SCHEDULE 40, WELDED - ON PIPE RACK	EST	300	LF		45.1	0	13,500	0.87	300	SPNG	94.41	28,300	41,800
	LARGE BORE PIPING	6" CS, SCH 40 WELDED - ON PIPE RACK	EST	200	LF		32.2	0	6,400	0.88	202	SPNG	94.41	19,100	25,500
	LARGE BORE PIPING	6" CS, SCH 40 WELDED	EST	100	LF		41.7	0	4,200	1.61	185	SPNG	94.41	17,500	21,700
	LARGE BORE PIPING	8" HDPE (UNDERGROUND)	EST	400	LF		14.1	0	5,600	0.83	382	SPNG	94.41	36,000	41,600

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	LARGE BORE PIPING	10" CS, SCH 40 WELDED	EST	300	LF		110.3	0	33,100	2.40	828	SPNG	94.41	78,200	111,300
	LARGE BORE PIPING	20" HDPE (UNDERGROUND)	EST	600	LF		72.8	0	43,700	1.45	1,001	SPNG	94.41	94,500	138,200
	SMALL BORE PIPING	2" CS, SCH 80 WELDED	EST	50	LF		22.20	0	1,100	1.26	72	SPNG	94.41	6,800	7,900
	SMALL BORE PIPING	2" SS, SCH 80 WELDED	EST	50	LF		48.80	0	2,400	1.44	83	SPNG	94.41	7,800	10,200
	SMALL BORE PIPING	ALLOWANCE FOR MISC SIZE <2" SS, SCH 80 WELDED	EST	100	LF		33.70	0	3,400	1.32	152	SPNG	94.41	14,300	17,700
	VALVE	2" GLOBE, 150# SS, WELDED	EST	15	EA	1,450		21,800	0	5.64	97	SPNG	94.41	9,200	31,000
	VALVE	4" GATE, 150 #, CS, WELDED	EST	10	EA	2,500		25,000	0	7.70	89	SPNG	94.41	8,400	33,400
	VALVE	6" AIR OPERATED, 150 #, CS, FLANGED	EST	2	EA	14,000		28,000	0	17.30	40	SPNG	94.41	3,800	31,800
	VALVE	8" AIR OPERATED, 150 #, CS, FLANGED	EST	4	EA	17,000		68,000	0	19.30	89	SPNG	94.41	8,400	76,400
	EXCAVATION / BACKFILL	FOR UNDERGROUND PIPING	EST	2,000	CY			0	0	0.20	460	EXFD	90.00	41,400	41,400
	BEDDING	FOR UNDERGROUND PIPING	EST	267	CY		35.0	0	9,300	0.25	77	EXFD	90.00	6,900	16,200
	PIPE SUPPORTS	AVERAGE COST FOR MISC PIPE SIZES	EST	110	EA		75.00	0	8,300	2.50	316	MECH	88.89	28,100	36,400
6.6	BYPRODUCT WASTE SILO	CONCRETE SILO 60' DIA X 92' H - 3225 TONS -SUBCONTRACT COST INCLUDES LABOR	EST	1	EA	1,885,000		1,885,000	0	0.00	0	CONP	79.64	0	1,885,000
6.7	RECYCLE SILO	NOT REQUIRED FOR NID													
6.8	FLY ASH SILO	STEEL -STORAGE SILO, 16' DIA X 18' H, 48TONS						45,000	23,200					64,300	132,500
	SILO BIN	PIN MIXERS INCLUDED WITH FLY ASH HANDLING MECHANICAL EQUIPMENT	EST	1	EA	45,000		45,000	0	400.00	460	TANK	89.16	41,000	86,000
	SUPPORT STEEL FOR SILO	THREE-COAT SHOP PAINT	EST	8	TN		2,900.00	0	23,200	24.00	221	STST	105.71	23,300	46,500
6.9	BYPRODUCT WASTE STORAGE SILO - FOUNDATIONS							0	162,400					301,900	464,300
	EXCAVATION / BACKFILL		EST	1,300	CY			0	0	0.36	538	EXFD	90.00	48,400	48,400
	REINFORCING		EST	65.0	TN		1,150.00	0	74,800	20.00	1,495	REIN	78.27	117,000	191,800
	FORMWORK		EST	1,200	SF		2.50	0	3,000	0.14	193	FORM	99.43	19,200	22,200
	CONCRETE		EST	670	CY		105.00	0	70,400	1.50	1,156	CONP	79.64	92,000	162,400
	MUD MAT		EST	40	CY		105.00	0	4,200	1.50	69	CONP	79.64	5,500	9,700
	EMBEDDED STEEL		EST	4,000	LB		2.50	0	10,000	0.06	276	CARP	71.88	19,800	29,800
6.10	FLY ASH SILO - FOUNDATIONS							0	13,900					35,900	49,800
	EXCAVATION / BACKFILL		EST	300	CY			0	0	0.36	124	EXFD	90.00	11,200	11,200
	REINFORCING		EST	5.0	TN		1,150.00	0	5,800	20.00	115	REIN	78.27	9,000	14,800
	FORMWORK		EST	320	SF		2.50	0	800	0.14	52	FORM	99.43	5,100	5,900
	CONCRETE		EST	50	CY		105.00	0	5,300	1.50	86	CONP	79.64	6,900	12,200
	MUD MAT		EST	5	CY		105.00	0	500	1.50	9	CONP	79.64	700	1,200
	EMBEDDED STEEL		EST	600	LB		2.50	0	1,500	0.06	41	CARP	71.88	3,000	4,500
6.11	BYPRODUCT TRANSPORT BLOWER BUILDING - FOUNDATIONS							0	97,600					172,100	269,700
	EXCAVATION / BACKFILL		EST	470	CY			0	0	0.36	195	EXFD	90.00	17,500	17,500
	REINFORCING		EST	38	TN		1,150.00	0	43,700	20.00	874	REIN	78.27	68,400	112,100
	FORMWORK		EST	960	SF		2.50	0	2,400	0.14	155	FORM	99.43	15,400	17,800
	CONCRETE		EST	400	CY		105.00	0	42,000	1.50	690	CONP	79.64	55,000	97,000
	MUD MAT		EST	43	CY		105.00	0	4,500	1.50	74	CONP	79.64	5,900	10,400
	EMBEDDED STEEL		EST	2,000	LB		2.50	0	5,000	0.06	138	CARP	71.88	9,900	14,900
6.12	BYPRODUCT TRANSPORT BLOWER BUILDING	90' L X 30' W X 20' H						40,000	241,500					26,200	307,700
	PRE-ENGINEERED BUILDING INCLUDING H&V AND LIGHTING	SUBCONTRACT PRICE, INCLUDES LABOR	EST	2,700	SF		85	0	229,500	0.00	0	STST	105.71	0	229,500

AEP

BIG SANDY UNIT 2

FGD PROJECT - NID BASE EST (ESP)-1A - 3.0 LB/MM BTU

ORDER OF MAGNITUDE COST ESTIMATE

Estimate No.: 30723C
Project No.: 12721-000
Date: 9/29/2010
Preparer: MNO
Reviewer: JMK
Approver: PEF

Cost Type:
Est=Estimated
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Wage Rates Based on: BIG SANDY
Labor Productivity = 1.15

Account No.	Item Description	Scope Definition	Cost Type	Quantity	Unit of Measure	Unit Equip.Cost	Unit Material Cost	Total Equipment Cost	Total Material Cost	Unit Man-hours (Base)	Total Man-hours (w/ productivity)	Crew Code	Crew Wage Rate	Total Construction & Erection Cost	Total Projected Cost
	ADDITIONAL HVAC UNIT FOR ELECTRICAL ROOM & CONTROLS	20T PACKAGED UNIT FOR ELECTRICAL EQUIPMENT ROOM. INCLUDES ALLOWANCE FOR CONCRETE PAD AND ELECTRICAL WORK	EST	1	LT	40000	12000	40,000	12,000	280.00	322	HVAC	81.24	26,200	78,200
6.13	FLY ASH BLOWER AND ELECTRICAL BUILDING - FOUNDATIONS							0	82,800					150,900	233,700
	EXCAVATION / BACKFILL		EST	450	CY			0	0	0.36	186	EXFD	90.00	16,800	16,800
	REINFORCING		EST	30	TN		1,150.00	0	34,500	20.00	690	REIN	78.27	54,000	88,500
	FORMWORK		EST	1,100	SF		2.50	0	2,800	0.14	177	FORM	99.43	17,600	20,400
	CONCRETE		EST	350	CY		105.00	0	36,800	1.50	604	CONP	79.64	48,100	84,900
	MUD MAT		EST	40	CY		105.00	0	4,200	1.50	69	CONP	79.64	5,500	9,700
	EMBEDDED STEEL		EST	1,800	LB		2.50	0	4,500	0.06	124	CARP	71.88	8,900	13,400
6.14	FLY ASH BLOWER AND ELECTRICAL BUILDING	110' L X 30' W X 25' H						75,000	276,500					24,400	375,900
	PREENGINEERED BUILDING INCLUDING H&V AND LIGHTING	SUBCONTRACT PRICE, INCLUDES LABOR	EST	2,700	SF		95	0	256,500	0.00	0	STST	105.71	0	256,500
	ADDITONAL HVAC UNIT FOR ELECTRICAL ROOM & CONTROLS	40T PACKAGED UNIT FOR ELECTRICAL EQUIPMENT ROOM. INCLUDES ALLOWANCE FOR CONCRETE PAD AND ELECTRICAL WORK	EST	1	LT	75000	20000	75,000	20,000	350.00	300	HVAC	81.24	24,400	119,400
6.15	LOAD OUT AREA PDC	SUBCONTRACT PRICE INCLUDES LABOR. COMPLETE WITH HVAC, & FINISHES.	EST	600	SF		500.00	0	300,000	0.00	0	STST	105.71	0	300,000
6.16	MCC	480V MCC PER LINE UP	EST	4	EA	30000		120,000	0	16.00	74	WIRE	98.84	7,300	127,300
6.17	EMERGENBCY POWER SYSTEM							185,500	0					40,000	225,500
	UPS PANEL BOARDS		EST	2	EA	15500		31,000	0	40.00	92	WIRE	98.84	9,100	40,100
	SATELLITE UPS		EST	2	EA	41200		82,400	0	16.00	37	WIRE	98.84	3,600	86,000
	VRLA BATTERIES		EST	2	LT	36050		72,100	0	120.00	276	WIRE	98.84	27,300	99,400
6.18	LIGHTING/ TRANSFORMERS & PANELS							18,500	75,000					53,200	146,700
	LIGHT FIXTURES		EST	100	EA		750	0	75,000	4.00	460	WIRE	98.84	45,500	120,500
	45KVA, 480V, 3 PHASE	LOW VOLTAGE XFMR	EST	1	EA	10000		10,000	0	40.00	46	WIRE	98.84	4,500	14,500
	200A, 480-277V, 3 PHASE- RECEPTACLE PANEL	INCLUDING BREAKERS	EST	1	EA	5000		5,000	0	16.00	18	WIRE	98.84	1,800	6,800
	200A, 277V-120V, 3 PHASE- LIGHTING PANELS	INCLUDING BREAKERS	EST	1	EA	3500		3,500	0	12.00	14	WIRE	98.84	1,400	4,900
6.19	RACEWAY, CABLE TRAY, & CONDUIT							0	40,700					236,200	276,900
	24" X 6" AL CABLE TRAY	INCLUDING SUPPORT & FITTINGS	EST	350	LF		27.10	0	9,500	1.75	704	WIRE	98.84	69600	79,100
	4" RGS CONDUIT	INCLUDING SUPPORT & FITTINGS	EST	350	LF		31.00	0	10,900	0.81	325	WIRE	98.84	32100	43,000
	1" RGS CONDUIT	INCLUDING SUPPORT & FITTINGS	EST	1,300	LF		4.44	0	5,800	0.24	357	WIRE	98.84	35300	41,100
	3/4" RGS CONDUIT	INCLUDING SUPPORT & FITTINGS	EST	4,500	LF		3.23	0	14,500	0.19	1,004	WIRE	98.84	99200	113,700
6.20	GROUNDING							0	4,500					10,900	15,400
	GROUND ROD	3/4" - 20' LONG EACH	EST	4	EA		150	0	600	4.00	18	WIRE	98.84	1,800	2,400
	500 MCM	BARE COPPER WIRE	EST	500	FT		7.65	0	3,800	0.12	69	WIRE	98.84	6,800	10,600
	CADWELD		EST	8	EA		15	0	100	2.00	18	WIRE	98.84	1,800	1,900
	GROUNDING TEST	TEST & DOCUMENTATION	EST	1	LT			0	0	4.00	5	WIRE	98.84	500	500
6.21	MEDIUM VOLTAGE POWER CABLE & TERMINATION	1/C # 2/0-5KV	EST	3,600	LF		2.63	0	9,500	0.12	484	WIRE	98.84	47,900	57,400
6.22	LOW VOLTAGE POWER CABLE & TERMINATION							0	80,900					100,600	181,500
	#4/0 - #12 AWG-600V		EST	11,200	LF		7.22	0	80,900	0.08	1,018	WIRE	98.84	100,600	181,500
6.23	CONTROL & INSTRUMENT CABLE	#14, #16 & PR # 20 & SHLD WIRE	EST	12,000	LF		3.20	0	38,400	0.08	1,090	WIRE	98.84	107,800	146,200
6.24	DUCT BANK	DUCT BANK WITH 4-5" & 4-3" CONDUITS	EST	30	LF		205.00	0	6,200	4.05	140	ECND	75.97	10600	16,800

				AEP										Estimate No.:	30723C
				BIG SANDY UNIT 2										Project No.:	12721-000
				FGD PROJECT - NID BASE EST (ESP)-1A - 3.0 LB/MM BTU										Date:	9/29/2010
				ORDER OF MAGNITUDE COST ESTIMATE										Preparer:	MNO
		Cost Type:												Reviewer:	JMK
		Est=Estimated												Approver:	PEF
		Allow.=Allowance								Wage Rates Based on:		BIG SANDY			
		Q=Vendor Quote								Labor Productivity =		1.15			

Account No.	Item Description	Scope Definition	Cost Type	Quantity	Unit of Measure	Unit Equip.Cost	Unit Material Cost	Total Equipment Cost	Total Material Cost	Unit Man-hours (Base)	Total Man-hours (w/ productivity)	Crew Code	Crew Wage Rate	Total Construction & Erection Cost	Total Projected Cost
6.25	COMMUNICATIONS		EST	1	LT		70,000.00	0	70,000	440.00	506	WIRE	98.84	50,000	120,000
6.26	LIGHTNING PROTECTION		EST	1	LT		19,000.00	0	19,000	123.00	141	WIRE	98.84	14,000	33,000
6.27	SECURITY SYSTEM		EST	1	LT		16,000.00	0	16,000	123.00	141	WIRE	98.84	14,000	30,000
90.00	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS							7,267,800	1,712,300		53,463			4,776,500	13,688,400
	OTHER DIRECT & CONSTRUCTION INDIRECT COSTS														
	ADDITIONAL CRANE ALLOWANCE								0					0	0
	MOBILIZATION / DEMOBILIZATION - INCLUDED IN WAGE RATES ABOVE														0
	COST DUE TO OVERTIME WORKING 5 X10 HOUR DAYS			1	LS										795,662
	COST DUE TO OVERTIME INEFFICIENCY - SPECIFY % INEFFICIENCY			8.00	%						4,649		83.48	388,000	388,000
	COST DUE TO OVERTIME PAY @1.5 TIMES OVERTIME PAY RATE SPECIFY % ADDITIONAL HOURS PAID ON ACTUAL HOURS WORKED			10.00	%						5,811			407,662	407,662
	PER DIEM	NONE		0.00	HR						63,923			0	0
	CONSUMABLES - % of ACCT NO. 90			0.5	%				8,562					23,883	32,444
	FREIGHT ON MATERIAL - % of ACCT NO. 90			5.0	%				85,615						85,615
	FREIGHT ON EQUIPMENT - % of ACCT NO. 90			5.0	%			363,390							363,390
	SCAFFOLDING - % OF ACCT NO. 90			5.0	%				85,615					238,825	324,440
	CONTRACTOR'S GENERAL AND ADMINISTRATION & PROFIT EXPENSE - % of ACCT NO. 90			15	%				256,845					716,475	973,320
	SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS							363,400	436,600					1,774,800	2,574,900
	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	BYPRODUCT WASTE & FLY ASH HANDLING SYSTEMS						7,631,200	2,148,900					6,551,300	16,263,300
7.0	ABSORBER ISLAND	NOT REQUIRED FOR NID													0
8.0	ACTIVATED CARBON INJECTION SYSTEM														0
8.1	ACI MECHANICAL EQUIPMENT:		EST	1	LT	3046400		3,046,400	0	9900.00	11,385	MECH	88.89	1,012,000	4,058,400
	PAC CARBON STORAGE SILO	INCLUDED WITH ACI MECHANICAL EQUIPMENT	EST	1	LT			0	0		0	MECH	88.89	0	0
	BIN VENT FILTER	INCLUDED WITH ACI MECHANICAL EQUIPMENT	EST	1	LT			0	0		0	MECH	88.89	0	0
	SUPPORT STEEL	INCLUDED WITH ACI MECHANICAL EQUIPMENT	EST	1	LT			0	0		0	MECH	88.89	0	0
	ROOF ACCESS LADDER	INCLUDED WITH ACI MECHANICAL EQUIPMENT	EST	1	LT			0	0		0	MECH	88.89	0	0
	ROOF MOUNTED JIB CRANE	INCLUDED WITH ACI MECHANICAL EQUIPMENT	EST	1	LT			0	0		0	MECH	88.89	0	0
	INSTRUMENTATION FOR SILO	INCLUDED WITH ACI MECHANICAL EQUIPMENT	EST	1	LT			0	0		0	MECH	88.89	0	0
	PRESSURE VACUUM RELIEF	INCLUDED WITH ACI MECHANICAL EQUIPMENT	EST	1	LT			0	0		0	MECH	88.89	0	0
	3X50% PAC FEED TRAIN	INCLUDED WITH ACI MECHANICAL EQUIPMENT	EST	1	LT			0	0		0	MECH	88.89	0	0
	FEED HOPERS WITH ROTARY FEEDERS	INCLUDED WITH ACI MECHANICAL EQUIPMENT	EST	1	LT			0	0		0	MECH	88.89	0	0
	GRAVIMETRIC FEEDERS	INCLUDED WITH ACI MECHANICAL EQUIPMENT	EST	1	LT			0	0		0	MECH	88.89	0	0
	REGENERATIVE BLOWERS AND EDUCTORS	INCLUDED WITH ACI MECHANICAL EQUIPMENT	EST	1	LT			0	0		0	MECH	88.89	0	0

AEP
BIG SANDY UNIT 2
FGD PROJECT - NID BASE EST (ESP)-1A - 3.0 LB/MM BTU
ORDER OF MAGNITUDE COST ESTIMATE

Estimate No.: 30723C
Project No.: 12721-000
Date: 9/29/2010
Preparer: MNO
Reviewer: JMK
Approver: PEF

Cost Type:
Est=Estimated
Allow.=Allowance
Q=Vendor Quote

Wage Rates Based on: BIG SANDY
Labor Productivity = 1.15

Account No.	Item Description	Scope Definition	Cost Type	Quantity	Unit of Measure	Unit Equip.Cost	Unit Material Cost	Total Equipment Cost	Total Material Cost	Unit Man-hours (Base)	Total Man-hours (w/ productivity)	Crew Code	Crew Wage Rate	Total Construction & Erection Cost	Total Projected Cost
	PAC LOADING PIPE WITH CERAMIC BACKED ELBOWS	INCLUDED WITH ACI MECHANICAL EQUIPMENT	EST	1	LT			0	0		0	MECH	88.89	0	0
	PAC DISTRIBUTION MANIFOLD AND LANCES	INCLUDED WITH ACI MECHANICAL EQUIPMENT	EST	1	LT			0	0		0	MECH	88.89	0	0
8.2	PIPING - MECHANICAL		EST	1	LT			29,800	149,800					377,100	556,700
	LARGE BORE PIPING	2" CS, SCH 80 WELDED	EST	150	LF		22.2	0	3,300	1.26	217	SPNG	94.41	20,500	23,800
	LARGE BORE PIPING	10" CS, SCH 40 WELDED	EST	1,200	LF		110.3	0	132,400	2.40	3,312	SPNG	94.41	312,700	445,100
	VALVE	2" GATE 150 #, CS, WELDED	EST	4	EA	960		3,800	0	5.60	26	SPNG	94.41	2,400	6,200
	VALVE	10" GATE, 150 #, CS, WELDED	EST	4	EA	6,500		26,000	0	16.10	74	SPNG	94.41	7,000	33,000
	PIPE SUPPORTS	AVERAGE COST FOR MISC PIPE SIZES	EST	113	EA		125.00	0	14,100	3.00	388	MECH	88.89	34,500	48,600
8.3	ACI SYSTEM - FOUNDATIONS							0	41,500					88,000	129,500
	EXCAVATION / BACKFILL		EST	404	CY			0	0	0.36	167	EXFD	90.00	15,100	15,100
	REINFORCING		EST	14.0	TN		1,150.00	0	16,100	20.00	322	REIN	78.27	25,200	41,300
	FORMWORK		EST	1,050	SF		2.50	0	2,600	0.14	169	FORM	99.43	16,800	19,400
	CONCRETE		EST	175	CY		105.00	0	18,400	1.50	302	CONP	79.64	24,000	42,400
	MUD MAT		EST	25	CY		105.00	0	2,600	1.50	43	CONP	79.64	3,400	6,000
	EMBEDDED STEEL		EST	705	LB		2.50	0	1,800	0.06	49	CARP	71.88	3,500	5,300
8.4	MCC							61,800	0					3,600	65,400
	480V MCC	PER LINE UP	EST	2	EA	30900		61,800	0	16.00	37	WIRE	98.84	3,600	65,400
8.5	GROUNDING							5,500	0					18,600	24,100
	GROUND ROD	3/4" - 20' LONG	EST	8	EA	150		1,200	0	4.00	37	WIRE	98.84	3,600	4,800
	500 MCM	BARE COPPER WIRE	EST	500	FT	7.65		3,800	0	0.12	69	WIRE	98.84	6,800	10,600
	CADWELD		EST	32	EA	15		500	0	2.00	74	WIRE	98.84	7,300	7,800
	GROUNDING TEST	TEST & DOCUMENTATION	EST	1	LT			0	0	8.00	9	WIRE	98.84	900	900
8.6	LIGHTING / TRANSFORMERS & PANELS							26,000	15,000					20,400	61,400
	LIGHT FIXTURES		EST	20	EA		750	0	15,000	4.00	92	WIRE	98.84	9,100	24,100
	45KVA, 480V, 3 PHASE	LOW VOLTAGE XFMR	EST	1	EA	10000		10,000	0	40.00	46	WIRE	98.84	4,500	14,500
	37.7KVA, 480V, 3 PHASE	LOW VOLTAGE XFMR	EST	1	EA	7500		7,500	0	32.00	37	WIRE	98.84	3,600	11,100
	200A, 480-277V, 3 PHASE- RECEPTACLE PANEL	INCLUDING BREAKERS	EST	1	EA	5000		5,000	0	16.00	18	WIRE	98.84	1,800	6,800
	200A, 277V-120V, 3 PHASE- LIGHTING PANELS	INCLUDING BREAKERS	EST	1	EA	3500		3,500	0	12.00	14	WIRE	98.84	1,400	4,900
8.7	RACEWAY, CABLE TRAY, & CONDUIT							0	89,900					302,900	392,800
	12" X 6" AL CABLE TRAY	INCLUDING SUPPORT & FITTINGS	EST	300	LF		18.25	0	5,500	1.10	330	WIRE	98.84	32600	38,100
	18" X 6" AL CABLE TRAY	INCLUDING SUPPORT & FITTINGS	EST	200	LF		21.50	0	4,300	1.45	290	WIRE	98.84	28700	33,000
	5" RGS CONDUIT	INCLUDING SUPPORT & FITTINGS	EST	200	LF		61.00	0	12,200	1.13	225	WIRE	98.84	22300	34,500
	4" RGS CONDUIT	INCLUDING SUPPORT & FITTINGS	EST	250	LF		31.00	0	7,800	0.81	202	WIRE	98.84	19900	27,700
	3" RGS CONDUIT	INCLUDING SUPPORT & FITTINGS	EST	300	LF		21.50	0	6,500	0.65	194	WIRE	98.84	19100	25,600
	2" RGS CONDUIT	INCLUDING SUPPORT & FITTINGS	EST	300	LF		9.25	0	2,800	0.35	106	WIRE	98.84	10400	13,200
	1-1/2" RGS CONDUIT	INCLUDING SUPPORT & FITTINGS	EST	500	LF		7.15	0	3,600	0.28	142	WIRE	98.84	14000	17,600
	1" RGS CONDUIT	INCLUDING SUPPORT & FITTINGS	EST	2,000	LF		4.44	0	8,900	0.24	478	WIRE	98.84	47200	56,100
	3/4" RGS CONDUIT	INCLUDING SUPPORT & FITTINGS	EST	3,000	LF		3.23	0	9,700	0.19	669	WIRE	98.84	66200	75,900
	DUCT BANK WITH 12-5" & 6-3" CONDUITS	3.08' H X 5.2' W	EST	75	LF		381.96	0	28,600	6.48	559	ECND	75.97	42500	71,100
8.8	LOW VOLTAGE POWER CABLE & TERMINATION	#4/0 - #12 AWG-600V	EST	2,000	LF		7.22	0	14,400	0.08	182	WIRE	98.84	18000	32,400
8.9	CONTROL & INSTRUMENT CABLE	#14, #16 & PR # 20 & SHLD WIRE	EST	5,000	LF		3.20	0	16,000	0.08	454	WIRE	98.84	44900	60,900

				AEP										Estimate No.:	30723C
				BIG SANDY UNIT 2										Project No.:	12721-000
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				ORDER OF MAGNITUDE COST ESTIMATE										Preparer:	MNO
		Cost Type:												Reviewer:	JMK
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Account No.	Item Description	Scope Definition	Cost Type	Quantity	Unit of Measure	Unit Equip.Cost	Unit Material Cost	Total Equipment Cost	Total Material Cost	Unit Man-hours (Base)	Total Man-hours (w/ productivity)	Crew Code	Crew Wage Rate	Total Construction & Erection Cost	Total Projected Cost
90.00	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS							3,169,500	326,600		20,717			1,885,500	5,381,600
	OTHER DIRECT & CONSTRUCTION INDIRECT COSTS														
	ADDITIONAL CRANE ALLOWANCE								0					0	0
	MOBILIZATION / DEMOBILIZATION - INCLUDED IN WAGE RATES ABOVE														0
	COST DUE TO OVERTIME WORKING 5 X10 HOUR DAYS			1	LS										307,970
	COST DUE TO OVERTIME INEFFICIENCY - SPECIFY % INEFFICIENCY			8.00	%						1,801		83.48	150,000	150,000
	COST DUE TO OVERTIME PAY @1.5 TIMES OVERTIME PAY RATE SPECIFY % ADDITIONAL HOURS PAID ON ACTUAL HOURS WORKED			10.00	%						2,252			157,970	157,970
	PER DIEM	NONE		0.00	HR						24,770			0	0
	CONSUMABLES - % of ACCT NO. 90			0.5	%				1,633					9,428	11,061
	FREIGHT ON MATERIAL - % of ACCT NO. 90			5.0	%				16,330						16,330
	FREIGHT ON EQUIPMENT - % of ACCT NO. 90			5.0	%			158,475							158,475
	SCAFFOLDING - % OF ACCT NO. 90			5.0	%				16,330					94,275	110,605
	CONTRACTOR'S GENERAL AND ADMINISTRATION & PROFIT EXPENSE - % of ACCT NO. 90			15	%				48,990					282,825	331,815
	SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS							158,500	83,300					694,500	936,300
	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	ACTIVATED CARBON INJECTION SYSTEM						3,328,000	409,900					2,580,000	6,317,900
9.0	COMPRESSED AIR SYSTEM														
9.1	AIR COMPRESSOR & AUXILIARIES							848,000	0					184,600	1,032,600
	AIR COMPRESSOR	4100 CFM, OIL FREE	EST	2	EA	350000		700,000	0	750.00	1,725	MECH	88.89	153,300	853,300
	DRYERS	DESICCANT TYPE, HEATED AIR	EST	2	EA	60000		120,000	0	115.00	265	MECH	88.89	23,500	143,500
	RECEIVERS	3000 GAL WITH SAFETY RELIEF VALVE AND PRESSURE GAUGE	EST	2	EA	14000		28,000	0	38.00	87	MECH	88.89	7,800	35,800
9.2	PIPING - MECHANICAL							320,600	344,800					875,600	1,541,000
	LARGE BORE PIPING	4" CS, SCHEDULE 40, WELDED - ON PIPE RACK	EST	500	LF		14.5	0	7,300	0.70	403	SPNG	94.41	38,000	45,300
	LARGE BORE PIPING	6" CS, SCH 40 WELDED	EST	100	LF		41.7	0	4,200	1.61	185	SPNG	94.41	17,500	21,700
	LARGE BORE PIPING	4" SS, SCHEDULE 40, WELDED - ON PIPE RACK	EST	500	LF		45.1	0	22,600	0.87	500	SPNG	94.41	47,200	69,800
	LARGE BORE PIPING	6" SS, SCHEDULE 40, WELDED	EST	200	LF		111.0	0	22,200	2.02	465	SPNG	94.41	43,900	66,100
	LARGE BORE PIPING	8" SS, SCHEDULE 40, WELDED - ON PIPE RACK	EST	700	LF		122.2	0	85,500	1.26	1,014	SPNG	94.41	95,800	181,300
	SMALL BORE PIPING	2" CS, SCH 80 WELDED, UNDERGROUND WRAPPED	EST	700	LF		20.80	0	14,600	0.64	515	SPNG	94.41	48,600	63,200
	SMALL BORE PIPING	ALLOWANCE FOR MISC SIZE <2" CS, SCH 80 WELDED	EST	200	LF		19.30	0	3,900	1.16	267	SPNG	94.41	25,200	29,100
	SMALL BORE PIPING	2" SS, SCH 80 WELDED	EST	700	LF		48.80	0	34,200	1.44	1,159	SPNG	94.41	109,400	143,600
	SMALL BORE PIPING	ALLOWANCE FOR MISC SIZE <2" SS, SCH 80 WELDED	EST	1,500	LF		33.70	0	50,600	1.32	2,277	SPNG	94.41	215,000	265,600
	VALVE	2" GLOBE, 150# SS, WELDED	EST	50	EA	1,450		72,500	0	5.64	324	SPNG	94.41	30,600	103,100
	VALVE	4" GATE, 150 #, CS, WELDED	EST	10	EA	2,500		25,000	0	7.70	89	SPNG	94.41	8,400	33,400
	VALVE	4" GATE, 150 #, SS, WELDED	EST	10	EA	3,400		34,000	0	9.24	106	SPNG	94.41	10,000	44,000
	VALVE	6" GATE, 150 #, SS, WELDED	EST	2	EA	4,700		9,400	0	12.96	30	SPNG	94.41	2,800	12,200
	VALVE	8" GATE, 150 #, SS, WELDED	EST	14	EA	6,240		87,400	0	15.96	257	SPNG	94.41	24,300	111,700
	VALVE	<2" GLOBE, 150# CS, WELDED	EST	10	EA	450		4,500	0	3.40	39	SPNG	94.41	3,700	8,200
	VALVE	<2" GLOBE, 150# SS, WELDED	EST	100	EA	750	750.00	75,000	75,000	4.08	469	SPNG	94.41	44,300	194,300
	VALVE	2" GLOBE, 150# CS, WELDED	EST	15	EA	850		12,800	0	4.20	72	SPNG	94.41	6,800	19,600
	PIPE SUPPORTS	AVERAGE COST FOR MISC PIPE SIZES	EST	440	EA		50.00	0	22,000	2.00	1,012	MECH	88.89	90,000	112,000
	EXCAVATION / BACKFILL	FOR UNDERGROUND PIPING	EST	583	CY			0	0	0.20	134	EXFD	90.00	12,100	12,100
	BEDDING	FOR UNDERGROUND PIPING	EST	78	CY		35.0	0	2,700	0.25	22	EXFD	90.00	2,000	4,700

				AEP											Estimate No.:	30723C
				BIG SANDY UNIT 2											Project No.:	12721-000
				FGD PROJECT - NID BASE EST (ESP)-1A - 3.0 LB/MM BTU											Date:	9/29/2010
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		Q=Vendor Quote								Labor Productivity =		1.15				

Account No.	Item Description	Scope Definition	Cost Type	Quantity	Unit of Measure	Unit Equip.Cost	Unit Material Cost	Total Equipment Cost	Total Material Cost	Unit Man-hours (Base)	Total Man-hours (w/ productivity)	Crew Code	Crew Wage Rate	Total Construction & Erection Cost	Total Projected Cost
9.3	AIR COMPRESSOR BUILDING - FOUNDATIONS							0	249,800					419,700	669,500
	EXCAVATION / BACKFILL		EST	1,100	CY			0	0	0.36	455	EXFD	90.00	41,000	41,000
	REINFORCING		EST	100	TN		1,150.00	0	115,000	20.00	2,300	REIN	78.27	180,000	295,000
	FORMWORK		EST	1,500	SF		2.50	0	3,800	0.14	242	FORM	99.43	24,000	27,800
	CONCRETE		EST	1,100	CY		105.00	0	115,500	1.50	1,898	CONP	79.64	151,100	266,600
	MUD MAT		EST	100	CY		105.00	0	10,500	1.50	173	CONP	79.64	13,700	24,200
	EMBEDDED STEEL		EST	2,000	LB		2.50	0	5,000	0.06	138	CARP	71.88	9,900	14,900
9.4	AIR COMPRESSOR BUILDING	120' L X 60' W X 20' H						0	612,000					0	612,000
	PRE-ENGINEERED BUILDING INCLUDING H&V AND LIGHTING	SUBCONTRACT PRICE, INCLUDES LABOR	EST	7,200	SF		85	0	612,000	0.00	0	STST	105.71	0	612,000
9.5	LIGHTING/ TRANSFORMERS & PANELS							11,000	10,500					11,400	32,900
	LIGHT FIXTURES		EST	14	EA		750	0	10,500	4.00	64	WIRE	98.84	6,400	16,900
	37.7KVA, 480V, 3 PHASE	LOW VOLTAGE XFMR	EST	1	EA	7500		7,500	0	32.00	37	WIRE	98.84	3,600	11,100
	200A, 277V-120V, 3 PHASE- LIGHTING PANELS	INCLUDING BREAKERS	EST	1	EA	3500		3,500	0	12.00	14	WIRE	98.84	1,400	4,900
9.6	RACEWAY, CABLE TRAY, & CONDUIT	INCLUDED IN ID FANS, 1.0						0	0					0	
9.7	GROUNDING							4,500	0					10,900	15,400
	GROUND ROD	3/4" - 20' LONG EACH	EST	4	EA	150		600	0	4.00	18	WIRE	98.84	1,800	2,400
	500 MCM	BARE COPPER WIRE	EST	500	FT	7.65		3,800	0	0.12	69	WIRE	98.84	6,800	10,600
	CADWELD		EST	8	EA	15		100	0	2.00	18	WIRE	98.84	1,800	1,900
	GROUNDING TEST	TEST & DOCUMENTATION	EST	1	LT			0	0	4.00	5	WIRE	98.84	500	500
9.8	COMMUNICATIONS		EST	1	LT		34,000.00	0	34,000	229.00	263	WIRE	98.84	26,000	60,000
9.9	LIGHTNING PROTECTION		EST	1	LT		10,500.00	0	10,500	66.00	76	WIRE	98.84	7,500	18,000
90.00	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS							1,184,100	1,261,600		17,187			1,535,700	3,981,400
	OTHER DIRECT & CONSTRUCTION INDIRECT COSTS														
	ADDITIONAL CRANE ALLOWANCE								0					0	0
	MOBILIZATION / DEMOBILIZATION - INCLUDED IN WAGE RATES ABOVE														0
	COST DUE TO OVERTIME WORKING 5 X10 HOUR DAYS			1	LS										256,050
	COST DUE TO OVERTIME INEFFICIENCY - SPECIFY % INEFFICIENCY			8.00	%						1,494		83.48	125,000	125,000
	COST DUE TO OVERTIME PAY @1.5 TIMES OVERTIME PAY RATE SPECIFY % ADDITIONAL HOURS PAID ON ACTUAL HOURS WORKED			10.00	%						1,868			131,050	131,050
	PER DIEM	NONE		0.00	HR						20,549			0	0
	CONSUMABLES - % of ACCT NO. 90			0.5	%				6,308					7,679	13,987
	FREIGHT ON MATERIAL - % of ACCT NO. 90			5.0	%				63,080						63,080
	FREIGHT ON EQUIPMENT - % of ACCT NO. 90			5.0	%			59,205							59,205
	SCAFFOLDING - % OF ACCT NO. 90			5.0	%				63,080					76,785	139,865
	CONTRACTOR'S GENERAL AND ADMINISTRATION & PROFIT EXPENSE - % of ACCT NO. 90			15	%				189,240					230,355	419,595
	SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS							59,200	321,700					570,900	951,800
	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	COMPRESSED AIR SYSTEM						1,243,300	1,583,300					2,106,600	4,933,200
10.0	SERVICE WATER SYSTEM														
10.1	PUMPS	INCLUDES SELF-CLEANING STRAIINERS						174,000	0					85,900	259,900
	SERVICE WATER PUMPS	3000 GPM, 150 HP	EST	2	EA	45000		90,000	0	220.00	506	MECH	88.89	45,000	135,000
	RIVER WATER BOOSTER PUMPS	3000 GPM, 75 PSIG	EST	2	EA	20000		40,000	0	120.00	276	MECH	88.89	24,500	64,500
	SELF-CLEANING STRAIINERS	DUPLEX, 3000 GPM	EST	2	EA	22000		44,000	0	80.00	184	MECH	88.89	16,400	60,400
10.2	PIPING - MECHANICAL		EST	1	LT			298,400	342,800					688,300	1,329,500
	LARGE BORE PIPING	4" SS, SCHEDULE 40, WELDED - ON PIPE RACK	EST	900	LF		45.1	0	40,600	0.87	900	SPNG	94.41	85,000	125,600

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				ORDER OF MAGNITUDE COST ESTIMATE											Preparer:	MNO
		Cost Type:													Reviewer:	JMK
		Est=Estimated													Approver:	PEF
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		Q=Vendor Quote								Labor Productivity =		1.15				

Account No.	Item Description	Scope Definition	Cost Type	Quantity	Unit of Measure	Unit Equip.Cost	Unit Material Cost	Total Equipment Cost	Total Material Cost	Unit Man-hours (Base)	Total Man-hours (w/ productivity)	Crew Code	Crew Wage Rate	Total Construction & Erection Cost	Total Projected Cost
	LARGE BORE PIPING	6" SS, SCHEDULE 40, WELDED - ON PIPE RACK	EST	400	LF		80.4	0	32,200	1.14	524	SPNG	94.41	49,500	81,700
	LARGE BORE PIPING	6" SS, SCHEDULE 40, WELDED	EST	200	LF		111.0	0	22,200	2.02	465	SPNG	94.41	43,900	66,100
	LARGE BORE PIPING	10" SS, SCHEDULE 40, WELDED	EST	1,000	LF		179.9	0	179,900	2.49	2,864	SPNG	94.41	270,300	450,200
	LARGE BORE PIPING	14" HDPE (UNDERGROUND)	EST	500	LF		65.5	0	32,800	1.02	587	SPNG	94.41	55,400	88,200
	SMALL BORE PIPING	2" SS, SCH 80 WELDED	EST	300	LF		48.80	0	14,600	1.44	497	SPNG	94.41	46,900	61,500
	SMALL BORE PIPING	ALLOWANCE FOR MISC SIZE <2" SS, SCH 80 WELDED	EST	100	LF		33.70	0	3,400	1.32	152	SPNG	94.41	14,300	17,700
	VALVE	4" GATE, 150 #, SS, WELDED	EST	12	EA	3,400		40,800	0	9.24	128	SPNG	94.41	12,000	52,800
	VALVE	6" GATE, 150 #, SS, WELDED	EST	8	EA	4,700		37,600	0	12.96	119	SPNG	94.41	11,300	48,900
	VALVE	10" GATE, 150 #, SS, WELDED	EST	20	EA	9,500		190,000	0	18.52	426	SPNG	94.41	40,200	230,200
	VALVE	14" BFLY 150# SS, FLANGED	EST	4	EA	7,500		30,000	0	19.76	91	SPNG	94.41	8,600	38,600
	PIPE SUPPORTS	AVERAGE COST FOR MISC PIPE SIZES	EST	160	EA		95.00	0	15,200	2.50	460	MECH	88.89	40,900	56,100
	EXCAVATION / BACKFILL	FOR UNDERGROUND PIPING	EST	417	CY			0	0	0.20	96	EXFD	90.00	8,600	8,600
	BEDDING	FOR UNDERGROUND PIPING	EST	56	CY		35.0	0	1,900	0.25	16	EXFD	90.00	1,400	3,300
10.3	PIPING - FIRE PROTECTION SYSTEM		EST	1	LT			181,200	284,600	89.55	7,176	0	1207.47	673,300	1,139,100
	LARGE BORE PIPING	4" CS, SCHEDULE 40, WELDED	EST	200	LF		24.4	0	4,900	0.73	168	SPNG	94.41	15,900	20,800
	LARGE BORE PIPING	8" CS, SCHEDULE 40, WELDED	EST	300	LF		64.2	0	19,300	0.98	338	SPNG	94.41	31,900	51,200
	LARGE BORE PIPING	12" CS, SCHEDULE 40, WELDED	EST	150	LF		174.6	0	26,200	1.43	247	SPNG	94.41	23,300	49,500
	LARGE BORE PIPING	20" HDPE (UNDERGROUND)	EST	3,000	LF		72.8	0	218,400	1.45	5,003	SPNG	94.41	472,300	690,700
	VALVE	4" GATE, 150 #, CS, WELDED	EST	10	EA	2,500		25,000	0	7.70	89	SPNG	94.41	8,400	33,400
	VALVE	8" GATE, 150 #, CS, WELDED	EST	6	EA	4,800		28,800	0	13.30	92	SPNG	94.41	8,700	37,500
	VALVE	10" GATE, 150 #, CS, WELDED	EST	4	EA	6,500		26,000	0	16.10	74	SPNG	94.41	7,000	33,000
	VALVE	10" GATE WITH PIV, 150 #, CS, WELDED	EST	10	EA	7,000		70,000	0	17.71	204	SPNG	94.41	19,200	89,200
	VALVE	12" GATE, 150 #, CS, WELDED	EST	2	EA	8,200		16,400	0	19.20	44	SPNG	94.41	4,200	20,600
	FIRE HYDRANTS		EST	10	EA	1,500		15,000	0	8.00	92	MECH	88.89	8,200	23,200
	PIPE SUPPORTS	AVERAGE COST FOR MISC PIPE SIZES	EST	54	EA		75.00	0	4,100	2.50	156	MECH	88.89	13,800	17,900
	EXCAVATION / BACKFILL	FOR UNDERGROUND PIPING	EST	2,500	CY			0	0	0.20	575	EXFD	90.00	51,800	51,800
	BEDDING	FOR UNDERGROUND PIPING	EST	333	CY		35.0	0	11,700	0.25	96	EXFD	90.00	8,600	20,300
10.4	TANKS							0	120,000					0	120,000
	SERVICE WATER TANKS	20,000 GAL, CS, 14' DIA X 20' - SUBCONTRACT PRICE INCLUDES LABOR WITH EXTERIOR PRIMED AND FIELD PAINTED	EST	2	EA		60000.0	0	120,000	0.00	0	TANK	89.16	0	120,000
10.5	SERVICE WATER TANK & PUMP - FOUNDATIONS							0	17,300					41,400	58,700
	EXCAVATION / BACKFILL		EST	296	CY			0	0	0.36	123	EXFD	90.00	11,000	11,000
	REINFORCING		EST	9.0	TN		1,150.00	0	10,400	20.00	207	REIN	78.27	16,200	26,600
	FORMWORK		EST	371	SF		2.50	0	900	0.14	60	FORM	99.43	5,900	6,800
	CONCRETE		EST	48	CY		105.00	0	5,000	1.50	83	CONP	79.64	6,600	11,600
	MUD MAT		EST	4	CY		105.00	0	400	1.50	7	CONP	79.64	500	900
	EMBEDDED STEEL		EST	240	LB		2.50	0	600	0.06	17	CARP	71.88	1,200	1,800
10.7	ELECTRICAL	INCLUDED IN ID FANS, 1.0													
90.00	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS							653,600	764,700		15,961			1,488,900	2,907,200
	OTHER DIRECT & CONSTRUCTION INDIRECT COSTS														
	ADDITIONAL CRANE ALLOWANCE								0					0	0
	MOBILIZATION / DEMOBILIZATION - INCLUDED IN WAGE RATES ABOVE														0
	COST DUE TO OVERTIME WORKING 5 X10 HOUR DAYS			1	LS										237,703
	COST DUE TO OVERTIME INEFFICIENCY - SPECIFY % INEFFICIENCY			8.00	%						1,388		83.48	116,000	116,000
	COST DUE TO OVERTIME PAY @1.5 TIMES OVERTIME PAY RATE SPECIFY % ADDITIONAL HOURS PAID ON ACTUAL HOURS WORKED			10.00	%						1,735			121,703	121,703

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	PER DIEM	NONE		0.00	HR						19,084			0	0
	CONSUMABLES - % of ACCT NO. 90			0.5	%				3,824					7,445	11,268
	FREIGHT ON MATERIAL - % of ACCT NO. 90			5.0	%				38,235						38,235
	FREIGHT ON EQUIPMENT - % of ACCT NO. 90			5.0	%			32,680							32,680
	SCAFFOLDING - % OF ACCT NO. 90			5.0	%				38,235					74,445	112,680
	CONTRACTOR'S GENERAL AND ADMINISTRATION & PROFIT EXPENSE - % of ACCT NO. 90			15	%				114,705					223,335	338,040
	SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS							32,700	195,000					542,900	770,600
	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	SERVICE WATER SYSTEM						686,300	959,700					2,031,800	3,677,800
11.0	POTABLE WATER SYSTEM														
11.1	PUMPS							30,000	0					18,400	48,400
	POTABLE WATER BOOSTER PUMPS	50 GPM, 5 HP	EST	2	EA	15000		30,000	0	90.00	207	MECH	88.89	18,400	48,400
11.2	PIPING - MECHANICAL		EST	1	LT			99,500	181,900					448,200	729,600
	LARGE BORE PIPING	4" SS, SCHEDULE 40, WELDED - ON PIPE RACK	EST	800	LF		45.1	0	36,100	0.87	800	SPNG	94.41	75,600	111,700
	LARGE BORE PIPING	4" SS, SCHEDULE 40, WELDED	EST	200	LF		68.3	0	13,700	1.82	419	SPNG	94.41	39,500	53,200
	LARGE BORE PIPING	6" SS, SCHEDULE 40, WELDED	EST	800	LF		111.0	0	88,800	2.02	1,858	SPNG	94.41	175,500	264,300
	LARGE BORE PIPING	8" HDPE (UNDERGROUND)	EST	200	LF		14.1	0	2,800	0.83	191	SPNG	94.41	18,000	20,800
	SMALL BORE PIPING	2" D.I. SCH 80 (UNDERGROUND)	EST	500	LF		15.00	0	7,500	0.30	173	SPNG	94.41	16,300	23,800
	SMALL BORE PIPING	ALLOWANCE FOR MISC SIZE <2" SS, SCH 80 WELDED	EST	200	LF		33.70	0	6,700	1.32	304	SPNG	94.41	28,700	35,400
	SMALL BORE PIPING	2" COPPER	EST	300	LF		28.50	0	8,600	0.43	148	SPNG	94.41	14,000	22,600
	VALVE	2" GLOBE, 150# CS, WELDED	EST	10	EA	850		8,500	0	4.20	48	SPNG	94.41	4,600	13,100
	VALVE	<2" GLOBE, 150# SS, WELDED	EST	8	EA	750	750.00	6,000	6,000	4.08	38	SPNG	94.41	3,500	15,500
	VALVE	4" GATE, 150 #, SS, WELDED	EST	20	EA	4,250		85,000	0	9.24	213	SPNG	94.41	20,100	105,100
	PIPE SUPPORTS	AVERAGE COST FOR MISC PIPE SIZES	EST	150	EA		60.00	0	9,000	2.50	431	MECH	88.89	38,300	47,300
	EXCAVATION / BACKFILL	FOR UNDERGROUND PIPING	EST	583	CY			0	0	0.20	134	EXFD	90.00	12,100	12,100
	BEDDING	FOR UNDERGROUND PIPING	EST	78	CY		35.0	0	2,700	0.25	22	EXFD	90.00	2,000	4,700
11.3	TANKS							0	8,500					0	8,500
	POTABLE WATER TANK	1,000 GAL, SS, 5' DIA X 8' - SUBCONTRACT PRICE INCLUDES LABOR	EST	1	EA		8500.0	0	8,500	0.00	0	TANK	89.16	0	8,500
11.4	POTABLE WATER TANK & PUMP - FOUNDATIONS							0	5,200					9,200	14,400
	EXCAVATION / BACKFILL		EST	20	CY			0	0	0.36	8	EXFD	90.00	700	700
	REINFORCING		EST	3.0	TN		1,150.00	0	3,500	20.00	69	REIN	78.27	5,400	8,900
	FORMWORK		EST	75	SF		2.50	0	200	0.14	12	FORM	99.43	1,200	1,400
	CONCRETE		EST	12	CY		105.00	0	1,300	1.50	21	CONP	79.64	1,600	2,900
	MUD MAT		EST	0	CY		105.00	0	0	1.50	0	CONP	79.64	0	0
	EMBEDDED STEEL		EST	60	LB		2.50	0	200	0.06	4	CARP	71.88	300	500
11.5	ELECTRICAL	INCLUDED IN ID FANS, 1.0													
90.00	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS							129,500	195,600		5,100			475,800	800,900
	OTHER DIRECT & CONSTRUCTION INDIRECT COSTS														
	ADDITIONAL CRANE ALLOWANCE								0					0	0
	MOBILIZATION / DEMOBILIZATION - INCLUDED IN WAGE RATES ABOVE														0
	COST DUE TO OVERTIME WORKING 5 X10 HOUR DAYS			1	LS										75,889
	COST DUE TO OVERTIME INEFFICIENCY - SPECIFY % INEFFICIENCY			8.00	%						443		83.48	37,000	37,000
	COST DUE TO OVERTIME PAY @1.5 TIMES OVERTIME PAY RATE SPECIFY % ADDITIONAL HOURS PAID ON ACTUAL HOURS WORKED			10.00	%						554			38,889	38,889
	PER DIEM	NONE		0.00	HR						6,098			0	0
	CONSUMABLES - % of ACCT NO. 90			0.5	%				978					2,379	3,357

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	FREIGHT ON MATERIAL - % of ACCT NO. 90			5.0	%				9,780						9,780
	FREIGHT ON EQUIPMENT - % of ACCT NO. 90			5.0	%			6,475							6,475
	SCAFFOLDING - % OF ACCT NO. 90			5.0	%				9,780					23,790	33,570
	CONTRACTOR'S GENERAL AND ADMINISTRATION & PROFIT EXPENSE - % of ACCT NO. 90			15	%				29,340					71,370	100,710
	SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS							6,500	49,900					173,400	229,800
	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	POTABLE WATER SYSTEM						136,000	245,500					649,200	1,030,700
12.0	FGD SUBSTATION														
12.1	TRANSFORMERS							1,370,000	0					254,900	1,624,900
	FGD SUBSTATION-AUX TRANSFORMERS: 11A & 11B	138KV-13.8KV- 2 WINDING XFMR	EST	2	EA	600000		1,200,000	0	1100.00	2,530	EHEA	79.16	200,300	1,400,300
	SUS TRANSFORMERS: 32F, 32G	13.8KV-480V,3PHASE	EST	2	EA	85000		170,000	0	300.00	690	EHEA	79.16	54,600	224,600
12.2	TRANSFORMER PDC	15W X 45' X 10'H. SUBCONTRACT PRICE INCLUDES LABOR	EST	675.0	SF	300.0		202500.0	0.0	0.0	0.0	STST	105.71	0.0	202500.0
12.3	TRANSFORMER PDC - FOUNDATION							0	73,200					146,900	220,100
	EXCAVATION / BACKFILL		EST	700	CY			0	0	0.36	290	EXFD	90.00	26,100	26,100
	REINFORCING		EST	26	TN		1,150.00	0	30,200	20.00	604	REIN	78.27	47,300	77,500
	FORMWORK		EST	1,100	SF		2.50	0	2,800	0.14	177	FORM	99.43	17,600	20,400
	CONCRETE		EST	300	CY		105.00	0	31,500	1.50	518	CONP	79.64	41,200	72,700
	MUD MAT		EST	35	CY		105.00	0	3,700	1.50	60	CONP	79.64	4,800	8,500
	EMBEDDED STEEL		EST	2,000	LB		2.50	0	5,000	0.06	138	CARP	71.88	9,900	14,900
12.4	138KV MAIN FEEDER & TERMINATIONS							264,000	0					254,000	518,000
	138KV STRUCTURE AND SWITCH		EST	1	LT	103500		103,500	0	450.00	518	STST	105.71	54,700	158,200
	138KV MAIN FEEDER	1/C 750KCMIL- 138KV	EST	2,100	LF	51.75		108,700	0	0.69	1,671	WIRE	98.84	165,200	273,900
	138KV ACCESSORIES		EST	1	LT	51750		51,800	0	300.00	345	WIRE	98.84	34,100	85,900
12.5	SWITCHGEAR							814,200	0					128,900	943,100
	13.8 KV MEDIUM VOLTAGE (11A/B)	PRICE PER SECTION	EST	10	EA	50000		500,000	0	40.00	460	EHEA	79.16	36,400	536,400
	480V LOW VOLTAGE (32F/G)	PRICE PER SECTION	EST	5	EA	38000		190,000	0	16.00	92	EHEA	79.16	7,300	197,300
	EXISTING SCR SWITCHGEAR MODIFICATION	TURNKEY INCLUDING INSTALLATION & MATERIAL (EATON QUOTE 7/16/10)	Q	1	LT	124,200		124,200	0	750.00	863	WIRE	98.84	85,200	209,400
12.6	MCC	480V MCC, PER LINE UP	EST	2	EA	30000		60,000	0	16.00	37	WIRE	98.84	3,600	63,600
12.7	CABLE BUS							181,100	18,000					290,200	489,300
	15KV CABLE BUS DUCT	BUS DUCT ONLY	EST	200	FT	442		88,400	0	3.30	759	WIRE	98.84	75,000	163,400
	480V CABLE BUS DUCT	BUS DUCT ONLY	EST	150	FT	618		92,700	0	10.30	1,777	WIRE	98.84	175,600	268,300
	CABLE BUS TERMINATION	500MCM - 15KV TERMINATIONS	EST	4	EA		1,800.00	0	7,200	33.00	152	WIRE	98.84	15,000	22,200
	CABLE BUS TERMINATION	750MCM- 480V TERMINATIONS	EST	4	EA		2,700.00	0	10,800	54.00	248	WIRE	98.84	24,600	35,400
12.8	PANELS - RELAY							100,000	0					9,100	109,100
	RELAY PANELS & INTERLOCK	ALLOWANCE	EST	1	LT	100000		100,000	0	80.00	92	WIRE	98.84	9,100	109,100
12.9	MIMIC PANELS		EST	1	EA	17500		17,500	0	40.00	46	WIRE	98.84	4,500	22,000
12.10	EMERGENCY POWER SYSTEM							108,300	0					24,400	132,700
	DC PANEL BOARD		EST	1	EA	15500		15,500	0	40.00	46	WIRE	98.84	4,500	20,000
	UPS PANEL BOARDS		EST	1	EA	15500		15,500	0	40.00	46	WIRE	98.84	4,500	20,000
	SATELLITE UPS		EST	1	EA	41200		41,200	0	16.00	18	WIRE	98.84	1,800	43,000
	VRLA BATTERIES	8HR-400A, 480V	EST	1	LT	36050		36,100	0	120.00	138	WIRE	98.84	13,600	49,700
12.11	GROUNDING							23,300	0					59,100	82,400
	GROUND ROD	3/4" - 20' LONG EACH	EST	16	EA	150		2,400	0	4.00	74	WIRE	98.84	7,300	9,700
	500 MCM	BARE COPPER WIRE	EST	2,600	FT	7.65		19,900	0	0.12	359	WIRE	98.84	35,500	55,400
	CADWELD		EST	64	EA	15		1,000	0	2.00	147	WIRE	98.84	14,500	15,500
	GROUNDING TEST	TEST & DOCUMENTATION	EST	1	LT			0	0	16.00	18	WIRE	98.84	1,800	1,800
12.12	LIGHTING/ TRANSFORMERS & PANELS							26,000	30,000					29,500	85,500
	LIGHT FIXTURES		EST	40	EA		750	0	30,000	4.00	184	WIRE	98.84	18,200	48,200
	45KVA, 480V, 3 PHASE	LOW VOLTAGE XFMR	EST	1	EA	10000		10,000	0	40.00	46	WIRE	98.84	4,500	14,500

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Account No.	Item Description	Scope Definition	Cost Type	Quantity	Unit of Measure	Unit Equip.Cost	Unit Material Cost	Total Equipment Cost	Total Material Cost	Unit Man-hours (Base)	Total Man-hours (w/ productivity)	Crew Code	Crew Wage Rate	Total Construction & Erection Cost	Total Projected Cost
	37.7KVA, 480V, 3 PHASE	LOW VOLTAGE XFMR	EST	1	EA	7500		7,500	0	32.00	37	WIRE	98.84	3,600	11,100
	200A, 480-277V, 3 PHASE- RECEPTACLE PANEL	INCLUDING BREAKERS	EST	1	EA	5000		5,000	0	16.00	18	WIRE	98.84	1,800	6,800
	200A, 277V-120V, 3 PHASE- LIGHTING PANELS	INCLUDING BREAKERS	EST	1	EA	3500		3,500	0	12.00	14	WIRE	98.84	1,400	4,900
12.13	OUTDOOR LIGHTING	NEW AUX YARD LIGHTING - ALLOWANCE	EST	1	LT	25000		25,000	0	500.00	575	WIRE	98.84	56,800	81,800
12.14	RACEWAY, CABLE TRAY, & CONDUIT							0	390,600					1,918,600	2,309,200
	12" X 6" AL CABLE TRAY	INCLUDING SUPPORT & FITTINGS	EST	1,250	LF		18.25	0	22,800	1.10	1,581	WIRE	98.84	156,300	179,100
	18" X 6" AL CABLE TRAY	INCLUDING SUPPORT & FITTINGS	EST	750	LF		21.50	0	16,100	1.45	1,251	WIRE	98.84	123,600	139,700
	24" X 6" AL CABLE TRAY	INCLUDING SUPPORT & FITTINGS	EST	2,200	LF		27.10	0	59,600	1.75	4,428	WIRE	98.84	437,600	497,200
	36" X 6" AL CABLE TRAY	INCLUDING SUPPORT & FITTINGS	EST	600	LF		30.30	0	18,200	1.95	1,346	WIRE	98.84	133,000	151,200
	5" RGS CONDUIT	INCLUDING SUPPORT & FITTINGS	EST	1,000	LF		61.00	0	61,000	1.13	1,296	WIRE	98.84	128,100	189,100
	4" RGS CONDUIT	INCLUDING SUPPORT & FITTINGS	EST	1,800	LF		31.00	0	55,800	0.81	1,670	WIRE	98.84	165,100	220,900
	3" RGS CONDUIT	INCLUDING SUPPORT & FITTINGS	EST	2,000	LF		21.50	0	43,000	0.65	1,484	WIRE	98.84	146,600	189,600
	2" RGS CONDUIT	INCLUDING SUPPORT & FITTINGS	EST	3,000	LF		9.25	0	27,800	0.35	1,214	WIRE	98.84	120,000	147,800
	1-1/2" RGS CONDUIT	INCLUDING SUPPORT & FITTINGS	EST	3,700	LF		7.15	0	26,500	0.28	1,208	WIRE	98.84	119,400	145,900
	1" RGS CONDUIT	INCLUDING SUPPORT & FITTINGS	EST	6,200	LF		4.44	0	27,500	0.24	1,704	WIRE	98.84	168,400	195,900
	3/4" RGS CONDUIT	INCLUDING SUPPORT & FITTINGS	EST	10,000	LF		3.23	0	32,300	0.19	2,231	WIRE	98.84	220,500	252,800
12.15	DUCT BANK							0	26,200					54,300	80,500
	UNDERGROUND SURVEY FOR NEW DUCT BANK RUN	MAIN FEEDER BETWEEN EXISTING SCR SUBSTATION TO FGD AUX XFMR	EST	200	LF			0	0	0.80	184	ECND	75.97	14,000	14,000
	4' X 4' DUCT BANK (138KV SCR TO FGD AUX XFMR SUBSTATION)	6 - 6" PVC	EST	40	LF		375	0	15,000	6.25	288	ECND	75.97	21,800	36,800
	DUCT BANK WITH 6-5" & 4-3" CONDUITS	2.38' H X 4' W	EST	50	LF		223.02	0	11,200	4.24	244	ECND	75.97	18,500	29,700
12.16	HIGH VOLTAGE POWER CABLE & TERMINATION	1/C # 500KCMIL- 15KV	EST	1,800	LF		9.27	0	16,700	0.23	476	WIRE	98.84	47,100	63,800
12.17	LOW VOLTAGE POWER CABLE & TERMINATION							0	96,600					147,700	244,300
	3/C # 500KCMIL- 600V		EST	600	LF		26.12	0	15,700	0.69	476	WIRE	98.84	47,100	62,800
	#4/0 - #12 AWG-600V		EST	11,200	LF		7.22	0	80,900	0.08	1,018	WIRE	98.84	100,600	181,500
12.18	CONTROL & INSTRUMENT CABLE	#14, #16 & PR # 20 & SHLD WIRE	EST	6,800	LF		3.20	0	21,800	0.08	618	WIRE	98.84	61,100	82,900
12.19	FOUNDATION FOR AUX TRANSFORMER							0	70,200					205,400	275,600
	EXCAVATION / BACKFILL		EST	1,000	CY			0	0	0.36	414	EXFD	90.00	37,300	37,300
	REINFORCING		EST	20.0	TN		1,150.00	0	23,000	20.00	460	REIN	78.27	36,000	59,000
	FORMWORK		EST	5,000	SF		2.50	0	12,500	0.14	805	FORM	99.43	80,000	92,500
	CONCRETE		EST	190	CY		105.00	0	20,000	1.50	328	CONP	79.64	26,100	46,100
	MUD MAT		EST	45	CY		105.00	0	4,700	1.50	78	CONP	79.64	6,200	10,900
	EMBEDDED STEEL		EST	4,000	LB		2.50	0	10,000	0.06	276	CARP	71.88	19,800	29,800
12.20	FIREWALL FOR TRANSFORMERS							0	4,300					7,600	11,900
	REINFORCING		EST	1.5	TN		1,150.00	0	1,700	20.00	35	REIN	78.27	2,700	4,400
	FORMWORK		EST	120	SF		2.50	0	300	0.14	19	FORM	99.43	1,900	2,200
	CONCRETE		EST	22	CY		105.00	0	2,300	1.50	38	CONP	79.64	3,000	5,300
12.21	COMMUNICATIONS		EST	1	LT		17,000.00	0	17,000	114.00	131	WIRE	98.84	13,000	30,000
12.22	LIGHTNING PROTECTION		EST	1	LT		4,000.00	0	4,000	18.00	21	WIRE	98.84	2,000	6,000
12.23	SECURITY SYSTEM		EST	1	LT		8,000.00	0	8,000	62.00	71	WIRE	98.84	7,000	15,000
90.00	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS							3,191,900	776,600		39,177			3,725,700	7,694,200
	OTHER DIRECT & CONSTRUCTION INDIRECT COSTS														
	ADDITIONAL CRANE ALLOWANCE								0					0	0
	MOBILIZATION / DEMOBILIZATION - INCLUDED IN WAGE RATES ABOVE														0
	COST DUE TO OVERTIME WORKING 5 X10 HOUR DAYS			1	LS										582,728

				AEP										Estimate No.:	30723C
				BIG SANDY UNIT 2										Project No.:	12721-000
				FGD PROJECT - NID BASE EST (ESP)-1A - 3.0 LB/MM BTU										Date:	9/29/2010
				ORDER OF MAGNITUDE COST ESTIMATE										Preparer:	MNO
		Cost Type:												Reviewer:	JMK
		Est=Estimated												Approver:	PEF
		Allow.=Allowance								Wage Rates Based on:		BIG SANDY			
		Q=Vendor Quote								Labor Productivity =		1.15			

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	COST DUE TO OVERTIME INEFFICIENCY - SPECIFY % INEFFICIENCY			8.00	%						3,407		83.48	284,000	284,000
	COST DUE TO OVERTIME PAY @1.5 TIMES OVERTIME PAY RATE SPECIFY % ADDITIONAL HOURS PAID ON ACTUAL HOURS WORKED			10.00	%						4,258			298,728	298,728
	PER DIEM	NONE		0.00	HR						46,842			0	0
	CONSUMABLES - % of ACCT NO. 90			0.5	%				3,883					18,629	22,512
	FREIGHT ON MATERIAL - % of ACCT NO. 90			5.0	%				38,830						38,830
	FREIGHT ON EQUIPMENT - % of ACCT NO. 90			5.0	%			159,595							159,595
	SCAFFOLDING - % OF ACCT NO. 90			5.0	%				38,830					186,285	225,115
	CONTRACTOR'S GENERAL AND ADMINISTRATION & PROFIT EXPENSE - % of ACCT NO. 90			15	%				116,490					558,855	675,345
	SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS							159,600	198,000					1,346,496	1,704,100
	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	FGD SUBSTATION						3,351,500	974,600					5,072,200	9,398,300
13.0	FGD DCS SYSTEM														0
13.1	DCS	3200 I/O POINTS	EST	3,200	EA	750		2,400,000	0	2.50	9,200	INEL	88.43	813,600	3,213,600
13.2	DCS - VENDOR FIELD SUPPORT	200 MAN DAYS @ $1500/DAY - SHOWN AS SUBCONTRACT COST	EST	200	DAYS	1500		300,000	0		0	INEL	88.43	0	300,000
13.3	LOCALLY MOUNTED INSTRUMENTS							0	650,400					852,900	1,503,300
	LOCALLY MOUNTED INSTRUMENTS		EST	275	EA		2200	0	605,000	20.00	6,325	INEL	88.43	559,300	1,164,300
	INSTRUMENT RACKS	INCLUDED WITH INSTRUMENTS													
	INSTRUMENT TUBING	ALLOWANCE	EST	8,250	LF		5.5	0	45,400	0.35	3,321	INEL	88.43	293,600	339,000
90.00	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS							2,700,000	650,400		18,846			1,666,500	5,016,900
	OTHER DIRECT & CONSTRUCTION INDIRECT COSTS														
	ADDITIONAL CRANE ALLOWANCE								0					0	0
	MOBILIZATION / DEMOBILIZATION - INCLUDED IN WAGE RATES ABOVE														0
	COST DUE TO OVERTIME WORKING 5 X10 HOUR DAYS			1	LS										280,700
	COST DUE TO OVERTIME INEFFICIENCY - SPECIFY % INEFFICIENCY			8.00	%						1,639		83.48	137,000	137,000
	COST DUE TO OVERTIME PAY @1.5 TIMES OVERTIME PAY RATE SPECIFY % ADDITIONAL HOURS PAID ON ACTUAL HOURS WORKED			10.00	%						2,048			143,700	143,700
	PER DIEM	NONE		0.00	HR						22,533			0	0
	CONSUMABLES - % of ACCT NO. 90			0.5	%				3,252					8,333	11,585
	FREIGHT ON MATERIAL - % of ACCT NO. 90			5.0	%				32,520						32,520
	FREIGHT ON EQUIPMENT - % of ACCT NO. 90			5.0	%			135,000							135,000
	SCAFFOLDING - % OF ACCT NO. 90			5.0	%				32,520					83,325	115,845
	CONTRACTOR'S GENERAL AND ADMINISTRATION & PROFIT EXPENSE - % of ACCT NO. 90			15	%				97,560					249,975	347,535
	SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS							135,000	165,900					622,300	923,200
	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	FGD DCS SYSTEM						2,835,000	816,300					2,288,800	5,940,100
14.0	CEM SYSTEM														0
14.1	CEM	PROVIDED BY AEP		1	LT	1260000	540000	1,260,000	540,000					310,000	2,110,000
90.00	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS							1,260,000	540,000					310,000	2,110,000
	CONTRACTOR'S GENERAL AND ADMINISTRATION EXPENSE & PROFIT- % of ACCT NO. 90			15	%				81,000						316,500
	SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS														316,500
	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	CEM SYSTEM													2,426,500
15.0	TRUCK & RAIL INFRASTRUCTURE														0

				AEP										Estimate No.:	30723C
				BIG SANDY UNIT 2										Project No.:	12721-000
				FGD PROJECT - NID BASE EST (ESP)-1A - 3.0 LB/MM BTU										Date:	9/29/2010
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15.1	EXISTING RAILROAD IMPROVEMENTS	FOR FULL RAILCAR STORAGE TRACK IMPROVEMENTS - 3250 LF						0	660,200					689,200	1,349,400
	REMOVE AND REPLACE 8" OF THE BALLAST	INCLUDES DISPOSAL OF REMOVED BALLAST	EST	3,250	LF		12.25	0	39,800	0.16	598	RRTK	88.26	52,800	92,600
	REPLACE 75% OF THE EXISTING WOODEN RAILROAD TIES	INCLUDES TIE PLATES, SPIKES AND BOLTS	EST	1,950	LF		80	0	156,000	0.85	1,906	RRTK	88.26	168,200	324,200
	REMOVE THE EXISTING RAIL AND REPLACE WITH 132-LB RAIL		EST	3,250	LF		87.5	0	284,400	1.05	3,924	RRTK	88.26	346,400	630,800
	REPLACE EXISTING #8 TURNOUTS		EST	4	EA		45000	0	180,000	300.00	1,380	RRTK	88.26	121,800	301,800
15.2	EXISTING RAILROAD IMPROVEMENTS	FOR LOOP TRACK UPGRADE - 5000 LF						0	1,008,800					1,055,600	2,064,400
	REMOVE AND REPLACE 8" OF THE BALLAST	INCLUDES DISPOSAL OF REMOVED BALLAST	EST	5,000	LF		12.25	0	61,300	0.16	920	RRTK	88.26	81,200	142,500
	REPLACE 75% OF THE EXISTING WOODEN RAILROAD TIES	INCLUDES TIE PLATES, SPIKES AND BOLTS	EST	3,000	LF		80	0	240,000	0.85	2,933	RRTK	88.26	258,800	498,800
	REMOVE THE EXISTING RAIL AND REPLACE WITH 132-LB RAIL		EST	5,000	LF		87.5	0	437,500	1.05	6,038	RRTK	88.26	532,900	970,400
	REPLACE EXISTING #8 TURNOUTS		EST	6	EA		45000	0	270,000	300.00	2,070	RRTK	88.26	182,700	452,700
15.3	NEW RAILROAD TRACK	INCLUDES, 132LB RAIL, 7" TIMBERS, TIE PLATES, SPIKES, BOLTS, 12: SUB BALLAST, 12" BALLAST, 12 OZ/SY GEOTEXTILE MEMBRANE, 12" SUBGRADE PREP	EST	1,400	LF		180	0	252,000	1.50	2,415	RRTK	88.26	213,100	465,100
15.4	FIELD FABRICATED TURNOUTS	#8 TURNOUT	EST	2	EA		45000	0	90,000	270.00	621	RRTK	88.26	54,800	144,800
15.5	RAIL SCALE	SUBCONTRACT COST, INCLUDES FOUNDATIONS	EST	2	EA	106250		212,500	0	0.00	0	MECH	88.89	0	212,500
15.6	NEW CONCRETE ENCASEMENT	OVER AND AROUND DUCT BANK CONNECTING THE PLANT TO SWITCHYARD. THIS IS UNDER THE NEW TRACK WORK EXTENSION						0	33,200					71,400	104,600
	EXCAVATION / BACKFILL		EST	170	CY			0	0	0.36	70	EXFD	90.00	6,300	6,300
	REINFORCING		EST	13	TN		1,150.00	0	14,400	20.00	288	REIN	78.27	22,500	36,900
	FORMWORK		EST	1,350	SF		2.50	0	3,400	0.14	217	FORM	99.43	21,600	25,000
	CONCRETE		EST	113	CY		105.00	0	11,900	1.50	195	CONP	79.64	15,500	27,400
	MUD MAT		EST	20	CY		105.00	0	2,100	1.50	35	CONP	79.64	2,700	4,800
	EMBEDDED STEEL		EST	567	LB		2.50	0	1,400	0.06	39	CARP	71.88	2,800	4,200
90.00	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS							212,500	2,044,200		23,648			2,084,100	4,340,800
	OTHER DIRECT & CONSTRUCTION INDIRECT COSTS														
	ADDITIONAL CRANE ALLOWANCE								0					0	0
	MOBILIZATION / DEMOBILIZATION - INCLUDED IN WAGE RATES ABOVE														0
	COST DUE TO OVERTIME WORKING 5 X10 HOUR DAYS			1	LS										352,321
	COST DUE TO OVERTIME INEFFICIENCY - SPECIFY % INEFFICIENCY			8.00	%						2,056		83.48	172,000	172,000
	COST DUE TO OVERTIME PAY @1.5 TIMES OVERTIME PAY RATE SPECIFY % ADDITIONAL HOURS PAID ON ACTUAL HOURS WORKED			10.00	%						2,570			180,321	180,321
	PER DIEM	NONE		0.00	HR						28,275			0	0
	CONSUMABLES - % of ACCT NO. 90			0.5	%				10,221					10,421	20,642
	FREIGHT ON MATERIAL - % of ACCT NO. 90			5.0	%				102,210						102,210
	FREIGHT ON EQUIPMENT - % of ACCT NO. 90			5.0	%			10,625							10,625
	SCAFFOLDING - % OF ACCT NO. 90			5.0	%				102,210					104,205	206,415
	CONTRACTOR'S GENERAL AND ADMINISTRATION & PROFIT EXPENSE - % of ACCT NO. 90			15	%				306,630					312,615	619,245

AEP
BIG SANDY UNIT 2
FGD PROJECT - NID BASE EST (ESP)-1A - 3.0 LB/MM BTU
ORDER OF MAGNITUDE COST ESTIMATE

Estimate No.: 30723C
Project No.: 12721-000
Date: 9/29/2010
Preparer: MNO
Reviewer: JMK
Approver: PEF

Cost Type:
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Wage Rates Based on: BIG SANDY
Labor Productivity = 1.15

Account No.	Item Description	Scope Definition	Cost Type	Quantity	Unit of Measure	Unit Equip.Cost	Unit Material Cost	Total Equipment Cost	Total Material Cost	Unit Man-hours (Base)	Total Man-hours (w/ productivity)	Crew Code	Crew Wage Rate	Total Construction & Erection Cost	Total Projected Cost
	SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS							10,600	521,300					779,600	1,311,500
	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	TRUCK & RAIL INFRASTRUCTURE						223,100	2,565,500					2,863,700	5,652,300
16.0	SITE IMPROVEMENTS - CIVIL WORK														
16.1	SITE GRADING							0	0					555,200	555,200
	CUT		EST	17,000	CY			0	0	0.08	1,564	ETWK	177.49	277,600	277,600
	FILL		EST	17,000	CY			0	0	0.08	1,564	ETWK	177.49	277,600	277,600
16.2	ROADS & SURFACING							0	1,204,900					1,667,500	2,872,400
	20' WIDE ACCESS ROAD	INCLUDES: 1.5" ASPHALT SURFACE COURSE 1.5" ASPHALT BINDER COURSE 12" BASE COURSE 10 OZ/SY GEOTEXTILE 12" SUBGRADE PREP	EST	5,600	SY		47	0	263,200	0.40	2,576	PBIT	90.25	232,500	495,700
	24' WIDE ACCESS ROAD	INCLUDES: 1.5" ASPHALT SURFACE COURSE 1.5" ASPHALT BINDER COURSE 12" BASE COURSE 10 OZ/SY GEOTEXTILE 12" SUBGRADE PREP	EST	5,300	SY		47	0	249,100	0.40	2,438	PBIT	90.25	220,000	469,100
	24' WIDE ACCESS ROAD AGGREGATE SHOULDERS	INCLUDES: 12" BASE COURSE 10 OZ/SY GEOTEXTILE	EST	1,300	SY		17.5	0	22,800	0.10	150	BCSE	105.94	15,800	38,600
	LIME UNLOADING AREA	INCLUDES: 1.5" ASPHALT SURFACE COURSE 1.5" ASPHALT BINDER COURSE 12" BASE COURSE 10 OZ/SY GEOTEXTILE 12" SUBGRADE PREP	EST	2,400	SY		47	0	112,800	0.40	1,104	PBIT	90.25	99,600	212,400
	PARKING AREA	INCLUDES: 1.5" ASPHALT SURFACE COURSE 1.5" ASPHALT BINDER COURSE 12" BASE COURSE 10 OZ/SY GEOTEXTILE 12" SUBGRADE PREP	EST	900	SY		47	0	42,300	0.40	414	PBIT	90.25	37,400	79,700
	BYPRODUCT & WASTE LOADING AREA - SURFACING	12" REINFORCED CONCRETE	EST	1,900	SY		96	0	182,400	1.60	3,496	CONP	79.64	278,400	460,800
	BYPRODUCT & WASTE LOADING AREA	6" CONCRETE CURB	EST	560	LF		6.5	0	3,600	0.96	618	COND	70.04	43,300	46,900
	CONCRETE PAD BUILDING ENTRANCES	10" REINFORCED CONCRETE	EST	340	SY		80	0	27,200	1.50	587	CONP	79.64	46,700	73,900
	AGGREGATE AREA SURFACING	INCLUDES: 6" BASE COURSE 10 OZ/SY GEOTEXTILE 12" SUBGRADE PREP	EST	33,500	SY		9	0	301,500	0.17	6,549	BCSE	105.94	693,800	995,300
16.3	NEW CONCRETE ENCASEMENT	16' X 4' X 40' - FOR EXISTING ASH PIPE HAUL ROAD CROSSING						0	36,500					73,000	109,500
	EXCAVATION / BACKFILL		EST	300	CY			0	0	0.36	124	EXFD	90.00	11,200	11,200
	REINFORCING		EST	25.0	TN		1,150.00	0	28,800	20.00	575	REIN	78.27	45,000	73,800
	FORMWORK		EST	500	SF		2.50	0	1,300	0.14	81	FORM	99.43	8,000	9,300
	CONCRETE		EST	50	CY		105.00	0	5,300	1.50	86	CONP	79.64	6,900	12,200
	MUD MAT		EST	5	CY		105.00	0	500	1.50	9	CONP	79.64	700	1,200
	EMBEDDED STEEL		EST	250	LB		2.50	0	600	0.06	17	CARP	71.88	1,200	1,800
16.4	TRUCK SCALE & CONCRETE APPROACH							170,000	27,300					92,000	289,300
	TRUCK SCALE	SUBCONTRACT COST, INCLUDES FOUNDATIONS AND LABOR	EST	2	EA	85000		170,000	0	0.00	0	MECH	88.89	0	170,000
	CONCRETE APPROACH FOR TRUCK SCALE	20' x 40' - TOTAL FOR TWO SCALES	EST	119	CY		230.0	0	27,300	7.50	1,022	EXFD	90.00	92,000	119,300

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		Cost Type:												Reviewer:	JMK
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Account No.	Item Description	Scope Definition	Cost Type	Quantity	Unit of Measure	Unit Equip.Cost	Unit Material Cost	Total Equipment Cost	Total Material Cost	Unit Man-hours (Base)	Total Man-hours (w/ productivity)	Crew Code	Crew Wage Rate	Total Construction & Erection Cost	Total Projected Cost
16.5	PROCESS WATER STORAGE BASIN							60,000	81,600					240,300	381,900
	SAND EXCAVATION		EST	3,000	CY			0	0	0.03	90	ETWK	177.49	15,900	15,900
	ROCK EXCAVATION	ASSUME ROCK IS RIPPABLE	EST	400	CY			0	0	0.05	22	ETWK	177.49	3,900	3,900
	POND SURFACING	6" REINFORCED CONCRETE	EST	1,700	SY		48	0	81,600	1.20	2,346	CONP	79.64	186,800	268,400
	PUMPS	500 GPM, 75 PSIG	EST	2	EA	30000		60,000	0	165.00	380	MECH	88.89	33,700	93,700
16.6	PROCESS WATER STORAGE BASIN PUMP STRUCTURE - CONCRETE							0	47,000					105,400	152,400
	EXCAVATION / BACKFILL		EST	0	CY			0	0	0.36	0	EXFD	90.00	0	0
	REINFORCING		EST	7	TN		1,150.00	0	8,100	20.00	161	REIN	78.27	12,600	20,700
	FORMWORK		EST	3,968	SF		2.50	0	9,900	0.14	639	FORM	99.43	63,500	73,400
	CONCRETE		EST	76	CY		105.00	0	8,000	1.50	131	CONP	79.64	10,400	18,400
	MUD MAT		EST	0	CY		105.00	0	0	1.50	0	CONP	79.64	0	0
	EMBEDDED STEEL		EST	380	LB		2.50	0	1,000	0.06	26	CARP	71.88	1,900	2,900
	PROCESS WATER BASIN PUMP STRUCTURE - GALLERY		EST	5	TN		4,000.00	0	20,000	35.00	201	GALL	84.61	17,000	37,000
16.7	STORM WATER DRAINAGE TRENCH	2' W X 3' DEEP CAST-IN-PLACE CONCRETE TRENCH W/REINFORCING & HS-20 RATED GRATE COVERS	EST	3,900	LF		135	0	526,500	1.50	6,728	CONP	79.64	535,800	1,062,300
16.8	STORM WATER RUNOFF POND							0	15,000					122,600	137,600
	SAND EXCAVATION		EST	11,000	CY			0	0	0.03	329	ETWK	177.49	58,400	58,400
	ROCK EXCAVATION	ASSUME ROCK IS RIPPABLE	EST	3,700	CY			0	0	0.05	204	ETWK	177.49	36,300	36,300
	4" TOPSOIL		EST	650	CY		14	0	9,100	0.03	22	LAND	61.45	1,400	10,500
	GRASS SEEDING, FERTILIZER AND MULCH		EST	1.2	AC		4930	0	5,900	240.00	331	MSTR	80.04	26,500	32,400
16.9	STORM WATER RUNOFF POND PUMP STRUCTURE - CONCRETE							90,000	42,300					182,200	314,500
	EXCAVATION / BACKFILL		EST	0	CY			0	0	0.36	0	EXFD	90.00	0	0
	REINFORCING		EST	3	TN		1,150.00	0	3,500	20.00	69	REIN	78.27	5,400	8,900
	FORMWORK		EST	2,025	SF		2.50	0	5,100	0.14	326	FORM	99.43	32,400	37,500
	CONCRETE		EST	33	CY		105.00	0	3,500	1.50	57	CONP	79.64	4,500	8,000
	MUD MAT		EST	0	CY		105.00	0	0	1.50	0	CONP	79.64	0	0
	EMBEDDED STEEL		EST	165	LB		2.50	0	400	0.06	11	CARP	71.88	800	1,200
	STORM WATER POND PUMP STRUCTURE - GALLERY		EST	5	TN		4,000.00	0	20,000	35.00	201	GALL	84.61	17,000	37,000
	PUMPS	500 GPM, 75 PSIG	EST	3	EA	30000		90,000	0	165.00	569	MECH	88.89	50,600	140,600
	PIPING	6" HDPE, SDR 9	EST	1,000	LF		9.8	0	9,800	0.69	794	YDPP	90.14	71,500	81,300
16.10	OILY WATER SEWER							4,500	112,600					236,000	353,100
	PIPING	6" CISP	EST	1,500	LF		21.5	0	32,300	0.33	569	YDPP	90.14	51,300	83,600
	PIPING	8" CISP	EST	1,400	LF		33.5	0	46,900	0.54	869	YDPP	90.14	78,400	125,300
	PIPING	6" HDPE, SDR 9	EST	1,000	LF		9.8	0	9,800	0.69	794	YDPP	90.14	71,500	81,300
	POST INDICATOR VALVE		EST	6	EA	750		4,500	0	6.00	41	YDPP	90.14	3,700	8,200
	MANHOLES		EST	15	EA		1575.0	0	23,600	20.00	345	YDPP	90.14	31,100	54,700
16.11	OIL SEPARATOR	500 GPM W/ INTEGRAL LIFT STATION	EST	2	EA	50000		100,000	0	560.00	1,288	YDPP	90.14	116,100	216,100
16.12	SANITARY SEWER							0	22,200					96,900	119,100
	PIPING	6" CISP	EST	500	LF		21.5	0	10,800	0.33	190	YDPP	90.14	17,100	27,900
	MANHOLES		EST	4	EA		1575.0	0	6,300	20.00	92	YDPP	90.14	8,300	14,600
	PIPING	4" HDPE (UNDERGROUND)	EST	1,500	LF		3.4	0	5,100	0.46	794	YDPP	90.14	71,500	76,600
16.13	SANITARY LIFT STATION	PACKAGED TYPE COMPLETE WITH PUMPS 100,000 GPD	EST	1	EA	150,000	3.4	150,000	0	475.00	546	YDPP	90.14	49,200	199,200
16.14	CONSTRUCTION LAYDOWN AREA	ALLOWANCE FOR 10 ACRES, DOES NOT INCLUDE LAND ACQUISITION, IF REQUIRED	EST	10	AC		70,000.0	0	700,000	800.00	9,200	EXFD	90.00	828,000	1,528,000

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16.15	CRAFT PARKING	DOES NOT INCLUDE LAND ACQUISITION, IF REQUIRED. ALLOWANCE FOR 20,000 SY INCLUDES: 6" BASE COURSE 10 OZ/SY GEOTEXTILE 12" SUBGRADE PREP	EST	20,000	SY		9	0	180,000	0.17	3,910	BCSE	105.94	414,200	594,200
16.16	CONTRACTOR OFFICES (AREA)	DOES NOT INCLUDE LAND ACQUISITION, IF REQUIRED. ALLOWANCE FOR 5,000 SY AREA (TRAILERS BY CONTRACTORS) INCLUDES: 6" BASE COURSE 10 OZ/SY GEOTEXTILE 12" SUBGRADE PREP	EST	5,000	SY		9	0	45,000	0.17	978	BCSE	105.94	103,600	148,600
16.17	TRUCK WASH AREA							0	47,300					83,100	130,400
	EXCAVATION / BACKFILL		EST	190	CY			0	0	0.36	79	EXFD	90.00	7,100	7,100
	REINFORCING		EST	20	TN		1,150.00	0	23,000	20.00	460	REIN	78.27	36,000	59,000
	FORMWORK		EST	510	SF		2.50	0	1,300	0.14	82	FORM	99.43	8,200	9,500
	CONCRETE		EST	170	CY		105.00	0	17,900	1.50	293	CONP	79.64	23,400	41,300
	MUD MAT		EST	25	CY		105.00	0	2,600	1.50	43	CONP	79.64	3,400	6,000
	EMBEDDED STEEL		EST	1,000	LB		2.50	0	2,500	0.06	69	CARP	71.88	5,000	7,500
16.18	NEW PERMANENT STORAGE	INCLUDES LIGHTING AND H&V. SUBCONTRACT PRICE INCLUDES ELECTRICAL AND H&V		10,000	SF	85		850,000	0		0	STST	105.71	0	850,000
16.19	FOUNDATIONS FOR THE NEW WAREHOUSE							0	273,500					450,200	723,700
	EXCAVATION / BACKFILL		EST	950	CY			0	0	0.36	393	EXFD	90.00	35,400	35,400
	REINFORCING		EST	110	TN		1,150.00	0	126,500	20.00	2,530	REIN	78.27	198,000	324,500
	FORMWORK		EST	1,200	SF		2.50	0	3,000	0.14	193	FORM	99.43	19,200	22,200
	CONCRETE		EST	1,100	CY		105.00	0	115,500	1.50	1,898	CONP	79.64	151,100	266,600
	MUD MAT		EST	140	CY		105.00	0	14,700	1.50	242	CONP	79.64	19,200	33,900
	EMBEDDED STEEL		EST	5,500	LB		2.50	0	13,800	0.06	380	CARP	71.88	27,300	41,100
16.20	NEW TEMPORARY STORAGE	WEATHER TIGHT CANVAS ENCLOSURE. INCLUDES LIGHTING AND H&V. SUBCONTRACT PRICE INCLUDES ELECTRICAL AND H&V		10,000	SF	45		450,000	0		0	STST	105.71	0	450,000
16.21	FOUNDATIONS FOR TEMPORARY STORAGE							0	99,500					157,200	256,700
	EXCAVATION / BACKFILL		EST	230	CY			0	0	0.36	95	EXFD	90.00	8,600	8,600
	REINFORCING		EST	35	TN		1,150.00	0	40,300	20.00	805	REIN	78.27	63,000	103,300
	FORMWORK		EST	400	SF		2.50	0	1,000	0.14	64	FORM	99.43	6,400	7,400
	CONCRETE		EST	370	CY		105.00	0	38,900	1.50	638	CONP	79.64	50,800	89,700
	MUD MAT		EST	140	CY		105.00	0	14,700	1.50	242	CONP	79.64	19,200	33,900
	EMBEDDED STEEL		EST	1,850	LB		2.50	0	4,600	0.06	128	CARP	71.88	9,200	13,800
16.22	LABOR BUS SERVICE FROM PARKING LOT TO CONSTRUCTION AREA AND ACCESS CONTROL	ALLOWANCE FOR 36 MONTHS BASED ON 2 BUSES OPERATING CONTINUOUSLY FOR 5X10 WORKWEEK. SUBCONTRACT COST INCLUDES EQUIPMENT, MATERIAL AND LABOR	ALLOW	36	MN	38000		1,368,000	0					0	1,368,000
16.23	EROSION & SEDIMENT CONTROL							0	12,500					20,500	33,000
	SILT FENCE		EST	2,500	LF		1.0	0	2,500	0.02	58	LAND	61.45	3,500	6,000
	ROCK CHECK DAMS		EST	20	EA		500.0	0	10,000	12.00	276	LAND	61.45	17,000	27,000
90.00	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS							3,242,500	3,473,700		65,193			6,129,000	12,845,200
	OTHER DIRECT & CONSTRUCTION INDIRECT COSTS														

AEP
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ORDER OF MAGNITUDE COST ESTIMATE

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Wage Rates Based on: BIG SANDY
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	ADDITIONAL CRANE ALLOWANCE								0					0	0
	MOBILIZATION / DEMOBILIZATION - INCLUDED IN WAGE RATES ABOVE														0
	COST DUE TO OVERTIME WORKING 5 X10 HOUR DAYS			1	LS										970,106
	COST DUE TO OVERTIME INEFFICIENCY - SPECIFY % INEFFICIENCY			8.00	%						5,669		83.48	473,000	473,000
	COST DUE TO OVERTIME PAY @1.5 TIMES OVERTIME PAY RATE SPECIFY % ADDITIONAL HOURS PAID ON ACTUAL HOURS WORKED			10.00	%						7,086			497,106	497,106
	PER DIEM	NONE		0.00	HR						77,948			0	0
	CONSUMABLES - % of ACCT NO. 90			0.5	%				17,369					30,645	48,014
	FREIGHT ON MATERIAL - % of ACCT NO. 90			5.0	%				173,685						173,685
	FREIGHT ON EQUIPMENT - % of ACCT NO. 90			5.0	%			162,125							162,125
	SCAFFOLDING - % OF ACCT NO. 90			5.0	%				173,685					306,450	480,135
	CONTRACTOR'S GENERAL AND ADMINISTRATION & PROFIT EXPENSE - % of ACCT NO. 90			15	%				521,055					919,350	1,440,405
	SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS							162,100	885,800					2,226,600	3,274,500
	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	SITE IMPROVEMENTS - CIVIL WORK						3,404,600	4,359,500					8,355,600	16,119,700
17.0	BOP ITEMS														0
17.1	PIPE INSULATION	AVERAGE 6" PIPE SIZE	EST	3,400	LF		10	0	34,000	0.39	1,525	PINS	69.50	106,000	140,000
17.2	HEAT TRACING							0	175,600					248,500	424,100
	CABLE	AVERAGE 6" PIPE SIZE	EST	3,000	LF		10.35	0	31,100	0.05	173	WIRE	98.84	17,000	48,100
	POWER CONNECTOR AND OTHER ACCESSORIES INCLUDING THERMOSTATS FOR HEAT TRACING (BY ZONES)		EST	55	EA		450	0	24,500	8.00	502	WIRE	98.84	49,600	74,100
	HEAT TRACING BALANCE OF PLANT INCL PANELS, POWER WIRING AND CONDUITS		EST	4	LT		30000	0	120,000	400.00	1,840	WIRE	98.84	181,900	301,900
17.3	TOUCH UP PAINT (INCLUDES PAINTING CS PIPE)							0	176,700					677,900	854,600
	TOUCH UP PAINT FOR SHOP PAINTED STEEL		EST	31,200	SF		3	0	93,600	0.15	5,382	PNTR	66.72	359,100	452,700
	TOUCH UP PAINT FOR EQUIPMENT		EST	12,000	SF		3	0	36,000	0.15	2,070	PNTR	66.72	138,100	174,100
	PAINTING CS PIPE ONLY	AVERAGE 6" PIPE SIZE, ALLOWANCE FOR 10,000 LF PIPE	EST	15,700	SF		3	0	47,100	0.15	2,708	PNTR	66.72	180,700	227,800
17.4	HOISTS & TROLLEYS							150,000	175,000					204,400	529,400
	MISC HOISTS & TROLLEYS	IN BUILDINGS FOR EQUIPMENT MAINTENANCE AND FOR ID FANS	EST	10	EA	15000	17500	150,000	175,000	200.00	2,300	MECH	88.89	204,400	529,400
17.5	MISC AUX STEEL FOR PIPE SUPPORTS	FIELD FABRICATED	EST	35	TN		3500	0	122,500	120.00	4,830	STST	105.71	510,600	633,100
17.6	MISC PIPE SUPPORT FOUNDATIONS							0	10,500					21,000	31,500
	EXCAVATION / BACKFILL		EST	65	CY			0	0	0.36	27	EXFD	90.00	2,400	2,400
	REINFORCING		EST	5.0	TN		1,150.00	0	5,800	20.00	115	REIN	78.27	9,000	14,800
	FORMWORK		EST	260	SF		2.50	0	700	0.14	42	FORM	99.43	4,200	4,900
	CONCRETE		EST	25	CY		105.00	0	2,600	1.50	43	CONP	79.64	3,400	6,000
	MUD MAT		EST	10	CY		105.00	0	1,100	1.50	17	CONP	79.64	1,400	2,500
	EMBEDDED STEEL		EST	125	LB		2.50	0	300	0.06	9	CARP	71.88	600	900
17.7	EYE WASH STATIONS	WITH 50 KW HEATERS	EST	5	EA	6000	1000	30,000	5,000	60.00	345	MECH	88.89	30,700	65,700
17.8	FIRE PROTECTION FOR MISC BUILDINGS & AREAS	STAND PIPE FOR BUILDINGS	EST	10	EA		30000	0	300,000	240.00	2,760	MECH	88.89	245,300	545,300
90.00	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS							180,000	999,300		24,687			2,044,400	3,223,700
	OTHER DIRECT & CONSTRUCTION INDIRECT COSTS														

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	ADDITIONAL CRANE ALLOWANCE								0					0	0
	MOBILIZATION / DEMOBILIZATION - INCLUDED IN WAGE RATES ABOVE														0
	COST DUE TO OVERTIME WORKING 5 X10 HOUR DAYS			1	LS										367,244
	COST DUE TO OVERTIME INEFFICIENCY - SPECIFY % INEFFICIENCY			8.00	%						2,147		83.48	179,000	179,000
	COST DUE TO OVERTIME PAY @1.5 TIMES OVERTIME PAY RATE SPECIFY % ADDITIONAL HOURS PAID ON ACTUAL HOURS WORKED			10.00	%						2,683			188,244	188,244
	PER DIEM	NONE		0.00	HR						29,517			0	0
	CONSUMABLES - % of ACCT NO. 90			0.5	%				4,997					10,222	15,219
	FREIGHT ON MATERIAL - % of ACCT NO. 90			5.0	%				49,965						49,965
	FREIGHT ON EQUIPMENT - % of ACCT NO. 90			5.0	%			9,000							9,000
	SCAFFOLDING - % OF ACCT NO. 90			5.0	%				49,965					102,220	152,185
	CONTRACTOR'S GENERAL AND ADMINISTRATION & PROFIT EXPENSE - % of ACCT NO. 90			15	%				149,895					306,660	456,555
	SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS							9,000	254,822					786,346	1,050,167
	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	BOP ITEMS						189,000	1,254,100					2,830,700	4,273,900
18.0	CAPITAL REPLACEMENTS - REMOVAL AND RELOCATION OF EXISTING EQUIPMENT AND INFRASTRUCTURE														0
18.1	RELOCATE HYDROGEN STORAGE TANK							0	15,600					86,800	102,400
	LABOR ALLOWANCE TO RELOCATED THE TANK	LABOR ALLOWANCE TO RELOCATE THE TANK	EST	1	LT			0	0	500.00	575	MECH	88.89	51,100	51,100
	NEW FOUNDATION ALLOWANCE FOR THE RELOCATED TANK		EST	35	CY		230	0	8,100	6.00	242	MECH	88.89	21,500	29,600
	ELECTRICAL ALLOWANCE FOR THE RELOCATED TANK	INCLUDES LIGHTING	EST	1	LT		7500	0	7,500	125.00	144	WIRE	98.84	14,200	21,700
18.2	NEW HYDROGEN LINE TO PLANT							0	62,100					150,600	212,700
	LARGE BORE PIPE	DOUBLE WALL PIPE	EST	800	LF		75	0	60,000	1.65	1,518	YDPP	90.14	136,800	196,800
	EXCAVATION / BACKFILL	FOR UNDERGROUND PIPING	EST	593	CY			0	0	0.20	136	EXFD	90.00	12,300	12,300
	BEDDING	FOR UNDERGROUND PIPING	EST	59	CY		35	0	2,100	0.25	17	EXFD	90.00	1,500	3,600
18.3	RELOCATE MISC. UNDERGROUND UTILITIES	ALLOWANCE	EST	1	LT		125000	0	125,000	1500.00	1,725	WIRE	98.84	170,500	295,500
18.4	OUTAGE TIE-IN DUCTWORK	ALLOWANCE FOR 85 TON DUCTWORK	ALLOW	85	TN		3250	0	276,300	50.00	4,888	FLDU	107.96	527,700	804,000
18.5	RELOCATED WAREHOUSE - FOUNDATIONS							0	342,600					534,900	877,500
	EXCAVATION / BACKFILL		EST	1,152	CY			0	0	0.15	199	EXFD	90.00	17,900	17,900
	REINFORCING		EST	134	TN		1,150.00	0	154,100	20.00	3,082	REIN	78.27	241,200	395,300
	FORMWORK		EST	1,356	SF		2.50	0	3,400	0.14	218	FORM	99.43	21,700	25,100
	CONCRETE		EST	1,419	CY		105.00	0	149,000	1.50	2,448	CONP	79.64	194,900	343,900
	MUD MAT		EST	175	CY		105.00	0	18,400	1.50	302	CONP	79.64	24,000	42,400
	EMBEDDED STEEL		EST	7,095	LB		2.50	0	17,700	0.06	490	CARP	71.88	35,200	52,900
18.6	RELOCATE EXISTING WAREHOUSE BUILDING	150' L X 75' W X 25' H						0	95,600					1,121,500	1,217,100
	CAREFULLY REMOVE BUILDING SIDING, STEEL AND ROOF & PIECE MARK FOR RELOCATION		EST	11,250	SF			0	0	0.22	2,846	STST	105.71	300,900	300,900
	ASSEMBLE REMOVED BUILDING STEEL, ROOFING, SIDING, WINDOWS AND DOORS INCLUDING OVERHEAD DOORS	INCLUDES 10-15% NEW MATERIAL ALLOWANCE AS SOME REMOVED PIECES MAY NOT BE SALVAGEABLE	EST	11,250	SF		8.5	0	95,600	0.60	7,763	STST	105.71	820,600	916,200
90.00	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS							0	917,200		26,591			2,592,000	3,509,200
	OTHER DIRECT & CONSTRUCTION INDIRECT COSTS														
	ADDITIONAL CRANE ALLOWANCE								0					0	0

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Account No.	Item Description	Scope Definition	Cost Type	Quantity	Unit of Measure	Unit Equip.Cost	Unit Material Cost	Total Equipment Cost	Total Material Cost	Unit Man-hours (Base)	Total Man-hours (w/ productivity)	Crew Code	Crew Wage Rate	Total Construction & Erection Cost	Total Projected Cost
	MOBILIZATION / DEMOBILIZATION - INCLUDED IN WAGE RATES ABOVE														0
	COST DUE TO OVERTIME WORKING 5 X10 HOUR DAYS			1	LS										395,761
	COST DUE TO OVERTIME INEFFICIENCY - SPECIFY % INEFFICIENCY			8.00	%						2,312		83.48	193,000	193,000
	COST DUE TO OVERTIME PAY @1.5 TIMES OVERTIME PAY RATE SPECIFY % ADDITIONAL HOURS PAID ON ACTUAL HOURS WORKED			10.00	%						2,890			202,761	202,761
	PER DIEM	NONE		0.00	HR						31,794			0	0
	CONSUMABLES - % of ACCT NO. 90			0.5	%				4,586					12,960	17,546
	FREIGHT ON MATERIAL - % of ACCT NO. 90			5.0	%				45,860						45,860
	FREIGHT ON EQUIPMENT - % of ACCT NO. 90			5.0	%			0							0
	SCAFFOLDING - % OF ACCT NO. 90			5.0	%				45,860					129,600	175,460
	CONTRACTOR'S GENERAL AND ADMINISTRATION & PROFIT EXPENSE - % of ACCT NO. 90			15	%				137,580					388,800	526,380
	SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS							0	233,900					927,100	1,161,000
	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	CAPITAL REPLACEMENTS - REMOVAL AND RELOCATION OF EXISTING EQUIPMENT AND INFRASTRUCTURE						0	1,151,100					3,519,100	4,670,200
19.0	ARSENIC, ASBESTOS , LEAD ABATEMENT														0
19.1	ARSENIC, ASBESTOS , LEAD ABATEMENT	PROVIDED BY AEP		1	LT										750,000
90.00	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS														750,000
	CONTRACTOR'S GENERAL AND ADMINISTRATION EXPENSE & PROFIT- % of ACCT NO. 90			15	%				0						112,500
	SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS														112,500
	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	ARSENIC, ASBESTOS , LEAD ABATEMENT													862,500
99.00	OVERALL - EQUIPMENT, MATERIAL AND LABOR COSTS							94,765,600	47,621,700		1,300,851			121,455,100	283,874,200
	OTHER DIRECT & CONSTRUCTION INDIRECT COSTS														
	ADDITIONAL CRANE ALLOWANCE			9	MN	75,000.00		675,000	0		7,452			662,400	1,337,400
	MOBILIZATION / DEMOBILIZATION - INCLUDED IN WAGE RATES ABOVE														0
	COST DUE TO OVERTIME WORKING 5 X10 HOUR DAYS			1	LS										19,414,442
	COST DUE TO OVERTIME INEFFICIENCY - SPECIFY % INEFFICIENCY			8.00	%						113,117		93.37	9,443,000	9,443,000
	COST DUE TO OVERTIME PAY @1.5 TIMES OVERTIME PAY RATE SPECIFY % ADDITIONAL HOURS PAID ON ACTUAL HOURS WORKED			10.00	%						142,142			9,971,442	9,971,442
	PER DIEM	NONE		0.00	HR									0	0
	CONSUMABLES - % of ACCT NO. 90			0.5	%				235,409					605,726	841,134
	FREIGHT ON MATERIAL - % of ACCT NO. 90			5.0	%				2,354,085						2,354,085
	FREIGHT ON EQUIPMENT - % of ACCT NO. 90			5.0	%			4,675,280							4,675,280
	SCAFFOLDING - % OF ACCT NO. 90			5.0	%				2,354,085					6,057,255	8,411,340
	CONTRACTOR'S GENERAL AND ADMINISTRATION & PROFIT EXPENSE - % of ACCT NO. 90			15	%				7,143,255					18,171,765	28,565,520
	OVERALL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS							5,350,300	12,086,800					44,911,600	65,599,200
	OVERALL TOTAL DIRECT & CONSTRUCTION INDIRECT COST							100,115,900	59,708,500					166,366,700	349,473,400
	TOTAL PROJECT DIRECT AND CONSTRUCTION INDIRECT COSTS							100,115,900	59,708,500					166,366,700	349,473,400
								0	0					0	0

				AEP											Estimate No.:	30723C
				BIG SANDY UNIT 2											Project No.:	12721-000
				FGD PROJECT - NID BASE EST (ESP)-1A - 3.0 LB/MM BTU											Date:	9/29/2010
				ORDER OF MAGNITUDE COST ESTIMATE											Preparer:	MNO
		Cost Type:													Reviewer:	JMK
		Est=Estimated													Approver:	PEF
		Allow.=Allowance								Wage Rates Based on:		BIG SANDY				
		Q=Vendor Quote								Labor Productivity =		1.15				

Account No.	Item Description	Scope Definition	Cost Type	Quantity	Unit of Measure	Unit Equip.Cost	Unit Material Cost	Total Equipment Cost	Total Material Cost	Unit Man-hours (Base)	Total Man-hours (w/ productivity)	Crew Code	Crew Wage Rate	Total Construction & Erection Cost	Total Projected Cost
	INDIRECT COSTS														
	ENGINEERING, PROCUREMENT, & PROJECT SERVICES			1.0	LT										25,000,000
	CONSTRUCTION MANAGEMENT			3.0	%										10,484,200
	S-U / COMMISSIONING			1.0											3,494,700
	CRAFT START-UP SUPPORT	1% OF TOTAL LABOR MANHOURS (INCLUDES OVERTIME INEFFICIENCY & COST DUE TO OVERTIME PAY @1.5 TIMES OVERTIME PAY RATE - BASED ON ASSUMED 5X10 WORKWEEK)		1.0	%						14,140		93.37	1,431,100	1,431,100
	INITIAL FILLS			0.3	%										1,048,400
	OPERATOR & TRAINING MANUALS			1.0	LT										300,000
	SUBCONTRACTORS (NOISE & DUCTWORK CONSULTANT, GEOTECHNICAL INVESTIGATION)			1.0	LT										400,000
	NOISE ABATEMENT FOR 85 DBA REQUIREMENT	FOR ID FAN, NID MODULES, TRANSFORMERS, BOP, DUCTWORK, ACOUSTIC BARRIERS FOR BOUNDARY LIMITS		1.0	LT										2,600,000
	SUBTOTAL - INDIRECT COSTS														44,758,400
	TOTAL PROJECT DIRECT AND INDIRECT COSTS														394,231,800
	SPARE PARTS:			1.5	%			1,501,700							1,501,700
	SPARE PARTS - CAPITALIZED			0.90	%			901,020							901,020
	SPARE PARTS - FIRST YEAR OF OPERATION			0.60	%			600,680							600,680
	CONTINGENCY			14.1	%										55,898,200
	ESCALATION														49,816,200
	EQUIPMENT	4.0%/yr		4.0	%			15,907,700							15,907,700
	MATERIAL	2.0%/yr		2.0	%				6,177,000						6,177,000
	LABOR	2.5%/yr		2.5	%									22,471,200	22,471,200
	INDIRECTS	2.5%/yr		2.5	%									5,260,300	5,260,300
	TOTAL PROJECT COST														501,447,900
	REFERENCE COSTS:														
A	REMOVAL OF FUEL OIL TANK							1,200,000	80,000					469,400	1,749,400
	REMOVE FUEL OIL TANK & SOIL REMEDIATION	LABOR COST IS FOR REMOVAL OF TANK ONLY. ALLOWANCE FOR SOIL REMEDIATION AND DISPOSAL IN AN EPA APPROVED LANDFILL. SUBCONTRACT COST INCLUDES LABOR. USED LOWER END OF THE RANGE $118-355/CY. COST COULD BE LOWER ($59-118/CY) IF SOLD TO A BITUMINOUS CONCRETE BATCH PLANT	EST	8,000	CY	150		1,200,000	0		0	MECH	88.89	0	1,200,000
	REMOVE DIKE & RECOMPACT FILL IN TANK AREA		EST	3,500	CY			0	0	0.60	2,415	ETWK	177.49	428,600	428,600
	FILL FROM OFF SITE COURSE		EST	5,000	CY		16	0	80,000	0.04	230	ETWK	177.49	40,800	120,800

ATTACHMENT 5-7
NID Detailed Capital Cost Estimate No. 30727 Base Est-1B ESP not in Service (3.0 lb SO_2/MMbtu)

				AEP										Estimate No.:	30727C
				BIG SANDY UNIT 2										Project No.:	12721-000
				FGD PROJECT - NID BASE EST (N/ESP)-1B - 3.0 LB/MM BTU										Date:	9/29/2010
				ORDER OF MAGNITUDE COST ESTIMATE										Preparer:	MNO
		Cost Type:												Reviewer:	JMK
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Account No.	Item Description	Scope Definition	Cost Type	Quantity	Unit of Measure	Unit Equip.Cost	Unit Material Cost	Total Equipment Cost	Total Material Cost	Unit Man-hours (Base)	Total Man-hours (w/ productivity)	Crew Code	Crew Wage Rate	Total Construction & Erection Cost	Total Projected Cost
1.0	ID FANS														
1.1	ID FANS - OEM EQUIPMENT	1,875,000 ACFM WITH 19,500 HP MOTORS ($750,000 EACH). INCLUDES HYDRAULIC OIL UNITS, SEAL AIR FAN SKIDS, VIBRATION MONITORING EQUIPMENT, FAN STALL EQUIPMENT, FIELD SERVICE REP FOR 140 DAYS	EST	2	EA	3,460,000		6,920,000	0	8190.00	18,837	MECH	88.89	1,674,400	8,594,400
1.2	PIPING & SUPPORTS - MECHANICAL							21,800	28,700					120,500	171,000
	LARGE BORE PIPING	6" CS, SCH 40 WELDED	EST	200	LF		41.7	0	8,300	1.61	370	SPNG	94.41	35,000	43,300
	SMALL BORE PIPING	2" CS, SCH 80 WELDED	EST	50	LF		22.20	0	1,100	1.26	72	SPNG	94.41	6,800	7,900
	SMALL BORE PIPING	2" SS, SCH 80 WELDED	EST	250	LF		48.80	0	12,200	1.44	414	SPNG	94.41	39,100	51,300
	SMALL BORE PIPING	ALLOWANCE FOR MISC SIZE <2" SS, SCH 80 WELDED	EST	100	LF		33.70	0	3,400	1.32	152	SPNG	94.41	14,300	17,700
	VALVE	2" GLOBE, 150# SS, WELDED	EST	15	EA	1,450		21,800	0	5.64	97	SPNG	94.41	9,200	31,000
	PIPE SUPPORTS		EST	105	EA		35.00	0	3,700	1.50	181	MECH	88.89	16,100	19,800
1.3	DAMPERS							781,000	0					352,600	1,133,600
	INLET DAMPERS	2X50% DOUBLE LOUVER TYPE WITH SEAL AIR FANS TOTAL FOR TWO FANS	EST	580	SF	450		261,000	0	2.50	1,668	MECH	88.89	148,200	409,200
	OUTLET DAMPERS	2X50% GUILLOTINE DAMPERS, WITH SEAL AIR FANS TOTAL FOR TWO FANS	EST	800	SF	650		520,000	0	2.50	2,300	MECH	88.89	204,400	724,400
1.4	EXPANSION JOINTS		EST	570	LF		230.00	0	131,100	2.00	1,311	MECH	88.89	116,500	247,600
1.5	DUCTWORK	NID MODULE OUTLET TO ID FANS AND FROM ID FANS TO STACK - INCLUDES INTERNAL BRACING AND TURNING VANES	EST	800	TN		3,250.00	0	2,600,000	50.00	46,000	FLDU	107.96	4,966,200	7,566,200
1.6	DUCT SUPPORT STEEL	THREE COAT SHOP PAINT	EST	400	TN		2,900.00	0	1,160,000	24.00	11,040	STST	105.71	1,167,000	2,327,000
1.7	ID FAN INSULATION & LAGGING	TOTAL FOR TWO FANS. PRICING REFLECTS STANDARD ACOUSTICAL INSULATION	EST	4,200	SF		40.00	0	168,000	0.55	2,657	DINS	81.75	217,200	385,200
1.8	DUCTWORK INSULATION & LAGGING	INCLUDES INSULATION FOR SPRAY DRYER OUTLET DUCT TO NID MODULES SUPPLIED WITH THE OEM EQUIPMENT	EST	72,000	SF		12.00	0	864,000	0.25	20,700	DINS	81.75	1,692,200	2,556,200
1.9	DUCT SUPPORT STEEL - FOUNDATIONS							0	295,500					574,000	869,500
	EXCAVATION / BACKFILL		EST	1,900	CY			0	0	0.36	787	EXFD	90.00	70,800	70,800
	REINFORCING		EST	110	TN		1,150.00	0	126,500	20.00	2,530	REIN	78.27	198,000	324,500
	FORMWORK		EST	6,200	SF		2.50	0	15,500	0.14	998	FORM	99.43	99,300	114,800
	CONCRETE		EST	1,200	CY		105.00	0	126,000	1.50	2,070	CONP	79.64	164,900	290,900
	MUD MAT		EST	190	CY		105.00	0	20,000	1.50	328	CONP	79.64	26,100	46,100
	EMBEDDED STEEL		EST	3,000	LB		2.50	0	7,500	0.06	207	CARP	71.88	14,900	22,400
1.10	ID FAN FOUNDATIONS INCLUDING ID FAN AUX EQUIPMENT							0	106,000					198,700	304,700
	EXCAVATION / BACKFILL		EST	600	CY			0	0	0.36	248	EXFD	90.00	22,400	22,400
	REINFORCING		EST	40	TN		1,150.00	0	46,000	20.00	920	REIN	78.27	72,000	118,000
	FORMWORK		EST	1,500	SF		2.50	0	3,800	0.14	242	FORM	99.43	24,000	27,800
	CONCRETE		EST	400	CY		105.00	0	42,000	1.50	690	CONP	79.64	55,000	97,000
	MUD MAT		EST	40	CY		105.00	0	4,200	1.50	69	CONP	79.64	5,500	9,700
	EMBEDDED STEEL		EST	4,000	LB		2.50	0	10,000	0.06	276	CARP	71.88	19,800	29,800
1.11	NID CONTROL & SWITCHGEAR BUILDING - FOUNDATIONS							0	273,800					458,900	732,700
	EXCAVATION / BACKFILL		EST	1,160	CY			0	0	0.36	480	EXFD	90.00	43,200	43,200
	REINFORCING		EST	111	TN		1,150.00	0	127,700	20.00	2,553	REIN	78.27	199,800	327,500

				AEP										Estimate No.:	30727C
				BIG SANDY UNIT 2										Project No.:	12721-000
				FGD PROJECT - NID BASE EST (N/ESP)-1B - 3.0 LB/MM BTU										Date:	9/29/2010
				ORDER OF MAGNITUDE COST ESTIMATE										Preparer:	MNO
		Cost Type:												Reviewer:	JMK
		Est=Estimated												Approver:	PEF
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		Q=Vendor Quote								Labor Productivity =		1.15			

Account No.	Item Description	Scope Definition	Cost Type	Quantity	Unit of Measure	Unit Equip.Cost	Unit Material Cost	Total Equipment Cost	Total Material Cost	Unit Man-hours (Base)	Total Man-hours (w/ productivity)	Crew Code	Crew Wage Rate	Total Construction & Erection Cost	Total Projected Cost
	FORMWORK		EST	1,624	SF		2.50	0	4,100	0.14	261	FORM	99.43	26,000	30,100
	CONCRETE		EST	1,178	CY		105.00	0	123,700	1.50	2,032	CONP	79.64	161,800	285,500
	MUD MAT		EST	114	CY		105.00	0	12,000	1.50	197	CONP	79.64	15,700	27,700
	EMBEDDED STEEL		EST	2,500	LB		2.50	0	6,300	0.06	173	CARP	71.88	12,400	18,700
1.12	NID CONTROL & SWITCHGEAR BUILDING	SUBCONTRACT PRICE INCLUDES LABOR. COMPLETE WITH HVAC, FINISHES AND SANITARY FACILITIES	EST	7,875	SF		500.00	0	3,937,500	0.00	0	STST	105.71	0	3,937,500
1.13	TRANSFORMERS							770,000	0					145,600	915,600
	SST TRANSFORMERS: 21F & 21G	13.8KV-4160V, 3 PHASE, 2 WINDING	EST	2	EA	300000		600,000	0	500.00	1,150	EHEA	79.16	91,000	691,000
	SUS TRANSFORMERS: 31F, 31G	13.8KV-4160V, 3 PHASE, CAST COIL	EST	2	EA	85000		170,000	0	300.00	690	EHEA	79.16	54,600	224,600
1.14	SWITCHGEAR							1,082,000	0		0			569,000	1,651,000
	13KV MEDIUM VOLTAGE	PRICE PER SECTION	EST	10	EA	50000		500,000	0	230.00	2,645	EHEA	79.16	209,400	709,400
	4.16 KV MEDIUM VOLTAGE (21F/G)	PRICE PER SECTION	EST	10	EA	39200		392,000	0	280.00	3,220	EHEA	79.16	254,900	646,900
	480V LOW VOLTAGE (31F/G)	PRICE PER SECTION	EST	5	EA	38000		190,000	0	230.00	1,323	EHEA	79.16	104,700	294,700
1.15	CABLE BUS & TERMINATIONS							756,300	35,800		0			1,316,200	2,108,300
	15KV CABLE BUS TO 13F/G)	CABLE BUS	EST	1,300	FT	466		605,800	0	6.75	10,091	WIRE	98.84	997,400	1,603,200
	5KV CABLE BUS	CABLE BUS	EST	150	FT	385		57,800	0	4.70	811	WIRE	98.84	80,100	137,900
	480V CABLE BUS	CABLE BUS	EST	150	FT	618		92,700	0	10.30	1,777	WIRE	98.84	175,600	268,300
	CABLE BUS TERMINATION	500MCM- 15KV TERMINATIONS	EST	4	EA		1,800.00	0	7,200	33.00	152	WIRE	98.84	15,000	22,200
	CABLE BUS TERMINATION	1000MCM- 5KV TERMINATIONS	EST	4	EA		4,440.00	0	17,800	51.60	237	WIRE	98.84	23,500	41,300
	CABLE BUS TERMINATION	750MCM- 480V TERMINATIONS	EST	4	EA		2,700.00	0	10,800	54.00	248	WIRE	98.84	24,600	35,400
1.16	MCC							120,000	0					7,200	127,200
	480V MCC	PER LINE UP	EST	2	EA	30,000		60,000	0	16.00	37	WIRE	98.84	3,600	63,600
	DC MCC	PER LINE UP	EST	2	EA	30,000		60,000	0	16.00	37	WIRE	98.84	3,600	63,600
1.17	MIMIC PANELS		EST	1	EA	17500		17,500	0	40.00	46	WIRE	98.84	4,500	22,000
1.18	EMERGENCY POWER SYSTEM							285,500	0					38,900	324,400
	DC PANEL BOARD		EST	1	EA	15500		15,500	0	40.00	46	WIRE	98.84	4,500	20,000
	UPS PANEL BOARDS		EST	2	EA	15500		31,000	0	40.00	92	WIRE	98.84	9,100	40,100
	UPS		EST	1	EA	60000		60,000	0	32.00	37	WIRE	98.84	3,600	63,600
	SWITCHBOARD		EST	1	EA	40000		40,000	0	40.00	46	WIRE	98.84	4,500	44,500
	BYPASS TRANSFORMERS		EST	1	EA	25000		25,000	0	40.00	46	WIRE	98.84	4,500	29,500
	BATTERY CHARGER		EST	2	EA	32000		64,000	0	16.00	37	WIRE	98.84	3,600	67,600
	BATTERIES		EST	1	LT	50000		50,000	0	80.00	92	WIRE	98.84	9,100	59,100
1.19	HIGH VOLTAGE POWER CABLE & TERMINATION	1/C 750KCMIL- 13.8KV	EST	3,600	LF		51.75	0	186,300	0.69	2,865	WIRE	98.84	283,200	469,500
1.20	MEDIUM VOLTAGE POWER CABLE & TERMINATION							0	91,600		0			393,700	485,300
	1/C # 350KCMIL-5KV		EST	14,600	LF		6.13	0	89,500	0.23	3,862	WIRE	98.84	381,700	471,200
	1/C # 2/0-5KV		EST	900	LF		2.35	0	2,100	0.12	121	WIRE	98.84	12,000	14,100
1.21	LOW VOLTAGE POWER CABLE & TERMINATION							0	543,000		0			794,800	1,337,800
	3/C # 500KCMIL- 600V		EST	2,600	LF		26.12	0	67,900	0.69	2,063	WIRE	98.84	203,900	271,800

				AEP										Estimate No.:	30727C
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		Cost Type:												Reviewer:	JMK
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		Q=Vendor Quote								Labor Productivity =		1.15			

Account No.	Item Description	Scope Definition	Cost Type	Quantity	Unit of Measure	Unit Equip.Cost	Unit Material Cost	Total Equipment Cost	Total Material Cost	Unit Man-hours (Base)	Total Man-hours (w/ productivity)	Crew Code	Crew Wage Rate	Total Construction & Erection Cost	Total Projected Cost
	#4/0 - #12 AWG-600V		EST	65,800	LF		7.22	0	475,100	0.08	5,978	WIRE	98.84	590,900	1,066,000
1.22	CONTROL & INSTRUMENT CABLE	#14, #16 & PR # 20 & SHLD WIRE	EST	107,800	LF		3.20	0	345,000	0.08	9,794	WIRE	98.84	968,000	1,313,000
1.23	GROUNDING							11,100	0					37,200	48,300
	GROUND ROD	3/4" - 20' LONG EACH	EST	16	EA	150		2,400	0	4.00	74	WIRE	98.84	7,300	9,700
	500 MCM	BARE COPPER WIRE	EST	1,000	FT	7.65		7,700	0	0.12	138	WIRE	98.84	13,600	21,300
	CADWELD		EST	64	EA	15		1,000	0	2.00	147	WIRE	98.84	14,500	15,500
	GROUNDING TEST	TEST & DOCUMENTATION	EST	1	LT			0	0	16.00	18	WIRE	98.84	1,800	1,800
1.24	LIGHTING/ TRANSFORMERS & PANELS							26,000	30,000					29,500	85,500
	LIGHT FIXTURES		EST	40	EA		750	0	30,000	4.00	184	WIRE	98.84	18,200	48,200
	45KVA, 480V, 3 PHASE	LOW VOLTAGE XFMR	EST	1	EA	10000		10,000	0	40.00	46	WIRE	98.84	4,500	14,500
	37.7KVA, 480V, 3 PHASE	LOW VOLTAGE XFMR	EST	1	EA	7500		7,500	0	32.00	37	WIRE	98.84	3,600	11,100
	200A, 480-277V, 3 PHASE- RECEPTACLE PANEL	INCLUDING BREAKERS	EST	1	EA	5000		5,000	0	16.00	18	WIRE	98.84	1,800	6,800
	200A, 277V-120V, 3 PHASE- LIGHTING PANELS	INCLUDING BREAKERS	EST	1	EA	3500		3,500	0	12.00	14	WIRE	98.84	1,400	4,900
1.25	RACEWAY, CABLE TRAY, & CONDUIT							0	1,651,700		0			8,113,100	9,764,800
	12" X 6" AL CABLE TRAY	INCLUDING SUPPORT & FITTINGS	EST	5,120	LF		18.25	0	93,400	1.10	6,477	WIRE	98.84	640,200	733,600
	18" X 6" AL CABLE TRAY	INCLUDING SUPPORT & FITTINGS	EST	3,000	LF		21.50	0	64,500	1.45	5,003	WIRE	98.84	494,400	558,900
	24" X 6" AL CABLE TRAY	INCLUDING SUPPORT & FITTINGS	EST	9,200	LF		27.10	0	249,300	1.75	18,515	WIRE	98.84	1,830,000	2,079,300
	36" X 6" AL CABLE TRAY	INCLUDING SUPPORT & FITTINGS	EST	2,400	LF		30.30	0	72,700	1.95	5,382	WIRE	98.84	532,000	604,700
	5" RGS CONDUIT	INCLUDING SUPPORT & FITTINGS	EST	4,000	LF		61.00	0	244,000	1.13	5,184	WIRE	98.84	512,400	756,400
	4" RGS CONDUIT	INCLUDING SUPPORT & FITTINGS	EST	8,600	LF		31.00	0	266,600	0.81	7,981	WIRE	98.84	788,900	1,055,500
	3" RGS CONDUIT	INCLUDING SUPPORT & FITTINGS	EST	8,000	LF		21.50	0	172,000	0.65	5,934	WIRE	98.84	586,500	758,500
	2" RGS CONDUIT	INCLUDING SUPPORT & FITTINGS	EST	12,000	LF		9.25	0	111,000	0.35	4,858	WIRE	98.84	480,100	591,100
	1-1/2" RGS CONDUIT	INCLUDING SUPPORT & FITTINGS	EST	15,000	LF		7.15	0	107,300	0.28	4,899	WIRE	98.84	484,200	591,500
	1" RGS CONDUIT	INCLUDING SUPPORT & FITTINGS	EST	27,000	LF		4.44	0	119,900	0.24	7,421	WIRE	98.84	733,500	853,400
	3/4" RGS CONDUIT	INCLUDING SUPPORT & FITTINGS	EST	46,750	LF		3.23	0	151,000	0.19	10,430	WIRE	98.84	1,030,900	1,181,900
1.26	DUCT BANK							0	40,800					280,000	320,800
	DUCT BANK WITH 3-5" & 3-3" CONDUITS		EST	300	LF		142.42	0	14,200	3.17	1,094	ECND	75.97	83,100	97,300
	DUCT BANK WITH 6-5" & 6-3" CONDUITS		EST	375	LF		265.88	0	26,600	6.01	2,592	ECND	75.97	196,900	223,500
1.27	FOUNDATION FOR TRANSFORMERS							0	64,600		0			188,900	253,500
	EXCAVATION / BACKFILL		EST	950	CY			0	0	0.36	393	EXFD	90.00	35,400	35,400
	REINFORCING		EST	18	TN		1,150.00	0	20,700	20.00	414	REIN	78.27	32,400	53,100
	FORMWORK		EST	4,500	SF		2.50	0	11,300	0.14	725	FORM	99.43	72,000	83,300
	CONCRETE		EST	178	CY		105.00	0	18,700	1.50	307	CONP	79.64	24,500	43,200
	MUD MAT		EST	42	CY		105.00	0	4,400	1.50	72	CONP	79.64	5,800	10,200
	EMBEDDED STEEL		EST	3,800	LB		2.50	0	9,500	0.06	262	CARP	71.88	18,800	28,300
1.28	FIREWALL FOR TRANSFORMERS							0	3,200					8,300	11,500
	REINFORCING		EST	1.2	TN		1,150.00	0	1,400	20.00	28	REIN	78.27	2,200	3,600
	FORMWORK		EST	80	SF		2.50	0	200	0.14	13	FORM	99.43	1,300	1,500
	CONCRETE		EST	15	CY		105.00	0	1,600	3.50	60	CONP	79.64	4,800	6,400
1.29	COMMUNICATIONS		EST	1	LT		17,000.00	0	17,000	114.00	131	WIRE	98.84	13,000	30,000
1.30	LIGHTNING PROTECTION		EST	1	LT		12,000.00	0	12,000	81.00	93	WIRE	98.84	9,200	21,200

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1.31	SECURITY SYSTEM		EST	1	LT		8,000.00	0	8,000	62.00	71	WIRE	98.84	7,000	15,000
90.00	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS							10,791,200	12,593,600		257,416			24,745,500	48,130,300
	OTHER DIRECT & CONSTRUCTION INDIRECT COSTS														
	ADDITIONAL CRANE ALLOWANCE								0					0	0
	MOBILIZATION / DEMOBILIZATION - INCLUDED IN WAGE RATES ABOVE														0
	COST DUE TO OVERTIME WORKING 5 X10 HOUR DAYS			1	LS										3,831,835
	COST DUE TO OVERTIME INEFFICIENCY - SPECIFY % INEFFICIENCY			8.00	%						22,384		83.48	1,869,000	1,869,000
	COST DUE TO OVERTIME PAY @1.5 TIMES OVERTIME PAY RATE SPECIFY % ADDITIONAL HOURS PAID ON ACTUAL HOURS WORKED			10.00	%						27,980			1,962,835	1,962,835
	PER DIEM	NONE		0.00	HR						307,780			0	0
	CONSUMABLES - % of ACCT NO. 90			0.5	%				62,968					123,728	186,696
	FREIGHT ON MATERIAL - % of ACCT NO. 90			5.0	%				629,680						629,680
	FREIGHT ON EQUIPMENT - % of ACCT NO. 90			5.0	%			539,560							539,560
	SCAFFOLDING - % OF ACCT NO. 90			5.0	%				629,680					1,237,275	1,866,955
	CONTRACTOR'S GENERAL AND ADMINISTRATION & PROFIT - % o ACCT NO. 90			15	%				1,889,040					3,711,825	5,600,865
	SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS							539,600	3,211,400					8,904,700	12,655,600
	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	ID FANS						11,330,800	15,805,000					33,650,200	60,785,900
2.0	NID MODULES														
2.1	MECHANICAL EQUIPMENT	A 12-MODULE NID SYSTEM (160' X 160') INCLUDING LIME DAY SILOS, HYDRATORS, MIXERS, J-DUCTS, FABRIC FILTER MODULES, ALL INTERNAL ELEMENTS (BAGS, CAGES, ASH HOPPERS, 2 BROKEN BAG DETECTORS / COMPARTMENT), ASH RECYCLE SYSTEM, VACUUM PIPING, AND ALL INTERNAL PIPING & DUCTWORK FOR THE VARIOUS MODULES.	EST	1	LT	50,231,000		50,231,000	0	317100.00	364,665	MECH	88.89	32,415,100	82,646,100
2.2	INSULATION FOR NID MODULES	SUBCONTRACT COST INCLUDES LABOR	EST	80,640	SF	30		2,419,200	0	0.00	0	DINS	81.75	0	2,419,200
2.3	PENTHOUSE FOR NID MODULES	14 FT HIGH, 25600 SF						58,100	1,316,900					1,747,600	3,122,600
	SUPPORT STEEL AND PURLINS	THREE COAT PAINT	EST	200	TN		2,900.00	0	580,000	24.00	5,520	STST	105.71	583,500	1,163,500
	SIDING FOR PENTHOUSE		EST	8,960	SF		12.00	0	107,500	0.11	1,133	SDNG	93.41	105,900	213,400
	CONCRETE FLOOR FOR PENTHOUSE		EST	632	CY		230.00	0	145,400	7.50	5,451	SDNG	93.41	509,200	654,600
	ROOFING FOR PENTHOUSE		EST	25,600	SF		18.00	0	460,800	0.22	6,477	ROOF	69.12	447,700	908,500
	H&V		EST	1	LT	58100	23240	58,100	23,200	1084.00	1,247	HVAC	81.24	101,300	182,600
2.4	BOTTOM ENCLOSURE FOR NID MODULES	40 FT HIGH						92,200	2,428,900					2,544,900	5,066,000
	SUPPORT STEEL AND PURLINS	THREE COAT PAINT	EST	560	TN		2,900.00	0	1,624,000	24.00	15,456	STST	105.71	1,633,900	3,257,900
	SIDING FOR BOTTOM ENCLOSURE		EST	25,600	SF		12.00	0	307,200	0.11	3,238	SDNG	93.41	302,500	609,700
	ROOFING FOR BOTTOM ENCLOSURE		EST	25,600	SF		18.00	0	460,800	0.22	6,477	ROOF	69.12	447,700	908,500
	H&V		EST	1	LT	92200	36880	92,200	36,900	1721.33	1,980	HVAC	81.24	160,800	289,900
2.5	PIPING & SUPPORTS - MECHANICAL							125,200	174,500					385,900	685,600
	LARGE BORE PIPING	4" CS, SCHEDULE 40, WELDED	EST	300	LF		23.0	0	6,900	1.48	511	SPNG	94.41	48,200	55,100
	LARGE BORE PIPING	6" SS, SCH 40 WELDED	EST	400	LF		111.00	0	44,400	2.02	929	SPNG	94.41	87,700	132,100
	LARGE BORE PIPING	18" CS, STD WELDED	EST	400	LF		234.10	0	93,600	2.34	1,076	SPNG	94.41	101,600	195,200
	SMALL BORE PIPING	2" CS, SCH 80 WELDED	EST	150	LF		22.20	0	3,300	1.26	217	SPNG	94.41	20,500	23,800
	SMALL BORE PIPING	2" SS, SCH 80 WELDED	EST	100	LF		48.80	0	4,900	1.44	166	SPNG	94.41	15,600	20,500

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	SMALL BORE PIPING	ALLOWANCE FOR MISC SIZE <2" SS, SCH 80 WELDED	EST	300	LF		33.70	0	10,100	1.32	455	SPNG	94.41	43,000	53,100
	VALVE	18" GATE, 150 #, CS, WELDED	EST	4	EA	17,500		70,000	0	28.30	130	SPNG	94.41	12,300	82,300
	VALVE	6" GATE, 150 #, SS, WELDED	EST	6	EA	4,700		28,200	0	12.96	89	SPNG	94.41	8,400	36,600
	VALVE	4" GATE, 150 #, CS, WELDED	EST	5	EA	2,500		12,500	0	7.70	44	SPNG	94.41	4,200	16,700
	VALVE	2" GLOBE, 150# SS, WELDED	EST	10	EA	1,450		14,500	0	5.64	65	SPNG	94.41	6,100	20,600
	PIPE SUPPORTS		EST	150	EA		75.00	0	11,300	2.50	431	MECH	88.89	38,300	49,600
2.6	DUCTWORK							0	4,797,000					9,162,600	13,959,600
	NID MODULE INLET	INCLUDES INTERNAL BRACING AND TURNING VANES	EST	1,476	TN		3,250.00	0	4,797,000	50.00	84,870	FLDU	107.96	9,162,600	13,959,600
2.7	DUCT SUPPORT STEEL	THREE COAT SHOP PAINT	EST	738	TN		2,900.00	0	2,140,200	24.00	20,369	STST	105.71	2,153,200	4,293,400
2.8	DUCTWORK INSULATION & LAGGING		EST	136,000	SF		12.00	0	1,632,000	0.25	39,100	DINS	81.75	3,196,400	4,828,400
2.9	NID MODULE- FOUNDATIONS							0	1,087,000					1,778,100	2,865,100
	EXCAVATION / BACKFILL		EST	4,400	CY			0	0	0.36	1,822	EXFD	90.00	163,900	163,900
	REINFORCING		EST	450	TN		1,150.00	0	517,500	20.00	10,350	REIN	78.27	810,100	1,327,600
	FORMWORK		EST	3,200	SF		2.50	0	8,000	0.14	515	FORM	99.43	51,200	59,200
	CONCRETE		EST	4,750	CY		105.00	0	498,800	1.50	8,194	CONP	79.64	652,600	1,151,400
	MUD MAT		EST	340	CY		105.00	0	35,700	1.50	587	CONP	79.64	46,700	82,400
	EMBEDDED STEEL		EST	10,800	LB		2.50	0	27,000	0.06	745	CARP	71.88	53,600	80,600
2.10	NID MODULE - SUPPORT STEEL AND ACCESS GALLERY							0	1,152,000					2,863,700	4,015,700
	SUPPORT STEEL	MATERIAL INCLUDED WITH OEM EQUIPMENT	EST	640	TN			0	0	24.00	17,664	STST	105.71	1,867,300	1,867,300
	ACCESS GALLERY		EST	25,600	SF		45.00	0	1,152,000	0.40	11,776	GALL	84.61	996,400	2,148,400
2.11	GROUNDING							0	16,000		0			46,100	62,100
	GROUND ROD	3/4" - 20' LONG	EST	16	EA		150	0	2,400	4.00	74	WIRE	98.84	7,300	9,700
	500 MCM	BARE COPPER WIRE	EST	1,650	FT		7.65	0	12,600	0.12	228	WIRE	98.84	22,500	35,100
	CADWELD		EST	64	EA		15	0	1,000	2.00	147	WIRE	98.84	14,500	15,500
	GROUNDING TEST	TEST & DOCUMENTATION	EST	1	LT			0	0	16.00	18	WIRE	98.84	1,800	1,800
2.12	LIGHTING/ TRANSFORMERS & PANELS							27,000	75,000		0			57,300	159,300
	LIGHT FIXTURES		EST	100	EA		750	0	75,000	4.00	460	WIRE	98.84	45,500	120,500
	45KVA, 480V, 3 PHASE	LOW VOLTAGE XFMR	EST	2	EA	10000		20,000	0	40.00	92	WIRE	98.84	9,100	29,100
	200A, 277V-120V, 3 PHASE- LIGHTING PANELS	INCLUDING BREAKERS	EST	2	EA	3500		7,000	0	12.00	28	WIRE	98.84	2,700	9,700
2.13	RACEWAY, CABLE TRAY, & CONDUIT	INCLUDED IN ID FANS, 1.0													
90.00	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS							52,952,700	14,819,500		612,796			56,350,900	124,123,100
	OTHER DIRECT & CONSTRUCTION INDIRECT COSTS														
	ADDITIONAL CRANE ALLOWANCE			9	MN	75000		675,000		720.00	7,452	MECH	88.89	662400	1,337,400
	MOBILIZATION / DEMOBILIZATION - INCLUDED IN WAGE RATES ABOVE														0
	COST DUE TO OVERTIME WORKING 5 X10 HOUR DAYS			1	LS										9,172,928
	COST DUE TO OVERTIME INEFFICIENCY - SPECIFY % INEFFICIENCY			8.00	%						53,287		83.48	4,448,000	4,448,000
	COST DUE TO OVERTIME PAY @1.5 TIMES OVERTIME PAY RATE SPECIFY % ADDITIONAL HOURS PAID ON ACTUAL HOURS WORKED			10.00	%						67,353			4,724,928	4,724,928
	PER DIEM	NONE		0.00	HR						740,888			0	0
	CONSUMABLES - % of ACCT NO. 90			0.5	%				74,098					281,755	355,852
	FREIGHT ON MATERIAL - % of ACCT NO. 90			5.0	%				740,975						740,975
	FREIGHT ON EQUIPMENT - % of ACCT NO. 90			5.0	%			2,647,635							2,647,635
	SCAFFOLDING - % OF ACCT NO. 90			5.0	%				740,975					2,817,545	3,558,520

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	CONTRACTOR'S GENERAL AND ADMINISTRATION & PROFIT - % o			15	%				2,222,925					8,452,635	10,675,560
	SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS							3,322,600	3,779,000					21,387,300	28,488,900
	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	NID MODULES						56,275,300	18,598,500					77,738,200	152,612,000
3.0	NEW STACK														
3.1	CONCRETE STACK (DRY)	PROVIDED BY AEP													19,350,000
90.00	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS														19,350,000
	CONTRACTOR'S GENERAL AND ADMINISTRATION EXPENSE & PROFIT			15	%				0						2,902,500
	SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS														2,902,500
	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	NEW STACK													22,252,500
4.0	LIME HANDLING SYSTEM														
4.1	LIME STORAGE SILO							6,770,000	0					0	6,770,000
	SILO	CONCRETE SILO 65' DIA X 126' H - 8100 TONS -SUBCONTRACT COST INCLUDES LABOR	EST	2	EA	3,240,000.00		6,480,000	0	0.00	0	CONP	79.64	0	6,480,000
	ELEVATOR	MAINTENANCE ELEVATOR COMMON FOR BOTH SILOS - SUBCONTRACT COST INCLUDES LABOR	EST	1	EA	290,000.00		290,000	0	0.00	0	MECH	88.89	0	290,000
4.2	LIME UNLOADING SYSTEM	INCLUDE PNEUMATIC HANDLING SYSTEM, THREE VACUUM EXHAUSTERS, TWO FILTER SEPARATORS	EST	1	LT	595,000		595,000	0	4675.00	5,376	MECH	88.89	477,900	1,072,900
4.3	LIME TRANSPORT SYSTEM TO DAY BINS	INCLUDE PNEUMATIC HANDLING SYSTEM, THREE VACUUM EXHAUSTERS, TWO FILTER SEPARATORS	EST	1	LT	1,100,000		1,100,000	0	6400.00	7,360	MECH	88.89	654,200	1,754,200
4.4	PIPING - MECHANICAL							88,700	130,300					342,600	561,600
	LARGE BORE PIPING	14" CS, SCH 40 WELDED - ON PIPE RACK	EST	500	LF		163.1	0	81,600	1.67	960	SPNG	94.41	90,700	172,300
	LARGE BORE PIPING	8" HDPE (UNDERGROUND)	EST	1,200	LF		14.1	0	16,900	0.83	1,145	SPNG	94.41	108,100	125,000
	LARGE BORE PIPING	6" CS, SCH 40 WELDED	EST	200	LF		41.7	0	8,300	1.61	370	SPNG	94.41	35,000	43,300
	SMALL BORE PIPING	2" CS, SCH 80 WELDED	EST	50	LF		22.20	0	1,100	1.26	72	SPNG	94.41	6,800	7,900
	SMALL BORE PIPING	2" SS, SCH 80 WELDED	EST	50	LF		48.80	0	2,400	1.44	83	SPNG	94.41	7,800	10,200
	SMALL BORE PIPING	ALLOWANCE FOR MISC SIZE <2" SS, SCH 80 WELDED	EST	100	LF		33.70	0	3,400	1.32	152	SPNG	94.41	14,300	17,700
	VALVE	2" GLOBE, 150# SS, WELDED	EST	6	EA	1,450		8,700	0	5.64	39	SPNG	94.41	3,700	12,400
	VALVE	8" AIR OPERATED, 150 #, CS, FLANGED	EST	4	EA	17,000		68,000	0	19.30	89	SPNG	94.41	8,400	76,400
	VALVE	14" BFLY 150# CS, FLANGED	EST	4	EA	3,000		12,000	0	16.60	76	SPNG	94.41	7,200	19,200
	EXCAVATION / BACKFILL	FOR UNDERGROUND PIPING	EST	1,000	CY			0	0	0.20	230	EXFD	90.00	20,700	20,700
	BEDDING	FOR UNDERGROUND PIPING	EST	133	CY		35.0	0	4,700	0.25	38	EXFD	90.00	3,500	8,200
	PIPE SUPPORTS		EST	238	EA		50.00	0	11,900	1.50	410	MECH	88.89	36,400	48,300
4.5	LIME STORAGE SILO ACCESS STAIR TOWER		EST	55	TN		2,900.00	0	159,500	24.00	1,518	STST	105.71	160,500	320,000
4.6	PIPE RACK FOR LIME HANDLING, WASTE HANDLING AND MISC MECHANICAL PIPING	THREE COAT SHOP PAINT	EST	650	TN		2,900.00	0	1,885,000	24.00	17,940	STST	105.71	1,896,400	3,781,400
4.7	RAIL CAR UNLOADING AREA - FOUNDATIONS	20' X 120' - NO SIDING						0	42,700					90,100	132,800
	EXCAVATION / BACKFILL		EST	500	CY			0	0	0.36	207	EXFD	90.00	18,600	18,600
	REINFORCING		EST	15	TN		1,150.00	0	17,300	20.00	345	REIN	78.27	27,000	44,300
	FORMWORK		EST	750	SF		2.50	0	1,900	0.14	121	FORM	99.43	12,000	13,900
	CONCRETE		EST	200	CY		105.00	0	21,000	1.50	345	CONP	79.64	27,500	48,500

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	MUD MAT		EST	0	CY		105.00	0	0	1.50	0	CONP	79.64	0	0
	EMBEDDED STEEL		EST	1,000	LB		2.50	0	2,500	0.06	69	CARP	71.88	5,000	7,500
4.8	LIME UNLOADING BLOWER / ELECTRICAL BUILDING - FOUNDATIONS							0	69,600					147,600	217,200
	EXCAVATION / BACKFILL		EST	800	CY			0	0	0.36	331	EXFD	90.00	29,800	29,800
	REINFORCING		EST	25	TN		1,150.00	0	28,800	20.00	575	REIN	78.27	45,000	73,800
	FORMWORK		EST	1,200	SF		2.50	0	3,000	0.14	193	FORM	99.43	19,200	22,200
	CONCRETE		EST	300	CY		105.00	0	31,500	1.50	518	CONP	79.64	41,200	72,700
	MUD MAT		EST	0	CY		105.00	0	0	1.50	0	CONP	79.64	0	0
	EMBEDDED STEEL		EST	2,500	LB		2.50	0	6,300	0.06	173	CARP	71.88	12,400	18,700
4.9	LIME UNLOADING BLOWER / ELECTRICAL BUILDING	100' L X 30' W X 30' H						75,000	335,000					24,400	434,400
	PRE-ENGINEERED BUILDING INCLUDING H&V AND LIGHTING	SUBCONTRACT PRICE, INCLUDES LABOR	EST	3,000	SF		105	0	315,000	0.00	0	STST	105.71	0	315,000
	ADDITIONAL HVAC UNIT FOR ELECTRICAL ROOM & CONTROLS	40T PACKAGED UNIT FOR ELECTRICAL EQUIPMENT ROOM. INCLUDES ALLOWANCE FOR CONCRETE PAD AND ELECTRICAL WORK	EST	1	LT	75000	20000	75,000	20,000	350.00	300	HVAC	81.24	24,400	119,400
4.10	CONCRETE PIT FOR THE ELEVATOR		EST	10	CY		230.00	0	2,300	7.50	86	CONP	79.64	6,900	9,200
4.11	LIME STORAGE SILO - FOUNDATIONS	INCLUDES FOUNDATIONS FOR LIME TRANSPORT SYSTEM PRESSURE BLOWERS						0	368,100					676,300	1,044,400
	EXCAVATION / BACKFILL		EST	2,900	CY			0	0	0.36	1,201	EXFD	90.00	108,100	108,100
	REINFORCING		EST	147.0	TN		1,150.00	0	169,100	20.00	3,381	REIN	78.27	264,600	433,700
	FORMWORK		EST	2,600	SF		2.50	0	6,500	0.14	419	FORM	99.43	41,600	48,100
	CONCRETE		EST	1,600	CY		105.00	0	168,000	1.50	2,760	CONP	79.64	219,800	387,800
	MUD MAT		EST	90	CY		105.00	0	9,500	1.50	155	CONP	79.64	12,400	21,900
	EMBEDDED STEEL		EST	6,000	LB		2.50	0	15,000	0.06	414	CARP	71.88	29,800	44,800
4.12	LIME STORAGE SILO ACCESS STAIR TOWER - FOUNDATIONS							0	14,200					28,600	42,800
	EXCAVATION / BACKFILL		EST	110	CY			0	0	0.36	46	EXFD	90.00	4,100	4,100
	REINFORCING		EST	4.8	TN		1,150.00	0	5,500	20.00	110	REIN	78.27	8,600	14,100
	FORMWORK		EST	320	SF		2.50	0	800	0.14	52	FORM	99.43	5,100	5,900
	CONCRETE		EST	60	CY		105.00	0	6,300	1.50	104	CONP	79.64	8,200	14,500
	MUD MAT		EST	8	CY		105.00	0	800	1.50	14	CONP	79.64	1,100	1,900
	EMBEDDED STEEL		EST	300	LB		2.50	0	800	0.06	21	CARP	71.88	1,500	2,300
4.13	PIPE RACK - FOUNDATIONS							0	239,600					588,600	828,200
	EXCAVATION / BACKFILL		EST	3,200	CY			0	0	0.36	1,325	EXFD	90.00	119,200	119,200
	REINFORCING		EST	90.0	TN		1,150.00	0	103,500	20.00	2,070	REIN	78.27	162,000	265,500
	FORMWORK		EST	9,500	SF		2.50	0	23,800	0.14	1,530	FORM	99.43	152,100	175,900
	CONCRETE		EST	950	CY		105.00	0	99,800	1.50	1,639	CONP	79.64	130,500	230,300
	MUD MAT		EST	0	CY		105.00	0	0	1.50	0	CONP	79.64	0	0
	EMBEDDED STEEL		EST	5,000	LB		2.50	0	12,500	0.06	345	CARP	71.88	24,800	37,300
4.14	TRANSFORMERS	SUS TRANSFORMERS: 33F, 33G, 13.8KV-480V,3PHASE, 3 WINDING XFMR	EST	2	EA	85000		170,000	0	300.00	690	EHEA	79.16	54,600	224,600
4.15	SWITCHGEAR	480V LOW VOLTAGE (33F/G), SWITCHGEAR	EST	5	EA	39200		196,000	0	230.00	1,323	EHEA	79.16	104,700	300,700
4.16	CABLE BUS DUCT							134,700	10,800					200,200	345,700
	480V CABLE BUS	BUST DUCT ONLY	EST	150	FT	898		134,700	0	10.30	1,777	WIRE	98.84	175,600	310,300
	CABLE BUS TERMINATION	750MCM- 480V TERMINATIONS	EST	4	EA		2,700.00	0	10,800	54.00	248	WIRE	98.84	24,600	35,400
4.17	MCC							61,800	0					3,600	65,400

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	480V MCC	PER LINE UP	EST	2	EA	30900		61,800	0	16.00	37	WIRE	98.84	3,600	65,400
4.18	MIMIC PANELS		EST	1	EA	17500		17,500	0	12.00	14	WIRE	98.84	1,400	18,900
4.19	EMERGENCY POWER SYSTEM							108,300	0					24,400	132,700
	DC PANEL BOARD		EST	1	EA	15450		15,500	0	40.00	46	WIRE	98.84	4,500	20,000
	UPS PANEL BOARDS		EST	1	EA	15450		15,500	0	40.00	46	WIRE	98.84	4,500	20,000
	SATELLITE UPS		EST	1	EA	41200		41,200	0	16.00	18	WIRE	98.84	1,800	43,000
	VRLA BATTERIES		EST	1	LT	36050		36,100	0	120.00	138	WIRE	98.84	13,600	49,700
4.20	GROUNDING							13,300	0					41,300	54,600
	GROUND ROD	3/4" - 20' LONG	EST	16	EA	150		2,400	0	4.00	74	WIRE	98.84	7,300	9,700
	500 MCM	BARE COPPER WIRE	EST	1,300	FT	7.65		9,900	0	0.12	179	WIRE	98.84	17,700	27,600
	CADWELD		EST	64	EA	15		1,000	0	2.00	147	WIRE	98.84	14,500	15,500
	GROUNDING TEST	TEST & DOCUMENTATION	EST	1	LT			0	0	16.00	18	WIRE	98.84	1,800	1,800
4.21	LIGHTING/ TRANSFORMERS & PANELS							52,000	135,000					104,500	291,500
	LIGHT FIXTURES		EST	180	EA		750	0	135,000	4.00	828	WIRE	98.84	81,800	216,800
	45KVA, 480V, 3 PHASE	LOW VOLTAGE XFMR	EST	2	EA	10000		20,000	0	40.00	92	WIRE	98.84	9,100	29,100
	37.7KVA, 480V, 3 PHASE	LOW VOLTAGE XFMR	EST	2	EA	7500		15,000	0	32.00	74	WIRE	98.84	7,300	22,300
	200A, 480-277V, 3 PHASE- RECEPTACLE PANEL	INCLUDING BREAKERS	EST	2	EA	5000		10,000	0	16.00	37	WIRE	98.84	3,600	13,600
	200A, 277V-120V, 3 PHASE- LIGHTING PANELS	INCLUDING BREAKERS	EST	2	EA	3500		7,000	0	12.00	28	WIRE	98.84	2,700	9,700
4.22	RACEWAY, CABLE TRAY, & CONDUIT							0	310,900					1,537,100	1,848,000
	12" X 6" AL CABLE TRAY	INCLUDING SUPPORT & FITTINGS	EST	1,050	LF		18.25	0	19,200	1.10	1,328	WIRE	98.84	131,300	150,500
	18" X 6" AL CABLE TRAY	INCLUDING SUPPORT & FITTINGS	EST	600	LF		21.50	0	12,900	1.45	1,001	WIRE	98.84	98,900	111,800
	24" X 6" AL CABLE TRAY	INCLUDING SUPPORT & FITTINGS	EST	1,700	LF		27.10	0	46,100	1.75	3,421	WIRE	98.84	338,200	384,300
	36" X 6" AL CABLE TRAY	INCLUDING SUPPORT & FITTINGS	EST	500	LF		30.30	0	15,200	1.95	1,121	WIRE	98.84	110,800	126,000
	5" RGS CONDUIT	INCLUDING SUPPORT & FITTINGS	EST	750	LF		61.00	0	45,800	1.13	972	WIRE	98.84	96,100	141,900
	4" RGS CONDUIT	INCLUDING SUPPORT & FITTINGS	EST	1,450	LF		31.00	0	45,000	0.81	1,346	WIRE	98.84	133,000	178,000
	3" RGS CONDUIT	INCLUDING SUPPORT & FITTINGS	EST	1,550	LF		21.50	0	33,300	0.65	1,150	WIRE	98.84	113,600	146,900
	2" RGS CONDUIT	INCLUDING SUPPORT & FITTINGS	EST	2,400	LF		9.25	0	22,200	0.35	972	WIRE	98.84	96,000	118,200
	1-1/2" RGS CONDUIT	INCLUDING SUPPORT & FITTINGS	EST	3,050	LF		7.15	0	21,800	0.28	996	WIRE	98.84	98,500	120,300
	1" RGS CONDUIT	INCLUDING SUPPORT & FITTINGS	EST	5,150	LF		4.44	0	22,900	0.24	1,415	WIRE	98.84	139,900	162,800
	3/4" RGS CONDUIT	INCLUDING SUPPORT & FITTINGS	EST	8,200	LF		3.23	0	26,500	0.19	1,829	WIRE	98.84	180,800	207,300
4.23	HIGH VOLTAGE POWER CABLE & TERMINATION	1/C # 500KCMIL- 15KV	EST	15,600	LF		9.27	0	144,600	0.23	4,126	WIRE	98.84	407,800	552,400
4.24	MEDIUM VOLTAGE POWER CABLE & TERMINATION	1/C 350KCMIL-5KV	EST	10,800	LF		6.13	0	66,200	0.23	2,857	WIRE	98.84	282,300	348,500
4.25	LOW VOLTAGE POWER CABLE & TERMINATION							0	93,000					143,200	236,200
	3/C # 500KCMIL- 600V		EST	600	LF		26.12	0	15,700	0.69	476	WIRE	98.84	47,100	62,800
	#4/0 - #12 AWG-600V		EST	10,700	LF		7.22	0	77,300	0.08	972	WIRE	98.84	96,100	173,400
4.26	CONTROL & INSTRUMENT CABLE	#14, #16 & PR # 20 & SHLD WIRE	EST	8,200	LF		3.20	0	26,200	0.08	745	WIRE	98.84	73,600	99,800
4.27	DUCT BANK	DUCT BANK WITH 4-5" & 4-3" CONDUITS, 2.38' H X 3.79' W	EST	350	LF		174.67	0	61,100	3.80	1,530	ECND	75.97	116,200	177,300
4.28	FOUNDATIONS FOR TRANSFORMERS	FOR XFMR 33F, 33G, INCLUDES MUD MAT	EST	14.0	CY		250	0	3,500	8.00	129	CONP	79.64	10,300	13,800

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4.29	COMMUNICATIONS		EST	1	LT		34,000.00	0	34,000	229.00	263	WIRE	98.84	26,000	60,000
4.30	LIGHTNING PROTECTION		EST	1	LT		6,000.00	0	6,000	41.00	47	WIRE	98.84	4,700	10,700
4.31	SECURITY SYSTEM		EST	1	LT		8,000.00	0	8,000	62.00	71	WIRE	98.84	7,000	15,000
90.00	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS							9,382,300	4,145,600		87,285			8,237,000	21,764,900
	OTHER DIRECT & CONSTRUCTION INDIRECT COSTS														
	ADDITIONAL CRANE ALLOWANCE								0					0	0
	MOBILIZATION / DEMOBILIZATION - INCLUDED IN WAGE RATES ABOVE														0
	COST DUE TO OVERTIME WORKING 5 X10 HOUR DAYS			1	LS										1,299,562
	COST DUE TO OVERTIME INEFFICIENCY - SPECIFY % INEFFICIENCY			8.00	%						7,590		83.48	634,000	634,000
	COST DUE TO OVERTIME PAY @1.5 TIMES OVERTIME PAY RATE SPECIFY % ADDITIONAL HOURS PAID ON ACTUAL HOURS WORKED			10.00	%						9,488			665,562	665,562
	PER DIEM	NONE		0.00	HR						104,363			0	0
	CONSUMABLES - % of ACCT NO. 90			0.5	%				20,728					41,185	61,913
	FREIGHT ON MATERIAL - % of ACCT NO. 90			5.0	%				207,280						207,280
	FREIGHT ON EQUIPMENT - % of ACCT NO. 90			5.0	%			469,115							469,115
	SCAFFOLDING - % OF ACCT NO. 90			5.0	%				207,280					411,850	619,130
	CONTRACTOR'S GENERAL AND ADMINISTRATION & PROFIT - % o ACCT NO. 90			15	%				621,840					1,235,550	1,857,390
	SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS							469,100	1,057,100					2,988,100	4,514,400
	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	LIME HANDLING SYSTEM						9,851,400	5,202,700					11,225,100	26,279,300
5.0	LIME SLAKER BUILDING	NOT REQUIRED FOR NID													0
6.0	BYPRODUCT WASTE & FLY ASH HANDLING SYSTEMS														0
6.1	BYPRODUCT WASTE HANDLING - MECHANICAL EQUIPMENT	INCLUDES PNEUMATIC HANDLING SYSTEM, THREE PRESSURE BLOWERS, ONE BIN VENT FILTER, ASH UNLOADING SYSTEM	EST	1	LT	2,822,000		2,822,000	0	15740.00	18,101	MECH	88.89	1,609,000	4,431,000
6.2	ECONOMIZER ASH HANDLING - MECHANICAL EQUIPMENT	INCLUDES JET PUMPS AND PIPING / SUPPORTS TO THE BOTTOM ASH POND	EST	1	LT	400,000		400,000	0	2900.00	3,335	MECH	88.89	296,400	696,400
6.3	BUILDING SUMP PUMPS	FOR BUILDINGS - DUPLEX. INCLUDES CHECK & ISOLATION VALVES.		2	EA	14,000		28,000	0	60.00	138	MECH	88.89	12,300	40,300
6.4	AGITATOR FOR SUMP PUMPS	5 HP		1	EA	12,000		12,000	0	45.00	52	MECH	88.89	4,600	16,600
6.5	PIPING - MECHANICAL		EST	1	LT			142,800	131,000					408,700	682,500
	LARGE BORE PIPING	4" SS, SCHEDULE 40, WELDED - ON PIPE RACK	EST	300	LF		45.1	0	13,500	0.87	300	SPNG	94.41	28,300	41,800
	LARGE BORE PIPING	6" CS, SCH 40 WELDED - ON PIPE RACK	EST	200	LF		32.2	0	6,400	0.88	202	SPNG	94.41	19,100	25,500
	LARGE BORE PIPING	6" CS, SCH 40 WELDED	EST	100	LF		41.7	0	4,200	1.61	185	SPNG	94.41	17,500	21,700
	LARGE BORE PIPING	8" HDPE (UNDERGROUND)	EST	400	LF		14.1	0	5,600	0.83	382	SPNG	94.41	36,000	41,600
	LARGE BORE PIPING	10" CS, SCH 40 WELDED	EST	300	LF		110.3	0	33,100	2.40	828	SPNG	94.41	78,200	111,300
	LARGE BORE PIPING	20" HDPE (UNDERGROUND)	EST	600	LF		72.8	0	43,700	1.45	1,001	SPNG	94.41	94,500	138,200
	SMALL BORE PIPING	2" CS, SCH 80 WELDED	EST	50	LF		22.20	0	1,100	1.26	72	SPNG	94.41	6,800	7,900
	SMALL BORE PIPING	2" SS, SCH 80 WELDED	EST	50	LF		48.80	0	2,400	1.44	83	SPNG	94.41	7,800	10,200

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	SMALL BORE PIPING	ALLOWANCE FOR MISC SIZE <2" SS, SCH 80 WELDED	EST	100	LF		33.70	0	3,400	1.32	152	SPNG	94.41	14,300	17,700
	VALVE	2" GLOBE, 150# SS, WELDED	EST	15	EA	1,450		21,800	0	5.64	97	SPNG	94.41	9,200	31,000
	VALVE	4" GATE, 150 #, CS, WELDED	EST	10	EA	2,500		25,000	0	7.70	89	SPNG	94.41	8,400	33,400
	VALVE	6" AIR OPERATED, 150 #, CS, FLANGED	EST	2	EA	14,000		28,000	0	17.30	40	SPNG	94.41	3,800	31,800
	VALVE	8" AIR OPERATED, 150 #, CS, FLANGED	EST	4	EA	17,000		68,000	0	19.30	89	SPNG	94.41	8,400	76,400
	EXCAVATION / BACKFILL	FOR UNDERGROUND PIPING	EST	2,000	CY			0	0	0.20	460	EXFD	90.00	41,400	41,400
	BEDDING	FOR UNDERGROUND PIPING	EST	267	CY		35.0	0	9,300	0.25	77	EXFD	90.00	6,900	16,200
	PIPE SUPPORTS	AVERAGE COST FOR MISC PIPE SIZES	EST	110	EA		75.00	0	8,300	2.50	316	MECH	88.89	28,100	36,400
6.6	BYPRODUCT WASTE SILO	CONCRETE SILO 65' DIA X 111' H - 4700 TONS -SUBCONTRACT COST INCLUDES LABOR	EST	1	EA	2,630,000		2,630,000	0	0.00	0	CONP	79.64	0	2,630,000
6.7	RECYCLE SILO	NOT REQUIRED FOR NID													
6.8	FLY ASH SILO	NOT REQUIRED - ECONOMIZER FLY ASH SLUICD TO BOTTOM ASH POND						0	0					0	0
	SILO BIN		EST	0	EA	50,000		0	0	450.00	0	TANK	89.16	0	0
	SUPPORT STEEL FOR SILO		EST	0	TN		2,900.00	0	0	24.00	0	STST	105.71	0	0
6.9	BYPRODUCT WASTE STORAGE SILO - FOUNDATIONS							0	162,400					301,900	464,300
	EXCAVATION / BACKFILL		EST	1,300	CY			0	0	0.36	538	EXFD	90.00	48,400	48,400
	REINFORCING		EST	65.0	TN		1,150.00	0	74,800	20.00	1,495	REIN	78.27	117,000	191,800
	FORMWORK		EST	1,200	SF		2.50	0	3,000	0.14	193	FORM	99.43	19,200	22,200
	CONCRETE		EST	670	CY		105.00	0	70,400	1.50	1,156	CONP	79.64	92,000	162,400
	MUD MAT		EST	40	CY		105.00	0	4,200	1.50	69	CONP	79.64	5,500	9,700
	EMBEDDED STEEL		EST	4,000	LB		2.50	0	10,000	0.06	276	CARP	71.88	19,800	29,800
6.10	FLY ASH SILO - FOUNDATIONS	NOT REQUIRED						0	0					0	0
	EXCAVATION / BACKFILL		EST	0	CY			0	0	0.36	0	EXFD	90.00	0	0
	REINFORCING		EST	0.0	TN		1,150.00	0	0	20.00	0	REIN	78.27	0	0
	FORMWORK		EST	0	SF		2.50	0	0	0.14	0	FORM	99.43	0	0
	CONCRETE		EST	0	CY		105.00	0	0	1.50	0	CONP	79.64	0	0
	MUD MAT		EST	0	CY		105.00	0	0	1.50	0	CONP	79.64	0	0
	EMBEDDED STEEL		EST	0	LB		2.50	0	0	0.06	0	CARP	71.88	0	0
6.11	BYPRODUCT TRANSPORT BLOWER BUILDING - FOUNDATIONS							0	97,600					172,100	269,700
	EXCAVATION / BACKFILL		EST	470	CY			0	0	0.36	195	EXFD	90.00	17,500	17,500
	REINFORCING		EST	38	TN		1,150.00	0	43,700	20.00	874	REIN	78.27	68,400	112,100
	FORMWORK		EST	960	SF		2.50	0	2,400	0.14	155	FORM	99.43	15,400	17,800
	CONCRETE		EST	400	CY		105.00	0	42,000	1.50	690	CONP	79.64	55,000	97,000
	MUD MAT		EST	43	CY		105.00	0	4,500	1.50	74	CONP	79.64	5,900	10,400
	EMBEDDED STEEL		EST	2,000	LB		2.50	0	5,000	0.06	138	CARP	71.88	9,900	14,900
6.12	BYPRODUCT TRANSPORT BLOWER BUILDING	90' L X 30' W X 20' H						40,000	241,500					26,200	307,700
	PRE-ENGINEERED BUILDING INCLUDING H&V AND LIGHTING	SUBCONTRACT PRICE, INCLUDES LABOR	EST	2,700	SF		85	0	229,500	0.00	0	STST	105.71	0	229,500
	ADDITIONAL HVAC UNIT FOR ELECTRICAL ROOM & CONTROLS	20T PACKAGED UNIT FOR ELECTRICAL EQUIPMENT ROOM. INCLUDES ALLOWANCE FOR CONCRETE PAD AND ELECTRICAL WORK	EST	1	LT	40000	12000	40,000	12,000	280.00	322	HVAC	81.24	26,200	78,200
6.13	FLY ASH BLOWER AND ELECTRICAL BUILDING - FOUNDATIONS	NOT REQUIRED						0	0					0	0

AEP
BIG SANDY UNIT 2
FGD PROJECT - NID BASE EST (N/ESP)-1B - 3.0 LB/MM BTU
ORDER OF MAGNITUDE COST ESTIMATE

Estimate No.: 30727C
Project No.: 12721-000
Date: 9/29/2010
Preparer: MNO
Reviewer: JMK
Approver: PEF

Cost Type:
Est=Estimated
Allow.=Allowance
Q=Vendor Quote

Wage Rates Based on: BIG SANDY
Labor Productivity = 1.15

Account No.	Item Description	Scope Definition	Cost Type	Quantity	Unit of Measure	Unit Equip.Cost	Unit Material Cost	Total Equipment Cost	Total Material Cost	Unit Man-hours (Base)	Total Man-hours (w/ productivity)	Crew Code	Crew Wage Rate	Total Construction & Erection Cost	Total Projected Cost
	EXCAVATION / BACKFILL		EST	0	CY			0	0	0.36	0	EXFD	90.00	0	0
	REINFORCING		EST	0	TN		1,150.00	0	0	20.00	0	REIN	78.27	0	0
	FORMWORK		EST	0	SF		2.50	0	0	0.14	0	FORM	99.43	0	0
	CONCRETE		EST	0	CY		105.00	0	0	1.50	0	CONP	79.64	0	0
	MUD MAT		EST	0	CY		105.00	0	0	1.50	0	CONP	79.64	0	0
	EMBEDDED STEEL		EST	0	LB		2.50	0	0	0.06	0	CARP	71.88	0	0
6.14	FLY ASH BLOWER AND ELECTRICAL BUILDING	NOT REQUIRED						0	0					0	0
	PREENGINEERED BUILDING INCLUDING H&V AND LIGHTING		EST	0	SF		95	0	0	0.00	0	STST	105.71	0	0
	ADDITONAL HVAC UNIT FOR ELECTRICAL ROOM & CONTROLS		EST	0	LT	75000	20000	0	0	350.00	0	HVAC	81.24	0	0
6.15	LOAD OUT AREA PDC	SUBCONTRACT PRICE INCLUDES LABOR. COMPLETE WITH HVAC, & FINISHES.	EST	600	SF		500.00	0	300,000	0.00	0	STST	105.71	0	300,000
6.16	MCC	480V MCC PER LINE UP	EST	2	EA	30000		60,000	0	16.00	37	WIRE	98.84	3,600	63,600
6.17	EMERGENBCY POWER SYSTEM							92,800	0					19,900	112,700
	UPS PANEL BOARDS		EST	1	EA	15500		15,500	0	40.00	46	WIRE	98.84	4,500	20,000
	SATELLITE UPS		EST	1	EA	41200		41,200	0	16.00	18	WIRE	98.84	1,800	43,000
	VRLA BATTERIES		EST	1	LT	36050		36,100	0	120.00	138	WIRE	98.84	13,600	49,700
6.18	LIGHTING/ TRANSFORMERS & PANELS							18,500	60,000					44,100	122,600
	LIGHT FIXTURES		EST	80	EA		750	0	60,000	4.00	368	WIRE	98.84	36,400	96,400
	45KVA, 480V, 3 PHASE	LOW VOLTAGE XFMR	EST	1	EA	10000		10,000	0	40.00	46	WIRE	98.84	4,500	14,500
	200A, 480-277V, 3 PHASE- RECEPTACLE PANEL	INCLUDING BREAKERS	EST	1	EA	5000		5,000	0	16.00	18	WIRE	98.84	1,800	6,800
	200A, 277V-120V, 3 PHASE- LIGHTING PANELS	INCLUDING BREAKERS	EST	1	EA	3500		3,500	0	12.00	14	WIRE	98.84	1,400	4,900
6.19	RACEWAY, CABLE TRAY, & CONDUIT							0	32,500					189,100	221,600
	24" X 6" AL CABLE TRAY	INCLUDING SUPPORT & FITTINGS	EST	280	LF		27.10	0	7,600	1.75	564	WIRE	98.84	55700	63,300
	4" RGS CONDUIT	INCLUDING SUPPORT & FITTINGS	EST	280	LF		31.00	0	8,700	0.81	260	WIRE	98.84	25700	34,400
	1" RGS CONDUIT	INCLUDING SUPPORT & FITTINGS	EST	1,040	LF		4.44	0	4,600	0.24	286	WIRE	98.84	28300	32,900
	3/4" RGS CONDUIT	INCLUDING SUPPORT & FITTINGS	EST	3,600	LF		3.23	0	11,600	0.19	803	WIRE	98.84	79400	91,000
6.20	GROUNDING							0	4,500					10,900	15,400
	GROUND ROD	3/4" - 20' LONG EACH	EST	4	EA		150	0	600	4.00	18	WIRE	98.84	1,800	2,400
	500 MCM	BARE COPPER WIRE	EST	500	FT		7.65	0	3,800	0.12	69	WIRE	98.84	6,800	10,600
	CADWELD		EST	8	EA		15	0	100	2.00	18	WIRE	98.84	1,800	1,900
	GROUNDING TEST	TEST & DOCUMENTATION	EST	1	LT			0	0	4.00	5	WIRE	98.84	500	500
6.21	MEDIUM VOLTAGE POWER CABLE & TERMINATION	1/C # 2/0-5KV	EST	3,600	LF		2.63	0	9,500	0.12	484	WIRE	98.84	47,900	57,400
6.22	LOW VOLTAGE POWER CABLE & TERMINATION							0	64,700					80,500	145,200
	#4/0 - #12 AWG-600V		EST	8,960	LF		7.22	0	64,700	0.08	814	WIRE	98.84	80,500	145,200
6.23	CONTROL & INSTRUMENT CABLE	#14, #16 & PR # 20 & SHLD WIRE	EST	9,600	LF		3.20	0	30,700	0.08	872	WIRE	98.84	86,200	116,900
6.24	DUCT BANK	DUCT BANK WITH 4-5" & 4-3" CONDUITS	EST	30	LF		205.00	0	6,200	4.05	140	ECND	75.97	10600	16,800
6.25	COMMUNICATIONS		EST	1	LT		34,000.00	0	34,000	229.00	263	WIRE	98.84	26,000	60,000
6.26	LIGHTNING PROTECTION		EST	1	LT		16,000.00	0	16,000	123.00	141	WIRE	98.84	14,000	30,000
6.27	SECURITY SYSTEM		EST	1	LT		8,000.00	0	8,000	62.00	71	WIRE	98.84	7,000	15,000
90.00	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS							6,246,100	1,198,600		37,667			3,371,000	10,815,700

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Account No.	Item Description	Scope Definition	Cost Type	Quantity	Unit of Measure	Unit Equip.Cost	Unit Material Cost	Total Equipment Cost	Total Material Cost	Unit Man-hours (Base)	Total Man-hours (w/ productivity)	Crew Code	Crew Wage Rate	Total Construction & Erection Cost	Total Projected Cost
	OTHER DIRECT & CONSTRUCTION INDIRECT COSTS														
	ADDITIONAL CRANE ALLOWANCE								0					0	0
	MOBILIZATION / DEMOBILIZATION - INCLUDED IN WAGE RATES ABOVE														0
	COST DUE TO OVERTIME WORKING 5 X10 HOUR DAYS			1	LS										560,217
	COST DUE TO OVERTIME INEFFICIENCY - SPECIFY % INEFFICIENCY			8.00	%						3,275		83.48	273,000	273,000
	COST DUE TO OVERTIME PAY @1.5 TIMES OVERTIME PAY RATE SPECIFY % ADDITIONAL HOURS PAID ON ACTUAL HOURS WORKED			10.00	%						4,094			287,217	287,217
	PER DIEM	NONE		0.00	HR						45,037			0	0
	CONSUMABLES - % of ACCT NO. 90			0.5	%				5,993					16,855	22,848
	FREIGHT ON MATERIAL - % of ACCT NO. 90			5.0	%				59,930						59,930
	FREIGHT ON EQUIPMENT - % of ACCT NO. 90			5.0	%			312,305							312,305
	SCAFFOLDING - % OF ACCT NO. 90			5.0	%				59,930					168,550	228,480
	CONTRACTOR'S GENERAL AND ADMINISTRATION & PROFIT - % of ACCT NO. 90			15	%				179,790					505,650	685,440
	SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS							312,300	305,600					1,251,300	1,869,200
	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	BYPRODUCT WASTE & FLY ASH HANDLING SYSTEMS						6,558,400	1,504,200					4,622,300	12,684,900
7.0	ABSORBER ISLAND	NOT REQUIRED FOR NID													0
8.0	ACTIVATED CARBON INJECTION SYSTEM														0
8.1	ACI MECHANICAL EQUIPMENT:		EST	1	LT	3046400		3,046,400	0	9900.00	11,385	MECH	88.89	1,012,000	4,058,400
	PAC CARBON STORAGE SILO	INCLUDED WITH ACI MECHANICAL EQUIPMENT	EST	1	LT			0	0		0	MECH	88.89	0	0
	BIN VENT FILTER	INCLUDED WITH ACI MECHANICAL EQUIPMENT	EST	1	LT			0	0		0	MECH	88.89	0	0
	SUPPORT STEEL	INCLUDED WITH ACI MECHANICAL EQUIPMENT	EST	1	LT			0	0		0	MECH	88.89	0	0
	ROOF ACCESS LADDER	INCLUDED WITH ACI MECHANICAL EQUIPMENT	EST	1	LT			0	0		0	MECH	88.89	0	0
	ROOF MOUNTED JIB CRANE	INCLUDED WITH ACI MECHANICAL EQUIPMENT	EST	1	LT			0	0		0	MECH	88.89	0	0
	INSTRUMENTATION FOR SILO	INCLUDED WITH ACI MECHANICAL EQUIPMENT	EST	1	LT			0	0		0	MECH	88.89	0	0
	PRESSURE VACUUM RELIEF	INCLUDED WITH ACI MECHANICAL EQUIPMENT	EST	1	LT			0	0		0	MECH	88.89	0	0
	3X50% PAC FEED TRAIN	INCLUDED WITH ACI MECHANICAL EQUIPMENT	EST	1	LT			0	0		0	MECH	88.89	0	0
	FEED HOPERS WITH ROTARY FEEDERS	INCLUDED WITH ACI MECHANICAL EQUIPMENT	EST	1	LT			0	0		0	MECH	88.89	0	0
	GRAVIMETRIC FEEDERS	INCLUDED WITH ACI MECHANICAL EQUIPMENT	EST	1	LT			0	0		0	MECH	88.89	0	0
	REGENERATIVE BLOWERS AND EDUCTORS	INCLUDED WITH ACI MECHANICAL EQUIPMENT	EST	1	LT			0	0		0	MECH	88.89	0	0
	PAC LOADING PIPE WITH CERAMIC BACKED ELBOWS	INCLUDED WITH ACI MECHANICAL EQUIPMENT	EST	1	LT			0	0		0	MECH	88.89	0	0
	PAC DISTRIBUTION MANIFOLD AND LANCES	INCLUDED WITH ACI MECHANICAL EQUIPMENT	EST	1	LT			0	0		0	MECH	88.89	0	0
8.2	PIPING - MECHANICAL		EST	1	LT			29,800	149,800					377,100	556,700
	LARGE BORE PIPING	2" CS, SCH 80 WELDED	EST	150	LF		22.2	0	3,300	1.26	217	SPNG	94.41	20,500	23,800

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	LARGE BORE PIPING	10" CS, SCH 40 WELDED	EST	1,200	LF		110.3	0	132,400	2.40	3,312	SPNG	94.41	312,700	445,100
	VALVE	2" GATE 150 #, CS, WELDED	EST	4	EA	960		3,800	0	5.60	26	SPNG	94.41	2,400	6,200
	VALVE	10" GATE, 150 #, CS, WELDED	EST	4	EA	6,500		26,000	0	16.10	74	SPNG	94.41	7,000	33,000
	PIPE SUPPORTS	AVERAGE COST FOR MISC PIPE SIZES	EST	113	EA		125.00	0	14,100	3.00	388	MECH	88.89	34,500	48,600
8.3	ACI SYSTEM - FOUNDATIONS							0	41,500					88,000	129,500
	EXCAVATION / BACKFILL		EST	404	CY			0	0	0.36	167	EXFD	90.00	15,100	15,100
	REINFORCING		EST	14.0	TN		1,150.00	0	16,100	20.00	322	REIN	78.27	25,200	41,300
	FORMWORK		EST	1,050	SF		2.50	0	2,600	0.14	169	FORM	99.43	16,800	19,400
	CONCRETE		EST	175	CY		105.00	0	18,400	1.50	302	CONP	79.64	24,000	42,400
	MUD MAT		EST	25	CY		105.00	0	2,600	1.50	43	CONP	79.64	3,400	6,000
	EMBEDDED STEEL		EST	705	LB		2.50	0	1,800	0.06	49	CARP	71.88	3,500	5,300
8.4	MCC							61,800	0					3,600	65,400
	480V MCC	PER LINE UP	EST	2	EA	30900		61,800	0	16.00	37	WIRE	98.84	3,600	65,400
8.5	GROUNDING							5,500	0					18,600	24,100
	GROUND ROD	3/4" - 20' LONG	EST	8	EA	150		1,200	0	4.00	37	WIRE	98.84	3,600	4,800
	500 MCM	BARE COPPER WIRE	EST	500	FT	7.65		3,800	0	0.12	69	WIRE	98.84	6,800	10,600
	CADWELD		EST	32	EA	15		500	0	2.00	74	WIRE	98.84	7,300	7,800
	GROUNDING TEST	TEST & DOCUMENTATION	EST	1	LT			0	0	8.00	9	WIRE	98.84	900	900
8.6	LIGHTING / TRANSFORMERS & PANELS							26,000	15,000					20,400	61,400
	LIGHT FIXTURES		EST	20	EA		750	0	15,000	4.00	92	WIRE	98.84	9,100	24,100
	45KVA, 480V, 3 PHASE	LOW VOLTAGE XFMR	EST	1	EA	10000		10,000	0	40.00	46	WIRE	98.84	4,500	14,500
	37.7KVA, 480V, 3 PHASE	LOW VOLTAGE XFMR	EST	1	EA	7500		7,500	0	32.00	37	WIRE	98.84	3,600	11,100
	200A, 480-277V, 3 PHASE- RECEPTACLE PANEL	INCLUDING BREAKERS	EST	1	EA	5000		5,000	0	16.00	18	WIRE	98.84	1,800	6,800
	200A, 277V-120V, 3 PHASE- LIGHTING PANELS	INCLUDING BREAKERS	EST	1	EA	3500		3,500	0	12.00	14	WIRE	98.84	1,400	4,900
8.7	RACEWAY, CABLE TRAY, & CONDUIT							0	89,900					302,900	392,800
	12" X 6" AL CABLE TRAY	INCLUDING SUPPORT & FITTINGS	EST	300	LF		18.25	0	5,500	1.10	330	WIRE	98.84	32600	38,100
	18" X 6" AL CABLE TRAY	INCLUDING SUPPORT & FITTINGS	EST	200	LF		21.50	0	4,300	1.45	290	WIRE	98.84	28700	33,000
	5" RGS CONDUIT	INCLUDING SUPPORT & FITTINGS	EST	200	LF		61.00	0	12,200	1.13	225	WIRE	98.84	22300	34,500
	4" RGS CONDUIT	INCLUDING SUPPORT & FITTINGS	EST	250	LF		31.00	0	7,800	0.81	202	WIRE	98.84	19900	27,700
	3" RGS CONDUIT	INCLUDING SUPPORT & FITTINGS	EST	300	LF		21.50	0	6,500	0.65	194	WIRE	98.84	19100	25,600
	2" RGS CONDUIT	INCLUDING SUPPORT & FITTINGS	EST	300	LF		9.25	0	2,800	0.35	106	WIRE	98.84	10400	13,200
	1-1/2" RGS CONDUIT	INCLUDING SUPPORT & FITTINGS	EST	500	LF		7.15	0	3,600	0.28	142	WIRE	98.84	14000	17,600
	1" RGS CONDUIT	INCLUDING SUPPORT & FITTINGS	EST	2,000	LF		4.44	0	8,900	0.24	478	WIRE	98.84	47200	56,100
	3/4" RGS CONDUIT	INCLUDING SUPPORT & FITTINGS	EST	3,000	LF		3.23	0	9,700	0.19	669	WIRE	98.84	66200	75,900
	DUCT BANK WITH 12-5" & 6-3" CONDUITS	3.08' H X 5.2' W	EST	75	LF		381.96	0	28,600	6.48	559	ECND	75.97	42500	71,100
8.8	LOW VOLTAGE POWER CABLE & TERMINATION	#4/0 - #12 AWG-600V	EST	2,000	LF		7.22	0	14,400	0.08	182	WIRE	98.84	18000	32,400
8.9	CONTROL & INSTRUMENT CABLE	#14, #16 & PR # 20 & SHLD WIRE	EST	5,000	LF		3.20	0	16,000	0.08	454	WIRE	98.84	44900	60,900
90.00	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS							3,169,500	326,600		20,717			1,885,500	5,381,600
	OTHER DIRECT & CONSTRUCTION INDIRECT COSTS														
	ADDITIONAL CRANE ALLOWANCE								0					0	0
	MOBILIZATION / DEMOBILIZATION - INCLUDED IN WAGE RATES ABOVE														0

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	COST DUE TO OVERTIME WORKING 5 X10 HOUR DAYS			1	LS										307,970
	COST DUE TO OVERTIME INEFFICIENCY - SPECIFY % INEFFICIENCY			8.00	%						1,801		83.48	150,000	150,000
	COST DUE TO OVERTIME PAY @1.5 TIMES OVERTIME PAY RATE SPECIFY % ADDITIONAL HOURS PAID ON ACTUAL HOURS WORKED			10.00	%						2,252			157,970	157,970
	PER DIEM	NONE		0.00	HR						24,770			0	0
	CONSUMABLES - % of ACCT NO. 90			0.5	%				1,633					9,428	11,061
	FREIGHT ON MATERIAL - % of ACCT NO. 90			5.0	%				16,330						16,330
	FREIGHT ON EQUIPMENT - % of ACCT NO. 90			5.0	%			158,475							158,475
	SCAFFOLDING - % OF ACCT NO. 90			5.0	%				16,330					94,275	110,605
	CONTRACTOR'S GENERAL AND ADMINISTRATION & PROFIT - % o ACCT NO. 90			15	%				48,990					282,825	331,815
	SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS							158,500	83,300					694,500	936,300
	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	ACTIVATED CARBON INJECTION SYSTEM						3,328,000	409,900					2,580,000	6,317,900
9.0	COMPRESSED AIR SYSTEM														
9.1	AIR COMPRESSOR & AUXILIARIES							848,000	0					184,600	1,032,600
	AIR COMPRESSOR	4100 CFM, OIL FREE	EST	2	EA	350000		700,000	0	750.00	1,725	MECH	88.89	153,300	853,300
	DRYERS	DESICCANT TYPE, HEATED AIR	EST	2	EA	60000		120,000	0	115.00	265	MECH	88.89	23,500	143,500
	RECEIVERS	3000 GAL WITH SAFETY RELIEF VALVE AND PRESSURE GAUGE	EST	2	EA	14000		28,000	0	38.00	87	MECH	88.89	7,800	35,800
9.2	PIPING - MECHANICAL							320,600	344,800					875,600	1,541,000
	LARGE BORE PIPING	4" CS, SCHEDULE 40, WELDED - ON PIPE RACK	EST	500	LF		14.5	0	7,300	0.70	403	SPNG	94.41	38,000	45,300
	LARGE BORE PIPING	6" CS, SCH 40 WELDED	EST	100	LF		41.7	0	4,200	1.61	185	SPNG	94.41	17,500	21,700
	LARGE BORE PIPING	4" SS, SCHEDULE 40, WELDED - ON PIPE RACK	EST	500	LF		45.1	0	22,600	0.87	500	SPNG	94.41	47,200	69,800
	LARGE BORE PIPING	6" SS, SCHEDULE 40, WELDED	EST	200	LF		111.0	0	22,200	2.02	465	SPNG	94.41	43,900	66,100
	LARGE BORE PIPING	8" SS, SCHEDULE 40, WELDED - ON PIPE RACK	EST	700	LF		122.2	0	85,500	1.26	1,014	SPNG	94.41	95,800	181,300
	SMALL BORE PIPING	2" CS, SCH 80 WELDED, UNDERGROUND WRAPPED	EST	700	LF		20.80	0	14,600	0.64	515	SPNG	94.41	48,600	63,200
	SMALL BORE PIPING	ALLOWANCE FOR MISC SIZE <2" CS, SCH 80 WELDED	EST	200	LF		19.30	0	3,900	1.16	267	SPNG	94.41	25,200	29,100
	SMALL BORE PIPING	2" SS, SCH 80 WELDED	EST	700	LF		48.80	0	34,200	1.44	1,159	SPNG	94.41	109,400	143,600
	SMALL BORE PIPING	ALLOWANCE FOR MISC SIZE <2" SS, SCH 80 WELDED	EST	1,500	LF		33.70	0	50,600	1.32	2,277	SPNG	94.41	215,000	265,600
	VALVE	2" GLOBE, 150# SS, WELDED	EST	50	EA	1,450		72,500	0	5.64	324	SPNG	94.41	30,600	103,100
	VALVE	4" GATE, 150 #, CS, WELDED	EST	10	EA	2,500		25,000	0	7.70	89	SPNG	94.41	8,400	33,400
	VALVE	4" GATE, 150 #, SS, WELDED	EST	10	EA	3,400		34,000	0	9.24	106	SPNG	94.41	10,000	44,000
	VALVE	6" GATE, 150 #, SS, WELDED	EST	2	EA	4,700		9,400	0	12.96	30	SPNG	94.41	2,800	12,200
	VALVE	8" GATE, 150 #, SS, WELDED	EST	14	EA	6,240		87,400	0	15.96	257	SPNG	94.41	24,300	111,700
	VALVE	<2" GLOBE, 150# CS, WELDED	EST	10	EA	450		4,500	0	3.40	39	SPNG	94.41	3,700	8,200
	VALVE	<2" GLOBE, 150# SS, WELDED	EST	100	EA	750	750.00	75,000	75,000	4.08	469	SPNG	94.41	44,300	194,300
	VALVE	2" GLOBE, 150# CS, WELDED	EST	15	EA	850		12,800	0	4.20	72	SPNG	94.41	6,800	19,600
	PIPE SUPPORTS	AVERAGE COST FOR MISC PIPE SIZES	EST	440	EA		50.00	0	22,000	2.00	1,012	MECH	88.89	90,000	112,000
	EXCAVATION / BACKFILL	FOR UNDERGROUND PIPING	EST	583	CY			0	0	0.20	134	EXFD	90.00	12,100	12,100
	BEDDING	FOR UNDERGROUND PIPING	EST	78	CY		35.0	0	2,700	0.25	22	EXFD	90.00	2,000	4,700
9.3	AIR COMPRESSOR BUILDING - FOUNDATIONS							0	249,800					419,700	669,500
	EXCAVATION / BACKFILL		EST	1,100	CY			0	0	0.36	455	EXFD	90.00	41,000	41,000
	REINFORCING		EST	100	TN		1,150.00	0	115,000	20.00	2,300	REIN	78.27	180,000	295,000
	FORMWORK		EST	1,500	SF		2.50	0	3,800	0.14	242	FORM	99.43	24,000	27,800
	CONCRETE		EST	1,100	CY		105.00	0	115,500	1.50	1,898	CONP	79.64	151,100	266,600
	MUD MAT		EST	100	CY		105.00	0	10,500	1.50	173	CONP	79.64	13,700	24,200
	EMBEDDED STEEL		EST	2,000	LB		2.50	0	5,000	0.06	138	CARP	71.88	9,900	14,900

				AEP										Estimate No.:	30727C
				BIG SANDY UNIT 2										Project No.:	12721-000
				FGD PROJECT - NID BASE EST (N/ESP)-1B - 3.0 LB/MM BTU										Date:	9/29/2010
				ORDER OF MAGNITUDE COST ESTIMATE										Preparer:	MNO
		Cost Type:												Reviewer:	JMK
		Est=Estimated												Approver:	PEF
		Allow.=Allowance								Wage Rates Based on:		BIG SANDY			
		Q=Vendor Quote								Labor Productivity =		1.15			

Account No.	Item Description	Scope Definition	Cost Type	Quantity	Unit of Measure	Unit Equip.Cost	Unit Material Cost	Total Equipment Cost	Total Material Cost	Unit Man-hours (Base)	Total Man-hours (w/ productivity)	Crew Code	Crew Wage Rate	Total Construction & Erection Cost	Total Projected Cost
9.4	AIR COMPRESSOR BUILDING	120' L X 60' W X 20' H						0	612,000					0	612,000
	PRE-ENGINEERED BUILDING INCLUDING H&V AND LIGHTING	SUBCONTRACT PRICE, INCLUDES LABOR	EST	7,200	SF		85	0	612,000	0.00	0	STST	105.71	0	612,000
9.5	LIGHTING/ TRANSFORMERS & PANELS							11,000	10,500					11,400	32,900
	LIGHT FIXTURES		EST	14	EA		750	0	10,500	4.00	64	WIRE	98.84	6,400	16,900
	37.7KVA, 480V, 3 PHASE	LOW VOLTAGE XFMR	EST	1	EA	7500		7,500	0	32.00	37	WIRE	98.84	3,600	11,100
	200A, 277V-120V, 3 PHASE- LIGHTING PANELS	INCLUDING BREAKERS	EST	1	EA	3500		3,500	0	12.00	14	WIRE	98.84	1,400	4,900
9.6	RACEWAY, CABLE TRAY, & CONDUIT	INCLUDED IN ID FANS, 1.0													
9.7	GROUNDING							4,500	0					10,900	15,400
	GROUND ROD	3/4" - 20' LONG EACH	EST	4	EA	150		600	0	4.00	18	WIRE	98.84	1,800	2,400
	500 MCM	BARE COPPER WIRE	EST	500	FT	7.65		3,800	0	0.12	69	WIRE	98.84	6,800	10,600
	CADWELD		EST	8	EA	15		100	0	2.00	18	WIRE	98.84	1,800	1,900
	GROUNDING TEST	TEST & DOCUMENTATION	EST	1	LT			0	0	4.00	5	WIRE	98.84	500	500
9.8	COMMUNICATIONS		EST	1	LT		34,000.00	0	34,000	229.00	263	WIRE	98.84	26,000	60,000
9.9	LIGHTNING PROTECTION		EST	1	LT		10,500.00	0	10,500	66.00	76	WIRE	98.84	7,500	18,000
90.00	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS							1,184,100	1,261,600		17,187			1,535,700	3,981,400
	OTHER DIRECT & CONSTRUCTION INDIRECT COSTS														
	ADDITIONAL CRANE ALLOWANCE								0					0	0
	MOBILIZATION / DEMOBILIZATION - INCLUDED IN WAGE RATES ABOVE														0
	COST DUE TO OVERTIME WORKING 5 X10 HOUR DAYS			1	LS										256,050
	COST DUE TO OVERTIME INEFFICIENCY - SPECIFY % INEFFICIENCY			8.00	%						1,494		83.48	125,000	125,000
	COST DUE TO OVERTIME PAY @1.5 TIMES OVERTIME PAY RATE SPECIFY % ADDITIONAL HOURS PAID ON ACTUAL HOURS WORKED			10.00	%						1,868			131,050	131,050
	PER DIEM	NONE		0.00	HR						20,549			0	0
	CONSUMABLES - % of ACCT NO. 90			0.5	%				6,308					7,679	13,987
	FREIGHT ON MATERIAL - % of ACCT NO. 90			5.0	%				63,080						63,080
	FREIGHT ON EQUIPMENT - % of ACCT NO. 90			5.0	%			59,205							59,205
	SCAFFOLDING - % OF ACCT NO. 90			5.0	%				63,080					76,785	139,865
	CONTRACTOR'S GENERAL AND ADMINISTRATION & PROFIT - % o ACCT NO. 90			15	%				189,240					230,355	419,595
	SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS							59,200	321,700					570,900	951,800
	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	COMPRESSED AIR SYSTEM						1,243,300	1,583,300					2,106,600	4,933,200
10.0	SERVICE WATER SYSTEM														
10.1	PUMPS	INCLUDES SELF-CLEANING STRAIINERS						174,000	0					85,900	259,900
	SERVICE WATER PUMPS	3000 GPM, 150 HP	EST	2	EA	45000		90,000	0	220.00	506	MECH	88.89	45,000	135,000
	RIVER WATER BOOSTER PUMPS	3000 GPM, 75 PSIG	EST	2	EA	20000		40,000	0	120.00	276	MECH	88.89	24,500	64,500
	SELF-CLEANING STRAIINERS	DUPLEX, 3000 GPM	EST	2	EA	22000		44,000	0	80.00	184	MECH	88.89	16,400	60,400
10.2	PIPING - MECHANICAL		EST	1	LT			298,400	342,800					688,300	1,329,500
	LARGE BORE PIPING	4" SS, SCHEDULE 40, WELDED - ON PIPE RACK	EST	900	LF		45.1	0	40,600	0.87	900	SPNG	94.41	85,000	125,600
	LARGE BORE PIPING	6" SS, SCHEDULE 40, WELDED - ON PIPE RACK	EST	400	LF		80.4	0	32,200	1.14	524	SPNG	94.41	49,500	81,700
	LARGE BORE PIPING	6" SS, SCHEDULE 40, WELDED	EST	200	LF		111.0	0	22,200	2.02	465	SPNG	94.41	43,900	66,100
	LARGE BORE PIPING	10" SS, SCHEDULE 40, WELDED	EST	1,000	LF		179.9	0	179,900	2.49	2,864	SPNG	94.41	270,300	450,200
	LARGE BORE PIPING	14" HDPE (UNDERGROUND)	EST	500	LF		65.5	0	32,800	1.02	587	SPNG	94.41	55,400	88,200
	SMALL BORE PIPING	2" SS, SCH 80 WELDED	EST	300	LF		48.80	0	14,600	1.44	497	SPNG	94.41	46,900	61,500
	SMALL BORE PIPING	ALLOWANCE FOR MISC SIZE <2" SS, SCH 80 WELDED	EST	100	LF		33.70	0	3,400	1.32	152	SPNG	94.41	14,300	17,700

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				BIG SANDY UNIT 2										Project No.:	12721-000
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				ORDER OF MAGNITUDE COST ESTIMATE										Preparer:	MNO
		Cost Type:												Reviewer:	JMK
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		Q=Vendor Quote								Labor Productivity =		1.15			

Account No.	Item Description	Scope Definition	Cost Type	Quantity	Unit of Measure	Unit Equip.Cost	Unit Material Cost	Total Equipment Cost	Total Material Cost	Unit Man-hours (Base)	Total Man-hours (w/ productivity)	Crew Code	Crew Wage Rate	Total Construction & Erection Cost	Total Projected Cost
	VALVE	4" GATE, 150 #, SS, WELDED	EST	12	EA	3,400		40,800	0	9.24	128	SPNG	94.41	12,000	52,800
	VALVE	6" GATE, 150 #, SS, WELDED	EST	8	EA	4,700		37,600	0	12.96	119	SPNG	94.41	11,300	48,900
	VALVE	10" GATE, 150 #, SS, WELDED	EST	20	EA	9,500		190,000	0	18.52	426	SPNG	94.41	40,200	230,200
	VALVE	14" BFLY 150# SS, FLANGED	EST	4	EA	7,500		30,000	0	19.76	91	SPNG	94.41	8,600	38,600
	PIPE SUPPORTS	AVERAGE COST FOR MISC PIPE SIZES	EST	160	EA		95.00	0	15,200	2.50	460	MECH	88.89	40,900	56,100
	EXCAVATION / BACKFILL	FOR UNDERGROUND PIPING	EST	417	CY			0	0	0.20	96	EXFD	90.00	8,600	8,600
	BEDDING	FOR UNDERGROUND PIPING	EST	56	CY		35.0	0	1,900	0.25	16	EXFD	90.00	1,400	3,300
10.3	PIPING - FIRE PROTECTION SYSTEM		EST	1	LT			181,200	284,600	89.55	7,176	0	1207.47	673,300	1,139,100
	LARGE BORE PIPING	4" CS, SCHEDULE 40, WELDED	EST	200	LF		24.4	0	4,900	0.73	168	SPNG	94.41	15,900	20,800
	LARGE BORE PIPING	8" CS, SCHEDULE 40, WELDED	EST	300	LF		64.2	0	19,300	0.98	338	SPNG	94.41	31,900	51,200
	LARGE BORE PIPING	12" CS, SCHEDULE 40, WELDED	EST	150	LF		174.6	0	26,200	1.43	247	SPNG	94.41	23,300	49,500
	LARGE BORE PIPING	20" HDPE (UNDERGROUND)	EST	3,000	LF		72.8	0	218,400	1.45	5,003	SPNG	94.41	472,300	690,700
	VALVE	4" GATE, 150 #, CS, WELDED	EST	10	EA	2,500		25,000	0	7.70	89	SPNG	94.41	8,400	33,400
	VALVE	8" GATE, 150 #, CS, WELDED	EST	6	EA	4,800		28,800	0	13.30	92	SPNG	94.41	8,700	37,500
	VALVE	10" GATE, 150 #, CS, WELDED	EST	4	EA	6,500		26,000	0	16.10	74	SPNG	94.41	7,000	33,000
	VALVE	10" GATE WITH PIV, 150 #, CS, WELDED	EST	10	EA	7,000		70,000	0	17.71	204	SPNG	94.41	19,200	89,200
	VALVE	12" GATE, 150 #, CS, WELDED	EST	2	EA	8,200		16,400	0	19.20	44	SPNG	94.41	4,200	20,600
	FIRE HYDRANTS		EST	10	EA	1,500		15,000	0	8.00	92	MECH	88.89	8,200	23,200
	PIPE SUPPORTS	AVERAGE COST FOR MISC PIPE SIZES	EST	54	EA		75.00	0	4,100	2.50	156	MECH	88.89	13,800	17,900
	EXCAVATION / BACKFILL	FOR UNDERGROUND PIPING	EST	2,500	CY			0	0	0.20	575	EXFD	90.00	51,800	51,800
	BEDDING	FOR UNDERGROUND PIPING	EST	333	CY		35.0	0	11,700	0.25	96	EXFD	90.00	8,600	20,300
10.4	TANKS							0	120,000					0	120,000
	SERVICE WATER TANKS	20,000 GAL, CS, 14' DIA X 20' - SUBCONTRACT PRICE INCLUDES LABOR WITH EXTERIOR PRIMED AND FIELD PAINTED	EST	2	EA		60000.0	0	120,000	0.00	0	TANK	89.16	0	120,000
10.5	SERVICE WATER TANK & PUMP - FOUNDATIONS							0	17,300					41,400	58,700
	EXCAVATION / BACKFILL		EST	296	CY			0	0	0.36	123	EXFD	90.00	11,000	11,000
	REINFORCING		EST	9.0	TN		1,150.00	0	10,400	20.00	207	REIN	78.27	16,200	26,600
	FORMWORK		EST	371	SF		2.50	0	900	0.14	60	FORM	99.43	5,900	6,800
	CONCRETE		EST	48	CY		105.00	0	5,000	1.50	83	CONP	79.64	6,600	11,600
	MUD MAT		EST	4	CY		105.00	0	400	1.50	7	CONP	79.64	500	900
	EMBEDDED STEEL		EST	240	LB		2.50	0	600	0.06	17	CARP	71.88	1,200	1,800
10.6	ELECTRICAL	INCLUDED IN ID FANS, 1.0													
90.00	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS							653,600	764,700		15,961			1,488,900	2,907,200
	OTHER DIRECT & CONSTRUCTION INDIRECT COSTS														
	ADDITIONAL CRANE ALLOWANCE								0					0	0
	MOBILIZATION / DEMOBILIZATION - INCLUDED IN WAGE RATES ABOVE														0
	COST DUE TO OVERTIME WORKING 5 X10 HOUR DAYS			1	LS										237,703
	COST DUE TO OVERTIME INEFFICIENCY - SPECIFY % INEFFICIENCY			8.00	%						1,388		83.48	116,000	116,000
	COST DUE TO OVERTIME PAY @1.5 TIMES OVERTIME PAY RATE SPECIFY % ADDITIONAL HOURS PAID ON ACTUAL HOURS WORKED			10.00	%						1,735			121,703	121,703
	PER DIEM	NONE		0.00	HR						19,084			0	0
	CONSUMABLES - % of ACCT NO. 90			0.5	%				3,824					7,445	11,268
	FREIGHT ON MATERIAL - % of ACCT NO. 90			5.0	%				38,235						38,235
	FREIGHT ON EQUIPMENT - % of ACCT NO. 90			5.0	%			32,680							32,680
	SCAFFOLDING - % OF ACCT NO. 90			5.0	%				38,235					74,445	112,680
	CONTRACTOR'S GENERAL AND ADMINISTRATION & PROFIT - % of ACCT NO. 90			15	%				114,705					223,335	338,040

				AEP										Estimate No.:	30727C
				BIG SANDY UNIT 2										Project No.:	12721-000
				FGD PROJECT - NID BASE EST (N/ESP)-1B - 3.0 LB/MM BTU										Date:	9/29/2010
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		Q=Vendor Quote								Labor Productivity =		1.15			

Account No.	Item Description	Scope Definition	Cost Type	Quantity	Unit of Measure	Unit Equip.Cost	Unit Material Cost	Total Equipment Cost	Total Material Cost	Unit Man-hours (Base)	Total Man-hours (w/ productivity)	Crew Code	Crew Wage Rate	Total Construction & Erection Cost	Total Projected Cost
	SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS							32,700	195,000					542,900	770,600
	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	SERVICE WATER SYSTEM						686,300	959,700					2,031,800	3,677,800
11.0	POTABLE WATER SYSTEM														
11.1	PUMPS							30,000	0					18,400	48,400
	POTABLE WATER BOOSTER PUMPS	50 GPM, 5 HP	EST	2	EA	15000		30,000	0	90.00	207	MECH	88.89	18,400	48,400
11.2	PIPING - MECHANICAL		EST	1	LT			99,500	181,900					448,200	729,600
	LARGE BORE PIPING	4" SS, SCHEDULE 40, WELDED - ON PIPE RACK	EST	800	LF		45.1	0	36,100	0.87	800	SPNG	94.41	75,600	111,700
	LARGE BORE PIPING	4" SS, SCHEDULE 40, WELDED	EST	200	LF		68.3	0	13,700	1.82	419	SPNG	94.41	39,500	53,200
	LARGE BORE PIPING	6" SS, SCHEDULE 40, WELDED	EST	800	LF		111.0	0	88,800	2.02	1,858	SPNG	94.41	175,500	264,300
	LARGE BORE PIPING	8" HDPE (UNDERGROUND)	EST	200	LF		14.1	0	2,800	0.83	191	SPNG	94.41	18,000	20,800
	SMALL BORE PIPING	2" D.I. SCH 80 (UNDERGROUND)	EST	500	LF		15.00	0	7,500	0.30	173	SPNG	94.41	16,300	23,800
	SMALL BORE PIPING	ALLOWANCE FOR MISC SIZE <2" SS, SCH 80 WELDED	EST	200	LF		33.70	0	6,700	1.32	304	SPNG	94.41	28,700	35,400
	SMALL BORE PIPING	2" COPPER	EST	300	LF		28.50	0	8,600	0.43	148	SPNG	94.41	14,000	22,600
	VALVE	2" GLOBE, 150# CS, WELDED	EST	10	EA	850		8,500	0	4.20	48	SPNG	94.41	4,600	13,100
	VALVE	<2" GLOBE, 150# SS, WELDED	EST	8	EA	750	750.00	6,000	6,000	4.08	38	SPNG	94.41	3,500	15,500
	VALVE	4" GATE, 150 #, SS, WELDED	EST	20	EA	4,250		85,000	0	9.24	213	SPNG	94.41	20,100	105,100
	PIPE SUPPORTS	AVERAGE COST FOR MISC PIPE SIZES	EST	150	EA		60.00	0	9,000	2.50	431	MECH	88.89	38,300	47,300
	EXCAVATION / BACKFILL	FOR UNDERGROUND PIPING	EST	583	CY			0	0	0.20	134	EXFD	90.00	12,100	12,100
	BEDDING	FOR UNDERGROUND PIPING	EST	78	CY		35.0	0	2,700	0.25	22	EXFD	90.00	2,000	4,700
11.3	TANKS							0	8,500					0	8,500
	POTABLE WATER TANK	1,000 GAL, SS, 5' DIA X 8' - SUBCONTRACT PRICE INCLUDES LABOR	EST	1	EA		8500.0	0	8,500	0.00	0	TANK	89.16	0	8,500
11.4	POTABLE WATER TANK & PUMP - FOUNDATIONS							0	5,200					9,200	14,400
	EXCAVATION / BACKFILL		EST	20	CY			0	0	0.36	8	EXFD	90.00	700	700
	REINFORCING		EST	3.0	TN		1,150.00	0	3,500	20.00	69	REIN	78.27	5,400	8,900
	FORMWORK		EST	75	SF		2.50	0	200	0.14	12	FORM	99.43	1,200	1,400
	CONCRETE		EST	12	CY		105.00	0	1,300	1.50	21	CONP	79.64	1,600	2,900
	MUD MAT		EST	0	CY		105.00	0	0	1.50	0	CONP	79.64	0	0
	EMBEDDED STEEL		EST	60	LB		2.50	0	200	0.06	4	CARP	71.88	300	500
11.5	ELECTRICAL	INCLUDED IN ID FANS, 1.0													
90.00	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS							129,500	195,600		5,100			475,800	800,900
	OTHER DIRECT & CONSTRUCTION INDIRECT COSTS														
	ADDITIONAL CRANE ALLOWANCE								0					0	0
	MOBILIZATION / DEMOBILIZATION - INCLUDED IN WAGE RATES ABOVE														0
	COST DUE TO OVERTIME WORKING 5 X10 HOUR DAYS			1	LS										75,889
	COST DUE TO OVERTIME INEFFICIENCY - SPECIFY % INEFFICIENCY			8.00	%						443		83.48	37,000	37,000
	COST DUE TO OVERTIME PAY @1.5 TIMES OVERTIME PAY RATE SPECIFY % ADDITIONAL HOURS PAID ON ACTUAL HOURS WORKED			10.00	%						554			38,889	38,889
	PER DIEM	NONE		0.00	HR						6,098			0	0
	CONSUMABLES - % of ACCT NO. 90			0.5	%				978					2,379	3,357
	FREIGHT ON MATERIAL - % of ACCT NO. 90			5.0	%				9,780						9,780
	FREIGHT ON EQUIPMENT - % of ACCT NO. 90			5.0	%			6,475							6,475
	SCAFFOLDING - % OF ACCT NO. 90			5.0	%				9,780					23,790	33,570
	CONTRACTOR'S GENERAL AND ADMINISTRATION & PROFIT - % of ACCT NO. 90			15	%				29,340					71,370	100,710
	SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS							6,500	49,900					173,400	229,800

AEP

BIG SANDY UNIT 2

FGD PROJECT - NID BASE EST (N/ESP)-1B - 3.0 LB/MM BTU

ORDER OF MAGNITUDE COST ESTIMATE

Estimate No.: 30727C
Project No.: 12721-000
Date: 9/29/2010
Preparer: MNO
Reviewer: JMK
Approver: PEF

Cost Type:
Est=Estimated
Allow.=Allowance
Q=Vendor Quote

Wage Rates Based on: BIG SANDY
Labor Productivity = 1.15

Account No.	Item Description	Scope Definition	Cost Type	Quantity	Unit of Measure	Unit Equip.Cost	Unit Material Cost	Total Equipment Cost	Total Material Cost	Unit Man-hours (Base)	Total Man-hours (w/ productivity)	Crew Code	Crew Wage Rate	Total Construction & Erection Cost	Total Projected Cost
	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	POTABLE WATER SYSTEM						136,000	245,500					649,200	1,030,700
12.0	FGD SUBSTATION														
12.1	TRANSFORMERS							1,560,000	0					273,100	1,833,100
	FGD SUBSTATION-AUX TRANSFORMERS: 11A & 11B	138KV-13.8KV- 2 WINDING XFMR	EST	2	EA	695000		1,390,000	0	1200.00	2,760	EHEA	79.16	218,500	1,608,500
	SUS TRANSFORMERS: 32F, 32G	13.8KV-480V,3PHASE	EST	2	EA	85000		170,000	0	300.00	690	EHEA	79.16	54,600	224,600
12.2	TRANSFORMER PDC	15W X 45' X 10'H. SUBCONTRACT PRICE INCLUDES LABOR	EST	675.0	SF	300.0		202500.0	0.0	0.0	0.0	STST	105.71	0.0	202500.0
12.3	TRANSFORMER PDC - FOUNDATION							0	73,200					146,900	220,100
	EXCAVATION / BACKFILL		EST	700	CY			0	0	0.36	290	EXFD	90.00	26,100	26,100
	REINFORCING		EST	26	TN		1,150.00	0	30,200	20.00	604	REIN	78.27	47,300	77,500
	FORMWORK		EST	1,100	SF		2.50	0	2,800	0.14	177	FORM	99.43	17,600	20,400
	CONCRETE		EST	300	CY		105.00	0	31,500	1.50	518	CONP	79.64	41,200	72,700
	MUD MAT		EST	35	CY		105.00	0	3,700	1.50	60	CONP	79.64	4,800	8,500
	EMBEDDED STEEL		EST	2,000	LB		2.50	0	5,000	0.06	138	CARP	71.88	9,900	14,900
12.4	138KV MAIN FEEDER & TERMINATIONS							264,000	0					254,000	518,000
	138KV STRUCTURE AND SWITCH		EST	1	LT	103500		103,500	0	450.00	518	STST	105.71	54,700	158,200
	138KV MAIN FEEDER	1/C 750KCMIL- 138KV	EST	2,100	LF	51.75		108,700	0	0.69	1,671	WIRE	98.84	165,200	273,900
	138KV ACCESSORIES		EST	1	LT	51750		51,800	0	300.00	345	WIRE	98.84	34,100	85,900
12.5	SWITCHGEAR							714,200	0					121,600	835,800
	13.8 KV MEDIUM VOLTAGE (11A/B)	PRICE PER SECTION	EST	8	EA	50000		400,000	0	40.00	368	EHEA	79.16	29,100	429,100
	480V LOW VOLTAGE (32F/G)	PRICE PER SECTION	EST	5	EA	38000		190,000	0	16.00	92	EHEA	79.16	7,300	197,300
	EXISTING SCR SWITCHGEAR MODIFICATION	TURNKEY INCLUDING INSTALLATION & MATERIAL (EATON QUOTE 7/16/10)	Q	1	LT	124,200		124,200	0	750.00	863	WIRE	98.84	85,200	209,400
12.6	MCC	480V MCC, PER LINE UP	EST	2	EA	30000		60,000	0	16.00	37	WIRE	98.84	3,600	63,600
12.7	CABLE BUS							181,100	18,000					290,200	489,300
	15KV CABLE BUS DUCT	BUS DUCT ONLY	EST	200	FT	442		88,400	0	3.30	759	WIRE	98.84	75,000	163,400
	480V CABLE BUS DUCT	BUS DUCT ONLY	EST	150	FT	618		92,700	0	10.30	1,777	WIRE	98.84	175,600	268,300
	CABLE BUS TERMINATION	500MCM - 15KV TERMINATIONS	EST	4	EA		1,800.00	0	7,200	33.00	152	WIRE	98.84	15,000	22,200
	CABLE BUS TERMINATION	750MCM- 480V TERMINATIONS	EST	4	EA		2,700.00	0	10,800	54.00	248	WIRE	98.84	24,600	35,400
12.8	PANELS - RELAY							100,000	0					9,100	109,100
	RELAY PANELS & INTERLOCK	ALLOWANCE	EST	1	LT	100000		100,000	0	80.00	92	WIRE	98.84	9,100	109,100
12.9	MIMIC PANELS		EST	1	EA	17500		17,500	0	40.00	46	WIRE	98.84	4,500	22,000
12.10	EMERGENCY POWER SYSTEM							108,300	0					24,400	132,700
	DC PANEL BOARD		EST	1	EA	15500		15,500	0	40.00	46	WIRE	98.84	4,500	20,000
	UPS PANEL BOARDS		EST	1	EA	15500		15,500	0	40.00	46	WIRE	98.84	4,500	20,000
	SATELLITE UPS		EST	1	EA	41200		41,200	0	16.00	18	WIRE	98.84	1,800	43,000
	VRLA BATTERIES	8HR-400A, 480V	EST	1	LT	36050		36,100	0	120.00	138	WIRE	98.84	13,600	49,700
12.11	GROUNDING							23,300	0					59,100	82,400
	GROUND ROD	3/4" - 20' LONG EACH	EST	16	EA	150		2,400	0	4.00	74	WIRE	98.84	7,300	9,700
	500 MCM	BARE COPPER WIRE	EST	2,600	FT	7.65		19,900	0	0.12	359	WIRE	98.84	35,500	55,400
	CADWELD		EST	64	EA	15		1,000	0	2.00	147	WIRE	98.84	14,500	15,500
	GROUNDING TEST	TEST & DOCUMENTATION	EST	1	LT			0	0	16.00	18	WIRE	98.84	1,800	1,800
12.12	LIGHTING/ TRANSFORMERS & PANELS							26,000	30,000					29,500	85,500
	LIGHT FIXTURES		EST	40	EA		750	0	30,000	4.00	184	WIRE	98.84	18,200	48,200
	45KVA, 480V, 3 PHASE	LOW VOLTAGE XFMR	EST	1	EA	10000		10,000	0	40.00	46	WIRE	98.84	4,500	14,500
	37.7KVA, 480V, 3 PHASE	LOW VOLTAGE XFMR	EST	1	EA	7500		7,500	0	32.00	37	WIRE	98.84	3,600	11,100
	200A, 480-277V, 3 PHASE- RECEPTACLE PANEL	INCLUDING BREAKERS	EST	1	EA	5000		5,000	0	16.00	18	WIRE	98.84	1,800	6,800
	200A, 277V-120V, 3 PHASE- LIGHTING PANELS	INCLUDING BREAKERS	EST	1	EA	3500		3,500	0	12.00	14	WIRE	98.84	1,400	4,900
12.13	OUTDOOR LIGHTING	NEW AUX YARD LIGHTING - ALLOWANCE	EST	1	LT	25000		25,000	0	500.00	575	WIRE	98.84	56,800	81,800

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Account No.	Item Description	Scope Definition	Cost Type	Quantity	Unit of Measure	Unit Equip.Cost	Unit Material Cost	Total Equipment Cost	Total Material Cost	Unit Man-hours (Base)	Total Man-hours (w/ productivity)	Crew Code	Crew Wage Rate	Total Construction & Erection Cost	Total Projected Cost
12.14	RACEWAY, CABLE TRAY, & CONDUIT							0	390,600					1,918,600	2,309,200
	12" X 6" AL CABLE TRAY	INCLUDING SUPPORT & FITTINGS	EST	1,250	LF		18.25	0	22,800	1.10	1,581	WIRE	98.84	156,300	179,100
	18" X 6" AL CABLE TRAY	INCLUDING SUPPORT & FITTINGS	EST	750	LF		21.50	0	16,100	1.45	1,251	WIRE	98.84	123,600	139,700
	24" X 6" AL CABLE TRAY	INCLUDING SUPPORT & FITTINGS	EST	2,200	LF		27.10	0	59,600	1.75	4,428	WIRE	98.84	437,600	497,200
	36" X 6" AL CABLE TRAY	INCLUDING SUPPORT & FITTINGS	EST	600	LF		30.30	0	18,200	1.95	1,346	WIRE	98.84	133,000	151,200
	5" RGS CONDUIT	INCLUDING SUPPORT & FITTINGS	EST	1,000	LF		61.00	0	61,000	1.13	1,296	WIRE	98.84	128,100	189,100
	4" RGS CONDUIT	INCLUDING SUPPORT & FITTINGS	EST	1,800	LF		31.00	0	55,800	0.81	1,670	WIRE	98.84	165,100	220,900
	3" RGS CONDUIT	INCLUDING SUPPORT & FITTINGS	EST	2,000	LF		21.50	0	43,000	0.65	1,484	WIRE	98.84	146,600	189,600
	2" RGS CONDUIT	INCLUDING SUPPORT & FITTINGS	EST	3,000	LF		9.25	0	27,800	0.35	1,214	WIRE	98.84	120,000	147,800
	1-1/2" RGS CONDUIT	INCLUDING SUPPORT & FITTINGS	EST	3,700	LF		7.15	0	26,500	0.28	1,208	WIRE	98.84	119,400	145,900
	1" RGS CONDUIT	INCLUDING SUPPORT & FITTINGS	EST	6,200	LF		4.44	0	27,500	0.24	1,704	WIRE	98.84	168,400	195,900
	3/4" RGS CONDUIT	INCLUDING SUPPORT & FITTINGS	EST	10,000	LF		3.23	0	32,300	0.19	2,231	WIRE	98.84	220,500	252,800
12.15	DUCT BANK							0	26,200	0.05	0			54,300	80,500
	UNDERGROUND SURVEY FOR NEW DUCT BANK RUN	MAIN FEEDER BETWEEN EXISTING SCR SUBSTATION TO FGD AUX XFMR	EST	200	LF			0	0	0.80	184	ECND	75.97	14,000	14,000
	4' X 4' DUCT BANK (138KV SCR TO FGD AUX XFMR SUBSTATION)	6 - 6" PVC	EST	40	LF		375	0	15,000	6.25	288	ECND	75.97	21,800	36,800
	DUCT BANK WITH 6-5" & 4-3" CONDUITS	2.38' H X 4' W	EST	50	LF		223.02	0	11,200	4.24	244	ECND	75.97	18,500	29,700
12.16	HIGH VOLTAGE POWER CABLE & TERMINATION	1/C # 500KCMIL- 15KV	EST	1,800	LF		9.27	0	16,700	0.23	476	WIRE	98.84	47,100	63,800
12.17	LOW VOLTAGE POWER CABLE & TERMINATION							0	96,600					147,700	244,300
	3/C # 500KCMIL- 600V		EST	600	LF		26.12	0	15,700	0.69	476	WIRE	98.84	47,100	62,800
	#4/0 - #12 AWG-600V		EST	11,200	LF		7.22	0	80,900	0.08	1,018	WIRE	98.84	100,600	181,500
12.18	CONTROL & INSTRUMENT CABLE	#14, #16 & PR # 20 & SHLD WIRE	EST	6,800	LF		3.20	0	21,800	0.08	618	WIRE	98.84	61,100	82,900
12.19	FOUNDATION FOR AUX TRANSFORMER							0	70,200					205,400	275,600
	EXCAVATION / BACKFILL		EST	1,000	CY			0	0	0.36	414	EXFD	90.00	37,300	37,300
	REINFORCING		EST	20.0	TN		1,150.00	0	23,000	20.00	460	REIN	78.27	36,000	59,000
	FORMWORK		EST	5,000	SF		2.50	0	12,500	0.14	805	FORM	99.43	80,000	92,500
	CONCRETE		EST	190	CY		105.00	0	20,000	1.50	328	CONP	79.64	26,100	46,100
	MUD MAT		EST	45	CY		105.00	0	4,700	1.50	78	CONP	79.64	6,200	10,900
	EMBEDDED STEEL		EST	4,000	LB		2.50	0	10,000	0.06	276	CARP	71.88	19,800	29,800
12.20	FIREWALL FOR TRANSFORMERS							0	4,300					7,600	11,900
	REINFORCING		EST	1.5	TN		1,150.00	0	1,700	20.00	35	REIN	78.27	2,700	4,400
	FORMWORK		EST	120	SF		2.50	0	300	0.14	19	FORM	99.43	1,900	2,200
	CONCRETE		EST	22	CY		105.00	0	2,300	1.50	38	CONP	79.64	3,000	5,300
12.21	COMMUNICATIONS		EST	1	LT		17,000.00	0	17,000	114.00	131	WIRE	98.84	13,000	30,000
12.22	LIGHTNING PROTECTION		EST	1	LT		4,000.00	0	4,000	18.00	21	WIRE	98.84	2,000	6,000
12.23	SECURITY SYSTEM		EST	1	LT		8,000.00	0	8,000	62.00	71	WIRE	98.84	7,000	15,000
90.00	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS							3,281,900	776,600		39,315			3,736,600	7,795,100
	OTHER DIRECT & CONSTRUCTION INDIRECT COSTS														
	ADDITIONAL CRANE ALLOWANCE								0					0	0
	MOBILIZATION / DEMOBILIZATION - INCLUDED IN WAGE RATES ABOVE														0
	COST DUE TO OVERTIME WORKING 5 X10 HOUR DAYS			1	LS										584,780
	COST DUE TO OVERTIME INEFFICIENCY - SPECIFY % INEFFICIENCY			8.00	%						3,419		83.48	285,000	285,000
	COST DUE TO OVERTIME PAY @1.5 TIMES OVERTIME PAY RATE SPECIFY % ADDITIONAL HOURS PAID ON ACTUAL HOURS WORKED			10.00	%						4,273			299,780	299,780
	PER DIEM	NONE		0.00	HR						47,007			0	0
	CONSUMABLES - % of ACCT NO. 90			0.5	%				3,883					18,683	22,566

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	FREIGHT ON MATERIAL - % of ACCT NO. 90			5.0	%				38,830						38,830
	FREIGHT ON EQUIPMENT - % of ACCT NO. 90			5.0	%			164,095							164,095
	SCAFFOLDING - % OF ACCT NO. 90			5.0	%				38,830					186,830	225,660
	CONTRACTOR'S GENERAL AND ADMINISTRATION & PROFIT - % o ACCT NO. 90			15	%				116,490					560,490	676,980
	SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS							164,100	198,000					1,350,783	1,712,900
	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	FGD SUBSTATION						3,446,000	974,600					5,087,400	9,508,000
13.0	FGD DCS SYSTEM														0
13.1	DCS	3200 I/O POINTS	EST	3,200	EA	750		2,400,000	0	2.50	9,200	INEL	88.43	813,600	3,213,600
13.2	DCS - VENDOR FIELD SUPPORT	200 MAN DAYS @ $1500/DAY - SHOWN AS SUBCONTRACT COST	EST	200	DAYS	1500		300,000	0		0	INEL	88.43	0	300,000
13.3	LOCALLY MOUNTED INSTRUMENTS							0	650,400					852,900	1,503,300
	LOCALLY MOUNTED INSTRUMENTS		EST	275	EA		2200	0	605,000	20.00	6,325	INEL	88.43	559,300	1,164,300
	INSTRUMENT RACKS	INCLUDED WITH INSTRUMENTS													
	INSTRUMENT TUBING	ALLOWANCE	EST	8,250	LF		5.5	0	45,400	0.35	3,321	INEL	88.43	293,600	339,000
90.00	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS							2,700,000	650,400		18,846			1,666,500	5,016,900
	OTHER DIRECT & CONSTRUCTION INDIRECT COSTS														
	ADDITIONAL CRANE ALLOWANCE								0					0	0
	MOBILIZATION / DEMOBILIZATION - INCLUDED IN WAGE RATES ABOVE														0
	COST DUE TO OVERTIME WORKING 5 X10 HOUR DAYS			1	LS										280,700
	COST DUE TO OVERTIME INEFFICIENCY - SPECIFY % INEFFICIENCY			8.00	%						1,639		83.48	137,000	137,000
	COST DUE TO OVERTIME PAY @1.5 TIMES OVERTIME PAY RATE SPECIFY % ADDITIONAL HOURS PAID ON ACTUAL HOURS WORKED			10.00	%						2,048			143,700	143,700
	PER DIEM	NONE		0.00	HR						22,533			0	0
	CONSUMABLES - % of ACCT NO. 90			0.5	%				3,252					8,333	11,585
	FREIGHT ON MATERIAL - % of ACCT NO. 90			5.0	%				32,520						32,520
	FREIGHT ON EQUIPMENT - % of ACCT NO. 90			5.0	%			135,000							135,000
	SCAFFOLDING - % OF ACCT NO. 90			5.0	%				32,520					83,325	115,845
	CONTRACTOR'S GENERAL AND ADMINISTRATION & PROFIT - % o ACCT NO. 90			15	%				97,560					249,975	347,535
	SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS							135,000	165,900					622,300	923,200
	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	FGD DCS SYSTEM						2,835,000	816,300					2,288,800	5,940,100
14.0	CEM SYSTEM														0
14.1	CEM	PROVIDED BY AEP		1	LT	1260000	540000	1,260,000	540,000					310,000	2,110,000
90.00	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS							1,260,000	540,000					310,000	2,110,000
	CONTRACTOR'S GENERAL AND ADMINISTRATION EXPENSE & PROFIT- % of ACCT NO. 90			15	%				81,000						316,500
	SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS														316,500
	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	CEM SYSTEM													2,426,500
15.0	TRUCK & RAIL INFRASTRUCTURE														0
15.1	EXISTING RAILROAD IMPROVEMENTS	FOR FULL RAILCAR STORAGE TRACK IMPROVEMENTS - 3250 LF						0	660,200					689,200	1,349,400
	REMOVE AND REPLACE 8" OF THE BALLAST	INCLUDES DISPOSAL OF REMOVED BALLAST	EST	3,250	LF		12.25	0	39,800	0.16	598	RRTK	88.26	52,800	92,600
	REPLACE 75% OF THE EXISTING WOODEN RAILROAD TIES	INCLUDES TIE PLATES, SPIKES AND BOLTS	EST	1,950	LF		80	0	156,000	0.85	1,906	RRTK	88.26	168,200	324,200
	REMOVE THE EXISTING RAIL AND REPLACE WITH 132-LB RAIL		EST	3,250	LF		87.5	0	284,400	1.05	3,924	RRTK	88.26	346,400	630,800
	REPLACE EXISTING #8 TURNOUTS		EST	4	EA		45000	0	180,000	300.00	1,380	RRTK	88.26	121,800	301,800

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15.2	EXISTING RAILROAD IMPROVEMENTS	FOR LOOP TRACK UPGRADE - 5000 LF						0	1,008,800					1,055,600	2,064,400
	REMOVE AND REPLACE 8" OF THE BALLAST	INCLUDES DISPOSAL OF REMOVED BALLAST	EST	5,000	LF		12.25	0	61,300	0.16	920	RRTK	88.26	81,200	142,500
	REPLACE 75% OF THE EXISTING WOODEN RAILROAD TIES	INCLUDES TIE PLATES, SPIKES AND BOLTS	EST	3,000	LF		80	0	240,000	0.85	2,933	RRTK	88.26	258,800	498,800
	REMOVE THE EXISTING RAIL AND REPLACE WITH 132-LB RAIL		EST	5,000	LF		87.5	0	437,500	1.05	6,038	RRTK	88.26	532,900	970,400
	REPLACE EXISTING #8 TURNOUTS		EST	6	EA		45000	0	270,000	300.00	2,070	RRTK	88.26	182,700	452,700
15.3	NEW RAILROAD TRACK	INCLUDES, 132LB RAIL, 7" TIMBERS, TIE PLATES, SPIKES, BOLTS, 12: SUB BALLAST, 12" BALLAST, 12 OZ/SY GEOTEXTILE MEMBRANE, 12" SUBGRADE PREP	EST	1,400	LF		180	0	252,000	1.50	2,415	RRTK	88.26	213,100	465,100
15.4	FIELD FABRICATED TURNOUTS	#8 TURNOUT	EST	2	EA		45000	0	90,000	270.00	621	RRTK	88.26	54,800	144,800
15.5	RAIL SCALE	SUBCONTRACT COST, INCLUDES FOUNDATIONS	EST	2	EA	106250		212,500	0	0.00	0	MECH	88.89	0	212,500
15.6	NEW CONCRETE ENCASEMENT	OVER AND AROUND DUCT BANK CONNECTING THE PLANT TO SWITCHYARD. THIS IS UNDER THE NEW TRACK WORK EXTENSION						0	33,200					71,400	104,600
	EXCAVATION / BACKFILL		EST	170	CY			0	0	0.36	70	EXFD	90.00	6,300	6,300
	REINFORCING		EST	13	TN		1,150.00	0	14,400	20.00	288	REIN	78.27	22,500	36,900
	FORMWORK		EST	1,350	SF		2.50	0	3,400	0.14	217	FORM	99.43	21,600	25,000
	CONCRETE		EST	113	CY		105.00	0	11,900	1.50	195	CONP	79.64	15,500	27,400
	MUD MAT		EST	20	CY		105.00	0	2,100	1.50	35	CONP	79.64	2,700	4,800
	EMBEDDED STEEL		EST	567	LB		2.50	0	1,400	0.06	39	CARP	71.88	2,800	4,200
90.00	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS							212,500	2,044,200		23,648			2,084,100	4,340,800
	OTHER DIRECT & CONSTRUCTION INDIRECT COSTS														
	ADDITIONAL CRANE ALLOWANCE								0					0	0
	MOBILIZATION / DEMOBILIZATION - INCLUDED IN WAGE RATES ABOVE														0
	COST DUE TO OVERTIME WORKING 5 X10 HOUR DAYS			1	LS										352,321
	COST DUE TO OVERTIME INEFFICIENCY - SPECIFY % INEFFICIENCY			8.00	%						2,056		83.48	172,000	172,000
	COST DUE TO OVERTIME PAY @1.5 TIMES OVERTIME PAY RATE SPECIFY % ADDITIONAL HOURS PAID ON ACTUAL HOURS WORKED			10.00	%						2,570			180,321	180,321
	PER DIEM	NONE		0.00	HR						28,275			0	0
	CONSUMABLES - % of ACCT NO. 90			0.5	%				10,221					10,421	20,642
	FREIGHT ON MATERIAL - % of ACCT NO. 90			5.0	%				102,210						102,210
	FREIGHT ON EQUIPMENT - % of ACCT NO. 90			5.0	%			10,625							10,625
	SCAFFOLDING - % OF ACCT NO. 90			5.0	%				102,210					104,205	206,415
	CONTRACTOR'S GENERAL AND ADMINISTRATION & PROFIT - % of ACCT NO. 90			15	%				306,630					312,615	619,245
	SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS							10,600	521,300					779,600	1,311,500
	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	TRUCK & RAIL INFRASTRUCTURE						223,100	2,565,500					2,863,700	5,652,300
16.0	SITE IMPROVEMENTS - CIVIL WORK														
16.1	SITE GRADING							0	0					555,200	555,200
	CUT		EST	17,000	CY			0	0	0.08	1,564	ETWK	177.49	277,600	277,600
	FILL		EST	17,000	CY			0	0	0.08	1,564	ETWK	177.49	277,600	277,600
16.2	ROADS & SURFACING							0	1,204,900					1,667,500	2,872,400

				AEP										Estimate No.:	30727C
				BIG SANDY UNIT 2										Project No.:	12721-000
				FGD PROJECT - NID BASE EST (N/ESP)-1B - 3.0 LB/MM BTU										Date:	9/29/2010
				ORDER OF MAGNITUDE COST ESTIMATE										Preparer:	MNO
		Cost Type:												Reviewer:	JMK
		Est=Estimated												Approver:	PEF
		Allow.=Allowance								Wage Rates Based on:		BIG SANDY			
		Q=Vendor Quote								Labor Productivity =		1.15			

Account No.	Item Description	Scope Definition	Cost Type	Quantity	Unit of Measure	Unit Equip.Cost	Unit Material Cost	Total Equipment Cost	Total Material Cost	Unit Man-hours (Base)	Total Man-hours (w/ productivity)	Crew Code	Crew Wage Rate	Total Construction & Erection Cost	Total Projected Cost
	20' WIDE ACCESS ROAD	INCLUDES: 1.5" ASPHALT SURFACE COURSE 1.5" ASPHALT BINDER COURSE 12" BASE COURSE 10 OZ/SY GEOTEXTILE 12" SUBGRADE PREP	EST	5,600	SY		47	0	263,200	0.40	2,576	PBIT	90.25	232,500	495,700
	24' WIDE ACCESS ROAD	INCLUDES: 1.5" ASPHALT SURFACE COURSE 1.5" ASPHALT BINDER COURSE 12" BASE COURSE 10 OZ/SY GEOTEXTILE 12" SUBGRADE PREP	EST	5,300	SY		47	0	249,100	0.40	2,438	PBIT	90.25	220,000	469,100
	24' WIDE ACCESS ROAD AGGREGATE SHOULDERS	INCLUDES: 12" BASE COURSE 10 OZ/SY GEOTEXTILE	EST	1,300	SY		17.5	0	22,800	0.10	150	BCSE	105.94	15,800	38,600
	LIME UNLOADING AREA	INCLUDES: 1.5" ASPHALT SURFACE COURSE 1.5" ASPHALT BINDER COURSE 12" BASE COURSE 10 OZ/SY GEOTEXTILE 12" SUBGRADE PREP	EST	2,400	SY		47	0	112,800	0.40	1,104	PBIT	90.25	99,600	212,400
	PARKING AREA	INCLUDES: 1.5" ASPHALT SURFACE COURSE 1.5" ASPHALT BINDER COURSE 12" BASE COURSE 10 OZ/SY GEOTEXTILE 12" SUBGRADE PREP	EST	900	SY		47	0	42,300	0.40	414	PBIT	90.25	37,400	79,700
	BYPRODUCT & WASTE LOADING AREA - SURFACING	12" REINFORCED CONCRETE	EST	1,900	SY		96	0	182,400	1.60	3,496	CONP	79.64	278,400	460,800
	BYPRODUCT & WASTE LOADING AREA	6" CONCRETE CURB	EST	560	LF		6.5	0	3,600	0.96	618	COND	70.04	43,300	46,900
	CONCRETE PAD BUILDING ENTRANCES	10" REINFORCED CONCRETE	EST	340	SY		80	0	27,200	1.50	587	CONP	79.64	46,700	73,900
	AGGREGATE AREA SURFACING	INCLUDES: 6" BASE COURSE 10 OZ/SY GEOTEXTILE 12" SUBGRADE PREP	EST	33,500	SY		9	0	301,500	0.17	6,549	BCSE	105.94	693,800	995,300
16.3	NEW CONCRETE ENCASEMENT	16' X 4' X 40' - FOR EXISTING ASH PIPE HAUL ROAD CROSSING						0	36,500					73,000	109,500
	EXCAVATION / BACKFILL		EST	300	CY			0	0	0.36	124	EXFD	90.00	11,200	11,200
	REINFORCING		EST	25.0	TN		1,150.00	0	28,800	20.00	575	REIN	78.27	45,000	73,800
	FORMWORK		EST	500	SF		2.50	0	1,300	0.14	81	FORM	99.43	8,000	9,300
	CONCRETE		EST	50	CY		105.00	0	5,300	1.50	86	CONP	79.64	6,900	12,200
	MUD MAT		EST	5	CY		105.00	0	500	1.50	9	CONP	79.64	700	1,200
	EMBEDDED STEEL		EST	250	LB		2.50	0	600	0.06	17	CARP	71.88	1,200	1,800
16.4	TRUCK SCALE & CONCRETE APPROACH							170,000	27,300					92,000	289,300
	TRUCK SCALE	SUBCONTRACT COST, INCLUDES FOUNDATIONS AND LABOR	EST	2	EA	85000		170,000	0	0.00	0	MECH	88.89	0	170,000
	CONCRETE APPROACH FOR TRUCK SCALE	20' x 40' - TOTAL FOR TWO SCALES	EST	119	CY		230.0	0	27,300	7.50	1,022	EXFD	90.00	92,000	119,300
16.5	PROCESS WATER STORAGE BASIN							60,000	81,600					240,300	381,900
	SAND EXCAVATION		EST	3,000	CY			0	0	0.03	90	ETWK	177.49	15,900	15,900
	ROCK EXCAVATION	ASSUME ROCK IS RIPPABLE	EST	400	CY			0	0	0.05	22	ETWK	177.49	3,900	3,900
	POND SURFACING	6" REINFORCED CONCRETE	EST	1,700	SY		48	0	81,600	1.20	2,346	CONP	79.64	186,800	268,400
	PUMPS	500 GPM, 75 PSIG	EST	2	EA	30000		60,000	0	165.00	380	MECH	88.89	33,700	93,700
16.6	PROCESS WATER STORAGE BASIN PUMP STRUCTURE - CONCRETE							0	47,000					105,400	152,400
	EXCAVATION / BACKFILL		EST	0	CY			0	0	0.36	0	EXFD	90.00	0	0
	REINFORCING		EST	7	TN		1,150.00	0	8,100	20.00	161	REIN	78.27	12,600	20,700
	FORMWORK		EST	3,968	SF		2.50	0	9,900	0.14	639	FORM	99.43	63,500	73,400

				AEP										Estimate No.:	30727C
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Account No.	Item Description	Scope Definition	Cost Type	Quantity	Unit of Measure	Unit Equip.Cost	Unit Material Cost	Total Equipment Cost	Total Material Cost	Unit Man-hours (Base)	Total Man-hours (w/ productivity)	Crew Code	Crew Wage Rate	Total Construction & Erection Cost	Total Projected Cost
	CONCRETE		EST	76	CY		105.00	0	8,000	1.50	131	CONP	79.64	10,400	18,400
	MUD MAT		EST	0	CY		105.00	0	0	1.50	0	CONP	79.64	0	0
	EMBEDDED STEEL		EST	380	LB		2.50	0	1,000	0.06	26	CARP	71.88	1,900	2,900
	PROCESS WATER BASIN PUMP STRUCTURE - GALLERY		EST	5	TN		4,000.00	0	20,000	35.00	201	GALL	84.61	17,000	37,000
16.7	STORM WATER DRAINAGE TRENCH	2' W X 3' DEEP CAST-IN-PLACE CONCRETE TRENCH W/REINFORCING & HS-20 RATED GRATE COVERS	EST	3,900	LF		135	0	526,500	1.50	6,728	CONP	79.64	535,800	1,062,300
16.8	STORM WATER RUNOFF POND							0	15,000					122,600	137,600
	SAND EXCAVATION		EST	11,000	CY			0	0	0.03	329	ETWK	177.49	58,400	58,400
	ROCK EXCAVATION	ASSUME ROCK IS RIPPABLE	EST	3,700	CY			0	0	0.05	204	ETWK	177.49	36,300	36,300
	4" TOPSOIL		EST	650	CY		14	0	9,100	0.03	22	LAND	61.45	1,400	10,500
	GRASS SEEDING, FERTILIZER AND MULCH		EST	1.2	AC		4930	0	5,900	240.00	331	MSTR	80.04	26,500	32,400
16.9	STORM WATER RUNOFF POND PUMP STRUCTURE - CONCRETE							90,000	42,300					182,200	314,500
	EXCAVATION / BACKFILL		EST	0	CY			0	0	0.36	0	EXFD	90.00	0	0
	REINFORCING		EST	3	TN		1,150.00	0	3,500	20.00	69	REIN	78.27	5,400	8,900
	FORMWORK		EST	2,025	SF		2.50	0	5,100	0.14	326	FORM	99.43	32,400	37,500
	CONCRETE		EST	33	CY		105.00	0	3,500	1.50	57	CONP	79.64	4,500	8,000
	MUD MAT		EST	0	CY		105.00	0	0	1.50	0	CONP	79.64	0	0
	EMBEDDED STEEL		EST	165	LB		2.50	0	400	0.06	11	CARP	71.88	800	1,200
	STORM WATER POND PUMP STRUCTURE - GALLERY		EST	5	TN		4,000.00	0	20,000	35.00	201	GALL	84.61	17,000	37,000
	PUMPS	500 GPM, 75 PSIG	EST	3	EA	30000		90,000	0	165.00	569	MECH	88.89	50,600	140,600
	PIPING	6" HDPE, SDR 9	EST	1,000	LF		9.8	0	9,800	0.69	794	YDPP	90.14	71,500	81,300
16.10	OILY WATER SEWER							4,500	112,600					236,000	353,100
	PIPING	6" CISP	EST	1,500	LF		21.5	0	32,300	0.33	569	YDPP	90.14	51,300	83,600
	PIPING	8" CISP	EST	1,400	LF		33.5	0	46,900	0.54	869	YDPP	90.14	78,400	125,300
	PIPING	6" HDPE, SDR 9	EST	1,000	LF		9.8	0	9,800	0.69	794	YDPP	90.14	71,500	81,300
	POST INDICATOR VALVE		EST	6	EA	750		4,500	0	6.00	41	YDPP	90.14	3,700	8,200
	MANHOLES		EST	15	EA		1575.0	0	23,600	20.00	345	YDPP	90.14	31,100	54,700
16.11	OIL SEPARATOR	500 GPM W/ INTEGRAL LIFT STATION	EST	2	EA	50000		100,000	0	560.00	1,288	YDPP	90.14	116,100	216,100
16.12	SANITARY SEWER							0	22,200					96,900	119,100
	PIPING	6" CISP	EST	500	LF		21.5	0	10,800	0.33	190	YDPP	90.14	17,100	27,900
	MANHOLES		EST	4	EA		1575.0	0	6,300	20.00	92	YDPP	90.14	8,300	14,600
	PIPING	4" HDPE (UNDERGROUND)	EST	1,500	LF		3.4	0	5,100	0.46	794	YDPP	90.14	71,500	76,600
16.13	SANITARY LIFT STATION	PACKAGED TYPE COMPLETE WITH PUMPS 100,000 GPD	EST	1	EA	150,000	3.4	150,000	0	475.00	546	YDPP	90.14	49,200	199,200
16.14	CONSTRUCTION LAYDOWN AREA	ALLOWANCE FOR 10 ACRES, DOES NOT INCLUDE LAND ACQUISITION, IF REQUIRED	EST	10	AC		70,000.0	0	700,000	800.00	9,200	EXFD	90.00	828,000	1,528,000
16.15	CRAFT PARKING	DOES NOT INCLUDE LAND ACQUISITION, IF REQUIRED. ALLOWANCE FOR 20,000 SY INCLUDES: 6" BASE COURSE 10 OZ/SY GEOTEXTILE 12" SUBGRADE PREP	EST	20,000	SY		9	0	180,000	0.17	3,910	BCSE	105.94	414,200	594,200
16.16	CONTRACTOR OFFICES (AREA)	DOES NOT INCLUDE LAND ACQUISITION, IF REQUIRED. ALLOWANCE FOR 5,000 SY AREA (TRAILERS BY CONTRACTORS) INCLUDES: 6" BASE COURSE 10 OZ/SY GEOTEXTILE 12" SUBGRADE PREP	EST	5,000	SY		9	0	45,000	0.17	978	BCSE	105.94	103,600	148,600

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Account No.	Item Description	Scope Definition	Cost Type	Quantity	Unit of Measure	Unit Equip.Cost	Unit Material Cost	Total Equipment Cost	Total Material Cost	Unit Man-hours (Base)	Total Man-hours (w/ productivity)	Crew Code	Crew Wage Rate	Total Construction & Erection Cost	Total Projected Cost
16.17	TRUCK WASH AREA							0	47,300					83,100	130,400
	EXCAVATION / BACKFILL		EST	190	CY			0	0	0.36	79	EXFD	90.00	7,100	7,100
	REINFORCING		EST	20	TN		1,150.00	0	23,000	20.00	460	REIN	78.27	36,000	59,000
	FORMWORK		EST	510	SF		2.50	0	1,300	0.14	82	FORM	99.43	8,200	9,500
	CONCRETE		EST	170	CY		105.00	0	17,900	1.50	293	CONP	79.64	23,400	41,300
	MUD MAT		EST	25	CY		105.00	0	2,600	1.50	43	CONP	79.64	3,400	6,000
	EMBEDDED STEEL		EST	1,000	LB		2.50	0	2,500	0.06	69	CARP	71.88	5,000	7,500
16.18	NEW PERMANENT STORAGE	INCLUDES LIGHTING AND H&V. SUBCONTRACT PRICE INCLUDES ELECTRICAL AND H&V		10,000	SF	85		850,000	0		0	STST	105.71	0	850,000
16.19	FOUNDATIONS FOR THE NEW WAREHOUSE							0	273,500					450,200	723,700
	EXCAVATION / BACKFILL		EST	950	CY			0	0	0.36	393	EXFD	90.00	35,400	35,400
	REINFORCING		EST	110	TN		1,150.00	0	126,500	20.00	2,530	REIN	78.27	198,000	324,500
	FORMWORK		EST	1,200	SF		2.50	0	3,000	0.14	193	FORM	99.43	19,200	22,200
	CONCRETE		EST	1,100	CY		105.00	0	115,500	1.50	1,898	CONP	79.64	151,100	266,600
	MUD MAT		EST	140	CY		105.00	0	14,700	1.50	242	CONP	79.64	19,200	33,900
	EMBEDDED STEEL		EST	5,500	LB		2.50	0	13,800	0.06	380	CARP	71.88	27,300	41,100
16.20	NEW TEMPORARY STORAGE	WEATHER TIGHT CANVAS ENCLOSURE. INCLUDES LIGHTING AND H&V. SUBCONTRACT PRICE INCLUDES ELECTRICAL AND H&V		10,000	SF	45		450,000	0		0	STST	105.71	0	450,000
16.21	FOUNDATIONS FOR TEMPORARY STORAGE							0	99,500					157,200	256,700
	EXCAVATION / BACKFILL		EST	230	CY			0	0	0.36	95	EXFD	90.00	8,600	8,600
	REINFORCING		EST	35	TN		1,150.00	0	40,300	20.00	805	REIN	78.27	63,000	103,300
	FORMWORK		EST	400	SF		2.50	0	1,000	0.14	64	FORM	99.43	6,400	7,400
	CONCRETE		EST	370	CY		105.00	0	38,900	1.50	638	CONP	79.64	50,800	89,700
	MUD MAT		EST	140	CY		105.00	0	14,700	1.50	242	CONP	79.64	19,200	33,900
	EMBEDDED STEEL		EST	1,850	LB		2.50	0	4,600	0.06	128	CARP	71.88	9,200	13,800
16.22	LABOR BUS SERVICE FROM PARKING LOT TO CONSTRUCTION AREA AND ACCESS CONTROL	ALLOWANCE FOR 36 MONTHS BASED ON 2 BUSES OPERATING CONTINUOUSLY FOR 5X10 WORKWEEK. SUBCONTRACT COST INCLUDES EQUIPMENT, MATERIAL AND LABOR	ALLOW	36	MN	38000		1,368,000	0					0	1,368,000
16.23	EROSION & SEDIMENT CONTROL							0	12,500					20,500	33,000
	SILT FENCE		EST	2,500	LF		1.0	0	2,500	0.02	58	LAND	61.45	3,500	6,000
	ROCK CHECK DAMS		EST	20	EA		500.0	0	10,000	12.00	276	LAND	61.45	17,000	27,000
90.00	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS							3,242,500	3,473,700		65,193			6,129,000	12,845,200
	OTHER DIRECT & CONSTRUCTION INDIRECT COSTS														
	ADDITIONAL CRANE ALLOWANCE								0					0	0
	MOBILIZATION / DEMOBILIZATION - INCLUDED IN WAGE RATES ABOVE														0
	COST DUE TO OVERTIME WORKING 5 X10 HOUR DAYS			1	LS										970,106
	COST DUE TO OVERTIME INEFFICIENCY - SPECIFY % INEFFICIENCY			8.00	%						5,669		83.48	473,000	473,000
	COST DUE TO OVERTIME PAY @1.5 TIMES OVERTIME PAY RATE SPECIFY % ADDITIONAL HOURS PAID ON ACTUAL HOURS WORKED			10.00	%						7,086			497,106	497,106
	PER DIEM	NONE		0.00	HR						77,948			0	0
	CONSUMABLES - % of ACCT NO. 90			0.5	%				17,369					30,645	48,014
	FREIGHT ON MATERIAL - % of ACCT NO. 90			5.0	%				173,685						173,685
	FREIGHT ON EQUIPMENT - % of ACCT NO. 90			5.0	%			162,125							162,125
	SCAFFOLDING - % OF ACCT NO. 90			5.0	%				173,685					306,450	480,135

AEP
BIG SANDY UNIT 2
FGD PROJECT - NID BASE EST (N/ESP)-1B - 3.0 LB/MM BTU
ORDER OF MAGNITUDE COST ESTIMATE

Estimate No.: 30727C
Project No.: 12721-000
Date: 9/29/2010
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Reviewer: JMK
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Cost Type:
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	CONTRACTOR'S GENERAL AND ADMINISTRATION & PROFIT - % o ACCT NO. 90			15	%				521,055					919,350	1,440,405
	SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS							162,100	885,800					2,226,600	3,274,500
	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	SITE IMPROVEMENTS - CIVIL WORK						3,404,600	4,359,500					8,355,600	16,119,700
17.0	BOP ITEMS														0
17.1	PIPE INSULATION	AVERAGE 6" PIPE SIZE	EST	3,400	LF		10	0	34,000	0.39	1,525	PINS	69.50	106,000	140,000
17.2	HEAT TRACING							0	175,600					248,500	424,100
	CABLE	AVERAGE 6" PIPE SIZE	EST	3,000	LF		10.35	0	31,100	0.05	173	WIRE	98.84	17,000	48,100
	POWER CONNECTOR AND OTHER ACCESSORIES INCLUDING THERMOSTATS FOR HEAT TRACING (BY ZONES)		EST	55	EA		450	0	24,500	8.00	502	WIRE	98.84	49,600	74,100
	HEAT TRACING BALANCE OF PLANT INCL PANELS, POWER WIRING AND CONDUITS		EST	4	LT		30000	0	120,000	400.00	1,840	WIRE	98.84	181,900	301,900
17.3	TOUCH UP PAINT (INCLUDES PAINTING CS PIPE)							0	176,700					677,900	854,600
	TOUCH UP PAINT FOR SHOP PAINTED STEEL		EST	31,200	SF		3	0	93,600	0.15	5,382	PNTR	66.72	359,100	452,700
	TOUCH UP PAINT FOR EQUIPMENT		EST	12,000	SF		3	0	36,000	0.15	2,070	PNTR	66.72	138,100	174,100
	PAINTING CS PIPE ONLY	AVERAGE 6" PIPE SIZE, ALLOWANCE FOR 10,000 LF PIPE	EST	15,700	SF		3	0	47,100	0.15	2,708	PNTR	66.72	180,700	227,800
17.4	HOISTS & TROLLEYS							150,000	175,000					204,400	529,400
	MISC HOISTS & TROLLEYS	IN BUILDINGS FOR EQUIPMENT MAINTENANCE AND FOR ID FANS	EST	10	EA	15000	17500	150,000	175,000	200.00	2,300	MECH	88.89	204,400	529,400
17.5	MISC AUX STEEL FOR PIPE SUPPORTS	FIELD FABRICATED	EST	35	TN		3500	0	122,500	120.00	4,830	STST	105.71	510,600	633,100
17.6	MISC PIPE SUPPORT FOUNDATIONS							0	10,500					21,000	31,500
	EXCAVATION / BACKFILL		EST	65	CY			0	0	0.36	27	EXFD	90.00	2,400	2,400
	REINFORCING		EST	5.0	TN		1,150.00	0	5,800	20.00	115	REIN	78.27	9,000	14,800
	FORMWORK		EST	260	SF		2.50	0	700	0.14	42	FORM	99.43	4,200	4,900
	CONCRETE		EST	25	CY		105.00	0	2,600	1.50	43	CONP	79.64	3,400	6,000
	MUD MAT		EST	10	CY		105.00	0	1,100	1.50	17	CONP	79.64	1,400	2,500
	EMBEDDED STEEL		EST	125	LB		2.50	0	300	0.06	9	CARP	71.88	600	900
17.7	EYE WASH STATIONS	WITH 50 KW HEATERS	EST	5	EA	6000	1000	30,000	5,000	60.00	345	MECH	88.89	30,700	65,700
17.8	FIRE PROTECTION FOR MISC BUILDINGS & AREAS	STAND PIPE FOR BUILDINGS	EST	10	EA		30000	0	300,000	240.00	2,760	MECH	88.89	245,300	545,300
90.00	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS							180,000	999,300		24,687			2,044,400	3,223,700
	OTHER DIRECT & CONSTRUCTION INDIRECT COSTS														
	ADDITIONAL CRANE ALLOWANCE								0					0	0
	MOBILIZATION / DEMOBILIZATION - INCLUDED IN WAGE RATES ABOVE														0
	COST DUE TO OVERTIME WORKING 5 X10 HOUR DAYS			1	LS										367,244
	COST DUE TO OVERTIME INEFFICIENCY - SPECIFY % INEFFICIENCY			8.00	%						2,147		83.48	179,000	179,000
	COST DUE TO OVERTIME PAY @1.5 TIMES OVERTIME PAY RATE SPECIFY % ADDITIONAL HOURS PAID ON ACTUAL HOURS WORKED			10.00	%						2,683			188,244	188,244
	PER DIEM	NONE		0.00	HR						29,517			0	0
	CONSUMABLES - % of ACCT NO. 90			0.5	%				4,997					10,222	15,219
	FREIGHT ON MATERIAL - % of ACCT NO. 90			5.0	%				49,965						49,965
	FREIGHT ON EQUIPMENT - % of ACCT NO. 90			5.0	%			9,000							9,000
	SCAFFOLDING - % OF ACCT NO. 90			5.0	%				49,965					102,220	152,185

				AEP										Estimate No.:	30727C
				BIG SANDY UNIT 2										Project No.:	12721-000
				FGD PROJECT - NID BASE EST (N/ESP)-1B - 3.0 LB/MM BTU										Date:	9/29/2010
				ORDER OF MAGNITUDE COST ESTIMATE										Preparer:	MNO
		Cost Type:												Reviewer:	JMK
		Est=Estimated												Approver:	PEF
		Allow.=Allowance								Wage Rates Based on:		BIG SANDY			
		Q=Vendor Quote								Labor Productivity =		1.15			

Account No.	Item Description	Scope Definition	Cost Type	Quantity	Unit of Measure	Unit Equip.Cost	Unit Material Cost	Total Equipment Cost	Total Material Cost	Unit Man-hours (Base)	Total Man-hours (w/ productivity)	Crew Code	Crew Wage Rate	Total Construction & Erection Cost	Total Projected Cost
	CONTRACTOR'S GENERAL AND ADMINISTRATION & PROFIT - % o ACCT NO. 90			15	%				149,895					306,660	456,555
	SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS							9,000	254,822					786,346	1,050,167
	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	BOP ITEMS						189,000	1,254,100					2,830,700	4,273,900
18.0	CAPITAL REPLACEMENTS - REMOVAL AND RELOCATION OF EXISTING EQUIPMENT AND INFRASTRUCTURE														0
18.1	RELOCATE HYDROGEN STORAGE TANK							0	15,600					86,800	102,400
	LABOR ALLOWANCE TO RELOCATED THE TANK	LABOR ALLOWANCE TO RELOCATE THE TANK	EST	1	LT			0	0	500.00	575	MECH	88.89	51,100	51,100
	NEW FOUNDATION ALLOWANCE FOR THE RELOCATED TANK		EST	35	CY		230	0	8,100	6.00	242	MECH	88.89	21,500	29,600
	ELECTRICAL ALLOWANCE FOR THE RELOCATED TANK	INCLUDES LIGHTING	EST	1	LT		7500	0	7,500	125.00	144	WIRE	98.84	14,200	21,700
18.2	NEW HYDROGEN LINE TO PLANT							0	62,100					150,600	212,700
	LARGE BORE PIPE	DOUBLE WALL PIPE	EST	800	LF		75	0	60,000	1.65	1,518	YDPP	90.14	136,800	196,800
	EXCAVATION / BACKFILL	FOR UNDERGROUND PIPING	EST	593	CY			0	0	0.20	136	EXFD	90.00	12,300	12,300
	BEDDING	FOR UNDERGROUND PIPING	EST	59	CY		35	0	2,100	0.25	17	EXFD	90.00	1,500	3,600
18.3	RELOCATE MISC. UNDERGROUND UTILITIES	ALLOWANCE	EST	1	LT		125000	0	125,000	1500.00	1,725	WIRE	98.84	170,500	295,500
18.4	OUTAGE TIE-IN DUCTWORK	ALLOWANCE FOR 85 TON DUCTWORK	ALLOW	85	TN		3250	0	276,300	50.00	4,888	FLDU	107.96	527,700	804,000
18.5	RELOCATED WAREHOUSE - FOUNDATIONS							0	342,600					534,900	877,500
	EXCAVATION / BACKFILL		EST	1,152	CY			0	0	0.15	199	EXFD	90.00	17,900	17,900
	REINFORCING		EST	134	TN		1,150.00	0	154,100	20.00	3,082	REIN	78.27	241,200	395,300
	FORMWORK		EST	1,356	SF		2.50	0	3,400	0.14	218	FORM	99.43	21,700	25,100
	CONCRETE		EST	1,419	CY		105.00	0	149,000	1.50	2,448	CONP	79.64	194,900	343,900
	MUD MAT		EST	175	CY		105.00	0	18,400	1.50	302	CONP	79.64	24,000	42,400
	EMBEDDED STEEL		EST	7,095	LB		2.50	0	17,700	0.06	490	CARP	71.88	35,200	52,900
18.6	RELOCATE EXISTING WAREHOUSE BUILDING	150' L X 75' W X 25' H						0	95,600					1,121,500	1,217,100
	CAREFULLY REMOVE BUILDING SIDING, STEEL AND ROOF & PIECE MARK FOR RELOCATION		EST	11,250	SF			0	0	0.22	2,846	STST	105.71	300,900	300,900
	ASSEMBLE REMOVED BUILDING STEEL, ROOFING, SIDING, WINDOWS AND DOORS INCLUDING OVERHEAD DOORS	INCLUDES 10-15% NEW MATERIAL ALLOWANCE AS SOME REMOVED PIECES MAY NOT BE SALVAGEABLE	EST	11,250	SF		8.5	0	95,600	0.60	7,763	STST	105.71	820,600	916,200
90.00	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS							0	917,200		26,591			2,592,000	3,509,200
	OTHER DIRECT & CONSTRUCTION INDIRECT COSTS														
	ADDITIONAL CRANE ALLOWANCE								0					0	0
	MOBILIZATION / DEMOBILIZATION - INCLUDED IN WAGE RATES ABOVE														0
	COST DUE TO OVERTIME WORKING 5 X10 HOUR DAYS			1	LS										395,761
	COST DUE TO OVERTIME INEFFICIENCY - SPECIFY % INEFFICIENCY			8.00	%						2,312		83.48	193,000	193,000
	COST DUE TO OVERTIME PAY @1.5 TIMES OVERTIME PAY RATE SPECIFY % ADDITIONAL HOURS PAID ON ACTUAL HOURS WORKED			10.00	%						2,890			202,761	202,761
	PER DIEM	NONE		0.00	HR						31,794			0	0
	CONSUMABLES - % of ACCT NO. 90			0.5	%				4,586					12,960	17,546
	FREIGHT ON MATERIAL - % of ACCT NO. 90			5.0	%				45,860						45,860
	FREIGHT ON EQUIPMENT - % of ACCT NO. 90			5.0	%			0							0
	SCAFFOLDING - % OF ACCT NO. 90			5.0	%				45,860					129,600	175,460
	CONTRACTOR'S GENERAL AND ADMINISTRATION & PROFIT - % o ACCT NO. 90			15	%				137,580					388,800	526,380

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				ORDER OF MAGNITUDE COST ESTIMATE										Preparer:	MNO
		Cost Type:												Reviewer:	JMK
		Est=Estimated												Approver:	PEF
		Allow.=Allowance								Wage Rates Based on:		BIG SANDY			
		Q=Vendor Quote								Labor Productivity =		1.15			

Account No.	Item Description	Scope Definition	Cost Type	Quantity	Unit of Measure	Unit Equip.Cost	Unit Material Cost	Total Equipment Cost	Total Material Cost	Unit Man-hours (Base)	Total Man-hours (w/ productivity)	Crew Code	Crew Wage Rate	Total Construction & Erection Cost	Total Projected Cost
	SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS							0	233,900					927,100	1,161,000
	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	CAPITAL REPLACEMENTS - REMOVAL AND RELOCATION OF EXISTING EQUIPMENT AND INFRASTRUCTURE						0	1,151,100					3,519,100	4,670,200
19.0	ARSENIC, ASBESTOS , LEAD ABATEMENT														
19.1	ARSENIC, ASBESTOS , LEAD ABATEMENT	PROVIDED BY AEP		1	LT										750,000
90.00	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS														750,000
	CONTRACTOR'S GENERAL AND ADMINISTRATION EXPENSE & PROFIT- % of ACCT NO. 90			15	%				0						112,500
	SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS														112,500
	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	ARSENIC, ASBESTOS , LEAD ABATEMENT													862,500
99.00	OVERALL - EQUIPMENT, MATERIAL AND LABOR COSTS							95,385,900	44,707,200		1,252,409			116,652,900	276,846,000
	OTHER DIRECT & CONSTRUCTION INDIRECT COSTS														
	ADDITIONAL CRANE ALLOWANCE			9	MN	75,000.00		675,000	0		7,452			662,400	1,337,400
	MOBILIZATION / DEMOBILIZATION - INCLUDED IN WAGE RATES ABOVE														0
	COST DUE TO OVERTIME WORKING 5 X10 HOUR DAYS			1	LS										18,693,066
	COST DUE TO OVERTIME INEFFICIENCY - SPECIFY % INEFFICIENCY			8.00	%						108,905		93.14	9,091,000	9,091,000
	COST DUE TO OVERTIME PAY @1.5 TIMES OVERTIME PAY RATE SPECIFY % ADDITIONAL HOURS PAID ON ACTUAL HOURS WORKED			10.00	%						136,877			9,602,066	9,602,066
	PER DIEM	NONE		0.00	HR									0	0
	CONSUMABLES - % of ACCT NO. 90			0.5	%				220,836					581,715	802,551
	FREIGHT ON MATERIAL - % of ACCT NO. 90			5.0	%				2,208,360						2,208,360
	FREIGHT ON EQUIPMENT - % of ACCT NO. 90			5.0	%			4,706,295							4,706,295
	SCAFFOLDING - % OF ACCT NO. 90			5.0	%				2,208,360					5,817,145	8,025,505
	CONTRACTOR'S GENERAL AND ADMINISTRATION & PROFIT - % o ACCT NO. 90			15	%				6,706,080					17,451,435	27,408,015
	OVERALL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS							5,381,300	11,343,600					43,205,800	63,181,200
	OVERALL TOTAL DIRECT & CONSTRUCTION INDIRECT COST							100,767,200	56,050,800					159,858,700	340,027,200
	TOTAL PROJECT DIRECT AND CONSTRUCTION INDIRECT COSTS							100,767,200	56,050,800					159,858,700	340,027,200
								0	0					0	0
	INDIRECT COSTS														
	ENGINEERING, PROCUREMENT, & PROJECT SERVICES			1.0	LT										25,000,000
	CONSTRUCTION MANAGEMENT			3.0	%										10,200,800
	S-U / COMMISSIONING			1.0											3,400,300
	CRAFT START-UP SUPPORT	1% OF TOTAL LABOR MANHOURS (INCLUDES OVERTIME INEFFICIENCY & COST DUE TO OVERTIME PAY @1.5 TIMES OVERTIME PAY RATE - BASED ON ASSUMED 5X10 WORKWEEK)		1.0	%						13,613		93.14	1,374,500	1,374,500
	INITIAL FILLS			0.3	%										1,020,100
	OPERATOR & TRAINING MANUALS			1.0	LT										300,000
	SUBCONTRACTORS (NOISE & DUCTWORK CONSULTANT, GEOTECHNICAL INVESTIGATION)			1.0	LT										400,000

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Account No.	Item Description	Scope Definition	Cost Type	Quantity	Unit of Measure	Unit Equip.Cost	Unit Material Cost	Total Equipment Cost	Total Material Cost	Unit Man-hours (Base)	Total Man-hours (w/ productivity)	Crew Code	Crew Wage Rate	Total Construction & Erection Cost	Total Projected Cost
	NOISE ABATEMENT FOR 85 DBA REQUIREMENT	FOR ID FAN, NID MODULES, TRANSFORMERS, BOP, DUCTWORK, ACOUSTIC BARRIERS FOR BOUNDARY LIMITS		1.0	LT										2,600,000
	SUBTOTAL - INDIRECT COSTS														44,295,700
	TOTAL PROJECT DIRECT AND INDIRECT COSTS														384,322,900
	SPARE PARTS:			1.5	%			1,511,500							1,511,500
	SPARE PARTS - CAPITALIZED			0.90	%			906,900							906,900
	SPARE PARTS - FIRST YEAR OF OPERATION			0.60	%			604,600							604,600
	CONTINGENCY			14.3	%										55,124,800
	ESCALATION														48,734,300
	EQUIPMENT	4.0%/yr		4.0	%			16,011,200							16,011,200
	MATERIAL	2.0%/yr		2.0	%				5,863,300						5,863,300
	LABOR	2.5%/yr		2.5	%									21,653,900	21,653,900
	INDIRECTS	2.5%/yr		2.5	%									5,205,900	5,205,900
	TOTAL PROJECT COST														489,693,500
	REFERENCE COSTS:														
A	ESP DEMOLITION	ALLOWANCE FOR 1000T STRUCTURE	ALLOW	1,000	TN			0	0	6.00	6,900	WRKG	120.63	832,300	832,300
B	REMOVE BOOSTER AIR FANS		ALLOW	2	EA			0	0	400.00	920	WRKG	120.63	111,000	111,000
C	REMOVAL OF FUEL OIL TANK							1,200,000	80,000					469,400	1,749,400
	REMOVE FUEL OIL TANK & SOIL REMEDIATION	LABOR COST IS FOR REMOVAL OF TANK ONLY. ALLOWANCE FOR SOIL REMEDIATION AND DISPOSAL IN AN EPA APPROVED LANDFILL. SUBCONTRACT COST INCLUDES LABOR. USED LOWER END OF THE RANGE $118-355/CY. COST COULD BE LOWER ($59-118/CY) IF SOLD TO A BITUMINOUS CONCRETE BATCH PLANT	EST	8,000	CY	150		1,200,000	0		0	MECH	88.89	0	1,200,000
	REMOVE DIKE & RECOMPACT FILL IN TANK AREA		EST	3,500	CY			0	0	0.60	2,415	ETWK	177.49	428,600	428,600
	FILL FROM OFF SITE COURSE		EST	5,000	CY		16	0	80,000	0.04	230	ETWK	177.49	40,800	120,800

ATTACHMENT 5-8
NID Detailed Capital Cost Estimate No. 30722 Est-2A ESP in Service*
(1.7 lb SO_2/MMbtu)

* - Estimates 2A, 2B, 3A, 3B, 4A and 4B contain only accounts whose costs are different from the corresponding base estimates 1A and 1B.

				AEP											Estimate No.:	30722C
				BIG SANDY UNIT 2											Project No.:	12721-000
				FGD PROJECT - NID EST (ESP)-2A - 1.7 LB/MM BTU											Date:	9/29/2010
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Account No.	Item Description	Scope Definition	Cost Type	Quantity	Unit of Measure	Unit Equip.Cost	Unit Material Cost	Total Equipment Cost	Total Material Cost	Unit Man-hours (Base)	Total Man-hours (w/ productivity)	Crew Code	Crew Wage Rate	Total Construction & Erection Cost	Total Projected Cost
1.0	ID FANS														
2.0	NID MODULES														
2.1	MECHANICAL EQUIPMENT	A 12-MODULE NID SYSTEM (160' X 160') INCLUDING LIME DAY SILOS, HYDRATORS, MIXERS, J-DUCTS, FABRIC FILTER MODULES, ALL INTERNAL ELEMENTS (BAGS, CAGES, ASH HOPPERS, 2 BROKEN BAG DETECTORS/COMPARTMENT), ASH RECYCLE SYSTEM, VACUUM PIPING, AND ALL INTERNAL PIPING & DUCTWORK FOR THE VARIOUS MODULES.	EST	1	LT	48,579,000		48,579,000	0	308800	355,100	MECH	88.89	31,564,800	80,143,800
2.2	INSULATION FOR NID MODULES	SUBCONTRACT COST INCLUDES LABOR	EST	80,640	SF	30		2,419,200	0	0.00	0	DINS	81.75	0	2,419,200
2.3	PENTHOUSE FOR NID MODULES	14 FT HIGH, 25600 SF						58,100	1,316,900					1,747,600	3,122,600
	SUPPORT STEEL AND PURLINS	THREE COAT PAINT	EST	200	TN		2,900.00	0	580,000	24.00	5,520	STST	105.71	583,500	1,163,500
	SIDING FOR PENTHOUSE		EST	8,960	SF		12.00	0	107,500	0.11	1,133	SDNG	93.41	105,900	213,400
	CONCRETE FLOOR FOR PENTHOUSE		EST	632	CY		230.00	0	145,400	7.50	5,451	SDNG	93.41	509,200	654,600
	ROOFING FOR PENTHOUSE		EST	25,600	SF		18.00	0	460,800	0.22	6,477	ROOF	69.12	447,700	908,500
	H&V		EST	1	LT	58100	23240	58,100	23,200	1084.00	1,247	HVAC	81.24	101,300	182,600
2.4	BOTTOM ENCLOSURE FOR NID MODULES	40 FT HIGH						92,200	2,428,900					2,544,900	5,066,000
	SUPPORT STEEL AND PURLINS	THREE COAT PAINT	EST	560	TN		2,900.00	0	1,624,000	24.00	15,456	STST	105.71	1,633,900	3,257,900
	SIDING FOR BOTTOM ENCLOSURE		EST	25,600	SF		12.00	0	307,200	0.11	3,238	SDNG	93.41	302,500	609,700
	ROOFING FOR BOTTOM ENCLOSURE		EST	25,600	SF		18.00	0	460,800	0.22	6,477	ROOF	69.12	447,700	908,500
	H&V		EST	1	LT	92200	36880	92,200	36,900	1721.33	1,980	HVAC	81.24	160,800	289,900
2.5	PIPING & SUPPORTS - MECHANICAL							125,200	174,500					385,900	685,600
	LARGE BORE PIPING	4" CS, SCHEDULE 40, WELDED	EST	300	LF		23.0	0	6,900	1.48	511	SPNG	94.41	48,200	55,100
	LARGE BORE PIPING	6" SS, SCH 40 WELDED	EST	400	LF		111.00	0	44,400	2.02	929	SPNG	94.41	87,700	132,100
	LARGE BORE PIPING	18" CS, STD WELDED	EST	400	LF		234.10	0	93,600	2.34	1,076	SPNG	94.41	101,600	195,200
	SMALL BORE PIPING	2" CS, SCH 80 WELDED	EST	150	LF		22.20	0	3,300	1.26	217	SPNG	94.41	20,500	23,800
	SMALL BORE PIPING	2" SS, SCH 80 WELDED	EST	100	LF		48.80	0	4,900	1.44	166	SPNG	94.41	15,600	20,500
	SMALL BORE PIPING	ALLOWANCE FOR MISC SIZE <2" SS, SCH 80 WELDED	EST	300	LF		33.70	0	10,100	1.32	455	SPNG	94.41	43,000	53,100
	VALVE	18" GATE, 150 #, CS, WELDED	EST	4	EA	17,500		70,000	0	28.30	130	SPNG	94.41	12,300	82,300
	VALVE	6" GATE, 150 #, SS, WELDED	EST	6	EA	4,700		28,200	0	12.96	89	SPNG	94.41	8,400	36,600
	VALVE	4" GATE, 150 #, CS, WELDED	EST	5	EA	2,500		12,500	0	7.70	44	SPNG	94.41	4,200	16,700
	VALVE	2" GLOBE, 150# SS, WELDED	EST	10	EA	1,450		14,500	0	5.64	65	SPNG	94.41	6,100	20,600
	PIPE SUPPORTS		EST	150	EA		75.00	0	11,300	2.50	431	MECH	88.89	38,300	49,600
2.6	DUCTWORK							0	6,175,000					11,794,600	17,969,600
	NID MODULE INLET	INCLUDES INTERNAL BRACING AND TURNING VANES	EST	1,900	TN		3,250.00	0	6,175,000	50.00	109,250	FLDU	107.96	11,794,600	17,969,600
2.7	DUCT SUPPORT STEEL	THREE COAT SHOP PAINT	EST	950	TN		2,900.00	0	2,755,000	24.00	26,220	STST	105.71	2,771,700	5,526,700
2.8	DUCTWORK INSULATION & LAGGING		EST	170,000	SF		12.00	0	2,040,000	0.25	48,875	DINS	81.75	3,995,500	6,035,500
2.9	NID MODULE- FOUNDATIONS							0	1,087,000					1,778,100	2,865,100
	EXCAVATION / BACKFILL		EST	4,400	CY			0	0	0.36	1,822	EXFD	90.00	163,900	163,900
.	REINFORCING		EST	450	TN		1,150.00	0	517,500	20.00	10,350	REIN	78.27	810,100	1,327,600
	FORMWORK		EST	3,200	SF		2.50	0	8,000	0.14	515	FORM	99.43	51,200	59,200
	CONCRETE		EST	4,750	CY		105.00	0	498,800	1.50	8,194	CONP	79.64	652,600	1,151,400
	MUD MAT		EST	340	CY		105.00	0	35,700	1.50	587	CONP	79.64	46,700	82,400
	EMBEDDED STEEL		EST	10,800	LB		2.50	0	27,000	0.06	745	CARP	71.88	53,600	80,600
2.10	NID MODULE - SUPPORT STEEL AND ACCESS GALLERY							0	1,152,000					2,863,700	4,015,700

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		Cost Type:												Reviewer:	JMK
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		Allow.=Allowance								Wage Rates Based on:		BIG SANDY			
		Q=Vendor Quote								Labor Productivity =		1.15			

Account No.	Item Description	Scope Definition	Cost Type	Quantity	Unit of Measure	Unit Equip.Cost	Unit Material Cost	Total Equipment Cost	Total Material Cost	Unit Man-hours (Base)	Total Man-hours (w/ productivity)	Crew Code	Crew Wage Rate	Total Construction & Erection Cost	Total Projected Cost
	SUPPORT STEEL	MATERIAL INCLUDED WITH OEM EQUIPMENT	EST	640	TN			0	0	24.00	17,664	STST	105.71	1,867,300	1,867,300
	ACCESS GALLERY		EST	25,600	SF		45.00	0	1,152,000	0.40	11,776	GALL	84.61	996,400	2,148,400
2.11	GROUNDING							0	16,000		0			46,100	62,100
	GROUND ROD	3/4" - 20' LONG	EST	16	EA		150	0	2,400	4.00	74	WIRE	98.84	7,300	9,700
	500 MCM	BARE COPPER WIRE	EST	1,650	FT		7.65	0	12,600	0.12	228	WIRE	98.84	22,500	35,100
	CADWELD		EST	64	EA		15	0	1,000	2.00	147	WIRE	98.84	14,500	15,500
	GROUNDING TEST	TEST & DOCUMENTATION	EST	1	LT			0	0	16.00	18	WIRE	98.84	1,800	1,800
2.12	LIGHTING/ TRANSFORMERS & PANELS							27,000	75,000		0			57,300	159,300
	LIGHT FIXTURES		EST	100	EA		750	0	75,000	4.00	460	WIRE	98.84	45,500	120,500
	45KVA, 480V, 3 PHASE	LOW VOLTAGE XFMR	EST	2	EA	10000		20,000	0	40.00	92	WIRE	98.84	9,100	29,100
	200A, 277V-120V, 3 PHASE- LIGHTING PANELS	INCLUDING BREAKERS	EST	2	EA	3500		7,000	0	12.00	28	WIRE	98.84	2,700	9,700
2.13	RACEWAY, CABLE TRAY, & CONDUIT	INCLUDED IN ID FANS, 1.0													
90.00	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS							51,300,700	17,220,300		643,237			59,550,200	128,071,200
	OTHER DIRECT & CONSTRUCTION INDIRECT COSTS														
	ADDITIONAL CRANE ALLOWANCE			9	MN	75000		675,000		720.00	7,452	MECH	88.89	662400	1,337,400
	MOBILIZATION / DEMOBILIZATION - INCLUDED IN WAGE RATES ABOVE														0
	COST DUE TO OVERTIME WORKING 5 X10 HOUR DAYS			1	LS										9,626,046
	COST DUE TO OVERTIME INEFFICIENCY - SPECIFY % INEFFICIENCY			8.00	%						55,934		83.48	4,669,000	4,669,000
	COST DUE TO OVERTIME PAY @1.5 TIMES OVERTIME PAY RATE SPECIFY % ADDITIONAL HOURS PAID ON ACTUAL HOURS WORKED			10.00	%						70,662			4,957,046	4,957,046
	PER DIEM	NONE		0.00	HR						777,285			0	0
	CONSUMABLES - % of ACCT NO. 90			0.5	%				86,102					297,751	383,853
	FREIGHT ON MATERIAL - % of ACCT NO. 90			5.0	%				861,015						861,015
	FREIGHT ON EQUIPMENT - % of ACCT NO. 90			5.0	%			2,565,035							2,565,035
	SCAFFOLDING - % OF ACCT NO. 90			5.0	%				861,015					2,977,510	3,838,525
	CONTRACTOR'S GENERAL AND ADMINISTRATION & PROFIT EXPENSE - % of ACCT NO. 90			15	%				2,583,045					8,932,530	11,515,575
	SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS							3,240,000	4,391,200					22,496,200	30,127,400
	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	NID MODULES						54,540,700	21,611,500					82,046,400	158,198,600
3.0	NEW STACK														
4.0	LIME HANDLING SYSTEM														
4.1	LIME STORAGE SILO							3,054,000	0					0	3,054,000
	SILO	CONCRETE SILO 65' DIA X 114' H - 6900 TONS -SUBCONTRACT COST INCLUDES LABOR	EST	1	EA	2,764,000.00		2,764,000	0	0.00	0	CONP	79.64	0	2,764,000
	ELEVATOR	MAINTENANCE ELEVATOR COMMON FOR BOTH SILOS - SUBCONTRACT COST INCLUDES LABOR	EST	1	EA	290,000.00		290,000	0	0.00	0	MECH	88.89	0	290,000
4.2	LIME UNLOADING SYSTEM	INCLUDE PNEUMATIC HANDLING SYSTEM, THREE VACUUM EXHAUSTER, TWO FILTER SEPARATORS	EST	1	LT	350,000		350,000	0	2750.00	3,163	MECH	88.89	281,100	631,100

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Account No.	Item Description	Scope Definition	Cost Type	Quantity	Unit of Measure	Unit Equip.Cost	Unit Material Cost	Total Equipment Cost	Total Material Cost	Unit Man-hours (Base)	Total Man-hours (w/ productivity)	Crew Code	Crew Wage Rate	Total Construction & Erection Cost	Total Projected Cost
4.3	LIME TRANSPORT SYSTEM TO DAY BINS	INCLUDE PNEUMATIC HANDLING SYSTEM, THREE VACUUM EXHAUSTERS, TWO FILTER SEPARATORS	EST	1	LT	1,100,000		1,100,000	0	6400.00	7,360	MECH	88.89	654,200	1,754,200
4.4	PIPING - MECHANICAL							88,700	130,300					342,600	561,600
	LARGE BORE PIPING	14" CS, SCH 40 WELDED - ON PIPE RACK	EST	500	LF		163.1	0	81,600	1.67	960	SPNG	94.41	90,700	172,300
	LARGE BORE PIPING	8" HDPE (UNDERGROUND)	EST	1,200	LF		14.1	0	16,900	0.83	1,145	SPNG	94.41	108,100	125,000
	LARGE BORE PIPING	6" CS, SCH 40 WELDED	EST	200	LF		41.7	0	8,300	1.61	370	SPNG	94.41	35,000	43,300
	SMALL BORE PIPING	2" CS, SCH 80 WELDED	EST	50	LF		22.20	0	1,100	1.26	72	SPNG	94.41	6,800	7,900
	SMALL BORE PIPING	2" SS, SCH 80 WELDED	EST	50	LF		48.80	0	2,400	1.44	83	SPNG	94.41	7,800	10,200
	SMALL BORE PIPING	ALLOWANCE FOR MISC SIZE <2" SS, SCH 80 WELDED	EST	100	LF		33.70	0	3,400	1.32	152	SPNG	94.41	14,300	17,700
	VALVE	2" GLOBE, 150# SS, WELDED	EST	6	EA	1,450		8,700	0	5.64	39	SPNG	94.41	3,700	12,400
	VALVE	8" AIR OPERATED, 150 #, CS, FLANGED	EST	4	EA	17,000		68,000	0	19.30	89	SPNG	94.41	8,400	76,400
	VALVE	14" BFLY 150# CS, FLANGED	EST	4	EA	3,000		12,000	0	16.60	76	SPNG	94.41	7,200	19,200
	EXCAVATION / BACKFILL	FOR UNDERGROUND PIPING	EST	1,000	CY			0	0	0.20	230	EXFD	90.00	20,700	20,700
	BEDDING	FOR UNDERGROUND PIPING	EST	133	CY		35.0	0	4,700	0.25	38	EXFD	90.00	3,500	8,200
	PIPE SUPPORTS		EST	238	EA		50.00	0	11,900	1.50	410	MECH	88.89	36,400	48,300
4.5	LIME STORAGE SILO ACCESS STAIR TOWER		EST	55	TN		2,900.00	0	159,500	24.00	1,518	STST	105.71	160,500	320,000
4.6	PIPE RACK FOR LIME HANDLING, WASTE HANDLING AND MISC MECHANICAL PIPING	THREE COAT SHOP PAINT	EST	650	TN		2,900.00	0	1,885,000	24.00	17,940	STST	105.71	1,896,400	3,781,400
4.7	RAIL CAR UNLOADING AREA - FOUNDATIONS	20' X 120' - NO SIDING						0	42,700					90,100	132,800
	EXCAVATION / BACKFILL		EST	500	CY			0	0	0.36	207	EXFD	90.00	18,600	18,600
	REINFORCING		EST	15	TN		1,150.00	0	17,300	20.00	345	REIN	78.27	27,000	44,300
	FORMWORK		EST	750	SF		2.50	0	1,900	0.14	121	FORM	99.43	12,000	13,900
	CONCRETE		EST	200	CY		105.00	0	21,000	1.50	345	CONP	79.64	27,500	48,500
	MUD MAT		EST	0	CY		105.00	0	0	1.50	0	CONP	79.64	0	0
	EMBEDDED STEEL		EST	1,000	LB		2.50	0	2,500	0.06	69	CARP	71.88	5,000	7,500
4.8	LIME UNLOADING BLOWER / ELECTRICAL BUILDING - FOUNDATIONS							0	69,600					147,600	217,200
	EXCAVATION / BACKFILL		EST	800	CY			0	0	0.36	331	EXFD	90.00	29,800	29,800
	REINFORCING		EST	25	TN		1,150.00	0	28,800	20.00	575	REIN	78.27	45,000	73,800
	FORMWORK		EST	1,200	SF		2.50	0	3,000	0.14	193	FORM	99.43	19,200	22,200
	CONCRETE		EST	300	CY		105.00	0	31,500	1.50	518	CONP	79.64	41,200	72,700
	MUD MAT		EST	0	CY		105.00	0	0	1.50	0	CONP	79.64	0	0
	EMBEDDED STEEL		EST	2,500	LB		2.50	0	6,300	0.06	173	CARP	71.88	12,400	18,700
4.9	LIME UNLOADING BLOWER / ELECTRICAL BUILDING	100' L X 30' W X 30' H						75,000	335,000					24,400	434,400
	PRE-ENGINEERED BUILDING INCLUDING H&V AND LIGHTING	SUBCONTRACT PRICE, INCLUDES LABOR	EST	3,000	SF		105	0	315,000	0.00	0	STST	105.71	0	315,000
	ADDITIONAL HVAC UNIT FOR ELECTRICAL ROOM & CONTROLS	40T PACKAGED UNIT FOR ELECTRICAL EQUIPMENT ROOM. INCLUDES ALLOWANCE FOR CONCRETE PAD AND ELECTRICAL WORK	EST	1	LT	75000	20000	75,000	20,000	350.00	300	HVAC	81.24	24,400	119,400
4.10	CONCRETE PIT FOR THE ELEVATOR		EST	10	CY		230.00	0	2,300	7.50	86	CONP	79.64	6,900	9,200
4.11	LIME STORAGE SILO - FOUNDATIONS	INCLUDES FOUNDATIONS FOR LIME TRANSPORT SYSTEM PRESSURE BLOWERS						0	224,100					405,200	629,300
	EXCAVATION / BACKFILL		EST	1,630	CY			0	0	0.36	675	EXFD	90.00	60,700	60,700
	REINFORCING		EST	85.0	TN		1,150.00	0	97,800	20.00	1,955	REIN	78.27	153,000	250,800
	FORMWORK		EST	1,400	SF		2.50	0	3,500	0.14	225	FORM	99.43	22,400	25,900

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	CONCRETE		EST	1,000	CY		105.00	0	105,000	1.50	1,725	CONP	79.64	137,400	242,400
	MUD MAT		EST	50	CY		105.00	0	5,300	1.50	86	CONP	79.64	6,900	12,200
	EMBEDDED STEEL		EST	5,000	LB		2.50	0	12,500	0.06	345	CARP	71.88	24,800	37,300
4.12	LIME STORAGE SILO ACCESS STAIR TOWER - FOUNDATIONS							0	14,200					28,600	42,800
	EXCAVATION / BACKFILL		EST	110	CY			0	0	0.36	46	EXFD	90.00	4,100	4,100
	REINFORCING		EST	4.8	TN		1,150.00	0	5,500	20.00	110	REIN	78.27	8,600	14,100
	FORMWORK		EST	320	SF		2.50	0	800	0.14	52	FORM	99.43	5,100	5,900
	CONCRETE		EST	60	CY		105.00	0	6,300	1.50	104	CONP	79.64	8,200	14,500
	MUD MAT		EST	8	CY		105.00	0	800	1.50	14	CONP	79.64	1,100	1,900
	EMBEDDED STEEL		EST	300	LB		2.50	0	800	0.06	21	CARP	71.88	1,500	2,300
4.13	PIPE RACK - FOUNDATIONS							0	239,600					588,600	828,200
	EXCAVATION / BACKFILL		EST	3,200	CY			0	0	0.36	1,325	EXFD	90.00	119,200	119,200
	REINFORCING		EST	90.0	TN		1,150.00	0	103,500	20.00	2,070	REIN	78.27	162,000	265,500
	FORMWORK		EST	9,500	SF		2.50	0	23,800	0.14	1,530	FORM	99.43	152,100	175,900
	CONCRETE		EST	950	CY		105.00	0	99,800	1.50	1,639	CONP	79.64	130,500	230,300
	MUD MAT		EST	0	CY		105.00	0	0	1.50	0	CONP	79.64	0	0
	EMBEDDED STEEL		EST	5,000	LB		2.50	0	12,500	0.06	345	CARP	71.88	24,800	37,300
4.14	TRANSFORMERS	SUS TRANSFORMERS: 33F, 33G, 13.8KV-480V,3PHASE, 3 WINDING XFMR	EST	2	EA	85000		170,000	0	300.00	690	EHEA	79.16	54,600	224,600
4.15	SWITCHGEAR	480V LOW VOLTAGE (33F/G), SWITCHGEAR	EST	5	EA	39200		196,000	0	230.00	1,323	EHEA	79.16	104,700	300,700
4.16	CABLE BUS DUCT							134,700	10,800					200,200	345,700
	480V CABLE BUS	BUST DUCT ONLY	EST	150	FT	898		134,700	0	10.30	1,777	WIRE	98.84	175,600	310,300
	CABLE BUS TERMINATION	750MCM- 480V TERMINATIONS	EST	4	EA		2,700.00	0	10,800	54.00	248	WIRE	98.84	24,600	35,400
4.17	MCC							61,800	0					3,600	65,400
	480V MCC	PER LINE UP	EST	2	EA	30900		61,800	0	16.00	37	WIRE	98.84	3,600	65,400
4.18	MIMIC PANELS		EST	1	EA	17500		17,500	0	12.00	14	WIRE	98.84	1,400	18,900
4.19	EMERGENCY POWER SYSTEM							108,300	0					24,400	132,700
	DC PANEL BOARD		EST	1	EA	15450		15,500	0	40.00	46	WIRE	98.84	4,500	20,000
	UPS PANEL BOARDS		EST	1	EA	15450		15,500	0	40.00	46	WIRE	98.84	4,500	20,000
	SATELLITE UPS		EST	1	EA	41200		41,200	0	16.00	18	WIRE	98.84	1,800	43,000
	VRLA BATTERIES		EST	1	LT	36050		36,100	0	120.00	138	WIRE	98.84	13,600	49,700
4.20	GROUNDING							13,300	0					41,300	54,600
	GROUND ROD	3/4" - 20' LONG	EST	16	EA	150		2,400	0	4.00	74	WIRE	98.84	7,300	9,700
	500 MCM	BARE COPPER WIRE	EST	1,300	FT	7.65		9,900	0	0.12	179	WIRE	98.84	17,700	27,600
	CADWELD		EST	64	EA	15		1,000	0	2.00	147	WIRE	98.84	14,500	15,500
	GROUNDING TEST	TEST & DOCUMENTATION	EST	1	LT			0	0	16.00	18	WIRE	98.84	1,800	1,800
4.21	LIGHTING/ TRANSFORMERS & PANELS							52,000	135,000					104,500	291,500
	LIGHT FIXTURES		EST	180	EA		750	0	135,000	4.00	828	WIRE	98.84	81,800	216,800
	45KVA, 480V, 3 PHASE	LOW VOLTAGE XFMR	EST	2	EA	10000		20,000	0	40.00	92	WIRE	98.84	9,100	29,100
	37.7KVA, 480V, 3 PHASE	LOW VOLTAGE XFMR	EST	2	EA	7500		15,000	0	32.00	74	WIRE	98.84	7,300	22,300
	200A, 480-277V, 3 PHASE- RECEPTACLE PANEL	INCLUDING BREAKERS	EST	2	EA	5000		10,000	0	16.00	37	WIRE	98.84	3,600	13,600
	200A, 277V-120V, 3 PHASE- LIGHTING PANELS	INCLUDING BREAKERS	EST	2	EA	3500		7,000	0	12.00	28	WIRE	98.84	2,700	9,700
4.22	RACEWAY, CABLE TRAY, & CONDUIT							0	310,900					1,537,100	1,848,000
	12" X 6" AL CABLE TRAY	INCLUDING SUPPORT & FITTINGS	EST	1,050	LF		18.25	0	19,200	1.10	1,328	WIRE	98.84	131,300	150,500
	18" X 6" AL CABLE TRAY	INCLUDING SUPPORT & FITTINGS	EST	600	LF		21.50	0	12,900	1.45	1,001	WIRE	98.84	98,900	111,800
	24" X 6" AL CABLE TRAY	INCLUDING SUPPORT & FITTINGS	EST	1,700	LF		27.10	0	46,100	1.75	3,421	WIRE	98.84	338,200	384,300

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	36" X 6" AL CABLE TRAY	INCLUDING SUPPORT & FITTINGS	EST	500	LF		30.30	0	15,200	1.95	1,121	WIRE	98.84	110,800	126,000
	5" RGS CONDUIT	INCLUDING SUPPORT & FITTINGS	EST	750	LF		61.00	0	45,800	1.13	972	WIRE	98.84	96,100	141,900
	4" RGS CONDUIT	INCLUDING SUPPORT & FITTINGS	EST	1,450	LF		31.00	0	45,000	0.81	1,346	WIRE	98.84	133,000	178,000
	3" RGS CONDUIT	INCLUDING SUPPORT & FITTINGS	EST	1,550	LF		21.50	0	33,300	0.65	1,150	WIRE	98.84	113,600	146,900
	2" RGS CONDUIT	INCLUDING SUPPORT & FITTINGS	EST	2,400	LF		9.25	0	22,200	0.35	972	WIRE	98.84	96,000	118,200
	1-1/2" RGS CONDUIT	INCLUDING SUPPORT & FITTINGS	EST	3,050	LF		7.15	0	21,800	0.28	996	WIRE	98.84	98,500	120,300
	1" RGS CONDUIT	INCLUDING SUPPORT & FITTINGS	EST	5,150	LF		4.44	0	22,900	0.24	1,415	WIRE	98.84	139,900	162,800
	3/4" RGS CONDUIT	INCLUDING SUPPORT & FITTINGS	EST	8,200	LF		3.23	0	26,500	0.19	1,829	WIRE	98.84	180,800	207,300
4.23	HIGH VOLTAGE POWER CABLE & TERMINATION	1/C # 500KCMIL- 15KV	EST	15,600	LF		9.27	0	144,600	0.23	4,126	WIRE	98.84	407,800	552,400
4.24	MEDIUM VOLTAGE POWER CABLE & TERMINATION	1/C 350KCMIL-5KV	EST	10,800	LF		6.13	0	66,200	0.23	2,857	WIRE	98.84	282,300	348,500
4.25	LOW VOLTAGE POWER CABLE & TERMINATION							0	93,000					143,200	236,200
	3/C # 500KCMIL- 600V		EST	600	LF		26.12	0	15,700	0.69	476	WIRE	98.84	47,100	62,800
	#4/0 - #12 AWG-600V		EST	10,700	LF		7.22	0	77,300	0.08	972	WIRE	98.84	96,100	173,400
4.26	CONTROL & INSTRUMENT CABLE	#14, #16 & PR # 20 & SHLD WIRE	EST	8,200	LF		3.20	0	26,200	0.08	745	WIRE	98.84	73,600	99,800
4.27	DUCT BANK	DUCT BANK WITH 4-5" & 4-3" CONDUITS, 2.38' H X 3.79' W	EST	350	LF		174.67	0	61,100	3.80	1,530	ECND	75.97	116,200	177,300
4.28	FOUNDATIONS FOR TRANSFORMERS	FOR XFMR 33F, 33G, INCLUDES MUD MAT	EST	14.0	CY		250	0	3,500	8.00	129	CONP	79.64	10,300	13,800
4.29	COMMUNICATIONS		EST	1	LT		34,000.00	0	34,000	229.00	263	WIRE	98.84	26,000	60,000
4.30	LIGHTNING PROTECTION		EST	1	LT		6,000.00	0	6,000	41.00	47	WIRE	98.84	4,700	10,700
4.31	SECURITY SYSTEM		EST	1	LT		8,000.00	0	8,000	62.00	71	WIRE	98.84	7,000	15,000
90.00	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS							5,421,300	4,001,600		81,753			7,769,100	17,192,000
	OTHER DIRECT & CONSTRUCTION INDIRECT COSTS														
	ADDITIONAL CRANE ALLOWANCE								0					0	0
	MOBILIZATION / DEMOBILIZATION - INCLUDED IN WAGE RATES ABOVE														0
	COST DUE TO OVERTIME WORKING 5 X10 HOUR DAYS			1	LS										1,216,382
	COST DUE TO OVERTIME INEFFICIENCY - SPECIFY % INEFFICIENCY			8.00	%						7,109		83.48	593,000	593,000
	COST DUE TO OVERTIME PAY @1.5 TIMES OVERTIME PAY RATE SPECIFY % ADDITIONAL HOURS PAID ON ACTUAL HOURS WORKED			10.00	%						8,886			623,382	623,382
	PER DIEM	NONE		0.00	HR						97,749			0	0
	CONSUMABLES - % of ACCT NO. 90			0.5	%				20,008					38,846	58,854
	FREIGHT ON MATERIAL - % of ACCT NO. 90			5.0	%				200,080						200,080
	FREIGHT ON EQUIPMENT - % of ACCT NO. 90			5.0	%			271,065							271,065
	SCAFFOLDING - % OF ACCT NO. 90			5.0	%				200,080					388,455	588,535
	CONTRACTOR'S GENERAL AND ADMINISTRATION & PROFIT EXPENSE - % of ACCT NO. 90			15	%				600,240					1,165,365	1,765,605
	SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS							271,100	1,020,400					2,809,000	4,100,500

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	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	LIME HANDLING SYSTEM						5,692,400	5,022,000					10,578,100	21,292,500
5.0	LIME SLAKER BUILDING	NOT REQUIRED FOR NID													0
6.0	BYPRODUCT WASTE & FLY ASH HANDLING SYSTEMS														0
6.1	BYPRODUCT WASTE HANDLING - MECHANICAL EQUIPMENT	INCLUDES PNEUMATIC HANDLING SYSTEM, THREE PRESSURE BLOWERS, ONE BIN VENT FILTER, ASH UNLOADING SYSTEM	EST	1	LT	1,767,000		1,767,000	0	10520.00	12,098	MECH	88.89	1,075,400	2,842,400
6.2	FLY ASH HANDLING - MECHANICAL EQUIPMENT	INCLUDES PNEUMATIC HANDLING SYSTEM, TWO PRESSURE EXHAUSTERS, TRANSFER STATION, ONE BIN VENT FILTER, ASH UNLOADING SYSTEM	EST	1	LT	2,285,000		2,285,000	0	14000.00	16,100	MECH	88.89	1,431,100	3,716,100
6.3	BUILDING SUMP PUMPS	FOR BUILDINGS - DUPLEX. INCLUDES CHECK & ISOLATION VALVES.		2	EA	14,000		28,000	0	60.00	138	MECH	88.89	12,300	40,300
6.4	AGITATOR FOR SUMP PUMPS	5 HP		1	EA	12,000		12,000	0	45.00	52	MECH	88.89	4,600	16,600
6.5	PIPING - MECHANICAL		EST	1	LT			142,800	131,000					408,700	682,500
	LARGE BORE PIPING	4" SS, SCHEDULE 40, WELDED - ON PIPE RACK	EST	300	LF		45.1	0	13,500	0.87	300	SPNG	94.41	28,300	41,800
	LARGE BORE PIPING	6" CS, SCH 40 WELDED - ON PIPE RACK	EST	200	LF		32.2	0	6,400	0.88	202	SPNG	94.41	19,100	25,500
	LARGE BORE PIPING	6" CS, SCH 40 WELDED	EST	100	LF		41.7	0	4,200	1.61	185	SPNG	94.41	17,500	21,700
	LARGE BORE PIPING	8" HDPE (UNDERGROUND)	EST	400	LF		14.1	0	5,600	0.83	382	SPNG	94.41	36,000	41,600
	LARGE BORE PIPING	10" CS, SCH 40 WELDED	EST	300	LF		110.3	0	33,100	2.40	828	SPNG	94.41	78,200	111,300
	LARGE BORE PIPING	20" HDPE (UNDERGROUND)	EST	600	LF		72.8	0	43,700	1.45	1,001	SPNG	94.41	94,500	138,200
	SMALL BORE PIPING	2" CS, SCH 80 WELDED	EST	50	LF		22.20	0	1,100	1.26	72	SPNG	94.41	6,800	7,900
	SMALL BORE PIPING	2" SS, SCH 80 WELDED	EST	50	LF		48.80	0	2,400	1.44	83	SPNG	94.41	7,800	10,200
	SMALL BORE PIPING	ALLOWANCE FOR MISC SIZE <2" SS, SCH 80 WELDED	EST	100	LF		33.70	0	3,400	1.32	152	SPNG	94.41	14,300	17,700
	VALVE	2" GLOBE, 150# SS, WELDED	EST	15	EA	1,450		21,800	0	5.64	97	SPNG	94.41	9,200	31,000
	VALVE	4" GATE, 150 #, CS, WELDED	EST	10	EA	2,500		25,000	0	7.70	89	SPNG	94.41	8,400	33,400
	VALVE	6" AIR OPERATED, 150 #, CS, FLANGED	EST	2	EA	14,000		28,000	0	17.30	40	SPNG	94.41	3,800	31,800
	VALVE	8" AIR OPERATED, 150 #, CS, FLANGED	EST	4	EA	17,000		68,000	0	19.30	89	SPNG	94.41	8,400	76,400
	EXCAVATION / BACKFILL	FOR UNDERGROUND PIPING	EST	2,000	CY			0	0	0.20	460	EXFD	90.00	41,400	41,400
	BEDDING	FOR UNDERGROUND PIPING	EST	267	CY		35.0	0	9,300	0.25	77	EXFD	90.00	6,900	16,200
	PIPE SUPPORTS	AVERAGE COST FOR MISC PIPE SIZES	EST	110	EA		75.00	0	8,300	2.50	316	MECH	88.89	28,100	36,400
6.6	BYPRODUCT WASTE SILO	CONCRETE SILO 45' DIA X 80' H - 1625 TONS -SUBCONTRACT COST INCLUDES LABOR	EST	1	EA	1,375,000		1,375,000	0	0.00	0	CONP	79.64	0	1,375,000
6.7	RECYCLE SILO	NOT REQUIRED FOR NID													
6.8	FLY ASH SILO	STEEL -STORAGE SILO, 12' DIA X 13' H, 25TONS						25,000	20,300					61,400	106,700
	SILO BIN	PIN MIXERS INCLUDED WITH FLY ASH HANDLING MECHANICAL EQUIPMENT	EST	1	EA	25,000		25,000	0	400.00	460	TANK	89.16	41,000	66,000
	SUPPORT STEEL FOR SILO	THREE-COAT SHOP PAINT	EST	7	TN		2,900.00	0	20,300	24.00	193	STST	105.71	20,400	40,700

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				FGD PROJECT - NID EST (ESP)-2A - 1.7 LB/MM BTU										Date:	9/29/2010
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Account No.	Item Description	Scope Definition	Cost Type	Quantity	Unit of Measure	Unit Equip.Cost	Unit Material Cost	Total Equipment Cost	Total Material Cost	Unit Man-hours (Base)	Total Man-hours (w/ productivity)	Crew Code	Crew Wage Rate	Total Construction & Erection Cost	Total Projected Cost
6.9	BYPRODUCT WASTE STORAGE SILO - FOUNDATIONS							0	132,300					253,100	385,400
	EXCAVATION / BACKFILL		EST	1,200	CY			0	0	0.36	497	EXFD	90.00	44,700	44,700
	REINFORCING		EST	50.0	TN		1,150.00	0	57,500	20.00	1,150	REIN	78.27	90,000	147,500
	FORMWORK		EST	1,100	SF		2.50	0	2,800	0.14	177	FORM	99.43	17,600	20,400
	CONCRETE		EST	560	CY		105.00	0	58,800	1.50	966	CONP	79.64	76,900	135,700
	MUD MAT		EST	30	CY		105.00	0	3,200	1.50	52	CONP	79.64	4,100	7,300
	EMBEDDED STEEL		EST	4,000	LB		2.50	0	10,000	0.06	276	CARP	71.88	19,800	29,800
6.10	FLY ASH SILO - FOUNDATIONS							0	9,500					26,500	36,000
	EXCAVATION / BACKFILL		EST	250	CY			0	0	0.36	104	EXFD	90.00	9,300	9,300
	REINFORCING		EST	4.0	TN		1,150.00	0	4,600	20.00	92	REIN	78.27	7,200	11,800
	FORMWORK		EST	240	SF		2.50	0	600	0.14	39	FORM	99.43	3,800	4,400
	CONCRETE		EST	30	CY		105.00	0	3,200	1.50	52	CONP	79.64	4,100	7,300
	MUD MAT		EST	1	CY		105.00	0	100	1.50	2	CONP	79.64	100	200
	EMBEDDED STEEL		EST	400	LB		2.50	0	1,000	0.06	28	CARP	71.88	2,000	3,000
6.11	BYPRODUCT TRANSPORT BLOWER BUILDING - FOUNDATIONS							0	97,600					172,100	269,700
	EXCAVATION / BACKFILL		EST	470	CY			0	0	0.36	195	EXFD	90.00	17,500	17,500
	REINFORCING		EST	38	TN		1,150.00	0	43,700	20.00	874	REIN	78.27	68,400	112,100
	FORMWORK		EST	960	SF		2.50	0	2,400	0.14	155	FORM	99.43	15,400	17,800
	CONCRETE		EST	400	CY		105.00	0	42,000	1.50	690	CONP	79.64	55,000	97,000
	MUD MAT		EST	43	CY		105.00	0	4,500	1.50	74	CONP	79.64	5,900	10,400
	EMBEDDED STEEL		EST	2,000	LB		2.50	0	5,000	0.06	138	CARP	71.88	9,900	14,900
6.12	BYPRODUCT TRANSPORT BLOWER BUILDING	90' L X 30' W X 20' H						40,000	241,500					26,200	307,700
	PRE-ENGINEERED BUILDING INCLUDING H&V AND LIGHTING	SUBCONTRACT PRICE, INCLUDES LABOR	EST	2,700	SF		85	0	229,500	0.00	0	STST	105.71	0	229,500
	ADDITIONAL HVAC UNIT FOR ELECTRICAL ROOM & CONTROLS	20T PACKAGED UNIT FOR ELECTRICAL EQUIPMENT ROOM. INCLUDES ALLOWANCE FOR CONCRETE PAD AND ELECTRICAL WORK	EST	1	LT	40000	12000	40,000	12,000	280.00	322	HVAC	81.24	26,200	78,200
6.13	FLY ASH BLOWER AND ELECTRICAL BUILDING - FOUNDATIONS							0	82,800					150,900	233,700
	EXCAVATION / BACKFILL		EST	450	CY			0	0	0.36	186	EXFD	90.00	16,800	16,800
	REINFORCING		EST	30	TN		1,150.00	0	34,500	20.00	690	REIN	78.27	54,000	88,500
	FORMWORK		EST	1,100	SF		2.50	0	2,800	0.14	177	FORM	99.43	17,600	20,400
	CONCRETE		EST	350	CY		105.00	0	36,800	1.50	604	CONP	79.64	48,100	84,900
	MUD MAT		EST	40	CY		105.00	0	4,200	1.50	69	CONP	79.64	5,500	9,700
	EMBEDDED STEEL		EST	1,800	LB		2.50	0	4,500	0.06	124	CARP	71.88	8,900	13,400
6.14	FLY ASH BLOWER AND ELECTRICAL BUILDING	110' L X 30' W X 25' H						75,000	276,500					24,400	375,900
	PREENGINEERED BUILDING INCLUDING H&V AND LIGHTING	SUBCONTRACT PRICE, INCLUDES LABOR	EST	2,700	SF		95	0	256,500	0.00	0	STST	105.71	0	256,500
	ADDITONAL HVAC UNIT FOR ELECTRICAL ROOM & CONTROLS	40T PACKAGED UNIT FOR ELECTRICAL EQUIPMENT ROOM. INCLUDES ALLOWANCE FOR CONCRETE PAD AND ELECTRICAL WORK	EST	1	LT	75000	20000	75,000	20,000	350.00	300	HVAC	81.24	24,400	119,400
6.15	LOAD OUT AREA PDC	SUBCONTRACT PRICE INCLUDES LABOR. COMPLETE WITH HVAC, & FINISHES.	EST	600	SF		500.00	0	300,000	0.00	0	STST	105.71	0	300,000
6.16	MCC	480V MCC PER LINE UP	EST	4	EA	30000		120,000	0	16.00	74	WIRE	98.84	7,300	127,300
6.17	EMERGENBCY POWER SYSTEM							185,500	0					40,000	225,500
	UPS PANEL BOARDS		EST	2	EA	15500		31,000	0	40.00	92	WIRE	98.84	9,100	40,100
	SATELLITE UPS		EST	2	EA	41200		82,400	0	16.00	37	WIRE	98.84	3,600	86,000
	VRLA BATTERIES		EST	2	LT	36050		72,100	0	120.00	276	WIRE	98.84	27,300	99,400

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6.18	LIGHTING/ TRANSFORMERS & PANELS							18,500	75,000					53,200	146,700
	LIGHT FIXTURES		EST	100	EA		750	0	75,000	4.00	460	WIRE	98.84	45,500	120,500
	45KVA, 480V, 3 PHASE	LOW VOLTAGE XFMR	EST	1	EA	10000		10,000	0	40.00	46	WIRE	98.84	4,500	14,500
	200A, 480-277V, 3 PHASE- RECEPTACLE PANEL	INCLUDING BREAKERS	EST	1	EA	5000		5,000	0	16.00	18	WIRE	98.84	1,800	6,800
	200A, 277V-120V, 3 PHASE- LIGHTING PANELS	INCLUDING BREAKERS	EST	1	EA	3500		3,500	0	12.00	14	WIRE	98.84	1,400	4,900
6.19	RACEWAY, CABLE TRAY, & CONDUIT							0	40,700					236,200	276,900
	24" X 6" AL CABLE TRAY	INCLUDING SUPPORT & FITTINGS	EST	350	LF		27.10	0	9,500	1.75	704	WIRE	98.84	69600	79,100
	4" RGS CONDUIT	INCLUDING SUPPORT & FITTINGS	EST	350	LF		31.00	0	10,900	0.81	325	WIRE	98.84	32100	43,000
	1" RGS CONDUIT	INCLUDING SUPPORT & FITTINGS	EST	1,300	LF		4.44	0	5,800	0.24	357	WIRE	98.84	35300	41,100
	3/4" RGS CONDUIT	INCLUDING SUPPORT & FITTINGS	EST	4,500	LF		3.23	0	14,500	0.19	1,004	WIRE	98.84	99200	113,700
6.20	GROUNDING							0	4,500					10,900	15,400
	GROUND ROD	3/4" - 20' LONG EACH	EST	4	EA		150	0	600	4.00	18	WIRE	98.84	1,800	2,400
	500 MCM	BARE COPPER WIRE	EST	500	FT		7.65	0	3,800	0.12	69	WIRE	98.84	6,800	10,600
	CADWELD		EST	8	EA		15	0	100	2.00	18	WIRE	98.84	1,800	1,900
	GROUNDING TEST	TEST & DOCUMENTATION	EST	1	LT			0	0	4.00	5	WIRE	98.84	500	500
6.21	MEDIUM VOLTAGE POWER CABLE & TERMINATION	1/C # 2/0-5KV	EST	3,600	LF		2.63	0	9,500	0.12	484	WIRE	98.84	47,900	57,400
6.22	LOW VOLTAGE POWER CABLE & TERMINATION							0	80,900					100,600	181,500
	#4/0 - #12 AWG-600V		EST	11,200	LF		7.22	0	80,900	0.08	1,018	WIRE	98.84	100,600	181,500
6.23	CONTROL & INSTRUMENT CABLE	#14, #16 & PR # 20 & SHLD WIRE	EST	12,000	LF		3.20	0	38,400	0.08	1,090	WIRE	98.84	107,800	146,200
6.24	DUCT BANK	DUCT BANK WITH 4-5" & 4-3" CONDUITS	EST	30	LF		205.00	0	6,200	4.05	140	ECND	75.97	10600	16,800
6.25	COMMUNICATIONS		EST	1	LT		70,000.00	0	70,000	440.00	506	WIRE	98.84	50,000	120,000
6.26	LIGHTNING PROTECTION		EST	1	LT		19,000.00	0	19,000	123.00	141	WIRE	98.84	14,000	33,000
6.27	SECURITY SYSTEM		EST	1	LT		16,000.00	0	16,000	123.00	141	WIRE	98.84	14,000	30,000
90.00	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS							6,098,800	1,672,000		48,482			4,339,200	12,064,700
	OTHER DIRECT & CONSTRUCTION INDIRECT COSTS														
	ADDITIONAL CRANE ALLOWANCE								0					0	0
	MOBILIZATION / DEMOBILIZATION - INCLUDED IN WAGE RATES ABOVE														0
	COST DUE TO OVERTIME WORKING 5 X10 HOUR DAYS			1	LS										721,682
	COST DUE TO OVERTIME INEFFICIENCY - SPECIFY % INEFFICIENCY			8.00	%						4,216		83.48	352,000	352,000
	COST DUE TO OVERTIME PAY @1.5 TIMES OVERTIME PAY RATE SPECIFY % ADDITIONAL HOURS PAID ON ACTUAL HOURS WORKED			10.00	%						5,270			369,682	369,682
	PER DIEM	NONE		0.00	HR						57,968			0	0
	CONSUMABLES - % of ACCT NO. 90			0.5	%				8,360					21,696	30,056
	FREIGHT ON MATERIAL - % of ACCT NO. 90			5.0	%				83,600						83,600
	FREIGHT ON EQUIPMENT - % of ACCT NO. 90			5.0	%			304,940							304,940
	SCAFFOLDING - % OF ACCT NO. 90			5.0	%				83,600					216,960	300,560
	CONTRACTOR'S GENERAL AND ADMINISTRATION & PROFIT EXPENSE - % of ACCT NO. 90			15	%				250,800					650,880	901,680
	SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS							304,900	426,400					1,611,200	2,342,500
	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	BYPRODUCT WASTE & FLY ASH HANDLING SYSTEMS						6,403,700	2,098,400					5,950,400	14,407,200
7.0	ABSORBER ISLAND	NOT REQUIRED FOR NID													0
8.0	ACTIVATED CARBON INJECTION SYSTEM														0
9.0	COMPRESSED AIR SYSTEM														

AEP
BIG SANDY UNIT 2
FGD PROJECT - NID EST (ESP)-2A - 1.7 LB/MM BTU
ORDER OF MAGNITUDE COST ESTIMATE

Estimate No.: 30722C
Project No.: 12721-000
Date: 9/29/2010
Preparer: MNO
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Cost Type:
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Wage Rates Based on: BIG SANDY
Labor Productivity = 1.15

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10.0	SERVICE WATER SYSTEM														
11.0	POTABLE WATER SYSTEM														
12.0	FGD SUBSTATION														
13.0	FGD DCS SYSTEM														0
14.0	CEM SYSTEM														0
15.0	TRUCK & RAIL INFRASTRUCTURE														0
16.0	SITE IMPROVEMENTS - CIVIL WORK														
17.0	BOP ITEMS														0
17.1	PIPE INSULATION	AVERAGE 6" PIPE SIZE	EST	3,400	LF		10	0	34,000	0.39	1,525	PINS	69.50	106,000	140,000
17.2	HEAT TRACING							0	175,600					248,500	424,100
	CABLE	AVERAGE 6" PIPE SIZE	EST	3,000	LF		10.35	0	31,100	0.05	173	WIRE	98.84	17,000	48,100
	POWER CONNECTOR AND OTHER ACCESSORIES INCLUDING THERMOSTATS FOR HEAT TRACING (BY ZONES)		EST	55	EA		450	0	24,500	8.00	502	WIRE	98.84	49,600	74,100
	HEAT TRACING BALANCE OF PLANT INCL PANELS, POWER WIRING AND CONDUITS		EST	4	LT		30000	0	120,000	400.00	1,840	WIRE	98.84	181,900	301,900
17.3	TOUCH UP PAINT (INCLUDES PAINTING CS PIPE)							0	176,700					677,900	854,600
	TOUCH UP PAINT FOR SHOP PAINTED STEEL		EST	31,200	SF		3	0	93,600	0.15	5,382	PNTR	66.72	359,100	452,700
	TOUCH UP PAINT FOR EQUIPMENT		EST	12,000	SF		3	0	36,000	0.15	2,070	PNTR	66.72	138,100	174,100
	PAINTING CS PIPE ONLY	AVERAGE 6" PIPE SIZE, ALLOWANCE FOR 10,000 LF PIPE	EST	15,700	SF		3	0	47,100	0.15	2,708	PNTR	66.72	180,700	227,800
17.4	HOISTS & TROLLEYS							150,000	175,000					204,400	529,400
	MISC HOISTS & TROLLEYS	IN BUILDINGS FOR EQUIPMENT MAINTENANCE AND FOR ID FANS	EST	10	EA	15000	17500	150,000	175,000	200.00	2,300	MECH	88.89	204,400	529,400
17.5	MISC AUX STEEL FOR PIPE SUPPORTS	FIELD FABRICATED	EST	35	TN		3500	0	122,500	120.00	4,830	STST	105.71	510,600	633,100
17.6	MISC PIPE SUPPORT FOUNDATIONS							0	10,500					21,000	31,500
	EXCAVATION / BACKFILL		EST	65	CY			0	0	0.36	27	EXFD	90.00	2,400	2,400
	REINFORCING		EST	5.0	TN		1,150.00	0	5,800	20.00	115	REIN	78.27	9,000	14,800
	FORMWORK		EST	260	SF		2.50	0	700	0.14	42	FORM	99.43	4,200	4,900
	CONCRETE		EST	25	CY		105.00	0	2,600	1.50	43	CONP	79.64	3,400	6,000
	MUD MAT		EST	10	CY		105.00	0	1,100	1.50	17	CONP	79.64	1,400	2,500
	EMBEDDED STEEL		EST	125	LB		2.50	0	300	0.06	9	CARP	71.88	600	900
17.7	EYE WASH STATIONS	WITH 50 KW HEATERS	EST	5	EA	6000	1000	30,000	5,000	60.00	345	MECH	88.89	30,700	65,700
17.8	FIRE PROTECTION FOR MISC BUILDINGS & AREAS	STAND PIPE FOR BUILDINGS	EST	10	EA		30000	0	300,000	240.00	2,760	MECH	88.89	245,300	545,300
90.00	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS							180,000	999,300		24,687			2,044,400	3,223,700
	OTHER DIRECT & CONSTRUCTION INDIRECT COSTS														
	ADDITIONAL CRANE ALLOWANCE								0					0	0
	MOBILIZATION / DEMOBILIZATION - INCLUDED IN WAGE RATES ABOVE														0
	COST DUE TO OVERTIME WORKING 5 X10 HOUR DAYS			1	LS										367,244
	COST DUE TO OVERTIME INEFFICIENCY - SPECIFY % INEFFICIENCY			8.00	%						2,147		83.48	179,000	179,000

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	COST DUE TO OVERTIME PAY @1.5 TIMES OVERTIME PAY RATE SPECIFY % ADDITIONAL HOURS PAID ON ACTUAL HOURS WORKED			10.00	%						2,683			188,244	188,244
	PER DIEM	NONE		0.00	HR						29,517			0	0
	CONSUMABLES - % of ACCT NO. 90			0.5	%				4,997					10,222	15,219
	FREIGHT ON MATERIAL - % of ACCT NO. 90			5.0	%				49,965						49,965
	FREIGHT ON EQUIPMENT - % of ACCT NO. 90			5.0	%			9,000							9,000
	SCAFFOLDING - % OF ACCT NO. 90			5.0	%				49,965					102,220	152,185
	CONTRACTOR'S GENERAL AND ADMINISTRATION & PROFIT EXPENSE - % of ACCT NO. 90			15	%				149,895					306,660	456,555
	SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS							9,000	254,822					786,346	1,050,167
	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	BOP ITEMS						189,000	1,254,100					2,830,700	4,273,900
18.0	CAPITAL REPLACEMENTS - REMOVAL AND RELOCATION OF EXISTING EQUIPMENT AND INFRASTRUCTURE														0
19.0	ARSENIC, ASBESTOS , LEAD ABATEMENT														0
99.00	OVERALL - EQUIPMENT, MATERIAL AND LABOR COSTS							88,903,600	47,437,400		1,287,098			120,261,900	276,657,600
	OTHER DIRECT & CONSTRUCTION INDIRECT COSTS														
	ADDITIONAL CRANE ALLOWANCE			9	MN	75,000.00		675,000	0		7,452			662,400	1,337,400
	MOBILIZATION / DEMOBILIZATION - INCLUDED IN WAGE RATES ABOVE														0
	COST DUE TO OVERTIME WORKING 5 X10 HOUR DAYS			1	LS										19,208,577
	COST DUE TO OVERTIME INEFFICIENCY - SPECIFY % INEFFICIENCY			8.00	%						111,922		93.44	9,342,000	9,342,000
	COST DUE TO OVERTIME PAY @1.5 TIMES OVERTIME PAY RATE SPECIFY % ADDITIONAL HOURS PAID ON ACTUAL HOURS WORKED			10.00	%						140,647			9,866,577	9,866,577
	PER DIEM	NONE		0.00	HR									0	0
	CONSUMABLES - % of ACCT NO. 90			0.5	%				234,487					599,760	834,247
	FREIGHT ON MATERIAL - % of ACCT NO. 90			5.0	%				2,344,870						2,344,870
	FREIGHT ON EQUIPMENT - % of ACCT NO. 90			5.0	%			4,382,180							4,382,180
	SCAFFOLDING - % OF ACCT NO. 90			5.0	%				2,344,870					5,997,595	8,342,465
	CONTRACTOR'S GENERAL AND ADMINISTRATION & PROFIT EXPENSE - % of ACCT NO. 90			15	%				7,115,610					17,992,785	28,358,895
	OVERALL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS							5,057,200	12,039,800					44,461,100	64,808,600
	OVERALL TOTAL DIRECT & CONSTRUCTION INDIRECT COST							93,960,800	59,477,200					164,723,000	341,466,200
	TOTAL PROJECT DIRECT AND CONSTRUCTION INDIRECT COSTS							93,960,800	59,477,200					164,723,000	341,466,200
								0	0					0	0
	INDIRECT COSTS														
	ENGINEERING, PROCUREMENT, & PROJECT SERVICES			1.0	LT										25,000,000
	CONSTRUCTION MANAGEMENT			3.0	%										10,244,000
	S-U / COMMISSIONING			1.0											3,414,700
	CRAFT START-UP SUPPORT	1% OF TOTAL LABOR MANHOURS (INCLUDES OVERTIME INEFFICIENCY & COST DUE TO OVERTIME PAY @1.5 TIMES OVERTIME PAY RATE - BASED ON ASSUMED 5X10 WORKWEEK)		1.0	%						13,990		93.44	1,417,000	1,417,000
	INITIAL FILLS			0.3	%										1,024,400
	OPERATOR & TRAINING MANUALS			1.0	LT										300,000
	SUBCONTRACTORS (NOISE & DUCTWORK CONSULTANT, GEOTECHNICAL INVESTIGATION)			1.0	LT										400,000

				AEP										Estimate No.:	30722C
				BIG SANDY UNIT 2										Project No.:	12721-000
				FGD PROJECT - NID EST (ESP)-2A - 1.7 LB/MM BTU										Date:	9/29/2010
				ORDER OF MAGNITUDE COST ESTIMATE										Preparer:	MNO
		Cost Type:												Reviewer:	JMK
		Est=Estimated												Approver:	PEF
		Allow.=Allowance								Wage Rates Based on:		BIG SANDY			
		Q=Vendor Quote								Labor Productivity =		1.15			

Account No.	Item Description	Scope Definition	Cost Type	Quantity	Unit of Measure	Unit Equip.Cost	Unit Material Cost	Total Equipment Cost	Total Material Cost	Unit Man-hours (Base)	Total Man-hours (w/ productivity)	Crew Code	Crew Wage Rate	Total Construction & Erection Cost	Total Projected Cost
	NOISE ABATEMENT FOR 85 DBA REQUIREMENT	FOR ID FAN, NID MODULES, TRANSFORMERS, BOP, DUCTWORK, ACOUSTIC BARRIERS FOR BOUNDARY LIMITS		1.0	LT										2,600,000
	SUBTOTAL - INDIRECT COSTS														44,400,100
	TOTAL PROJECT DIRECT AND INDIRECT COSTS														385,866,300
	SPARE PARTS:			1.5	%			1,409,400							1,409,400
	SPARE PARTS - CAPITALIZED			0.90	%			845,640							845,640
	SPARE PARTS - FIRST YEAR OF OPERATION			0.60	%			563,760							563,760
	CONTINGENCY			14.2	%										54,896,800
	ESCALATION														48,570,900
	EQUIPMENT	4.0%/yr		4.0	%			14,929,700							14,929,700
	MATERIAL	2.0%/yr		2.0	%				6,158,000						6,158,000
	LABOR	2.5%/yr		2.5	%									22,265,100	22,265,100
	INDIRECTS	2.5%/yr		2.5	%									5,218,100	5,218,100
	TOTAL PROJECT COST														490,743,400
	REFERENCE COSTS:														
A	REMOVAL OF FUEL OIL TANK							1,200,000	80,000					469,400	1,749,400
	REMOVE FUEL OIL TANK & SOIL REMEDIATION	LABOR COST IS FOR REMOVAL OF TANK ONLY. ALLOWANCE FOR SOIL REMEDIATION AND DISPOSAL IN AN EPA APPROVED LANDFILL. SUBCONTRACT COST INCLUDES LABOR. USED LOWER END OF THE RANGE $118-355/CY. COST COULD BE LOWER ($59-118/CY) IF SOLD TO A BITUMINOUS CONCRETE BATCH PLANT	EST	8,000	CY	150		1,200,000	0		0	MECH	88.89	0	1,200,000
	REMOVE DIKE & RECOMPACT FILL IN TANK AREA		EST	3,500	CY			0	0	0.60	2,415	ETWK	177.49	428,600	428,600
	FILL FROM OFF SITE COURSE		EST	5,000	CY		16	0	80,000	0.04	230	ETWK	177.49	40,800	120,800

ATTACHMENT 5-9
NID Detailed Capital Cost Estimate No. 30726 Est-2B ESP not in Service*
(1.7 lb SO_2/MMbtu)

* - Estimates 2A, 2B, 3A, 3B, 4A and 4B contain only accounts whose costs are different from the corresponding base estimates 1A and 1B.

				AEP										Estimate No.:	30726C
				BIG SANDY UNIT 2										Project No.:	12721-000
				FGD PROJECT - NID EST (N/ESP)-2B - 1.7 LB/MM BTU										Date:	9/29/2010
				ORDER OF MAGNITUDE COST ESTIMATE										Preparer:	MNO
		Cost Type:												Reviewer:	JMK
		Est=Estimated												Approver:	PEF
		Allow.=Allowance								Wage Rates Based on:		BIG SANDY			
		Q=Vendor Quote								Labor Productivity =		1.15			

Account No.	Item Description	Scope Definition	Cost Type	Quantity	Unit of Measure	Unit Equip.Cost	Unit Material Cost	Total Equipment Cost	Total Material Cost	Unit Man-hours (Base)	Total Man-hours (w/ productivity)	Crew Code	Crew Wage Rate	Total Construction & Erection Cost	Total Projected Cost
1.0	ID FANS														
2.0	NID MODULES														
2.1	MECHANICAL EQUIPMENT	A 12-MODULE NID SYSTEM (160' X 160') INCLUDING LIME DAY SILOS, HYDRATORS, MIXERS, J-DUCTS, FABRIC FILTER MODULES, ALL INTERNAL ELEMENTS (BAGS, CAGES, ASH HOPPERS, 2 BROKEN BAG DETECTORS / COMPARTMENT), ASH RECYCLE SYSTEM, VACUUM PIPING, AND ALL INTERNAL PIPING & DUCTWORK FOR THE VARIOUS MODULES.	EST	1	LT	49,600,000		49,600,000	0	312700.00	359,605	MECH	88.89	31,965,300	81,565,300
2.2	INSULATION FOR NID MODULES	SUBCONTRACT COST INCLUDES LABOR	EST	80,640	SF	30		2,419,200	0	0.00	0	DINS	81.75	0	2,419,200
2.3	PENTHOUSE FOR NID MODULES	14 FT HIGH, 25600 SF						58,100	1,316,900					1,747,600	3,122,600
	SUPPORT STEEL AND PURLINS	THREE COAT PAINT	EST	200	TN		2,900.00	0	580,000	24.00	5,520	STST	105.71	583,500	1,163,500
	SIDING FOR PENTHOUSE		EST	8,960	SF		12.00	0	107,500	0.11	1,133	SDNG	93.41	105,900	213,400
	CONCRETE FLOOR FOR PENTHOUSE		EST	632	CY		230.00	0	145,400	7.50	5,451	SDNG	93.41	509,200	654,600
	ROOFING FOR PENTHOUSE		EST	25,600	SF		18.00	0	460,800	0.22	6,477	ROOF	69.12	447,700	908,500
	H&V		EST	1	LT	58100	23240	58,100	23,200	1084.00	1,247	HVAC	81.24	101,300	182,600
2.4	BOTTOM ENCLOSURE FOR NID MODULES	40 FT HIGH						92,200	2,428,900					2,544,900	5,066,000
	SUPPORT STEEL AND PURLINS	THREE COAT PAINT	EST	560	TN		2,900.00	0	1,624,000	24.00	15,456	STST	105.71	1,633,900	3,257,900
	SIDING FOR BOTTOM ENCLOSURE		EST	25,600	SF		12.00	0	307,200	0.11	3,238	SDNG	93.41	302,500	609,700
	ROOFING FOR BOTTOM ENCLOSURE		EST	25,600	SF		18.00	0	460,800	0.22	6,477	ROOF	69.12	447,700	908,500
	H&V		EST	1	LT	92200	36880	92,200	36,900	1721.33	1,980	HVAC	81.24	160,800	289,900
2.5	PIPING & SUPPORTS - MECHANICAL							125,200	174,500					385,900	685,600
	LARGE BORE PIPING	4" CS, SCHEDULE 40, WELDED	EST	300	LF		23.0	0	6,900	1.48	511	SPNG	94.41	48,200	55,100
	LARGE BORE PIPING	6" SS, SCH 40 WELDED	EST	400	LF		111.00	0	44,400	2.02	929	SPNG	94.41	87,700	132,100
	LARGE BORE PIPING	18" CS, STD WELDED	EST	400	LF		234.10	0	93,600	2.34	1,076	SPNG	94.41	101,600	195,200
	SMALL BORE PIPING	2" CS, SCH 80 WELDED	EST	150	LF		22.20	0	3,300	1.26	217	SPNG	94.41	20,500	23,800
	SMALL BORE PIPING	2" SS, SCH 80 WELDED	EST	100	LF		48.80	0	4,900	1.44	166	SPNG	94.41	15,600	20,500
	SMALL BORE PIPING	ALLOWANCE FOR MISC SIZE <2" SS, SCH 80 WELDED	EST	300	LF		33.70	0	10,100	1.32	455	SPNG	94.41	43,000	53,100
	VALVE	18" GATE, 150 #, CS, WELDED	EST	4	EA	17,500		70,000	0	28.30	130	SPNG	94.41	12,300	82,300
	VALVE	6" GATE, 150 #, SS, WELDED	EST	6	EA	4,700		28,200	0	12.96	89	SPNG	94.41	8,400	36,600
	VALVE	4" GATE, 150 #, CS, WELDED	EST	5	EA	2,500		12,500	0	7.70	44	SPNG	94.41	4,200	16,700
	VALVE	2" GLOBE, 150# SS, WELDED	EST	10	EA	1,450		14,500	0	5.64	65	SPNG	94.41	6,100	20,600
	PIPE SUPPORTS		EST	150	EA		75.00	0	11,300	2.50	431	MECH	88.89	38,300	49,600
2.6	DUCTWORK							0	4,797,000					9,162,600	13,959,600
	NID MODULE INLET	INCLUDES INTERNAL BRACING AND TURNING VANES	EST	1,476	TN		3,250.00	0	4,797,000	50.00	84,870	FLDU	107.96	9,162,600	13,959,600
2.7	DUCT SUPPORT STEEL	THREE COAT SHOP PAINT	EST	738	TN		2,900.00	0	2,140,200	24.00	20,369	STST	105.71	2,153,200	4,293,400
2.8	DUCTWORK INSULATION & LAGGING		EST	136,000	SF		12.00	0	1,632,000	0.25	39,100	DINS	81.75	3,196,400	4,828,400
2.9	NID MODULE- FOUNDATIONS							0	1,087,000					1,778,100	2,865,100
	EXCAVATION / BACKFILL		EST	4,400	CY			0	0	0.36	1,822	EXFD	90.00	163,900	163,900
.	REINFORCING		EST	450	TN		1,150.00	0	517,500	20.00	10,350	REIN	78.27	810,100	1,327,600
	FORMWORK		EST	3,200	SF		2.50	0	8,000	0.14	515	FORM	99.43	51,200	59,200
	CONCRETE		EST	4,750	CY		105.00	0	498,800	1.50	8,194	CONP	79.64	652,600	1,151,400
	MUD MAT		EST	340	CY		105.00	0	35,700	1.50	587	CONP	79.64	46,700	82,400
	EMBEDDED STEEL		EST	10,800	LB		2.50	0	27,000	0.06	745	CARP	71.88	53,600	80,600
2.10	NID MODULE - SUPPORT STEEL AND ACCESS GALLERY							0	1,152,000					2,863,700	4,015,700
	SUPPORT STEEL	MATERIAL INCLUDED WITH OEM EQUIPMENT	EST	640	TN			0	0	24.00	17,664	STST	105.71	1,867,300	1,867,300

				AEP											Estimate No.:	30726C
				BIG SANDY UNIT 2											Project No.:	12721-000
				FGD PROJECT - NID EST (N/ESP)-2B - 1.7 LB/MM BTU											Date:	9/29/2010
				ORDER OF MAGNITUDE COST ESTIMATE											Preparer:	MNO
		Cost Type:													Reviewer:	JMK
		Est=Estimated													Approver:	PEF
		Allow.=Allowance								Wage Rates Based on:		BIG SANDY				
		Q=Vendor Quote								Labor Productivity =		1.15				

Account No.	Item Description	Scope Definition	Cost Type	Quantity	Unit of Measure	Unit Equip.Cost	Unit Material Cost	Total Equipment Cost	Total Material Cost	Unit Man-hours (Base)	Total Man-hours (w/ productivity)	Crew Code	Crew Wage Rate	Total Construction & Erection Cost	Total Projected Cost
	ACCESS GALLERY		EST	25,600	SF		45.00	0	1,152,000	0.40	11,776	GALL	84.61	996,400	2,148,400
2.11	GROUNDING							0	16,000		0			46,100	62,100
	GROUND ROD	3/4" - 20' LONG	EST	16	EA		150	0	2,400	4.00	74	WIRE	98.84	7,300	9,700
	500 MCM	BARE COPPER WIRE	EST	1,650	FT		7.65	0	12,600	0.12	228	WIRE	98.84	22,500	35,100
	CADWELD		EST	64	EA		15	0	1,000	2.00	147	WIRE	98.84	14,500	15,500
	GROUNDING TEST	TEST & DOCUMENTATION	EST	1	LT			0	0	16.00	18	WIRE	98.84	1,800	1,800
2.12	LIGHTING/ TRANSFORMERS & PANELS							27,000	75,000		0			57,300	159,300
	LIGHT FIXTURES		EST	100	EA		750	0	75,000	4.00	460	WIRE	98.84	45,500	120,500
	45KVA, 480V, 3 PHASE	LOW VOLTAGE XFMR	EST	2	EA	10000		20,000	0	40.00	92	WIRE	98.84	9,100	29,100
	200A, 277V-120V, 3 PHASE- LIGHTING PANELS	INCLUDING BREAKERS	EST	2	EA	3500		7,000	0	12.00	28	WIRE	98.84	2,700	9,700
2.13	RACEWAY, CABLE TRAY, & CONDUIT	INCLUDED IN ID FANS, 1.0													
90.00	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS							52,321,700	14,819,500		607,736			55,901,100	123,042,300
	OTHER DIRECT & CONSTRUCTION INDIRECT COSTS														
	ADDITIONAL CRANE ALLOWANCE			9	MN	75000		675,000		720.00	7,452	MECH	88.89	662400	1,337,400
	MOBILIZATION / DEMOBILIZATION - INCLUDED IN WAGE RATES ABOVE														0
	COST DUE TO OVERTIME WORKING 5 X10 HOUR DAYS			1	LS										9,098,344
	COST DUE TO OVERTIME INEFFICIENCY - SPECIFY % INEFFICIENCY			8.00	%						52,847		83.48	4,412,000	4,412,000
	COST DUE TO OVERTIME PAY @1.5 TIMES OVERTIME PAY RATE SPECIFY % ADDITIONAL HOURS PAID ON ACTUAL HOURS WORKED			10.00	%						66,803			4,686,344	4,686,344
	PER DIEM	NONE		0.00	HR						734,838			0	0
	CONSUMABLES - % of ACCT NO. 90			0.5	%				74,098					279,506	353,603
	FREIGHT ON MATERIAL - % of ACCT NO. 90			5.0	%				740,975						740,975
	FREIGHT ON EQUIPMENT - % of ACCT NO. 90			5.0	%			2,616,085							2,616,085
	SCAFFOLDING - % OF ACCT NO. 90			5.0	%				740,975					2,795,055	3,536,030
	CONTRACTOR'S GENERAL AND ADMINISTRATION & PROFIT - % of ACCT NO. 90			15	%				2,222,925					8,385,165	10,608,090
	SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS							3,291,100	3,779,000					21,220,500	28,290,500
	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	NID MODULES						55,612,800	18,598,500					77,121,600	151,332,800
3.0	NEW STACK														
4.0	LIME HANDLING SYSTEM														
4.1	LIME STORAGE SILO							3,054,000	0					0	3,054,000
	SILO	CONCRETE SILO 65' DIA X 114' H - 6900 TONS -SUBCONTRACT COST INCLUDES LABOR	EST	1	EA	2,764,000.00		2,764,000	0	0.00	0	CONP	79.64	0	2,764,000
	ELEVATOR	MAINTENANCE ELEVATOR COMMON FOR BOTH SILOS - SUBCONTRACT COST INCLUDES LABOR	EST	1	EA	290,000.00		290,000	0	0.00	0	MECH	88.89	0	290,000
4.2	LIME UNLOADING SYSTEM	INCLUDE PNEUMATIC HANDLING SYSTEM, THREE VACUUM EXHAUSTER, TWO FILTER SEPARATORS	EST	1	LT	350,000		350,000	0	2750.00	3,163	MECH	88.89	281,100	631,100
4.3	LIME TRANSPORT SYSTEM TO DAY BINS	INCLUDE PNEUMATIC HANDLING SYSTEM, THREE VACUUM EXHAUSTERS, TWO FILTER SEPARATORS	EST	1	LT	1,100,000		1,100,000	0	6400.00	7,360	MECH	88.89	654,200	1,754,200
4.4	PIPING - MECHANICAL							88,700	130,300					342,600	561,600

				AEP										Estimate No.:	30726C
				BIG SANDY UNIT 2										Project No.:	12721-000
				FGD PROJECT - NID EST (N/ESP)-2B - 1.7 LB/MM BTU										Date:	9/29/2010
				ORDER OF MAGNITUDE COST ESTIMATE										Preparer:	MNO
		Cost Type:												Reviewer:	JMK
		Est=Estimated												Approver:	PEF
		Allow.=Allowance								Wage Rates Based on:		BIG SANDY			
		Q=Vendor Quote								Labor Productivity =		1.15			

Account No.	Item Description	Scope Definition	Cost Type	Quantity	Unit of Measure	Unit Equip.Cost	Unit Material Cost	Total Equipment Cost	Total Material Cost	Unit Man-hours (Base)	Total Man-hours (w/ productivity)	Crew Code	Crew Wage Rate	Total Construction & Erection Cost	Total Projected Cost
	LARGE BORE PIPING	14" CS, SCH 40 WELDED - ON PIPE RACK	EST	500	LF		163.1	0	81,600	1.67	960	SPNG	94.41	90,700	172,300
	LARGE BORE PIPING	8" HDPE (UNDERGROUND)	EST	1,200	LF		14.1	0	16,900	0.83	1,145	SPNG	94.41	108,100	125,000
	LARGE BORE PIPING	6" CS, SCH 40 WELDED	EST	200	LF		41.7	0	8,300	1.61	370	SPNG	94.41	35,000	43,300
	SMALL BORE PIPING	2" CS, SCH 80 WELDED	EST	50	LF		22.20	0	1,100	1.26	72	SPNG	94.41	6,800	7,900
	SMALL BORE PIPING	2" SS, SCH 80 WELDED	EST	50	LF		48.80	0	2,400	1.44	83	SPNG	94.41	7,800	10,200
	SMALL BORE PIPING	ALLOWANCE FOR MISC SIZE <2" SS, SCH 80 WELDED	EST	100	LF		33.70	0	3,400	1.32	152	SPNG	94.41	14,300	17,700
	VALVE	2" GLOBE, 150# SS, WELDED	EST	6	EA	1,450		8,700	0	5.64	39	SPNG	94.41	3,700	12,400
	VALVE	8" AIR OPERATED, 150 #, CS, FLANGED	EST	4	EA	17,000		68,000	0	19.30	89	SPNG	94.41	8,400	76,400
	VALVE	14" BFLY 150# CS, FLANGED	EST	4	EA	3,000		12,000	0	16.60	76	SPNG	94.41	7,200	19,200
	EXCAVATION / BACKFILL	FOR UNDERGROUND PIPING	EST	1,000	CY			0	0	0.20	230	EXFD	90.00	20,700	20,700
	BEDDING	FOR UNDERGROUND PIPING	EST	133	CY		35.0	0	4,700	0.25	38	EXFD	90.00	3,500	8,200
	PIPE SUPPORTS		EST	238	EA		50.00	0	11,900	1.50	410	MECH	88.89	36,400	48,300
4.5	LIME STORAGE SILO ACCESS STAIR TOWER		EST	55	TN		2,900.00	0	159,500	24.00	1,518	STST	105.71	160,500	320,000
4.6	PIPE RACK FOR LIME HANDLING, WASTE HANDLING AND MISC MECHANICAL PIPING	THREE COAT SHOP PAINT	EST	650	TN		2,900.00	0	1,885,000	24.00	17,940	STST	105.71	1,896,400	3,781,400
4.7	RAIL CAR UNLOADING AREA - FOUNDATIONS	20' X 120' - NO SIDING						0	42,700					90,100	132,800
	EXCAVATION / BACKFILL		EST	500	CY			0	0	0.36	207	EXFD	90.00	18,600	18,600
	REINFORCING		EST	15	TN		1,150.00	0	17,300	20.00	345	REIN	78.27	27,000	44,300
	FORMWORK		EST	750	SF		2.50	0	1,900	0.14	121	FORM	99.43	12,000	13,900
	CONCRETE		EST	200	CY		105.00	0	21,000	1.50	345	CONP	79.64	27,500	48,500
	MUD MAT		EST	0	CY		105.00	0	0	1.50	0	CONP	79.64	0	0
	EMBEDDED STEEL		EST	1,000	LB		2.50	0	2,500	0.06	69	CARP	71.88	5,000	7,500
4.8	LIME UNLOADING BLOWER / ELECTRICAL BUILDING - FOUNDATIONS							0	69,600					147,600	217,200
	EXCAVATION / BACKFILL		EST	800	CY			0	0	0.36	331	EXFD	90.00	29,800	29,800
	REINFORCING		EST	25	TN		1,150.00	0	28,800	20.00	575	REIN	78.27	45,000	73,800
	FORMWORK		EST	1,200	SF		2.50	0	3,000	0.14	193	FORM	99.43	19,200	22,200
	CONCRETE		EST	300	CY		105.00	0	31,500	1.50	518	CONP	79.64	41,200	72,700
	MUD MAT		EST	0	CY		105.00	0	0	1.50	0	CONP	79.64	0	0
	EMBEDDED STEEL		EST	2,500	LB		2.50	0	6,300	0.06	173	CARP	71.88	12,400	18,700
4.9	LIME UNLOADING BLOWER / ELECTRICAL BUILDING	100' L X 30' W X 30' H						75,000	335,000					24,400	434,400
	PRE-ENGINEERED BUILDING INCLUDING H&V AND LIGHTING	SUBCONTRACT PRICE, INCLUDES LABOR	EST	3,000	SF		105	0	315,000	0.00	0	STST	105.71	0	315,000
	ADDITIONAL HVAC UNIT FOR ELECTRICAL ROOM & CONTROLS	40T PACKAGED UNIT FOR ELECTRICAL EQUIPMENT ROOM. INCLUDES ALLOWANCE FOR CONCRETE PAD AND ELECTRICAL WORK	EST	1	LT	75000	20000	75,000	20,000	350.00	300	HVAC	81.24	24,400	119,400
4.10	CONCRETE PIT FOR THE ELEVATOR		EST	10	CY		230.00	0	2,300	7.50	86	CONP	79.64	6,900	9,200
4.11	LIME STORAGE SILO - FOUNDATIONS	INCLUDES FOUNDATIONS FOR LIME TRANSPORT SYSTEM PRESSURE BLOWERS						0	224,100					405,200	629,300
	EXCAVATION / BACKFILL		EST	1,630	CY			0	0	0.36	675	EXFD	90.00	60,700	60,700
	REINFORCING		EST	85.0	TN		1,150.00	0	97,800	20.00	1,955	REIN	78.27	153,000	250,800
	FORMWORK		EST	1,400	SF		2.50	0	3,500	0.14	225	FORM	99.43	22,400	25,900
	CONCRETE		EST	1,000	CY		105.00	0	105,000	1.50	1,725	CONP	79.64	137,400	242,400
	MUD MAT		EST	50	CY		105.00	0	5,300	1.50	86	CONP	79.64	6,900	12,200
	EMBEDDED STEEL		EST	5,000	LB		2.50	0	12,500	0.06	345	CARP	71.88	24,800	37,300
4.12	LIME STORAGE SILO ACCESS STAIR TOWER - FOUNDATIONS							0	14,200					28,600	42,800
	EXCAVATION / BACKFILL		EST	110	CY			0	0	0.36	46	EXFD	90.00	4,100	4,100

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	REINFORCING		EST	4.8	TN		1,150.00	0	5,500	20.00	110	REIN	78.27	8,600	14,100
	FORMWORK		EST	320	SF		2.50	0	800	0.14	52	FORM	99.43	5,100	5,900
	CONCRETE		EST	60	CY		105.00	0	6,300	1.50	104	CONP	79.64	8,200	14,500
	MUD MAT		EST	8	CY		105.00	0	800	1.50	14	CONP	79.64	1,100	1,900
	EMBEDDED STEEL		EST	300	LB		2.50	0	800	0.06	21	CARP	71.88	1,500	2,300
4.13	PIPE RACK - FOUNDATIONS							0	239,600					588,600	828,200
	EXCAVATION / BACKFILL		EST	3,200	CY			0	0	0.36	1,325	EXFD	90.00	119,200	119,200
	REINFORCING		EST	90.0	TN		1,150.00	0	103,500	20.00	2,070	REIN	78.27	162,000	265,500
	FORMWORK		EST	9,500	SF		2.50	0	23,800	0.14	1,530	FORM	99.43	152,100	175,900
	CONCRETE		EST	950	CY		105.00	0	99,800	1.50	1,639	CONP	79.64	130,500	230,300
	MUD MAT		EST	0	CY		105.00	0	0	1.50	0	CONP	79.64	0	0
	EMBEDDED STEEL		EST	5,000	LB		2.50	0	12,500	0.06	345	CARP	71.88	24,800	37,300
4.14	TRANSFORMERS	SUS TRANSFORMERS: 33F, 33G, 13.8KV-480V,3PHASE, 3 WINDING XFMR	EST	2	EA	85000		170,000	0	300.00	690	EHEA	79.16	54,600	224,600
4.15	SWITCHGEAR	480V LOW VOLTAGE (33F/G), SWITCHGEAR	EST	5	EA	39200		196,000	0	230.00	1,323	EHEA	79.16	104,700	300,700
4.16	CABLE BUS DUCT							134,700	10,800					200,200	345,700
	480V CABLE BUS	BUST DUCT ONLY	EST	150	FT	898		134,700	0	10.30	1,777	WIRE	98.84	175,600	310,300
	CABLE BUS TERMINATION	750MCM- 480V TERMINATIONS	EST	4	EA		2,700.00	0	10,800	54.00	248	WIRE	98.84	24,600	35,400
4.17	MCC							61,800	0					3,600	65,400
	480V MCC	PER LINE UP	EST	2	EA	30900		61,800	0	16.00	37	WIRE	98.84	3,600	65,400
4.18	MIMIC PANELS		EST	1	EA	17500		17,500	0	12.00	14	WIRE	98.84	1,400	18,900
4.19	EMERGENCY POWER SYSTEM							108,300	0					24,400	132,700
	DC PANEL BOARD		EST	1	EA	15450		15,500	0	40.00	46	WIRE	98.84	4,500	20,000
	UPS PANEL BOARDS		EST	1	EA	15450		15,500	0	40.00	46	WIRE	98.84	4,500	20,000
	SATELLITE UPS		EST	1	EA	41200		41,200	0	16.00	18	WIRE	98.84	1,800	43,000
	VRLA BATTERIES		EST	1	LT	36050		36,100	0	120.00	138	WIRE	98.84	13,600	49,700
4.20	GROUNDING							13,300	0					41,300	54,600
	GROUND ROD	3/4" - 20' LONG	EST	16	EA	150		2,400	0	4.00	74	WIRE	98.84	7,300	9,700
	500 MCM	BARE COPPER WIRE	EST	1,300	FT	7.65		9,900	0	0.12	179	WIRE	98.84	17,700	27,600
	CADWELD		EST	64	EA	15		1,000	0	2.00	147	WIRE	98.84	14,500	15,500
	GROUNDING TEST	TEST & DOCUMENTATION	EST	1	LT			0	0	16.00	18	WIRE	98.84	1,800	1,800
4.21	LIGHTING/ TRANSFORMERS & PANELS							52,000	135,000					104,500	291,500
	LIGHT FIXTURES		EST	180	EA		750	0	135,000	4.00	828	WIRE	98.84	81,800	216,800
	45KVA, 480V, 3 PHASE	LOW VOLTAGE XFMR	EST	2	EA	10000		20,000	0	40.00	92	WIRE	98.84	9,100	29,100
	37.7KVA, 480V, 3 PHASE	LOW VOLTAGE XFMR	EST	2	EA	7500		15,000	0	32.00	74	WIRE	98.84	7,300	22,300
	200A, 480-277V, 3 PHASE- RECEPTACLE PANEL	INCLUDING BREAKERS	EST	2	EA	5000		10,000	0	16.00	37	WIRE	98.84	3,600	13,600
	200A, 277V-120V, 3 PHASE- LIGHTING PANELS	INCLUDING BREAKERS	EST	2	EA	3500		7,000	0	12.00	28	WIRE	98.84	2,700	9,700
4.22	RACEWAY, CABLE TRAY, & CONDUIT							0	310,900					1,537,100	1,848,000
	12" X 6" AL CABLE TRAY	INCLUDING SUPPORT & FITTINGS	EST	1,050	LF		18.25	0	19,200	1.10	1,328	WIRE	98.84	131,300	150,500
	18" X 6" AL CABLE TRAY	INCLUDING SUPPORT & FITTINGS	EST	600	LF		21.50	0	12,900	1.45	1,001	WIRE	98.84	98,900	111,800
	24" X 6" AL CABLE TRAY	INCLUDING SUPPORT & FITTINGS	EST	1,700	LF		27.10	0	46,100	1.75	3,421	WIRE	98.84	338,200	384,300
	36" X 6" AL CABLE TRAY	INCLUDING SUPPORT & FITTINGS	EST	500	LF		30.30	0	15,200	1.95	1,121	WIRE	98.84	110,800	126,000
	5" RGS CONDUIT	INCLUDING SUPPORT & FITTINGS	EST	750	LF		61.00	0	45,800	1.13	972	WIRE	98.84	96,100	141,900
	4" RGS CONDUIT	INCLUDING SUPPORT & FITTINGS	EST	1,450	LF		31.00	0	45,000	0.81	1,346	WIRE	98.84	133,000	178,000

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	3" RGS CONDUIT	INCLUDING SUPPORT & FITTINGS	EST	1,550	LF		21.50	0	33,300	0.65	1,150	WIRE	98.84	113,600	146,900
	2" RGS CONDUIT	INCLUDING SUPPORT & FITTINGS	EST	2,400	LF		9.25	0	22,200	0.35	972	WIRE	98.84	96,000	118,200
	1-1/2" RGS CONDUIT	INCLUDING SUPPORT & FITTINGS	EST	3,050	LF		7.15	0	21,800	0.28	996	WIRE	98.84	98,500	120,300
	1" RGS CONDUIT	INCLUDING SUPPORT & FITTINGS	EST	5,150	LF		4.44	0	22,900	0.24	1,415	WIRE	98.84	139,900	162,800
	3/4" RGS CONDUIT	INCLUDING SUPPORT & FITTINGS	EST	8,200	LF		3.23	0	26,500	0.19	1,829	WIRE	98.84	180,800	207,300
4.23	HIGH VOLTAGE POWER CABLE & TERMINATION	1/C # 500KCMIL- 15KV	EST	15,600	LF		9.27	0	144,600	0.23	4,126	WIRE	98.84	407,800	552,400
4.24	MEDIUM VOLTAGE POWER CABLE & TERMINATION	1/C 350KCMIL-5KV	EST	10,800	LF		6.13	0	66,200	0.23	2,857	WIRE	98.84	282,300	348,500
4.25	LOW VOLTAGE POWER CABLE & TERMINATION							0	93,000					143,200	236,200
	3/C # 500KCMIL- 600V		EST	600	LF		26.12	0	15,700	0.69	476	WIRE	98.84	47,100	62,800
	#4/0 - #12 AWG-600V		EST	10,700	LF		7.22	0	77,300	0.08	972	WIRE	98.84	96,100	173,400
4.26	CONTROL & INSTRUMENT CABLE	#14, #16 & PR # 20 & SHLD WIRE	EST	8,200	LF		3.20	0	26,200	0.08	745	WIRE	98.84	73,600	99,800
4.27	DUCT BANK	DUCT BANK WITH 4-5" & 4-3" CONDUITS, 2.38' H X 3.79' W	EST	350	LF		174.67	0	61,100	3.80	1,530	ECND	75.97	116,200	177,300
4.28	FOUNDATIONS FOR TRANSFORMERS	FOR XFMR 33F, 33G, INCLUDES MUD MAT	EST	14.0	CY		250	0	3,500	8.00	129	CONP	79.64	10,300	13,800
4.29	COMMUNICATIONS		EST	1	LT		34,000.00	0	34,000	229.00	263	WIRE	98.84	26,000	60,000
4.30	LIGHTNING PROTECTION		EST	1	LT		6,000.00	0	6,000	41.00	47	WIRE	98.84	4,700	10,700
4.31	SECURITY SYSTEM		EST	1	LT		8,000.00	0	8,000	62.00	71	WIRE	98.84	7,000	15,000
90.00	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS							5,421,300	4,001,600		81,753			7,769,100	17,192,000
	OTHER DIRECT & CONSTRUCTION INDIRECT COSTS														
	ADDITIONAL CRANE ALLOWANCE								0					0	0
	MOBILIZATION / DEMOBILIZATION - INCLUDED IN WAGE RATES ABOVE														0
	COST DUE TO OVERTIME WORKING 5 X10 HOUR DAYS			1	LS										1,216,382
	COST DUE TO OVERTIME INEFFICIENCY - SPECIFY % INEFFICIENCY			8.00	%						7,109		83.48	593,000	593,000
	COST DUE TO OVERTIME PAY @1.5 TIMES OVERTIME PAY RATE SPECIFY % ADDITIONAL HOURS PAID ON ACTUAL HOURS WORKED			10.00	%						8,886			623,382	623,382
	PER DIEM	NONE		0.00	HR						97,749			0	0
	CONSUMABLES - % of ACCT NO. 90			0.5	%				20,008					38,846	58,854
	FREIGHT ON MATERIAL - % of ACCT NO. 90			5.0	%				200,080						200,080
	FREIGHT ON EQUIPMENT - % of ACCT NO. 90			5.0	%			271,065							271,065
	SCAFFOLDING - % OF ACCT NO. 90			5.0	%				200,080					388,455	588,535
	CONTRACTOR'S GENERAL AND ADMINISTRATION & PROFIT - % of ACCT NO. 90			15	%				600,240					1,165,365	1,765,605
	SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS							271,100	1,020,400					2,809,000	4,100,500
	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	LIME HANDLING SYSTEM						5,692,400	5,022,000					10,578,100	21,292,500
5.0	LIME SLAKER BUILDING	NOT REQUIRED FOR NID													0
6.0	BYPRODUCT WASTE & FLY ASH HANDLING SYSTEMS														0

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6.1	BYPRODUCT WASTE HANDLING - MECHANICAL EQUIPMENT	INCLUDES PNEUMATIC HANDLING SYSTEM, THREE PRESSURE BLOWERS, ONE BIN VENT FILTER, ASH UNLOADING SYSTEM	EST	1	LT	2,386,000		2,386,000	0	14200.00	16,330	MECH	88.89	1,451,600	3,837,600
6.2	ECONOMIZER ASH HANDLING - MECHANICAL EQUIPMENT	INCLUDES JET PUMPS AND PIPING / SUPPORTS TO THE BOTTOM ASH POND	EST	1	LT	400,000		400,000	0	2900.00	3,335	MECH	88.89	296,400	696,400
6.3	BUILDING SUMP PUMPS	FOR BUILDINGS - DUPLEX. INCLUDES CHECK & ISOLATION VALVES.		2	EA	14,000		28,000	0	60.00	138	MECH	88.89	12,300	40,300
6.4	AGITATOR FOR SUMP PUMPS	5 HP		1	EA	12,000		12,000	0	45.00	52	MECH	88.89	4,600	16,600
6.5	PIPING - MECHANICAL		EST	1	LT			142,800	131,000					408,700	682,500
	LARGE BORE PIPING	4" SS, SCHEDULE 40, WELDED - ON PIPE RACK	EST	300	LF		45.1	0	13,500	0.87	300	SPNG	94.41	28,300	41,800
	LARGE BORE PIPING	6" CS, SCH 40 WELDED - ON PIPE RACK	EST	200	LF		32.2	0	6,400	0.88	202	SPNG	94.41	19,100	25,500
	LARGE BORE PIPING	6" CS, SCH 40 WELDED	EST	100	LF		41.7	0	4,200	1.61	185	SPNG	94.41	17,500	21,700
	LARGE BORE PIPING	8" HDPE (UNDERGROUND)	EST	400	LF		14.1	0	5,600	0.83	382	SPNG	94.41	36,000	41,600
	LARGE BORE PIPING	10" CS, SCH 40 WELDED	EST	300	LF		110.3	0	33,100	2.40	828	SPNG	94.41	78,200	111,300
	LARGE BORE PIPING	20" HDPE (UNDERGROUND)	EST	600	LF		72.8	0	43,700	1.45	1,001	SPNG	94.41	94,500	138,200
	SMALL BORE PIPING	2" CS, SCH 80 WELDED	EST	50	LF		22.20	0	1,100	1.26	72	SPNG	94.41	6,800	7,900
	SMALL BORE PIPING	2" SS, SCH 80 WELDED	EST	50	LF		48.80	0	2,400	1.44	83	SPNG	94.41	7,800	10,200
	SMALL BORE PIPING	ALLOWANCE FOR MISC SIZE <2" SS, SCH 80 WELDED	EST	100	LF		33.70	0	3,400	1.32	152	SPNG	94.41	14,300	17,700
	VALVE	2" GLOBE, 150# SS, WELDED	EST	15	EA	1,450		21,800	0	5.64	97	SPNG	94.41	9,200	31,000
	VALVE	4" GATE, 150 #, CS, WELDED	EST	10	EA	2,500		25,000	0	7.70	89	SPNG	94.41	8,400	33,400
	VALVE	6" AIR OPERATED, 150 #, CS, FLANGED	EST	2	EA	14,000		28,000	0	17.30	40	SPNG	94.41	3,800	31,800
	VALVE	8" AIR OPERATED, 150 #, CS, FLANGED	EST	4	EA	17,000		68,000	0	19.30	89	SPNG	94.41	8,400	76,400
	EXCAVATION / BACKFILL	FOR UNDERGROUND PIPING	EST	2,000	CY			0	0	0.20	460	EXFD	90.00	41,400	41,400
	BEDDING	FOR UNDERGROUND PIPING	EST	267	CY		35.0	0	9,300	0.25	77	EXFD	90.00	6,900	16,200
	PIPE SUPPORTS	AVERAGE COST FOR MISC PIPE SIZES	EST	110	EA		75.00	0	8,300	2.50	316	MECH	88.89	28,100	36,400
6.6	BYPRODUCT WASTE SILO	CONCRETE SILO 55' DIA X 111' H - 4700 TONS -SUBCONTRACT COST INCLUDES LABOR	EST	1	EA	1,800,000		1,800,000	0	0.00	0	CONP	79.64	0	1,800,000
6.7	RECYCLE SILO	NOT REQUIRED FOR NID													
6.8	FLY ASH SILO	NOT REQUIRED - ECONOMIZER FLY ASH SLUICD TO BOTTOM ASH POND						0	0					0	0
	SILO BIN		EST	0	EA	50,000		0	0	450.00	0	TANK	89.16	0	0
	SUPPORT STEEL FOR SILO		EST	0	TN		2,900.00	0	0	24.00	0	STST	105.71	0	0
6.9	BYPRODUCT WASTE STORAGE SILO - FOUNDATIONS							0	132,300					253,100	385,400
	EXCAVATION / BACKFILL		EST	1,200	CY			0	0	0.36	497	EXFD	90.00	44,700	44,700
	REINFORCING		EST	50.0	TN		1,150.00	0	57,500	20.00	1,150	REIN	78.27	90,000	147,500
	FORMWORK		EST	1,100	SF		2.50	0	2,800	0.14	177	FORM	99.43	17,600	20,400
	CONCRETE		EST	560	CY		105.00	0	58,800	1.50	966	CONP	79.64	76,900	135,700
	MUD MAT		EST	30	CY		105.00	0	3,200	1.50	52	CONP	79.64	4,100	7,300
	EMBEDDED STEEL		EST	4,000	LB		2.50	0	10,000	0.06	276	CARP	71.88	19,800	29,800

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6.10	FLY ASH SILO - FOUNDATIONS	NOT REQUIRED						0	0					0	0
	EXCAVATION / BACKFILL		EST	0	CY			0	0	0.36	0	EXFD	90.00	0	0
	REINFORCING		EST	0.0	TN		1,150.00	0	0	20.00	0	REIN	78.27	0	0
	FORMWORK		EST	0	SF		2.50	0	0	0.14	0	FORM	99.43	0	0
	CONCRETE		EST	0	CY		105.00	0	0	1.50	0	CONP	79.64	0	0
	MUD MAT		EST	0	CY		105.00	0	0	1.50	0	CONP	79.64	0	0
	EMBEDDED STEEL		EST	0	LB		2.50	0	0	0.06	0	CARP	71.88	0	0
6.11	BYPRODUCT TRANSPORT BLOWER BUILDING - FOUNDATIONS							0	97,600					172,100	269,700
	EXCAVATION / BACKFILL		EST	470	CY			0	0	0.36	195	EXFD	90.00	17,500	17,500
	REINFORCING		EST	38	TN		1,150.00	0	43,700	20.00	874	REIN	78.27	68,400	112,100
	FORMWORK		EST	960	SF		2.50	0	2,400	0.14	155	FORM	99.43	15,400	17,800
	CONCRETE		EST	400	CY		105.00	0	42,000	1.50	690	CONP	79.64	55,000	97,000
	MUD MAT		EST	43	CY		105.00	0	4,500	1.50	74	CONP	79.64	5,900	10,400
	EMBEDDED STEEL		EST	2,000	LB		2.50	0	5,000	0.06	138	CARP	71.88	9,900	14,900
6.12	BYPRODUCT TRANSPORT BLOWER BUILDING	90' L X 30' W X 20' H						40,000	241,500					26,200	307,700
	PRE-ENGINEERED BUILDING INCLUDING H&V AND LIGHTING	SUBCONTRACT PRICE, INCLUDES LABOR	EST	2,700	SF		85	0	229,500	0.00	0	STST	105.71	0	229,500
	ADDITIONAL HVAC UNIT FOR ELECTRICAL ROOM & CONTROLS	20T PACKAGED UNIT FOR ELECTRICAL EQUIPMENT ROOM. INCLUDES ALLOWANCE FOR CONCRETE PAD AND ELECTRICAL WORK	EST	1	LT	40000	12000	40,000	12,000	280.00	322	HVAC	81.24	26,200	78,200
6.13	FLY ASH BLOWER AND ELECTRICAL BUILDING - FOUNDATIONS	NOT REQUIRED						0	0					0	0
	EXCAVATION / BACKFILL		EST	0	CY			0	0	0.36	0	EXFD	90.00	0	0
	REINFORCING		EST	0	TN		1,150.00	0	0	20.00	0	REIN	78.27	0	0
	FORMWORK		EST	0	SF		2.50	0	0	0.14	0	FORM	99.43	0	0
	CONCRETE		EST	0	CY		105.00	0	0	1.50	0	CONP	79.64	0	0
	MUD MAT		EST	0	CY		105.00	0	0	1.50	0	CONP	79.64	0	0
	EMBEDDED STEEL		EST	0	LB		2.50	0	0	0.06	0	CARP	71.88	0	0
6.14	FLY ASH BLOWER AND ELECTRICAL BUILDING	NOT REQUIRED						0	0					0	0
	PREENGINEERED BUILDING INCLUDING H&V AND LIGHTING		EST	0	SF		95	0	0	0.00	0	STST	105.71	0	0
	ADDITONAL HVAC UNIT FOR ELECTRICAL ROOM & CONTROLS		EST	0	LT	75000	20000	0	0	350.00	0	HVAC	81.24	0	0
6.15	LOAD OUT AREA PDC	SUBCONTRACT PRICE INCLUDES LABOR. COMPLETE WITH HVAC, & FINISHES.	EST	600	SF		500.00	0	300,000	0.00	0	STST	105.71	0	300,000
6.16	MCC	480V MCC PER LINE UP	EST	2	EA	30000		60,000	0	16.00	37	WIRE	98.84	3,600	63,600
6.17	EMERGENBCY POWER SYSTEM							92,800	0					19,900	112,700
	UPS PANEL BOARDS		EST	1	EA	15500		15,500	0	40.00	46	WIRE	98.84	4,500	20,000
	SATELLITE UPS		EST	1	EA	41200		41,200	0	16.00	18	WIRE	98.84	1,800	43,000
	VRLA BATTERIES		EST	1	LT	36050		36,100	0	120.00	138	WIRE	98.84	13,600	49,700
6.18	LIGHTING/ TRANSFORMERS & PANELS							18,500	60,000					44,100	122,600
	LIGHT FIXTURES		EST	80	EA		750	0	60,000	4.00	368	WIRE	98.84	36,400	96,400
	45KVA, 480V, 3 PHASE	LOW VOLTAGE XFMR	EST	1	EA	10000		10,000	0	40.00	46	WIRE	98.84	4,500	14,500
	200A, 480-277V, 3 PHASE- RECEPTACLE PANEL	INCLUDING BREAKERS	EST	1	EA	5000		5,000	0	16.00	18	WIRE	98.84	1,800	6,800
	200A, 277V-120V, 3 PHASE- LIGHTING PANELS	INCLUDING BREAKERS	EST	1	EA	3500		3,500	0	12.00	14	WIRE	98.84	1,400	4,900

				AEP										Estimate No.:	30726C
				BIG SANDY UNIT 2										Project No.:	12721-000
				FGD PROJECT - NID EST (N/ESP)-2B - 1.7 LB/MM BTU										Date:	9/29/2010
				ORDER OF MAGNITUDE COST ESTIMATE										Preparer:	MNO
		Cost Type:												Reviewer:	JMK
		Est=Estimated												Approver:	PEF
		Allow.=Allowance								Wage Rates Based on:		BIG SANDY			
		Q=Vendor Quote								Labor Productivity =		1.15			

Account No.	Item Description	Scope Definition	Cost Type	Quantity	Unit of Measure	Unit Equip.Cost	Unit Material Cost	Total Equipment Cost	Total Material Cost	Unit Man-hours (Base)	Total Man-hours (w/ productivity)	Crew Code	Crew Wage Rate	Total Construction & Erection Cost	Total Projected Cost
6.19	RACEWAY, CABLE TRAY, & CONDUIT							0	32,500					189,100	221,600
	24" X 6" AL CABLE TRAY	INCLUDING SUPPORT & FITTINGS	EST	280	LF		27.10	0	7,600	1.75	564	WIRE	98.84	55700	63,300
	4" RGS CONDUIT	INCLUDING SUPPORT & FITTINGS	EST	280	LF		31.00	0	8,700	0.81	260	WIRE	98.84	25700	34,400
	1" RGS CONDUIT	INCLUDING SUPPORT & FITTINGS	EST	1,040	LF		4.44	0	4,600	0.24	286	WIRE	98.84	28300	32,900
	3/4" RGS CONDUIT	INCLUDING SUPPORT & FITTINGS	EST	3,600	LF		3.23	0	11,600	0.19	803	WIRE	98.84	79400	91,000
6.20	GROUNDING							0	4,500					10,900	15,400
	GROUND ROD	3/4" - 20' LONG EACH	EST	4	EA		150	0	600	4.00	18	WIRE	98.84	1,800	2,400
	500 MCM	BARE COPPER WIRE	EST	500	FT		7.65	0	3,800	0.12	69	WIRE	98.84	6,800	10,600
	CADWELD		EST	8	EA		15	0	100	2.00	18	WIRE	98.84	1,800	1,900
	GROUNDING TEST	TEST & DOCUMENTATION	EST	1	LT			0	0	4.00	5	WIRE	98.84	500	500
6.21	MEDIUM VOLTAGE POWER CABLE & TERMINATION	1/C # 2/0-5KV	EST	3,600	LF		2.63	0	9,500	0.12	484	WIRE	98.84	47,900	57,400
6.22	LOW VOLTAGE POWER CABLE & TERMINATION							0	64,700					80,500	145,200
	#4/0 - #12 AWG-600V		EST	8,960	LF		7.22	0	64,700	0.08	814	WIRE	98.84	80,500	145,200
6.23	CONTROL & INSTRUMENT CABLE	#14, #16 & PR # 20 & SHLD WIRE	EST	9,600	LF		3.20	0	30,700	0.08	872	WIRE	98.84	86,200	116,900
6.24	DUCT BANK	DUCT BANK WITH 4-5" & 4-3" CONDUITS	EST	30	LF		205.00	0	6,200	4.05	140	ECND	75.97	10600	16,800
6.25	COMMUNICATIONS		EST	1	LT		34,000.00	0	34,000	229.00	263	WIRE	98.84	26,000	60,000
6.26	LIGHTNING PROTECTION		EST	1	LT		16,000.00	0	16,000	123.00	141	WIRE	98.84	14,000	30,000
6.27	SECURITY SYSTEM		EST	1	LT		8,000.00	0	8,000	62.00	71	WIRE	98.84	7,000	15,000
90.00	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS							4,980,100	1,168,500		35,287			3,164,800	9,313,400
	OTHER DIRECT & CONSTRUCTION INDIRECT COSTS														
	ADDITIONAL CRANE ALLOWANCE								0					0	0
	MOBILIZATION / DEMOBILIZATION - INCLUDED IN WAGE RATES ABOVE														0
	COST DUE TO OVERTIME WORKING 5 X10 HOUR DAYS			1	LS										525,065
	COST DUE TO OVERTIME INEFFICIENCY - SPECIFY % INEFFICIENCY			8.00	%						3,068		83.48	256,000	256,000
	COST DUE TO OVERTIME PAY @1.5 TIMES OVERTIME PAY RATE SPECIFY % ADDITIONAL HOURS PAID ON ACTUAL HOURS WORKED			10.00	%						3,836			269,065	269,065
	PER DIEM	NONE		0.00	HR						42,191			0	0
	CONSUMABLES - % of ACCT NO. 90			0.5	%				5,843					15,824	21,667
	FREIGHT ON MATERIAL - % of ACCT NO. 90			5.0	%				58,425						58,425
	FREIGHT ON EQUIPMENT - % of ACCT NO. 90			5.0	%			249,005							249,005
	SCAFFOLDING - % OF ACCT NO. 90			5.0	%				58,425					158,240	216,665
	CONTRACTOR'S GENERAL AND ADMINISTRATION & PROFIT - % of ACCT NO. 90			15	%				175,275					474,720	649,995
	SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS							249,000	298,000					1,173,800	1,720,800
	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	BYPRODUCT WASTE & FLY ASH HANDLING SYSTEMS						5,229,100	1,466,500					4,338,600	11,034,200
7.0	ABSORBER ISLAND	NOT REQUIRED FOR NID													0
8.0	ACTIVATED CARBON INJECTION SYSTEM														0
9.0	COMPRESSED AIR SYSTEM														
10.0	SERVICE WATER SYSTEM														
11.0	POTABLE WATER SYSTEM														
12.0	FGD SUBSTATION														

				AEP											Estimate No.:	30726C
				BIG SANDY UNIT 2											Project No.:	12721-000
				FGD PROJECT - NID EST (N/ESP)-2B - 1.7 LB/MM BTU											Date:	9/29/2010
				ORDER OF MAGNITUDE COST ESTIMATE											Preparer:	MNO
		Cost Type:													Reviewer:	JMK
		Est=Estimated													Approver:	PEF
		Allow.=Allowance								Wage Rates Based on:		BIG SANDY				
		Q=Vendor Quote								Labor Productivity =		1.15				

Account No.	Item Description	Scope Definition	Cost Type	Quantity	Unit of Measure	Unit Equip.Cost	Unit Material Cost	Total Equipment Cost	Total Material Cost	Unit Man-hours (Base)	Total Man-hours (w/ productivity)	Crew Code	Crew Wage Rate	Total Construction & Erection Cost	Total Projected Cost
13.0	FGD DCS SYSTEM														0
14.0	CEM SYSTEM														0
15.0	TRUCK & RAIL INFRASTRUCTURE														0
16.0	SITE IMPROVEMENTS - CIVIL WORK														
17.0	BOP ITEMS														0
17.1	PIPE INSULATION	AVERAGE 6" PIPE SIZE	EST	3,400	LF		10	0	34,000	0.39	1,525	PINS	69.50	106,000	140,000
17.2	HEAT TRACING							0	175,600					248,500	424,100
	CABLE	AVERAGE 6" PIPE SIZE	EST	3,000	LF		10.35	0	31,100	0.05	173	WIRE	98.84	17,000	48,100
	POWER CONNECTOR AND OTHER ACCESSORIES INCLUDING THERMOSTATS FOR HEAT TRACING (BY ZONES)		EST	55	EA		450	0	24,500	8.00	502	WIRE	98.84	49,600	74,100
	HEAT TRACING BALANCE OF PLANT INCL PANELS, POWER WIRING AND CONDUITS		EST	4	LT		30000	0	120,000	400.00	1,840	WIRE	98.84	181,900	301,900
17.3	TOUCH UP PAINT (INCLUDES PAINTING CS PIPE)							0	176,700					677,900	854,600
	TOUCH UP PAINT FOR SHOP PAINTED STEEL		EST	31,200	SF		3	0	93,600	0.15	5,382	PNTR	66.72	359,100	452,700
	TOUCH UP PAINT FOR EQUIPMENT		EST	12,000	SF		3	0	36,000	0.15	2,070	PNTR	66.72	138,100	174,100
	PAINTING CS PIPE ONLY	AVERAGE 6" PIPE SIZE, ALLOWANCE FOR 10,000 LF PIPE	EST	15,700	SF		3	0	47,100	0.15	2,708	PNTR	66.72	180,700	227,800
17.4	HOISTS & TROLLEYS							150,000	175,000					204,400	529,400
	MISC HOISTS & TROLLEYS	IN BUILDINGS FOR EQUIPMENT MAINTENANCE AND FOR ID FANS	EST	10	EA	15000	17500	150,000	175,000	200.00	2,300	MECH	88.89	204,400	529,400
17.5	MISC AUX STEEL FOR PIPE SUPPORTS	FIELD FABRICATED	EST	35	TN		3500	0	122,500	120.00	4,830	STST	105.71	510,600	633,100
17.6	MISC PIPE SUPPORT FOUNDATIONS							0	10,500					21,000	31,500
	EXCAVATION / BACKFILL		EST	65	CY			0	0	0.36	27	EXFD	90.00	2,400	2,400
	REINFORCING		EST	5.0	TN		1,150.00	0	5,800	20.00	115	REIN	78.27	9,000	14,800
	FORMWORK		EST	260	SF		2.50	0	700	0.14	42	FORM	99.43	4,200	4,900
	CONCRETE		EST	25	CY		105.00	0	2,600	1.50	43	CONP	79.64	3,400	6,000
	MUD MAT		EST	10	CY		105.00	0	1,100	1.50	17	CONP	79.64	1,400	2,500
	EMBEDDED STEEL		EST	125	LB		2.50	0	300	0.06	9	CARP	71.88	600	900
17.7	EYE WASH STATIONS	WITH 50 KW HEATERS	EST	5	EA	6000	1000	30,000	5,000	60.00	345	MECH	88.89	30,700	65,700
17.8	FIRE PROTECTION FOR MISC BUILDINGS & AREAS	STAND PIPE FOR BUILDINGS	EST	10	EA		30000	0	300,000	240.00	2,760	MECH	88.89	245,300	545,300
90.00	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS							180,000	999,300		24,687			2,044,400	3,223,700
	OTHER DIRECT & CONSTRUCTION INDIRECT COSTS														
	ADDITIONAL CRANE ALLOWANCE								0					0	0
	MOBILIZATION / DEMOBILIZATION - INCLUDED IN WAGE RATES ABOVE														0
	COST DUE TO OVERTIME WORKING 5 X10 HOUR DAYS			1	LS										367,244
	COST DUE TO OVERTIME INEFFICIENCY - SPECIFY % INEFFICIENCY			8.00	%						2,147		83.48	179,000	179,000
	COST DUE TO OVERTIME PAY @1.5 TIMES OVERTIME PAY RATE SPECIFY % ADDITIONAL HOURS PAID ON ACTUAL HOURS WORKED			10.00	%						2,683			188,244	188,244
	PER DIEM	NONE		0.00	HR						29,517			0	0
	CONSUMABLES - % of ACCT NO. 90			0.5	%				4,997					10,222	15,219
	FREIGHT ON MATERIAL - % of ACCT NO. 90			5.0	%				49,965						49,965
	FREIGHT ON EQUIPMENT - % of ACCT NO. 90			5.0	%			9,000							9,000

AEP
BIG SANDY UNIT 2
FGD PROJECT - NID EST (N/ESP)-2B - 1.7 LB/MM BTU
ORDER OF MAGNITUDE COST ESTIMATE

Estimate No.: 30726C
Project No.: 12721-000
Date: 9/29/2010
Preparer: MNO
Reviewer: JMK
Approver: PEF

Cost Type:
Est=Estimated
Allow.=Allowance
Q=Vendor Quote

Wage Rates Based on: BIG SANDY
Labor Productivity = 1.15

Account No.	Item Description	Scope Definition	Cost Type	Quantity	Unit of Measure	Unit Equip.Cost	Unit Material Cost	Total Equipment Cost	Total Material Cost	Unit Man-hours (Base)	Total Man-hours (w/ productivity)	Crew Code	Crew Wage Rate	Total Construction & Erection Cost	Total Projected Cost
	SCAFFOLDING - % OF ACCT NO. 90			5.0	%				49,965					102,220	152,185
	CONTRACTOR'S GENERAL AND ADMINISTRATION & PROFIT - % of ACCT NO. 90			15	%				149,895					306,660	456,555
	SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS							9,000	254,822					786,346	1,050,167
	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	BOP ITEMS						189,000	1,254,100					2,830,700	4,273,900
18.0	CAPITAL REPLACEMENTS - REMOVAL AND RELOCATION OF EXISTING EQUIPMENT AND INFRASTRUCTURE														0
19.0	ARSENIC, ASBESTOS , LEAD ABATEMENT														0
99.00	OVERALL - EQUIPMENT, MATERIAL AND LABOR COSTS							89,527,900	44,533,100		1,239,437			115,529,000	269,690,000
	OTHER DIRECT & CONSTRUCTION INDIRECT COSTS														
	ADDITIONAL CRANE ALLOWANCE			9	MN	75,000.00		675,000	0		7,452			662,400	1,337,400
	MOBILIZATION / DEMOBILIZATION - INCLUDED IN WAGE RATES ABOVE														0
	COST DUE TO OVERTIME WORKING 5 X10 HOUR DAYS			1	LS										18,500,151
	COST DUE TO OVERTIME INEFFICIENCY - SPECIFY % INEFFICIENCY			8.00	%						107,777		93.21	8,997,000	8,997,000
	COST DUE TO OVERTIME PAY @1.5 TIMES OVERTIME PAY RATE SPECIFY % ADDITIONAL HOURS PAID ON ACTUAL HOURS WORKED			10.00	%						135,467			9,503,151	9,503,151
	PER DIEM	NONE		0.00	HR									0	0
	CONSUMABLES - % of ACCT NO. 90			0.5	%				219,966					576,095	796,061
	FREIGHT ON MATERIAL - % of ACCT NO. 90			5.0	%				2,199,655						2,199,655
	FREIGHT ON EQUIPMENT - % of ACCT NO. 90			5.0	%			4,413,395							4,413,395
	SCAFFOLDING - % OF ACCT NO. 90			5.0	%				2,199,655					5,760,950	7,960,605
	CONTRACTOR'S GENERAL AND ADMINISTRATION & PROFIT - % of ACCT NO. 90			15	%				6,679,965					17,282,850	27,213,315
	OVERALL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS							5,088,400	11,299,200					42,782,400	62,420,600
	OVERALL TOTAL DIRECT & CONSTRUCTION INDIRECT COST							94,616,300	55,832,300					158,311,400	332,110,600
	TOTAL PROJECT DIRECT AND CONSTRUCTION INDIRECT COSTS							94,616,300	55,832,300					158,311,400	332,110,600
								0	0					0	0
	INDIRECT COSTS														
	ENGINEERING, PROCUREMENT, & PROJECT SERVICES			1.0	LT										25,000,000
	CONSTRUCTION MANAGEMENT			3.0	%										9,963,300
	S-U / COMMISSIONING			1.0											3,321,100
	CRAFT START-UP SUPPORT	1% OF TOTAL LABOR MANHOURS (INCLUDES OVERTIME INEFFICIENCY & COST DUE TO OVERTIME PAY @1.5 TIMES OVERTIME PAY RATE - BASED ON ASSUMED 5X10 WORKWEEK)		1.0	%						13,472		93.21	1,361,300	1,361,300
	INITIAL FILLS			0.3	%										996,300
	OPERATOR & TRAINING MANUALS			1.0	LT										300,000
	SUBCONTRACTORS (NOISE & DUCTWORK CONSULTANT, GEOTECHNICAL INVESTIGATION)			1.0	LT										400,000
	NOISE ABATEMENT FOR 85 DBA REQUIREMENT	FOR ID FAN, NID MODULES, TRANSFORMERS, BOP, DUCTWORK, ACOUSTIC BARRIERS FOR BOUNDARY LIMITS		1.0	LT										2,600,000
	SUBTOTAL - INDIRECT COSTS														43,942,000
	TOTAL PROJECT DIRECT AND INDIRECT COSTS														376,052,600

				AEP										Estimate No.:	30726C
				BIG SANDY UNIT 2										Project No.:	12721-000
				FGD PROJECT - NID EST (N/ESP)-2B - 1.7 LB/MM BTU										Date:	9/29/2010
				ORDER OF MAGNITUDE COST ESTIMATE										Preparer:	MNO
		Cost Type:												Reviewer:	JMK
		Est=Estimated												Approver:	PEF
		Allow.=Allowance								Wage Rates Based on:		BIG SANDY			
		Q=Vendor Quote								Labor Productivity =		1.15			

Account No.	Item Description	Scope Definition	Cost Type	Quantity	Unit of Measure	Unit Equip.Cost	Unit Material Cost	Total Equipment Cost	Total Material Cost	Unit Man-hours (Base)	Total Man-hours (w/ productivity)	Crew Code	Crew Wage Rate	Total Construction & Erection Cost	Total Projected Cost
	SPARE PARTS:			1.5	%			1,419,200							1,419,200
	SPARE PARTS - CAPITALIZED			0.90	%			851,520							851,520
	SPARE PARTS - FIRST YEAR OF OPERATION			0.60	%			567,680							567,680
	CONTINGENCY			14.3	%										53,792,000
	ESCALATION														47,501,200
	EQUIPMENT	4.0%/yr		4.0	%			15,033,900							15,033,900
	MATERIAL	2.0%/yr		2.0	%				5,844,400						5,844,400
	LABOR	2.5%/yr		2.5	%									21,458,600	21,458,600
	INDIRECTS	2.5%/yr		2.5	%									5,164,300	5,164,300
	TOTAL PROJECT COST														478,765,000
	REFERENCE COSTS:														
A	ESP DEMOLITION	ALLOWANCE FOR 1000T STRUCTURE	ALLOW	1,000	TN			0	0	6.00	6,900	WRKG	120.63	832,300	832,300
B	REMOVE BOOSTER AIR FANS		ALLOW	2	EA			0	0	400.00	920	WRKG	120.63	111,000	111,000
C	REMOVAL OF FUEL OIL TANK							1,200,000	80,000					469,400	1,749,400
	REMOVE FUEL OIL TANK & SOIL REMEDIATION	LABOR COST IS FOR REMOVAL OF TANK ONLY. ALLOWANCE FOR SOIL REMEDIATION AND DISPOSAL IN AN EPA APPROVED LANDFILL. SUBCONTRACT COST INCLUDES LABOR. USED LOWER END OF THE RANGE $118-355/CY. COST COULD BE LOWER ($59-118/CY) IF SOLD TO A BITUMINOUS CONCRETE BATCH PLANT	EST	8,000	CY	150		1,200,000	0		0	MECH	88.89	0	1,200,000
	REMOVE DIKE & RECOMPACT FILL IN TANK AREA		EST	3,500	CY			0	0	0.60	2,415	ETWK	177.49	428,600	428,600
	FILL FROM OFF SITE COURSE		EST	5,000	CY		16	0	80,000	0.04	230	ETWK	177.49	40,800	120,800

ATTACHMENT 5-10
NID Detailed Capital Cost Estimate No. 30724 Est-3A ESP in Service*
(4.5 lb SO_2/MMbtu)

* - Estimates 2A, 2B, 3A, 3B, 4A and 4B contain only accounts whose costs are different from the corresponding base estimates 1A and 1B.

AEP

BIG SANDY UNIT 2

FGD PROJECT - NID EST (ESP)-3A - 4.5 LB/MM BTU

ORDER OF MAGNITUDE COST ESTIMATE

Estimate No.: 30724C
Project No.: 12721-000
Date: 9/29/2010
Preparer: MNO
Reviewer: JMK
Approver: PEF

Cost Type:
Est=Estimated
Allow.=Allowance
Q=Vendor Quote

Wage Rates Based on: BIG SANDY
Labor Productivity = 1.15

Account No.	Item Description	Scope Definition	Cost Type	Quantity	Unit of Measure	Unit Equip.Cost	Unit Material Cost	Total Equipment Cost	Total Material Cost	Unit Man-hours (Base)	Total Man-hours (w/ productivity)	Crew Code	Crew Wage Rate	Total Construction & Erection Cost	Total Projected Cost
1.0	ID FANS														
2.0	NID MODULES														
2.1	MECHANICAL EQUIPMENT	A 12-MODULE NID SYSTEM (160' X 160') INCLUDING LIME DAY SILOS, HYDRATORS, MIXERS, J-DUCTS, FABRIC FILTER MODULES, ALL INTERNAL ELEMENTS (BAGS, CAGES, ASH HOPPERS, 2 BROKEN BAG DETECTORS/COMPARTMENT), ASH RECYCLE SYSTEM, VACUUM PIPING, AND ALL INTERNAL PIPING & DUCTWORK FOR THE VARIOUS MODULES.	EST	1	LT	53,053,000		53,053,000	0	332000.00	381,800	MECH	88.89	33,938,200	86,991,200
2.2	INSULATION FOR NID MODULES	SUBCONTRACT COST INCLUDES LABOR	EST	80,640	SF	30		2,419,200	0	0.00	0	DINS	81.75	0	2,419,200
2.3	PENTHOUSE FOR NID MODULES	14 FT HIGH, 25600 SF						58,100	1,316,900					1,747,600	3,122,600
	SUPPORT STEEL AND PURLINS	THREE COAT PAINT	EST	200	TN		2,900.00	0	580,000	24.00	5,520	STST	105.71	583,500	1,163,500
	SIDING FOR PENTHOUSE		EST	8,960	SF		12.00	0	107,500	0.11	1,133	SDNG	93.41	105,900	213,400
	CONCRETE FLOOR FOR PENTHOUSE		EST	632	CY		230.00	0	145,400	7.50	5,451	SDNG	93.41	509,200	654,600
	ROOFING FOR PENTHOUSE		EST	25,600	SF		18.00	0	460,800	0.22	6,477	ROOF	69.12	447,700	908,500
	H&V		EST	1	LT	58100	23240	58,100	23,200	1084.00	1,247	HVAC	81.24	101,300	182,600
2.4	BOTTOM ENCLOSURE FOR NID MODULES	40 FT HIGH						92,200	2,428,900					2,544,900	5,066,000
	SUPPORT STEEL AND PURLINS	THREE COAT PAINT	EST	560	TN		2,900.00	0	1,624,000	24.00	15,456	STST	105.71	1,633,900	3,257,900
	SIDING FOR BOTTOM ENCLOSURE		EST	25,600	SF		12.00	0	307,200	0.11	3,238	SDNG	93.41	302,500	609,700
	ROOFING FOR BOTTOM ENCLOSURE		EST	25,600	SF		18.00	0	460,800	0.22	6,477	ROOF	69.12	447,700	908,500
	H&V		EST	1	LT	92200	36880	92,200	36,900	1721.33	1,980	HVAC	81.24	160,800	289,900
2.5	PIPING & SUPPORTS - MECHANICAL							125,200	174,500					385,900	685,600
	LARGE BORE PIPING	4" CS, SCHEDULE 40, WELDED	EST	300	LF		23.0	0	6,900	1.48	511	SPNG	94.41	48,200	55,100
	LARGE BORE PIPING	6" SS, SCH 40 WELDED	EST	400	LF		111.00	0	44,400	2.02	929	SPNG	94.41	87,700	132,100
	LARGE BORE PIPING	18" CS, STD WELDED	EST	400	LF		234.10	0	93,600	2.34	1,076	SPNG	94.41	101,600	195,200
	SMALL BORE PIPING	2" CS, SCH 80 WELDED	EST	150	LF		22.20	0	3,300	1.26	217	SPNG	94.41	20,500	23,800
	SMALL BORE PIPING	2" SS, SCH 80 WELDED	EST	100	LF		48.80	0	4,900	1.44	166	SPNG	94.41	15,600	20,500
	SMALL BORE PIPING	ALLOWANCE FOR MISC SIZE <2" SS, SCH 80 WELDED	EST	300	LF		33.70	0	10,100	1.32	455	SPNG	94.41	43,000	53,100
	VALVE	18" GATE, 150 #, CS, WELDED	EST	4	EA	17,500		70,000	0	28.30	130	SPNG	94.41	12,300	82,300
	VALVE	6" GATE, 150 #, SS, WELDED	EST	6	EA	4,700		28,200	0	12.96	89	SPNG	94.41	8,400	36,600
	VALVE	4" GATE, 150 #, CS, WELDED	EST	5	EA	2,500		12,500	0	7.70	44	SPNG	94.41	4,200	16,700
	VALVE	2" GLOBE, 150# SS, WELDED	EST	10	EA	1,450		14,500	0	5.64	65	SPNG	94.41	6,100	20,600
	PIPE SUPPORTS		EST	150	EA		75.00	0	11,300	2.50	431	MECH	88.89	38,300	49,600
2.6	DUCTWORK							0	6,175,000					11,794,600	17,969,600
	NID MODULE INLET	INCLUDES INTERNAL BRACING AND TURNING VANES	EST	1,900	TN		3,250.00	0	6,175,000	50.00	109,250	FLDU	107.96	11,794,600	17,969,600
2.7	DUCT SUPPORT STEEL	THREE COAT SHOP PAINT	EST	950	TN		2,900.00	0	2,755,000	24.00	26,220	STST	105.71	2,771,700	5,526,700
2.8	DUCTWORK INSULATION & LAGGING		EST	170,000	SF		12.00	0	2,040,000	0.25	48,875	DINS	81.75	3,995,500	6,035,500
2.9	NID MODULE- FOUNDATIONS							0	1,087,000					1,778,100	2,865,100
	EXCAVATION / BACKFILL		EST	4,400	CY			0	0	0.36	1,822	EXFD	90.00	163,900	163,900
.	REINFORCING		EST	450	TN		1,150.00	0	517,500	20.00	10,350	REIN	78.27	810,100	1,327,600
	FORMWORK		EST	3,200	SF		2.50	0	8,000	0.14	515	FORM	99.43	51,200	59,200
	CONCRETE		EST	4,750	CY		105.00	0	498,800	1.50	8,194	CONP	79.64	652,600	1,151,400
	MUD MAT		EST	340	CY		105.00	0	35,700	1.50	587	CONP	79.64	46,700	82,400
	EMBEDDED STEEL		EST	10,800	LB		2.50	0	27,000	0.06	745	CARP	71.88	53,600	80,600
2.10	NID MODULE - SUPPORT STEEL AND ACCESS GALLERY							0	1,152,000					2,863,700	4,015,700
	SUPPORT STEEL	MATERIAL INCLUDED WITH OEM EQUIPMENT	EST	640	TN			0	0	24.00	17,664	STST	105.71	1,867,300	1,867,300
	ACCESS GALLERY		EST	25,600	SF		45.00	0	1,152,000	0.40	11,776	GALL	84.61	996,400	2,148,400

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2.11	GROUNDING							0	16,000		0			46,100	62,100
	GROUND ROD	3/4" - 20' LONG	EST	16	EA		150	0	2,400	4.00	74	WIRE	98.84	7,300	9,700
	500 MCM	BARE COPPER WIRE	EST	1,650	FT		7.65	0	12,600	0.12	228	WIRE	98.84	22,500	35,100
	CADWELD		EST	64	EA		15	0	1,000	2.00	147	WIRE	98.84	14,500	15,500
	GROUNDING TEST	TEST & DOCUMENTATION	EST	1	LT			0	0	16.00	18	WIRE	98.84	1,800	1,800
2.12	LIGHTING/ TRANSFORMERS & PANELS							27,000	75,000		0			57,300	159,300
	LIGHT FIXTURES		EST	100	EA		750	0	75,000	4.00	460	WIRE	98.84	45,500	120,500
	45KVA, 480V, 3 PHASE	LOW VOLTAGE XFMR	EST	2	EA	10000		20,000	0	40.00	92	WIRE	98.84	9,100	29,100
	200A, 277V-120V, 3 PHASE- LIGHTING PANELS	INCLUDING BREAKERS	EST	2	EA	3500		7,000	0	12.00	28	WIRE	98.84	2,700	9,700
2.13	RACEWAY, CABLE TRAY, & CONDUIT	INCLUDED IN ID FANS, 1.0													
90.00	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS							55,774,700	17,220,300		669,937			61,923,600	134,918,600
	OTHER DIRECT & CONSTRUCTION INDIRECT COSTS														
	ADDITIONAL CRANE ALLOWANCE			9	MN	75000		675,000		720.00	7,452	MECH	88.89	662400	1,337,400
	MOBILIZATION / DEMOBILIZATION - INCLUDED IN WAGE RATES ABOVE														0
	COST DUE TO OVERTIME WORKING 5 X10 HOUR DAYS			1	LS										10,023,637
	COST DUE TO OVERTIME INEFFICIENCY - SPECIFY % INEFFICIENCY			8.00	%						58,255		83.48	4,863,000	4,863,000
	COST DUE TO OVERTIME PAY @1.5 TIMES OVERTIME PAY RATE SPECIFY % ADDITIONAL HOURS PAID ON ACTUAL HOURS WORKED			10.00	%						73,564			5,160,637	5,160,637
	PER DIEM	NONE		0.00	HR						809,209			0	0
	CONSUMABLES - % of ACCT NO. 90			0.5	%				86,102					309,618	395,720
	FREIGHT ON MATERIAL - % of ACCT NO. 90			5.0	%				861,015						861,015
	FREIGHT ON EQUIPMENT - % of ACCT NO. 90			5.0	%			2,788,735							2,788,735
	SCAFFOLDING - % OF ACCT NO. 90			5.0	%				861,015					3,096,180	3,957,195
	CONTRACTOR'S GENERAL AND ADMINISTRATION & PROFIT EXPENSE - % of ACCT NO. 90			15	%				2,583,045					9,288,540	11,871,585
	SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS							3,463,700	4,391,200					23,380,400	31,235,300
	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	NID MODULES						59,238,400	21,611,500					85,304,000	166,153,900
3.0	NEW STACK														
4.0	LIME HANDLING SYSTEM														
4.1	LIME STORAGE SILO							8,952,000	0					0	8,952,000
	SILO	CONCRETE SILO 75' DIA X 132' H - 10512 TONS -SUBCONTRACT COST INCLUDES LABOR	EST	2	EA	4,331,000.00		8,662,000	0	0.00	0	CONP	79.64	0	8,662,000
	ELEVATOR	MAINTENANCE ELEVATOR COMMON FOR BOTH SILOS - SUBCONTRACT COST INCLUDES LABOR	EST	1	EA	290,000.00		290,000	0	0.00	0	MECH	88.89	0	290,000
4.2	LIME UNLOADING SYSTEM	INCLUDE PNEUMATIC HANDLING SYSTEM, THREE VACUUM EXHAUSTER, TWO FILTER SEPARATORS	EST	1	LT	1,100,000		1,100,000	0	5800.00	6,670	MECH	88.89	592,900	1,692,900
4.3	LIME TRANSPORT SYSTEM TO DAY BINS	INCLUDE PNEUMATIC HANDLING SYSTEM, THREE VACUUM EXHAUSTERS, TWO FILTER SEPARATORS	EST	1	LT	2,866,000		2,866,000	0	15300.00	17,595	MECH	88.89	1,564,000	4,430,000
4.4	PIPING - MECHANICAL							88,700	130,300					342,600	561,600
	LARGE BORE PIPING	14" CS, SCH 40 WELDED - ON PIPE RACK	EST	500	LF		163.1	0	81,600	1.67	960	SPNG	94.41	90,700	172,300

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	LARGE BORE PIPING	8" HDPE (UNDERGROUND)	EST	1,200	LF		14.1	0	16,900	0.83	1,145	SPNG	94.41	108,100	125,000
	LARGE BORE PIPING	6" CS, SCH 40 WELDED	EST	200	LF		41.7	0	8,300	1.61	370	SPNG	94.41	35,000	43,300
	SMALL BORE PIPING	2" CS, SCH 80 WELDED	EST	50	LF		22.20	0	1,100	1.26	72	SPNG	94.41	6,800	7,900
	SMALL BORE PIPING	2" SS, SCH 80 WELDED	EST	50	LF		48.80	0	2,400	1.44	83	SPNG	94.41	7,800	10,200
	SMALL BORE PIPING	ALLOWANCE FOR MISC SIZE <2" SS, SCH 80 WELDED	EST	100	LF		33.70	0	3,400	1.32	152	SPNG	94.41	14,300	17,700
	VALVE	2" GLOBE, 150# SS, WELDED	EST	6	EA	1,450		8,700	0	5.64	39	SPNG	94.41	3,700	12,400
	VALVE	8" AIR OPERATED, 150 #, CS, FLANGED	EST	4	EA	17,000		68,000	0	19.30	89	SPNG	94.41	8,400	76,400
	VALVE	14" BFLY 150# CS, FLANGED	EST	4	EA	3,000		12,000	0	16.60	76	SPNG	94.41	7,200	19,200
	EXCAVATION / BACKFILL	FOR UNDERGROUND PIPING	EST	1,000	CY			0	0	0.20	230	EXFD	90.00	20,700	20,700
	BEDDING	FOR UNDERGROUND PIPING	EST	133	CY		35.0	0	4,700	0.25	38	EXFD	90.00	3,500	8,200
	PIPE SUPPORTS		EST	238	EA		50.00	0	11,900	1.50	410	MECH	88.89	36,400	48,300
4.5	LIME STORAGE SILO ACCESS STAIR TOWER	INCLUDES CATWALK TO THE SECOND SILO - THREE COAT SHOP PAINT	EST	55	TN		2,900.00	0	159,500	24.00	1,518	STST	105.71	160,500	320,000
4.6	PIPE RACK FOR LIME HANDLING, WASTE HANDLING AND MISC MECHANICAL PIPING	THREE COAT SHOP PAINT	EST	650	TN		2,900.00	0	1,885,000	24.00	17,940	STST	105.71	1,896,400	3,781,400
4.7	RAIL CAR UNLOADING AREA - FOUNDATIONS	20' X 120' - NO SIDING						0	42,700					90,100	132,800
	EXCAVATION / BACKFILL		EST	500	CY			0	0	0.36	207	EXFD	90.00	18,600	18,600
	REINFORCING		EST	15	TN		1,150.00	0	17,300	20.00	345	REIN	78.27	27,000	44,300
	FORMWORK		EST	750	SF		2.50	0	1,900	0.14	121	FORM	99.43	12,000	13,900
	CONCRETE		EST	200	CY		105.00	0	21,000	1.50	345	CONP	79.64	27,500	48,500
	MUD MAT		EST	0	CY		105.00	0	0	1.50	0	CONP	79.64	0	0
	EMBEDDED STEEL		EST	1,000	LB		2.50	0	2,500	0.06	69	CARP	71.88	5,000	7,500
4.8	LIME UNLOADING BLOWER / ELECTRICAL BUILDING - FOUNDATIONS							0	69,600					147,600	217,200
	EXCAVATION / BACKFILL		EST	800	CY			0	0	0.36	331	EXFD	90.00	29,800	29,800
	REINFORCING		EST	25	TN		1,150.00	0	28,800	20.00	575	REIN	78.27	45,000	73,800
	FORMWORK		EST	1,200	SF		2.50	0	3,000	0.14	193	FORM	99.43	19,200	22,200
	CONCRETE		EST	300	CY		105.00	0	31,500	1.50	518	CONP	79.64	41,200	72,700
	MUD MAT		EST	0	CY		105.00	0	0	1.50	0	CONP	79.64	0	0
	EMBEDDED STEEL		EST	2,500	LB		2.50	0	6,300	0.06	173	CARP	71.88	12,400	18,700
4.9	LIME UNLOADING BLOWER / ELECTRICAL BUILDING	100' L X 30' W X 30' H						75,000	335,000					24,400	434,400
	PRE-ENGINEERED BUILDING INCLUDING H&V AND LIGHTING	SUBCONTRACT PRICE, INCLUDES LABOR	EST	3,000	SF		105	0	315,000	0.00	0	STST	105.71	0	315,000
	ADDITIONAL HVAC UNIT FOR ELECTRICAL ROOM & CONTROLS	40T PACKAGED UNIT FOR ELECTRICAL EQUIPMENT ROOM. INCLUDES ALLOWANCE FOR CONCRETE PAD AND ELECTRICAL WORK	EST	1	LT	75000	20000	75,000	20,000	350.00	300	HVAC	81.24	24,400	119,400
4.10	CONCRETE PIT FOR THE ELEVATOR		EST	10	CY		230.00	0	2,300	7.50	86	CONP	79.64	6,900	9,200
4.11	LIME STORAGE SILO - FOUNDATIONS	INCLUDES FOUNDATIONS FOR LIME TRANSPORT SYSTEM PRESSURE BLOWERS						0	560,700					1,002,700	1,563,400
	EXCAVATION / BACKFILL		EST	3,900	CY			0	0	0.36	1,615	EXFD	90.00	145,300	145,300
	REINFORCING		EST	230.0	TN		1,150.00	0	264,500	20.00	5,290	REIN	78.27	414,000	678,500
	FORMWORK		EST	3,200	SF		2.50	0	8,000	0.14	515	FORM	99.43	51,200	59,200
	CONCRETE		EST	2,400	CY		105.00	0	252,000	1.50	4,140	CONP	79.64	329,700	581,700
	MUD MAT		EST	130	CY		105.00	0	13,700	1.50	224	CONP	79.64	17,900	31,600
	EMBEDDED STEEL		EST	9,000	LB		2.50	0	22,500	0.06	621	CARP	71.88	44,600	67,100
4.12	LIME STORAGE SILO ACCESS STAIR TOWER - FOUNDATIONS							0	14,200					28,600	42,800
	EXCAVATION / BACKFILL		EST	110	CY			0	0	0.36	46	EXFD	90.00	4,100	4,100

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	REINFORCING		EST	4.8	TN		1,150.00	0	5,500	20.00	110	REIN	78.27	8,600	14,100
	FORMWORK		EST	320	SF		2.50	0	800	0.14	52	FORM	99.43	5,100	5,900
	CONCRETE		EST	60	CY		105.00	0	6,300	1.50	104	CONP	79.64	8,200	14,500
	MUD MAT		EST	8	CY		105.00	0	800	1.50	14	CONP	79.64	1,100	1,900
	EMBEDDED STEEL		EST	300	LB		2.50	0	800	0.06	21	CARP	71.88	1,500	2,300
4.13	PIPE RACK - FOUNDATIONS							0	239,600					588,600	828,200
	EXCAVATION / BACKFILL		EST	3,200	CY			0	0	0.36	1,325	EXFD	90.00	119,200	119,200
	REINFORCING		EST	90.0	TN		1,150.00	0	103,500	20.00	2,070	REIN	78.27	162,000	265,500
	FORMWORK		EST	9,500	SF		2.50	0	23,800	0.14	1,530	FORM	99.43	152,100	175,900
	CONCRETE		EST	950	CY		105.00	0	99,800	1.50	1,639	CONP	79.64	130,500	230,300
	MUD MAT		EST	0	CY		105.00	0	0	1.50	0	CONP	79.64	0	0
	EMBEDDED STEEL		EST	5,000	LB		2.50	0	12,500	0.06	345	CARP	71.88	24,800	37,300
4.14	TRANSFORMERS	SUS TRANSFORMERS: 33F, 33G, 13.8KV-480V,3PHASE, 3 WINDING XFMR	EST	2	EA	85000		170,000	0	300.00	690	EHEA	79.16	54,600	224,600
4.15	SWITCHGEAR	480V LOW VOLTAGE (33F/G), SWITCHGEAR	EST	5	EA	39200		196,000	0	230.00	1,323	EHEA	79.16	104,700	300,700
4.16	CABLE BUS DUCT							134,700	10,800					200,200	345,700
	480V CABLE BUS	BUST DUCT ONLY	EST	150	FT	898		134,700	0	10.30	1,777	WIRE	98.84	175,600	310,300
	CABLE BUS TERMINATION	750MCM- 480V TERMINATIONS	EST	4	EA		2,700.00	0	10,800	54.00	248	WIRE	98.84	24,600	35,400
4.17	MCC							61,800	0					3,600	65,400
	480V MCC	PER LINE UP	EST	2	EA	30900		61,800	0	16.00	37	WIRE	98.84	3,600	65,400
4.18	MIMIC PANELS		EST	1	EA	17500		17,500	0	12.00	14	WIRE	98.84	1,400	18,900
4.19	EMERGENCY POWER SYSTEM							108,300	0					24,400	132,700
	DC PANEL BOARD		EST	1	EA	15450		15,500	0	40.00	46	WIRE	98.84	4,500	20,000
	UPS PANEL BOARDS		EST	1	EA	15450		15,500	0	40.00	46	WIRE	98.84	4,500	20,000
	SATELLITE UPS		EST	1	EA	41200		41,200	0	16.00	18	WIRE	98.84	1,800	43,000
	VRLA BATTERIES		EST	1	LT	36050		36,100	0	120.00	138	WIRE	98.84	13,600	49,700
4.20	GROUNDING							13,300	0					41,300	54,600
	GROUND ROD	3/4" - 20' LONG	EST	16	EA	150		2,400	0	4.00	74	WIRE	98.84	7,300	9,700
	500 MCM	BARE COPPER WIRE	EST	1,300	FT	7.65		9,900	0	0.12	179	WIRE	98.84	17,700	27,600
	CADWELD		EST	64	EA	15		1,000	0	2.00	147	WIRE	98.84	14,500	15,500
	GROUNDING TEST	TEST & DOCUMENTATION	EST	1	LT			0	0	16.00	18	WIRE	98.84	1,800	1,800
4.21	LIGHTING/ TRANSFORMERS & PANELS							52,000	135,000					104,500	291,500
	LIGHT FIXTURES		EST	180	EA		750	0	135,000	4.00	828	WIRE	98.84	81,800	216,800
	45KVA, 480V, 3 PHASE	LOW VOLTAGE XFMR	EST	2	EA	10000		20,000	0	40.00	92	WIRE	98.84	9,100	29,100
	37.7KVA, 480V, 3 PHASE	LOW VOLTAGE XFMR	EST	2	EA	7500		15,000	0	32.00	74	WIRE	98.84	7,300	22,300
	200A, 480-277V, 3 PHASE- RECEPTACLE PANEL	INCLUDING BREAKERS	EST	2	EA	5000		10,000	0	16.00	37	WIRE	98.84	3,600	13,600
	200A, 277V-120V, 3 PHASE- LIGHTING PANELS	INCLUDING BREAKERS	EST	2	EA	3500		7,000	0	12.00	28	WIRE	98.84	2,700	9,700
4.22	RACEWAY, CABLE TRAY, & CONDUIT							0	310,900					1,537,100	1,848,000
	12" X 6" AL CABLE TRAY	INCLUDING SUPPORT & FITTINGS	EST	1,050	LF		18.25	0	19,200	1.10	1,328	WIRE	98.84	131,300	150,500
	18" X 6" AL CABLE TRAY	INCLUDING SUPPORT & FITTINGS	EST	600	LF		21.50	0	12,900	1.45	1,001	WIRE	98.84	98,900	111,800
	24" X 6" AL CABLE TRAY	INCLUDING SUPPORT & FITTINGS	EST	1,700	LF		27.10	0	46,100	1.75	3,421	WIRE	98.84	338,200	384,300
	36" X 6" AL CABLE TRAY	INCLUDING SUPPORT & FITTINGS	EST	500	LF		30.30	0	15,200	1.95	1,121	WIRE	98.84	110,800	126,000
	5" RGS CONDUIT	INCLUDING SUPPORT & FITTINGS	EST	750	LF		61.00	0	45,800	1.13	972	WIRE	98.84	96,100	141,900
	4" RGS CONDUIT	INCLUDING SUPPORT & FITTINGS	EST	1,450	LF		31.00	0	45,000	0.81	1,346	WIRE	98.84	133,000	178,000

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				ORDER OF MAGNITUDE COST ESTIMATE										Preparer:	MNO
		Cost Type:												Reviewer:	JMK
		Est=Estimated												Approver:	PEF
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		Q=Vendor Quote								Labor Productivity =		1.15			

Account No.	Item Description	Scope Definition	Cost Type	Quantity	Unit of Measure	Unit Equip.Cost	Unit Material Cost	Total Equipment Cost	Total Material Cost	Unit Man-hours (Base)	Total Man-hours (w/ productivity)	Crew Code	Crew Wage Rate	Total Construction & Erection Cost	Total Projected Cost
	3" RGS CONDUIT	INCLUDING SUPPORT & FITTINGS	EST	1,550	LF		21.50	0	33,300	0.65	1,150	WIRE	98.84	113,600	146,900
	2" RGS CONDUIT	INCLUDING SUPPORT & FITTINGS	EST	2,400	LF		9.25	0	22,200	0.35	972	WIRE	98.84	96,000	118,200
	1-1/2" RGS CONDUIT	INCLUDING SUPPORT & FITTINGS	EST	3,050	LF		7.15	0	21,800	0.28	996	WIRE	98.84	98,500	120,300
	1" RGS CONDUIT	INCLUDING SUPPORT & FITTINGS	EST	5,150	LF		4.44	0	22,900	0.24	1,415	WIRE	98.84	139,900	162,800
	3/4" RGS CONDUIT	INCLUDING SUPPORT & FITTINGS	EST	8,200	LF		3.23	0	26,500	0.19	1,829	WIRE	98.84	180,800	207,300
4.23	HIGH VOLTAGE POWER CABLE & TERMINATION	1/C # 500KCMIL- 15KV	EST	15,600	LF		9.27	0	144,600	0.23	4,126	WIRE	98.84	407,800	552,400
4.24	MEDIUM VOLTAGE POWER CABLE & TERMINATION	1/C 350KCMIL-5KV	EST	10,800	LF		6.13	0	66,200	0.23	2,857	WIRE	98.84	282,300	348,500
4.25	LOW VOLTAGE POWER CABLE & TERMINATION							0	93,000					143,200	236,200
	3/C # 500KCMIL- 600V		EST	600	LF		26.12	0	15,700	0.69	476	WIRE	98.84	47,100	62,800
	#4/0 - #12 AWG-600V		EST	10,700	LF		7.22	0	77,300	0.08	972	WIRE	98.84	96,100	173,400
4.26	CONTROL & INSTRUMENT CABLE	#14, #16 & PR # 20 & SHLD WIRE	EST	8,200	LF		3.20	0	26,200	0.08	745	WIRE	98.84	73,600	99,800
4.27	DUCT BANK	DUCT BANK WITH 4-5" & 4-3" CONDUITS, 2.38' H X 3.79' W	EST	350	LF		174.67	0	61,100	3.80	1,530	ECND	75.97	116,200	177,300
4.28	FOUNDATIONS FOR TRANSFORMERS	FOR XFMR 33F, 33G, INCLUDES MUD MAT	EST	14.0	CY		250	0	3,500	8.00	129	CONP	79.64	10,300	13,800
4.29	COMMUNICATIONS		EST	1	LT		34,000.00	0	34,000	229.00	263	WIRE	98.84	26,000	60,000
4.30	LIGHTNING PROTECTION		EST	1	LT		6,000.00	0	6,000	41.00	47	WIRE	98.84	4,700	10,700
4.31	SECURITY SYSTEM		EST	1	LT		8,000.00	0	8,000	62.00	71	WIRE	98.84	7,000	15,000
90.00	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS							13,835,300	4,338,200		102,890			9,588,200	27,761,700
	OTHER DIRECT & CONSTRUCTION INDIRECT COSTS														
	ADDITIONAL CRANE ALLOWANCE								0					0	0
	MOBILIZATION / DEMOBILIZATION - INCLUDED IN WAGE RATES ABOVE														0
	COST DUE TO OVERTIME WORKING 5 X10 HOUR DAYS			1	LS										1,531,547
	COST DUE TO OVERTIME INEFFICIENCY - SPECIFY % INEFFICIENCY			8.00	%						8,947		83.48	747,000	747,000
	COST DUE TO OVERTIME PAY @1.5 TIMES OVERTIME PAY RATE SPECIFY % ADDITIONAL HOURS PAID ON ACTUAL HOURS WORKED			10.00	%						11,184			784,547	784,547
	PER DIEM	NONE		0.00	HR						123,020			0	0
	CONSUMABLES - % of ACCT NO. 90			0.5	%				21,691					47,941	69,632
	FREIGHT ON MATERIAL - % of ACCT NO. 90			5.0	%				216,910						216,910
	FREIGHT ON EQUIPMENT - % of ACCT NO. 90			5.0	%			691,765							691,765
	SCAFFOLDING - % OF ACCT NO. 90			5.0	%				216,910					479,410	696,320
	CONTRACTOR'S GENERAL AND ADMINISTRATION & PROFIT EXPENSE - % of ACCT NO. 90			15	%				650,730					1,438,230	2,088,960
	SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS							691,800	1,106,200					3,497,100	5,295,100
	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	LIME HANDLING SYSTEM						14,527,100	5,444,400					13,085,300	33,056,800
5.0	LIME SLAKER BUILDING	NOT REQUIRED FOR NID													0
6.0	BYPRODUCT WASTE & FLY ASH HANDLING SYSTEMS														0

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6.1	BYPRODUCT WASTE HANDLING - MECHANICAL EQUIPMENT	INCLUDES PNEUMATIC HANDLING SYSTEM, THREE PRESSURE BLOWERS, ONE BIN VENT FILTER, ASH UNLOADING SYSTEM	EST	1	LT	2,386,000		2,386,000	0	14200.00	16,330	MECH	88.89	1,451,600	3,837,600
6.2	FLY ASH HANDLING - MECHANICAL EQUIPMENT	INCLUDES PNEUMATIC HANDLING SYSTEM, TWO PRESSURE EXHAUSTERS, TRANSFER STATION, ONE BIN VENT FILTER, ASH UNLOADING SYSTEM	EST	1	LT	2,285,000		2,285,000	0	14000.00	16,100	MECH	88.89	1,431,100	3,716,100
6.3	BUILDING SUMP PUMPS	FOR BUILDINGS - DUPLEX. INCLUDES CHECK & ISOLATION VALVES.		2	EA	14,000		28,000	0	60.00	138	MECH	88.89	12,300	40,300
6.4	AGITATOR FOR SUMP PUMPS	5 HP		1	EA	12,000		12,000	0	45.00	52	MECH	88.89	4,600	16,600
6.5	PIPING - MECHANICAL		EST	1	LT			142,800	131,000					408,700	682,500
	LARGE BORE PIPING	4" SS, SCHEDULE 40, WELDED - ON PIPE RACK	EST	300	LF		45.1	0	13,500	0.87	300	SPNG	94.41	28,300	41,800
	LARGE BORE PIPING	6" CS, SCH 40 WELDED - ON PIPE RACK	EST	200	LF		32.2	0	6,400	0.88	202	SPNG	94.41	19,100	25,500
	LARGE BORE PIPING	6" CS, SCH 40 WELDED	EST	100	LF		41.7	0	4,200	1.61	185	SPNG	94.41	17,500	21,700
	LARGE BORE PIPING	8" HDPE (UNDERGROUND)	EST	400	LF		14.1	0	5,600	0.83	382	SPNG	94.41	36,000	41,600
	LARGE BORE PIPING	10" CS, SCH 40 WELDED	EST	300	LF		110.3	0	33,100	2.40	828	SPNG	94.41	78,200	111,300
	LARGE BORE PIPING	20" HDPE (UNDERGROUND)	EST	600	LF		72.8	0	43,700	1.45	1,001	SPNG	94.41	94,500	138,200
	SMALL BORE PIPING	2" CS, SCH 80 WELDED	EST	50	LF		22.20	0	1,100	1.26	72	SPNG	94.41	6,800	7,900
	SMALL BORE PIPING	2" SS, SCH 80 WELDED	EST	50	LF		48.80	0	2,400	1.44	83	SPNG	94.41	7,800	10,200
	SMALL BORE PIPING	ALLOWANCE FOR MISC SIZE <2" SS, SCH 80 WELDED	EST	100	LF		33.70	0	3,400	1.32	152	SPNG	94.41	14,300	17,700
	VALVE	2" GLOBE, 150# SS, WELDED	EST	15	EA	1,450		21,800	0	5.64	97	SPNG	94.41	9,200	31,000
	VALVE	4" GATE, 150 #, CS, WELDED	EST	10	EA	2,500		25,000	0	7.70	89	SPNG	94.41	8,400	33,400
	VALVE	6" AIR OPERATED, 150 #, CS, FLANGED	EST	2	EA	14,000		28,000	0	17.30	40	SPNG	94.41	3,800	31,800
	VALVE	8" AIR OPERATED, 150 #, CS, FLANGED	EST	4	EA	17,000		68,000	0	19.30	89	SPNG	94.41	8,400	76,400
	EXCAVATION / BACKFILL	FOR UNDERGROUND PIPING	EST	2,000	CY			0	0	0.20	460	EXFD	90.00	41,400	41,400
	BEDDING	FOR UNDERGROUND PIPING	EST	267	CY		35.0	0	9,300	0.25	77	EXFD	90.00	6,900	16,200
	PIPE SUPPORTS	AVERAGE COST FOR MISC PIPE SIZES	EST	110	EA		75.00	0	8,300	2.50	316	MECH	88.89	28,100	36,400
6.6	BYPRODUCT WASTE SILO	CONCRETE SILO 65' DIA X 110' H - 4644 TONS -SUBCONTRACT COST INCLUDES LABOR	EST	1	EA	2,090,000		2,090,000	0	0.00	0	CONP	79.64	0	2,090,000
6.7	RECYCLE SILO	NOT REQUIRED FOR NID													
6.8	FLY ASH SILO	STEEL -STORAGE SILO, 18' DIA X 19' H, 69 TONS						55,000	29,000					80,500	164,500
	SILO BIN	PIN MIXERS INCLUDED WITH FLY ASH HANDLING MECHANICAL EQUIPMENT	EST	1	EA	55,000		55,000	0	500.00	575	TANK	89.16	51,300	106,300
	SUPPORT STEEL FOR SILO	THREE-COAT SHOP PAINT	EST	10	TN		2,900.00	0	29,000	24.00	276	STST	105.71	29,200	58,200
6.9	BYPRODUCT WASTE STORAGE SILO - FOUNDATIONS							0	188,700					349,900	538,600
	EXCAVATION / BACKFILL		EST	1,500	CY			0	0	0.36	621	EXFD	90.00	55,900	55,900
	REINFORCING		EST	75.0	TN		1,150.00	0	86,300	20.00	1,725	REIN	78.27	135,000	221,300
	FORMWORK		EST	1,300	SF		2.50	0	3,300	0.14	209	FORM	99.43	20,800	24,100
	CONCRETE		EST	780	CY		105.00	0	81,900	1.50	1,346	CONP	79.64	107,200	189,100

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	MUD MAT		EST	45	CY		105.00	0	4,700	1.50	78	CONP	79.64	6,200	10,900
	EMBEDDED STEEL		EST	5,000	LB		2.50	0	12,500	0.06	345	CARP	71.88	24,800	37,300
6.10	FLY ASH SILO - FOUNDATIONS							0	16,200					41,700	57,900
	EXCAVATION / BACKFILL		EST	350	CY			0	0	0.36	145	EXFD	90.00	13,000	13,000
	REINFORCING		EST	6.0	TN		1,150.00	0	6,900	20.00	138	REIN	78.27	10,800	17,700
	FORMWORK		EST	360	SF		2.50	0	900	0.14	58	FORM	99.43	5,800	6,700
	CONCRETE		EST	60	CY		105.00	0	6,300	1.50	104	CONP	79.64	8,200	14,500
	MUD MAT		EST	3	CY		105.00	0	300	1.50	5	CONP	79.64	400	700
	EMBEDDED STEEL		EST	700	LB		2.50	0	1,800	0.06	48	CARP	71.88	3,500	5,300
6.11	BYPRODUCT TRANSPORT BLOWER BUILDING - FOUNDATIONS							0	97,600					172,100	269,700
	EXCAVATION / BACKFILL		EST	470	CY			0	0	0.36	195	EXFD	90.00	17,500	17,500
	REINFORCING		EST	38	TN		1,150.00	0	43,700	20.00	874	REIN	78.27	68,400	112,100
	FORMWORK		EST	960	SF		2.50	0	2,400	0.14	155	FORM	99.43	15,400	17,800
	CONCRETE		EST	400	CY		105.00	0	42,000	1.50	690	CONP	79.64	55,000	97,000
	MUD MAT		EST	43	CY		105.00	0	4,500	1.50	74	CONP	79.64	5,900	10,400
	EMBEDDED STEEL		EST	2,000	LB		2.50	0	5,000	0.06	138	CARP	71.88	9,900	14,900
6.12	BYPRODUCT TRANSPORT BLOWER BUILDING	90' L X 30' W X 20' H						40,000	241,500					26,200	307,700
	PRE-ENGINEERED BUILDING INCLUDING H&V AND LIGHTING	SUBCONTRACT PRICE, INCLUDES LABOR	EST	2,700	SF		85	0	229,500	0.00	0	STST	105.71	0	229,500
	ADDITIONAL HVAC UNIT FOR ELECTRICAL ROOM & CONTROLS	20T PACKAGED UNIT FOR ELECTRICAL EQUIPMENT ROOM. INCLUDES ALLOWANCE FOR CONCRETE PAD AND ELECTRICAL WORK	EST	1	LT	40000	12000	40,000	12,000	280.00	322	HVAC	81.24	26,200	78,200
6.13	FLY ASH BLOWER AND ELECTRICAL BUILDING - FOUNDATIONS							0	82,800					150,900	233,700
	EXCAVATION / BACKFILL		EST	450	CY			0	0	0.36	186	EXFD	90.00	16,800	16,800
	REINFORCING		EST	30	TN		1,150.00	0	34,500	20.00	690	REIN	78.27	54,000	88,500
	FORMWORK		EST	1,100	SF		2.50	0	2,800	0.14	177	FORM	99.43	17,600	20,400
	CONCRETE		EST	350	CY		105.00	0	36,800	1.50	604	CONP	79.64	48,100	84,900
	MUD MAT		EST	40	CY		105.00	0	4,200	1.50	69	CONP	79.64	5,500	9,700
	EMBEDDED STEEL		EST	1,800	LB		2.50	0	4,500	0.06	124	CARP	71.88	8,900	13,400
6.14	FLY ASH BLOWER AND ELECTRICAL BUILDING	110' L X 30' W X 25' H						75,000	276,500					24,400	375,900
	PREENGINEERED BUILDING INCLUDING H&V AND LIGHTING	SUBCONTRACT PRICE, INCLUDES LABOR	EST	2,700	SF		95	0	256,500	0.00	0	STST	105.71	0	256,500
	ADDITONAL HVAC UNIT FOR ELECTRICAL ROOM & CONTROLS	40T PACKAGED UNIT FOR ELECTRICAL EQUIPMENT ROOM. INCLUDES ALLOWANCE FOR CONCRETE PAD AND ELECTRICAL WORK	EST	1	LT	75000	20000	75,000	20,000	350.00	300	HVAC	81.24	24,400	119,400
6.15	LOAD OUT AREA PDC	SUBCONTRACT PRICE INCLUDES LABOR. COMPLETE WITH HVAC, & FINISHES.	EST	600	SF		500.00	0	300,000	0.00	0	STST	105.71	0	300,000
6.16	MCC	480V MCC PER LINE UP	EST	4	EA	30000		120,000	0	16.00	74	WIRE	98.84	7,300	127,300
6.17	EMERGENBCY POWER SYSTEM							185,500	0					40,000	225,500
	UPS PANEL BOARDS		EST	2	EA	15500		31,000	0	40.00	92	WIRE	98.84	9,100	40,100
	SATELLITE UPS		EST	2	EA	41200		82,400	0	16.00	37	WIRE	98.84	3,600	86,000
	VRLA BATTERIES		EST	2	LT	36050		72,100	0	120.00	276	WIRE	98.84	27,300	99,400
6.18	LIGHTING/ TRANSFORMERS & PANELS							18,500	75,000					53,200	146,700
	LIGHT FIXTURES		EST	100	EA		750	0	75,000	4.00	460	WIRE	98.84	45,500	120,500
	45KVA, 480V, 3 PHASE	LOW VOLTAGE XFMR	EST	1	EA	10000		10,000	0	40.00	46	WIRE	98.84	4,500	14,500
	200A, 480-277V, 3 PHASE- RECEPTACLE PANEL	INCLUDING BREAKERS	EST	1	EA	5000		5,000	0	16.00	18	WIRE	98.84	1,800	6,800

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	200A, 277V-120V, 3 PHASE- LIGHTING PANELS	INCLUDING BREAKERS	EST	1	EA	3500		3,500	0	12.00	14	WIRE	98.84	1,400	4,900
6.19	RACEWAY, CABLE TRAY, & CONDUIT							0	40,700					236,200	276,900
	24" X 6" AL CABLE TRAY	INCLUDING SUPPORT & FITTINGS	EST	350	LF		27.10	0	9,500	1.75	704	WIRE	98.84	69600	79,100
	4" RGS CONDUIT	INCLUDING SUPPORT & FITTINGS	EST	350	LF		31.00	0	10,900	0.81	325	WIRE	98.84	32100	43,000
	1" RGS CONDUIT	INCLUDING SUPPORT & FITTINGS	EST	1,300	LF		4.44	0	5,800	0.24	357	WIRE	98.84	35300	41,100
	3/4" RGS CONDUIT	INCLUDING SUPPORT & FITTINGS	EST	4,500	LF		3.23	0	14,500	0.19	1,004	WIRE	98.84	99200	113,700
6.20	GROUNDING							0	4,500					10,900	15,400
	GROUND ROD	3/4" - 20' LONG EACH	EST	4	EA		150	0	600	4.00	18	WIRE	98.84	1,800	2,400
	500 MCM	BARE COPPER WIRE	EST	500	FT		7.65	0	3,800	0.12	69	WIRE	98.84	6,800	10,600
	CADWELD		EST	8	EA		15	0	100	2.00	18	WIRE	98.84	1,800	1,900
	GROUNDING TEST	TEST & DOCUMENTATION	EST	1	LT			0	0	4.00	5	WIRE	98.84	500	500
6.21	MEDIUM VOLTAGE POWER CABLE & TERMINATION	1/C # 2/0-5KV	EST	3,600	LF		2.63	0	9,500	0.12	484	WIRE	98.84	47,900	57,400
6.22	LOW VOLTAGE POWER CABLE & TERMINATION							0	80,900					100,600	181,500
	#4/0 - #12 AWG-600V		EST	11,200	LF		7.22	0	80,900	0.08	1,018	WIRE	98.84	100,600	181,500
6.23	CONTROL & INSTRUMENT CABLE	#14, #16 & PR # 20 & SHLD WIRE	EST	12,000	LF		3.20	0	38,400	0.08	1,090	WIRE	98.84	107,800	146,200
6.24	DUCT BANK	DUCT BANK WITH 4-5" & 4-3" CONDUITS	EST	30	LF		205.00	0	6,200	4.05	140	ECND	75.97	10600	16,800
6.25	COMMUNICATIONS		EST	1	LT		70,000.00	0	70,000	440.00	506	WIRE	98.84	50,000	120,000
6.26	LIGHTNING PROTECTION		EST	1	LT		19,000.00	0	19,000	123.00	141	WIRE	98.84	14,000	33,000
6.27	SECURITY SYSTEM		EST	1	LT		16,000.00	0	16,000	123.00	141	WIRE	98.84	14,000	30,000
90.00	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS							7,437,800	1,723,500		54,300			4,846,500	14,007,800
	OTHER DIRECT & CONSTRUCTION INDIRECT COSTS														
	ADDITIONAL CRANE ALLOWANCE								0					0	0
	MOBILIZATION / DEMOBILIZATION - INCLUDED IN WAGE RATES ABOVE														0
	COST DUE TO OVERTIME WORKING 5 X10 HOUR DAYS			1	LS										808,047
	COST DUE TO OVERTIME INEFFICIENCY - SPECIFY % INEFFICIENCY			8.00	%						4,722		83.48	394,000	394,000
	COST DUE TO OVERTIME PAY @1.5 TIMES OVERTIME PAY RATE SPECIFY % ADDITIONAL HOURS PAID ON ACTUAL HOURS WORKED			10.00	%						5,902			414,047	414,047
	PER DIEM	NONE		0.00	HR						64,924			0	0
	CONSUMABLES - % of ACCT NO. 90			0.5	%				8,618					24,233	32,850
	FREIGHT ON MATERIAL - % of ACCT NO. 90			5.0	%				86,175						86,175
	FREIGHT ON EQUIPMENT - % of ACCT NO. 90			5.0	%			371,890							371,890
	SCAFFOLDING - % OF ACCT NO. 90			5.0	%				86,175					242,325	328,500
	CONTRACTOR'S GENERAL AND ADMINISTRATION & PROFIT EXPENSE - % of ACCT NO. 90			15	%				258,525					726,975	985,500
	SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS							371,900	439,500					1,801,600	2,613,000
	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	BYPRODUCT WASTE & FLY ASH HANDLING SYSTEMS						7,809,700	2,163,000					6,648,100	16,620,800
7.0	ABSORBER ISLAND	NOT REQUIRED FOR NID													0
8.0	ACTIVATED CARBON INJECTION SYSTEM														0
9.0	COMPRESSED AIR SYSTEM														
10.0	SERVICE WATER SYSTEM														
11.0	POTABLE WATER SYSTEM														

				AEP										Estimate No.:	30724C
				BIG SANDY UNIT 2										Project No.:	12721-000
				FGD PROJECT - NID EST (ESP)-3A - 4.5 LB/MM BTU										Date:	9/29/2010
				ORDER OF MAGNITUDE COST ESTIMATE										Preparer:	MNO
		Cost Type:												Reviewer:	JMK
		Est=Estimated												Approver:	PEF
		Allow.=Allowance								Wage Rates Based on:		BIG SANDY			
		Q=Vendor Quote								Labor Productivity =		1.15			

Account No.	Item Description	Scope Definition	Cost Type	Quantity	Unit of Measure	Unit Equip.Cost	Unit Material Cost	Total Equipment Cost	Total Material Cost	Unit Man-hours (Base)	Total Man-hours (w/ productivity)	Crew Code	Crew Wage Rate	Total Construction & Erection Cost	Total Projected Cost
12.0	FGD SUBSTATION														
13.0	FGD DCS SYSTEM														0
14.0	CEM SYSTEM														0
15.0	TRUCK & RAIL INFRASTRUCTURE														0
16.0	SITE IMPROVEMENTS - CIVIL WORK														
17.0	BOP ITEMS														0
17.1	PIPE INSULATION	AVERAGE 6" PIPE SIZE	EST	3,400	LF		10	0	34,000	0.39	1,525	PINS	69.50	106,000	140,000
17.2	HEAT TRACING							0	175,600					248,500	424,100
	CABLE	AVERAGE 6" PIPE SIZE	EST	3,000	LF		10.35	0	31,100	0.05	173	WIRE	98.84	17,000	48,100
	POWER CONNECTOR AND OTHER ACCESSORIES INCLUDING THERMOSTATS FOR HEAT TRACING (BY ZONES)		EST	55	EA		450	0	24,500	8.00	502	WIRE	98.84	49,600	74,100
	HEAT TRACING BALANCE OF PLANT INCL PANELS, POWER WIRING AND CONDUITS		EST	4	LT		30000	0	120,000	400.00	1,840	WIRE	98.84	181,900	301,900
17.3	TOUCH UP PAINT (INCLUDES PAINTING CS PIPE)							0	176,700					677,900	854,600
	TOUCH UP PAINT FOR SHOP PAINTED STEEL		EST	31,200	SF		3	0	93,600	0.15	5,382	PNTR	66.72	359,100	452,700
	TOUCH UP PAINT FOR EQUIPMENT		EST	12,000	SF		3	0	36,000	0.15	2,070	PNTR	66.72	138,100	174,100
	PAINTING CS PIPE ONLY	AVERAGE 6" PIPE SIZE, ALLOWANCE FOR 10,000 LF PIPE	EST	15,700	SF		3	0	47,100	0.15	2,708	PNTR	66.72	180,700	227,800
17.4	HOISTS & TROLLEYS							150,000	175,000					204,400	529,400
	MISC HOISTS & TROLLEYS	IN BUILDINGS FOR EQUIPMENT MAINTENANCE AND FOR ID FANS	EST	10	EA	15000	17500	150,000	175,000	200.00	2,300	MECH	88.89	204,400	529,400
17.5	MISC AUX STEEL FOR PIPE SUPPORTS	FIELD FABRICATED	EST	35	TN		3500	0	122,500	120.00	4,830	STST	105.71	510,600	633,100
17.6	MISC PIPE SUPPORT FOUNDATIONS							0	10,500					21,000	31,500
	EXCAVATION / BACKFILL		EST	65	CY			0	0	0.36	27	EXFD	90.00	2,400	2,400
	REINFORCING		EST	5.0	TN		1,150.00	0	5,800	20.00	115	REIN	78.27	9,000	14,800
	FORMWORK		EST	260	SF		2.50	0	700	0.14	42	FORM	99.43	4,200	4,900
	CONCRETE		EST	25	CY		105.00	0	2,600	1.50	43	CONP	79.64	3,400	6,000
	MUD MAT		EST	10	CY		105.00	0	1,100	1.50	17	CONP	79.64	1,400	2,500
	EMBEDDED STEEL		EST	125	LB		2.50	0	300	0.06	9	CARP	71.88	600	900
17.7	EYE WASH STATIONS	WITH 50 KW HEATERS	EST	5	EA	6000	1000	30,000	5,000	60.00	345	MECH	88.89	30,700	65,700
17.8	FIRE PROTECTION FOR MISC BUILDINGS & AREAS	STAND PIPE FOR BUILDINGS	EST	10	EA		30000	0	300,000	240.00	2,760	MECH	88.89	245,300	545,300
90.00	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS							180,000	999,300		24,687			2,044,400	3,223,700
	OTHER DIRECT & CONSTRUCTION INDIRECT COSTS														
	ADDITIONAL CRANE ALLOWANCE								0					0	0
	MOBILIZATION / DEMOBILIZATION - INCLUDED IN WAGE RATES ABOVE														0
	COST DUE TO OVERTIME WORKING 5 X10 HOUR DAYS			1	LS										367,244
	COST DUE TO OVERTIME INEFFICIENCY - SPECIFY % INEFFICIENCY			8.00	%						2,147		83.48	179,000	179,000
	COST DUE TO OVERTIME PAY @1.5 TIMES OVERTIME PAY RATE SPECIFY % ADDITIONAL HOURS PAID ON ACTUAL HOURS WORKED			10.00	%						2,683			188,244	188,244
	PER DIEM	NONE		0.00	HR						29,517			0	0
	CONSUMABLES - % of ACCT NO. 90			0.5	%				4,997					10,222	15,219

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				FGD PROJECT - NID EST (ESP)-3A - 4.5 LB/MM BTU										Date:	9/29/2010
				ORDER OF MAGNITUDE COST ESTIMATE										Preparer:	MNO
		Cost Type:												Reviewer:	JMK
		Est=Estimated												Approver:	PEF
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		Q=Vendor Quote								Labor Productivity =		1.15			

Account No.	Item Description	Scope Definition	Cost Type	Quantity	Unit of Measure	Unit Equip.Cost	Unit Material Cost	Total Equipment Cost	Total Material Cost	Unit Man-hours (Base)	Total Man-hours (w/ productivity)	Crew Code	Crew Wage Rate	Total Construction & Erection Cost	Total Projected Cost
	FREIGHT ON MATERIAL - % of ACCT NO. 90			5.0	%				49,965						49,965
	FREIGHT ON EQUIPMENT - % of ACCT NO. 90			5.0	%			9,000							9,000
	SCAFFOLDING - % OF ACCT NO. 90			5.0	%				49,965					102,220	152,185
	CONTRACTOR'S GENERAL AND ADMINISTRATION & PROFIT EXPENSE - % of ACCT NO. 90			15	%				149,895					306,660	456,555
	SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS							9,000	254,822					786,346	1,050,167
	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	BOP ITEMS						189,000	1,254,100					2,830,700	4,273,900
18.0	CAPITAL REPLACEMENTS - REMOVAL AND RELOCATION OF EXISTING EQUIPMENT AND INFRASTRUCTURE														0
19.0	ARSENIC, ASBESTOS , LEAD ABATEMENT														0
99.00	OVERALL - EQUIPMENT, MATERIAL AND LABOR COSTS							103,130,600	47,825,500		1,340,752			124,961,700	296,017,800
	OTHER DIRECT & CONSTRUCTION INDIRECT COSTS														
	ADDITIONAL CRANE ALLOWANCE			9	MN	75,000.00		675,000	0		7,452			662,400	1,337,400
	MOBILIZATION / DEMOBILIZATION - INCLUDED IN WAGE RATES ABOVE														0
	COST DUE TO OVERTIME WORKING 5 X10 HOUR DAYS			1	LS										20,007,698
	COST DUE TO OVERTIME INEFFICIENCY - SPECIFY % INEFFICIENCY			8.00	%						116,587		93.20	9,732,000	9,732,000
	COST DUE TO OVERTIME PAY @1.5 TIMES OVERTIME PAY RATE SPECIFY % ADDITIONAL HOURS PAID ON ACTUAL HOURS WORKED			10.00	%						146,479			10,275,698	10,275,698
	PER DIEM	NONE		0.00	HR									0	0
	CONSUMABLES - % of ACCT NO. 90			0.5	%				236,428					623,259	859,686
	FREIGHT ON MATERIAL - % of ACCT NO. 90			5.0	%				2,364,275						2,364,275
	FREIGHT ON EQUIPMENT - % of ACCT NO. 90			5.0	%			5,093,530							5,093,530
	SCAFFOLDING - % OF ACCT NO. 90			5.0	%				2,364,275					6,232,585	8,596,860
	CONTRACTOR'S GENERAL AND ADMINISTRATION EXPENSE - % of ACCT NO. 90			15	%				7,173,825					18,697,755	29,122,080
	OVERALL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS							5,768,500	12,138,800					46,223,700	67,381,500
	OVERALL TOTAL DIRECT & CONSTRUCTION INDIRECT COST							108,899,100	59,964,300					171,185,400	363,399,300
	TOTAL PROJECT DIRECT AND CONSTRUCTION INDIRECT COSTS							108,899,100	59,964,300					171,185,400	363,399,300
								0	0					0	0
	INDIRECT COSTS														
	ENGINEERING, PROCUREMENT, & PROJECT SERVICES			1.0	LT										25,000,000
	CONSTRUCTION MANAGEMENT			3.0	%										10,902,000
	S-U / COMMISSIONING			1.0											3,634,000
	CRAFT START-UP SUPPORT	1% OF TOTAL LABOR MANHOURS (INCLUDES OVERTIME INEFFICIENCY & COST DUE TO OVERTIME PAY @1.5 TIMES OVERTIME PAY RATE - BASED ON ASSUMED 5X10 WORKWEEK)		1.0	%						14,573		93.20	1,472,400	1,472,400
	INITIAL FILLS			0.3	%										1,090,200
	OPERATOR & TRAINING MANUALS			1.0	LT										300,000
	SUBCONTRACTORS (NOISE & DUCTWORK CONSULTANT, GEOTECHNICAL INVESTIGATION)			1.0	LT										400,000
	NOISE ABATEMENT FOR 85 DBA REQUIREMENT	FOR ID FAN, NID MODULES, TRANSFORMERS, BOP, DUCTWORK, ACOUSTIC BARRIERS FOR BOUNDARY LIMITS		1.0	LT										2,600,000
	SUBTOTAL - INDIRECT COSTS														45,398,600

				AEP										Estimate No.:	30724C
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				ORDER OF MAGNITUDE COST ESTIMATE										Preparer:	MNO
		Cost Type:												Reviewer:	JMK
		Est=Estimated												Approver:	PEF
		Allow.=Allowance								Wage Rates Based on:		BIG SANDY			
		Q=Vendor Quote								Labor Productivity =		1.15			

Account No.	Item Description	Scope Definition	Cost Type	Quantity	Unit of Measure	Unit Equip.Cost	Unit Material Cost	Total Equipment Cost	Total Material Cost	Unit Man-hours (Base)	Total Man-hours (w/ productivity)	Crew Code	Crew Wage Rate	Total Construction & Erection Cost	Total Projected Cost
	TOTAL PROJECT DIRECT AND INDIRECT COSTS														408,797,900
	SPARE PARTS:			1.5	%			1,633,500							1,633,500
	SPARE PARTS - CAPITALIZED			0.90	%			980,100							980,100
	SPARE PARTS - FIRST YEAR OF OPERATION			0.60	%			653,400							653,400
	CONTINGENCY			14.1	%										57,769,600
	ESCALATION														51,924,700
	EQUIPMENT	4.0%/yr		4.0	%			17,303,300							17,303,300
	MATERIAL	2.0%/yr		2.0	%				6,202,100						6,202,100
	LABOR	2.5%/yr		2.5	%									23,083,800	23,083,800
	INDIRECTS	2.5%/yr		2.5	%									5,335,500	5,335,500
	TOTAL PROJECT COST														520,125,700
	REFERENCE COSTS:														
A	REMOVAL OF FUEL OIL TANK							1,200,000	80,000					469,400	1,749,400
	REMOVE FUEL OIL TANK & SOIL REMEDIATION	LABOR COST IS FOR REMOVAL OF TANK ONLY. ALLOWANCE FOR SOIL REMEDIATION AND DISPOSAL IN AN EPA APPROVED LANDFILL. SUBCONTRACT COST INCLUDES LABOR. USED LOWER END OF THE RANGE $118-355/CY. COST COULD BE LOWER ($59-118/CY) IF SOLD TO A BITUMINOUS CONCRETE BATCH PLANT	EST	8,000	CY	150		1,200,000	0		0	MECH	88.89	0	1,200,000
	REMOVE DIKE & RECOMPACT FILL IN TANK AREA		EST	3,500	CY			0	0	0.60	2,415	ETWK	177.49	428,600	428,600
	FILL FROM OFF SITE COURSE		EST	5,000	CY		16	0	80,000	0.04	230	ETWK	177.49	40,800	120,800

ATTACHMENT 5-11
NID Detailed Capital Cost Estimate No. 30728 Est-3B ESP not in Service*
(4.5 lb SO_2/MMbtu)

* - Estimates 2A, 2B, 3A, 3B, 4A and 4B contain only accounts whose costs are different from the corresponding base estimates 1A and 1B.

				AEP										Estimate No.:	30728C
				BIG SANDY UNIT 2										Project No.:	12721-000
				FGD PROJECT - NID EST (N/ESP)-3B - 4.5 LB/MM BTU										Date:	9/29/2010
				ORDER OF MAGNITUDE COST ESTIMATE										Preparer:	MNO
		Cost Type:												Reviewer:	JMK
		Est=Estimated												Approver:	PEF
		Allow.=Allowance								Wage Rates Based on:		BIG SANDY			
		Q=Vendor Quote								Labor Productivity =		1.15			

Account No.	Item Description	Scope Definition	Cost Type	Quantity	Unit of Measure	Unit Equip.Cost	Unit Material Cost	Total Equipment Cost	Total Material Cost	Unit Man-hours (Base)	Total Man-hours (w/ productivity)	Crew Code	Crew Wage Rate	Total Construction & Erection Cost	Total Projected Cost
1.0	ID FANS														
2.0	NID MODULES														
2.1	MECHANICAL EQUIPMENT	A 12-MODULE NID SYSTEM (160' X 160') INCLUDING LIME DAY SILOS, HYDRATORS, MIXERS, J-DUCTS, FABRIC FILTER MODULES, ALL INTERNAL ELEMENTS (BAGS, CAGES, ASH HOPPERS, 2 BROKEN BAG DETECTORS / COMPARTMENT), ASH RECYCLE SYSTEM, VACUUM PIPING, AND ALL INTERNAL PIPING & DUCTWORK FOR THE VARIOUS MODULES.	EST	1	LT	53,973,000		53,973,000	0	331100.00	380,765	MECH	88.89	33,846,200	87,819,200
2.2	INSULATION FOR NID MODULES	SUBCONTRACT COST INCLUDES LABOR	EST	80,640	SF	30		2,419,200	0	0.00	0	DINS	81.75	0	2,419,200
2.3	PENTHOUSE FOR NID MODULES	14 FT HIGH, 25600 SF						58,100	1,316,900					1,747,600	3,122,600
	SUPPORT STEEL AND PURLINS	THREE COAT PAINT	EST	200	TN		2,900.00	0	580,000	24.00	5,520	STST	105.71	583,500	1,163,500
	SIDING FOR PENTHOUSE		EST	8,960	SF		12.00	0	107,500	0.11	1,133	SDNG	93.41	105,900	213,400
	CONCRETE FLOOR FOR PENTHOUSE		EST	632	CY		230.00	0	145,400	7.50	5,451	SDNG	93.41	509,200	654,600
	ROOFING FOR PENTHOUSE		EST	25,600	SF		18.00	0	460,800	0.22	6,477	ROOF	69.12	447,700	908,500
	H&V		EST	1	LT	58100	23240	58,100	23,200	1084.00	1,247	HVAC	81.24	101,300	182,600
2.4	BOTTOM ENCLOSURE FOR NID MODULES	40 FT HIGH						92,200	2,428,900					2,544,900	5,066,000
	SUPPORT STEEL AND PURLINS	THREE COAT PAINT	EST	560	TN		2,900.00	0	1,624,000	24.00	15,456	STST	105.71	1,633,900	3,257,900
	SIDING FOR BOTTOM ENCLOSURE		EST	25,600	SF		12.00	0	307,200	0.11	3,238	SDNG	93.41	302,500	609,700
	ROOFING FOR BOTTOM ENCLOSURE		EST	25,600	SF		18.00	0	460,800	0.22	6,477	ROOF	69.12	447,700	908,500
	H&V		EST	1	LT	92200	36880	92,200	36,900	1721.33	1,980	HVAC	81.24	160,800	289,900
2.5	PIPING & SUPPORTS - MECHANICAL							125,200	174,500					385,900	685,600
	LARGE BORE PIPING	4" CS, SCHEDULE 40, WELDED	EST	300	LF		23.0	0	6,900	1.48	511	SPNG	94.41	48,200	55,100
	LARGE BORE PIPING	6" SS, SCH 40 WELDED	EST	400	LF		111.00	0	44,400	2.02	929	SPNG	94.41	87,700	132,100
	LARGE BORE PIPING	18" CS, STD WELDED	EST	400	LF		234.10	0	93,600	2.34	1,076	SPNG	94.41	101,600	195,200
	SMALL BORE PIPING	2" CS, SCH 80 WELDED	EST	150	LF		22.20	0	3,300	1.26	217	SPNG	94.41	20,500	23,800
	SMALL BORE PIPING	2" SS, SCH 80 WELDED	EST	100	LF		48.80	0	4,900	1.44	166	SPNG	94.41	15,600	20,500
	SMALL BORE PIPING	ALLOWANCE FOR MISC SIZE <2" SS, SCH 80 WELDED	EST	300	LF		33.70	0	10,100	1.32	455	SPNG	94.41	43,000	53,100
	VALVE	18" GATE, 150 #, CS, WELDED	EST	4	EA	17,500		70,000	0	28.30	130	SPNG	94.41	12,300	82,300
	VALVE	6" GATE, 150 #, SS, WELDED	EST	6	EA	4,700		28,200	0	12.96	89	SPNG	94.41	8,400	36,600
	VALVE	4" GATE, 150 #, CS, WELDED	EST	5	EA	2,500		12,500	0	7.70	44	SPNG	94.41	4,200	16,700
	VALVE	2" GLOBE, 150# SS, WELDED	EST	10	EA	1,450		14,500	0	5.64	65	SPNG	94.41	6,100	20,600
	PIPE SUPPORTS		EST	150	EA		75.00	0	11,300	2.50	431	MECH	88.89	38,300	49,600
2.6	DUCTWORK							0	4,797,000					9,162,600	13,959,600
	NID MODULE INLET	INCLUDES INTERNAL BRACING AND TURNING VANES	EST	1,476	TN		3,250.00	0	4,797,000	50.00	84,870	FLDU	107.96	9,162,600	13,959,600
2.7	DUCT SUPPORT STEEL	THREE COAT SHOP PAINT	EST	738	TN		2,900.00	0	2,140,200	24.00	20,369	STST	105.71	2,153,200	4,293,400
2.8	DUCTWORK INSULATION & LAGGING		EST	136,000	SF		12.00	0	1,632,000	0.25	39,100	DINS	81.75	3,196,400	4,828,400
2.9	NID MODULE- FOUNDATIONS							0	1,087,000					1,778,100	2,865,100
	EXCAVATION / BACKFILL		EST	4,400	CY			0	0	0.36	1,822	EXFD	90.00	163,900	163,900
.	REINFORCING		EST	450	TN		1,150.00	0	517,500	20.00	10,350	REIN	78.27	810,100	1,327,600
	FORMWORK		EST	3,200	SF		2.50	0	8,000	0.14	515	FORM	99.43	51,200	59,200
	CONCRETE		EST	4,750	CY		105.00	0	498,800	1.50	8,194	CONP	79.64	652,600	1,151,400
	MUD MAT		EST	340	CY		105.00	0	35,700	1.50	587	CONP	79.64	46,700	82,400
	EMBEDDED STEEL		EST	10,800	LB		2.50	0	27,000	0.06	745	CARP	71.88	53,600	80,600
2.10	NID MODULE - SUPPORT STEEL AND ACCESS GALLERY							0	1,152,000					2,863,700	4,015,700
	SUPPORT STEEL	MATERIAL INCLUDED WITH OEM EQUIPMENT	EST	640	TN			0	0	24.00	17,664	STST	105.71	1,867,300	1,867,300

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				ORDER OF MAGNITUDE COST ESTIMATE										Preparer:	MNO
		Cost Type:												Reviewer:	JMK
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		Q=Vendor Quote								Labor Productivity =		1.15			

Account No.	Item Description	Scope Definition	Cost Type	Quantity	Unit of Measure	Unit Equip.Cost	Unit Material Cost	Total Equipment Cost	Total Material Cost	Unit Man-hours (Base)	Total Man-hours (w/ productivity)	Crew Code	Crew Wage Rate	Total Construction & Erection Cost	Total Projected Cost
	ACCESS GALLERY		EST	25,600	SF		45.00	0	1,152,000	0.40	11,776	GALL	84.61	996,400	2,148,400
2.11	GROUNDING							0	16,000		0			46,100	62,100
	GROUND ROD	3/4" - 20' LONG	EST	16	EA		150	0	2,400	4.00	74	WIRE	98.84	7,300	9,700
	500 MCM	BARE COPPER WIRE	EST	1,650	FT		7.65	0	12,600	0.12	228	WIRE	98.84	22,500	35,100
	CADWELD		EST	64	EA		15	0	1,000	2.00	147	WIRE	98.84	14,500	15,500
	GROUNDING TEST	TEST & DOCUMENTATION	EST	1	LT			0	0	16.00	18	WIRE	98.84	1,800	1,800
2.12	LIGHTING/ TRANSFORMERS & PANELS							27,000	75,000		0			57,300	159,300
	LIGHT FIXTURES		EST	100	EA		750	0	75,000	4.00	460	WIRE	98.84	45,500	120,500
	45KVA, 480V, 3 PHASE	LOW VOLTAGE XFMR	EST	2	EA	10000		20,000	0	40.00	92	WIRE	98.84	9,100	29,100
	200A, 277V-120V, 3 PHASE- LIGHTING PANELS	INCLUDING BREAKERS	EST	2	EA	3500		7,000	0	12.00	28	WIRE	98.84	2,700	9,700
2.13	RACEWAY, CABLE TRAY, & CONDUIT	INCLUDED IN ID FANS, 1.0													
90.00	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS							56,694,700	14,819,500		628,896			57,782,000	129,296,200
	OTHER DIRECT & CONSTRUCTION INDIRECT COSTS														
	ADDITIONAL CRANE ALLOWANCE			9	MN	75000		675,000		720.00	7,452	MECH	88.89	662400	1,337,400
	MOBILIZATION / DEMOBILIZATION - INCLUDED IN WAGE RATES ABOVE														0
	COST DUE TO OVERTIME WORKING 5 X10 HOUR DAYS			1	LS										9,412,692
	COST DUE TO OVERTIME INEFFICIENCY - SPECIFY % INEFFICIENCY			8.00	%						54,687		83.48	4,565,000	4,565,000
	COST DUE TO OVERTIME PAY @1.5 TIMES OVERTIME PAY RATE SPECIFY % ADDITIONAL HOURS PAID ON ACTUAL HOURS WORKED			10.00	%						69,103			4,847,692	4,847,692
	PER DIEM	NONE		0.00	HR						760,138			0	0
	CONSUMABLES - % of ACCT NO. 90			0.5	%				74,098					288,910	363,008
	FREIGHT ON MATERIAL - % of ACCT NO. 90			5.0	%				740,975						740,975
	FREIGHT ON EQUIPMENT - % of ACCT NO. 90			5.0	%			2,834,735							2,834,735
	SCAFFOLDING - % OF ACCT NO. 90			5.0	%				740,975					2,889,100	3,630,075
	CONTRACTOR'S GENERAL AND ADMINISTRATION & PROFIT - % of ACCT NO. 90			15	%				2,222,925					8,667,300	10,890,225
	SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS							3,509,700	3,779,000					21,920,400	29,209,100
	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	NID MODULES						60,204,400	18,598,500					79,702,400	158,505,300
3.0	NEW STACK														
4.0	LIME HANDLING SYSTEM														
4.1	LIME STORAGE SILO							8,952,000	0					0	8,952,000
	SILO	CONCRETE SILO 75' DIA X 132' H - 10512 TONS -SUBCONTRACT COST INCLUDES LABOR	EST	2	EA	4,331,000.00		8,662,000	0	0.00	0	CONP	79.64	0	8,662,000
	ELEVATOR	MAINTENANCE ELEVATOR COMMON FOR BOTH SILOS - SUBCONTRACT COST INCLUDES LABOR	EST	1	EA	290,000.00		290,000	0	0.00	0	MECH	88.89	0	290,000
4.2	LIME UNLOADING SYSTEM	INCLUDE PNEUMATIC HANDLING SYSTEM, THREE VACUUM EXHAUSTER, TWO FILTER SEPARATORS	EST	1	LT	1,100,000		1,100,000	0	5800.00	6,670	MECH	88.89	592,900	1,692,900
4.3	LIME TRANSPORT SYSTEM TO DAY BINS	INCLUDE PNEUMATIC HANDLING SYSTEM, THREE VACUUM EXHAUSTERS, TWO FILTER SEPARATORS	EST	1	LT	2,866,000		2,866,000	0	15300.00	17,595	MECH	88.89	1,564,000	4,430,000
4.4	PIPING - MECHANICAL							88,700	130,300					342,600	561,600

															Estimate No.:	30728C
				AEP											Project No.:	12721-000
				BIG SANDY UNIT 2											Date:	9/29/2010
				FGD PROJECT - NID EST (N/ESP)-3B - 4.5 LB/MM BTU											Preparer:	MNO
				ORDER OF MAGNITUDE COST ESTIMATE											Reviewer:	JMK
		Cost Type:													Approver:	PEF
		Est=Estimated								Wage Rates Based on:		BIG SANDY				
		Allow.=Allowance								Labor Productivity =		1.15				
		Q=Vendor Quote														

Account No.	Item Description	Scope Definition	Cost Type	Quantity	Unit of Measure	Unit Equip.Cost	Unit Material Cost	Total Equipment Cost	Total Material Cost	Unit Man-hours (Base)	Total Man-hours (w/ productivity)	Crew Code	Crew Wage Rate	Total Construction & Erection Cost	Total Projected Cost
	LARGE BORE PIPING	14" CS, SCH 40 WELDED - ON PIPE RACK	EST	500	LF		163.1	0	81,600	1.67	960	SPNG	94.41	90,700	172,300
	LARGE BORE PIPING	8" HDPE (UNDERGROUND)	EST	1,200	LF		14.1	0	16,900	0.83	1,145	SPNG	94.41	108,100	125,000
	LARGE BORE PIPING	6" CS, SCH 40 WELDED	EST	200	LF		41.7	0	8,300	1.61	370	SPNG	94.41	35,000	43,300
	SMALL BORE PIPING	2" CS, SCH 80 WELDED	EST	50	LF		22.20	0	1,100	1.26	72	SPNG	94.41	6,800	7,900
	SMALL BORE PIPING	2" SS, SCH 80 WELDED	EST	50	LF		48.80	0	2,400	1.44	83	SPNG	94.41	7,800	10,200
	SMALL BORE PIPING	ALLOWANCE FOR MISC SIZE <2" SS, SCH 80 WELDED	EST	100	LF		33.70	0	3,400	1.32	152	SPNG	94.41	14,300	17,700
	VALVE	2" GLOBE, 150# SS, WELDED	EST	6	EA	1,450		8,700	0	5.64	39	SPNG	94.41	3,700	12,400
	VALVE	8" AIR OPERATED, 150 #, CS, FLANGED	EST	4	EA	17,000		68,000	0	19.30	89	SPNG	94.41	8,400	76,400
	VALVE	14" BFLY 150# CS, FLANGED	EST	4	EA	3,000		12,000	0	16.60	76	SPNG	94.41	7,200	19,200
	EXCAVATION / BACKFILL	FOR UNDERGROUND PIPING	EST	1,000	CY			0	0	0.20	230	EXFD	90.00	20,700	20,700
	BEDDING	FOR UNDERGROUND PIPING	EST	133	CY		35.0	0	4,700	0.25	38	EXFD	90.00	3,500	8,200
	PIPE SUPPORTS		EST	238	EA		50.00	0	11,900	1.50	410	MECH	88.89	36,400	48,300
4.5	LIME STORAGE SILO ACCESS STAIR TOWER	INCLUDES CATWALK TO THE SECOND SILO - THREE COAT SHOP PAINT	EST	55	TN		2,900.00	0	159,500	24.00	1,518	STST	105.71	160,500	320,000
4.6	PIPE RACK FOR LIME HANDLING, WASTE HANDLING AND MISC MECHANICAL PIPING	THREE COAT SHOP PAINT	EST	650	TN		2,900.00	0	1,885,000	24.00	17,940	STST	105.71	1,896,400	3,781,400
4.7	RAIL CAR UNLOADING AREA - FOUNDATIONS	20' X 120' - NO SIDING						0	42,700					90,100	132,800
	EXCAVATION / BACKFILL		EST	500	CY			0	0	0.36	207	EXFD	90.00	18,600	18,600
	REINFORCING		EST	15	TN		1,150.00	0	17,300	20.00	345	REIN	78.27	27,000	44,300
	FORMWORK		EST	750	SF		2.50	0	1,900	0.14	121	FORM	99.43	12,000	13,900
	CONCRETE		EST	200	CY		105.00	0	21,000	1.50	345	CONP	79.64	27,500	48,500
	MUD MAT		EST	0	CY		105.00	0	0	1.50	0	CONP	79.64	0	0
	EMBEDDED STEEL		EST	1,000	LB		2.50	0	2,500	0.06	69	CARP	71.88	5,000	7,500
4.8	LIME UNLOADING BLOWER / ELECTRICAL BUILDING - FOUNDATIONS							0	69,600					147,600	217,200
	EXCAVATION / BACKFILL		EST	800	CY			0	0	0.36	331	EXFD	90.00	29,800	29,800
	REINFORCING		EST	25	TN		1,150.00	0	28,800	20.00	575	REIN	78.27	45,000	73,800
	FORMWORK		EST	1,200	SF		2.50	0	3,000	0.14	193	FORM	99.43	19,200	22,200
	CONCRETE		EST	300	CY		105.00	0	31,500	1.50	518	CONP	79.64	41,200	72,700
	MUD MAT		EST	0	CY		105.00	0	0	1.50	0	CONP	79.64	0	0
	EMBEDDED STEEL		EST	2,500	LB		2.50	0	6,300	0.06	173	CARP	71.88	12,400	18,700
4.9	LIME UNLOADING BLOWER / ELECTRICAL BUILDING	100' L X 30' W X 30' H						75,000	335,000					24,400	434,400
	PRE-ENGINEERED BUILDING INCLUDING H&V AND LIGHTING	SUBCONTRACT PRICE, INCLUDES LABOR	EST	3,000	SF		105	0	315,000	0.00	0	STST	105.71	0	315,000
	ADDITIONAL HVAC UNIT FOR ELECTRICAL ROOM & CONTROLS	40T PACKAGED UNIT FOR ELECTRICAL EQUIPMENT ROOM. INCLUDES ALLOWANCE FOR CONCRETE PAD AND ELECTRICAL WORK	EST	1	LT	75000	20000	75,000	20,000	350.00	300	HVAC	81.24	24,400	119,400
4.10	CONCRETE PIT FOR THE ELEVATOR		EST	10	CY		230.00	0	2,300	7.50	86	CONP	79.64	6,900	9,200
4.11	LIME STORAGE SILO - FOUNDATIONS	INCLUDES FOUNDATIONS FOR LIME TRANSPORT SYSTEM PRESSURE BLOWERS						0	560,700					1,002,700	1,563,400
	EXCAVATION / BACKFILL		EST	3,900	CY			0	0	0.36	1,615	EXFD	90.00	145,300	145,300
	REINFORCING		EST	230.0	TN		1,150.00	0	264,500	20.00	5,290	REIN	78.27	414,000	678,500
	FORMWORK		EST	3,200	SF		2.50	0	8,000	0.14	515	FORM	99.43	51,200	59,200
	CONCRETE		EST	2,400	CY		105.00	0	252,000	1.50	4,140	CONP	79.64	329,700	581,700
	MUD MAT		EST	130	CY		105.00	0	13,700	1.50	224	CONP	79.64	17,900	31,600
	EMBEDDED STEEL		EST	9,000	LB		2.50	0	22,500	0.06	621	CARP	71.88	44,600	67,100
4.12	LIME STORAGE SILO ACCESS STAIR TOWER - FOUNDATIONS							0	14,200					28,600	42,800

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				BIG SANDY UNIT 2										Project No.:	12721-000
				FGD PROJECT - NID EST (N/ESP)-3B - 4.5 LB/MM BTU										Date:	9/29/2010
				ORDER OF MAGNITUDE COST ESTIMATE										Preparer:	MNO
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Account No.	Item Description	Scope Definition	Cost Type	Quantity	Unit of Measure	Unit Equip.Cost	Unit Material Cost	Total Equipment Cost	Total Material Cost	Unit Man-hours (Base)	Total Man-hours (w/ productivity)	Crew Code	Crew Wage Rate	Total Construction & Erection Cost	Total Projected Cost
	EXCAVATION / BACKFILL		EST	110	CY			0	0	0.36	46	EXFD	90.00	4,100	4,100
	REINFORCING		EST	4.8	TN		1,150.00	0	5,500	20.00	110	REIN	78.27	8,600	14,100
	FORMWORK		EST	320	SF		2.50	0	800	0.14	52	FORM	99.43	5,100	5,900
	CONCRETE		EST	60	CY		105.00	0	6,300	1.50	104	CONP	79.64	8,200	14,500
	MUD MAT		EST	8	CY		105.00	0	800	1.50	14	CONP	79.64	1,100	1,900
	EMBEDDED STEEL		EST	300	LB		2.50	0	800	0.06	21	CARP	71.88	1,500	2,300
4.13	PIPE RACK - FOUNDATIONS							0	239,600					588,600	828,200
	EXCAVATION / BACKFILL		EST	3,200	CY			0	0	0.36	1,325	EXFD	90.00	119,200	119,200
	REINFORCING		EST	90.0	TN		1,150.00	0	103,500	20.00	2,070	REIN	78.27	162,000	265,500
	FORMWORK		EST	9,500	SF		2.50	0	23,800	0.14	1,530	FORM	99.43	152,100	175,900
	CONCRETE		EST	950	CY		105.00	0	99,800	1.50	1,639	CONP	79.64	130,500	230,300
	MUD MAT		EST	0	CY		105.00	0	0	1.50	0	CONP	79.64	0	0
	EMBEDDED STEEL		EST	5,000	LB		2.50	0	12,500	0.06	345	CARP	71.88	24,800	37,300
4.14	TRANSFORMERS	SUS TRANSFORMERS: 33F, 33G, 13.8KV-480V,3PHASE, 3 WINDING XFMR	EST	2	EA	85000		170,000	0	300.00	690	EHEA	79.16	54,600	224,600
4.15	SWITCHGEAR	480V LOW VOLTAGE (33F/G), SWITCHGEAR	EST	5	EA	39200		196,000	0	230.00	1,323	EHEA	79.16	104,700	300,700
4.16	CABLE BUS DUCT							134,700	10,800					200,200	345,700
	480V CABLE BUS	BUST DUCT ONLY	EST	150	FT	898		134,700	0	10.30	1,777	WIRE	98.84	175,600	310,300
	CABLE BUS TERMINATION	750MCM- 480V TERMINATIONS	EST	4	EA		2,700.00	0	10,800	54.00	248	WIRE	98.84	24,600	35,400
4.17	MCC							61,800	0					3,600	65,400
	480V MCC	PER LINE UP	EST	2	EA	30900		61,800	0	16.00	37	WIRE	98.84	3,600	65,400
4.18	MIMIC PANELS		EST	1	EA	17500		17,500	0	12.00	14	WIRE	98.84	1,400	18,900
4.19	EMERGENCY POWER SYSTEM							108,300	0					24,400	132,700
	DC PANEL BOARD		EST	1	EA	15450		15,500	0	40.00	46	WIRE	98.84	4,500	20,000
	UPS PANEL BOARDS		EST	1	EA	15450		15,500	0	40.00	46	WIRE	98.84	4,500	20,000
	SATELLITE UPS		EST	1	EA	41200		41,200	0	16.00	18	WIRE	98.84	1,800	43,000
	VRLA BATTERIES		EST	1	LT	36050		36,100	0	120.00	138	WIRE	98.84	13,600	49,700
4.20	GROUNDING							13,300	0					41,300	54,600
	GROUND ROD	3/4" - 20' LONG	EST	16	EA	150		2,400	0	4.00	74	WIRE	98.84	7,300	9,700
	500 MCM	BARE COPPER WIRE	EST	1,300	FT	7.65		9,900	0	0.12	179	WIRE	98.84	17,700	27,600
	CADWELD		EST	64	EA	15		1,000	0	2.00	147	WIRE	98.84	14,500	15,500
	GROUNDING TEST	TEST & DOCUMENTATION	EST	1	LT			0	0	16.00	18	WIRE	98.84	1,800	1,800
4.21	LIGHTING/ TRANSFORMERS & PANELS							52,000	135,000					104,500	291,500
	LIGHT FIXTURES		EST	180	EA		750	0	135,000	4.00	828	WIRE	98.84	81,800	216,800
	45KVA, 480V, 3 PHASE	LOW VOLTAGE XFMR	EST	2	EA	10000		20,000	0	40.00	92	WIRE	98.84	9,100	29,100
	37.7KVA, 480V, 3 PHASE	LOW VOLTAGE XFMR	EST	2	EA	7500		15,000	0	32.00	74	WIRE	98.84	7,300	22,300
	200A, 480-277V, 3 PHASE- RECEPTACLE PANEL	INCLUDING BREAKERS	EST	2	EA	5000		10,000	0	16.00	37	WIRE	98.84	3,600	13,600
	200A, 277V-120V, 3 PHASE- LIGHTING PANELS	INCLUDING BREAKERS	EST	2	EA	3500		7,000	0	12.00	28	WIRE	98.84	2,700	9,700
4.22	RACEWAY, CABLE TRAY, & CONDUIT							0	310,900					1,537,100	1,848,000
	12" X 6" AL CABLE TRAY	INCLUDING SUPPORT & FITTINGS	EST	1,050	LF		18.25	0	19,200	1.10	1,328	WIRE	98.84	131,300	150,500
	18" X 6" AL CABLE TRAY	INCLUDING SUPPORT & FITTINGS	EST	600	LF		21.50	0	12,900	1.45	1,001	WIRE	98.84	98,900	111,800
	24" X 6" AL CABLE TRAY	INCLUDING SUPPORT & FITTINGS	EST	1,700	LF		27.10	0	46,100	1.75	3,421	WIRE	98.84	338,200	384,300
	36" X 6" AL CABLE TRAY	INCLUDING SUPPORT & FITTINGS	EST	500	LF		30.30	0	15,200	1.95	1,121	WIRE	98.84	110,800	126,000
	5" RGS CONDUIT	INCLUDING SUPPORT & FITTINGS	EST	750	LF		61.00	0	45,800	1.13	972	WIRE	98.84	96,100	141,900
	4" RGS CONDUIT	INCLUDING SUPPORT & FITTINGS	EST	1,450	LF		31.00	0	45,000	0.81	1,346	WIRE	98.84	133,000	178,000

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				BIG SANDY UNIT 2										Project No.:	12721-000
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Account No.	Item Description	Scope Definition	Cost Type	Quantity	Unit of Measure	Unit Equip.Cost	Unit Material Cost	Total Equipment Cost	Total Material Cost	Unit Man-hours (Base)	Total Man-hours (w/ productivity)	Crew Code	Crew Wage Rate	Total Construction & Erection Cost	Total Projected Cost
	3" RGS CONDUIT	INCLUDING SUPPORT & FITTINGS	EST	1,550	LF		21.50	0	33,300	0.65	1,150	WIRE	98.84	113,600	146,900
	2" RGS CONDUIT	INCLUDING SUPPORT & FITTINGS	EST	2,400	LF		9.25	0	22,200	0.35	972	WIRE	98.84	96,000	118,200
	1-1/2" RGS CONDUIT	INCLUDING SUPPORT & FITTINGS	EST	3,050	LF		7.15	0	21,800	0.28	996	WIRE	98.84	98,500	120,300
	1" RGS CONDUIT	INCLUDING SUPPORT & FITTINGS	EST	5,150	LF		4.44	0	22,900	0.24	1,415	WIRE	98.84	139,900	162,800
	3/4" RGS CONDUIT	INCLUDING SUPPORT & FITTINGS	EST	8,200	LF		3.23	0	26,500	0.19	1,829	WIRE	98.84	180,800	207,300
4.23	HIGH VOLTAGE POWER CABLE & TERMINATION	1/C # 500KCMIL- 15KV	EST	15,600	LF		9.27	0	144,600	0.23	4,126	WIRE	98.84	407,800	552,400
4.24	MEDIUM VOLTAGE POWER CABLE & TERMINATION	1/C 350KCMIL-5KV	EST	10,800	LF		6.13	0	66,200	0.23	2,857	WIRE	98.84	282,300	348,500
4.25	LOW VOLTAGE POWER CABLE & TERMINATION							0	93,000					143,200	236,200
	3/C # 500KCMIL- 600V		EST	600	LF		26.12	0	15,700	0.69	476	WIRE	98.84	47,100	62,800
	#4/0 - #12 AWG-600V		EST	10,700	LF		7.22	0	77,300	0.08	972	WIRE	98.84	96,100	173,400
4.26	CONTROL & INSTRUMENT CABLE	#14, #16 & PR # 20 & SHLD WIRE	EST	8,200	LF		3.20	0	26,200	0.08	745	WIRE	98.84	73,600	99,800
4.27	DUCT BANK	DUCT BANK WITH 4-5" & 4-3" CONDUITS, 2.38' H X 3.79' W	EST	350	LF		174.67	0	61,100	3.80	1,530	ECND	75.97	116,200	177,300
4.28	FOUNDATIONS FOR TRANSFORMERS	FOR XFMR 33F, 33G, INCLUDES MUD MAT	EST	14.0	CY		250	0	3,500	8.00	129	CONP	79.64	10,300	13,800
4.29	COMMUNICATIONS		EST	1	LT		34,000.00	0	34,000	229.00	263	WIRE	98.84	26,000	60,000
4.30	LIGHTNING PROTECTION		EST	1	LT		6,000.00	0	6,000	41.00	47	WIRE	98.84	4,700	10,700
4.31	SECURITY SYSTEM		EST	1	LT		8,000.00	0	8,000	62.00	71	WIRE	98.84	7,000	15,000
90.00	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS							13,835,300	4,338,200		102,890			9,588,200	27,761,700
	OTHER DIRECT & CONSTRUCTION INDIRECT COSTS														
	ADDITIONAL CRANE ALLOWANCE								0					0	0
	MOBILIZATION / DEMOBILIZATION - INCLUDED IN WAGE RATES ABOVE														0
	COST DUE TO OVERTIME WORKING 5 X10 HOUR DAYS			1	LS										1,531,547
	COST DUE TO OVERTIME INEFFICIENCY - SPECIFY % INEFFICIENCY			8.00	%						8,947		83.48	747,000	747,000
	COST DUE TO OVERTIME PAY @1.5 TIMES OVERTIME PAY RATE SPECIFY % ADDITIONAL HOURS PAID ON ACTUAL HOURS WORKED			10.00	%						11,184			784,547	784,547
	PER DIEM	NONE		0.00	HR						123,020			0	0
	CONSUMABLES - % of ACCT NO. 90			0.5	%				21,691					47,941	69,632
	FREIGHT ON MATERIAL - % of ACCT NO. 90			5.0	%				216,910						216,910
	FREIGHT ON EQUIPMENT - % of ACCT NO. 90			5.0	%			691,765							691,765
	SCAFFOLDING - % OF ACCT NO. 90			5.0	%				216,910					479,410	696,320
	CONTRACTOR'S GENERAL AND ADMINISTRATION & PROFIT - % of ACCT NO. 90			15	%				650,730					1,438,230	2,088,960
	SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS							691,800	1,106,200					3,497,100	5,295,100
	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	LIME HANDLING SYSTEM						14,527,100	5,444,400					13,085,300	33,056,800
5.0	LIME SLAKER BUILDING	NOT REQUIRED FOR NID													0
6.0	BYPRODUCT WASTE & FLY ASH HANDLING SYSTEMS														0

AEP

BIG SANDY UNIT 2

FGD PROJECT - NID EST (N/ESP)-3B - 4.5 LB/MM BTU

ORDER OF MAGNITUDE COST ESTIMATE

Estimate No.: 30728C
Project No.: 12721-000
Date: 9/29/2010
Preparer: MNO
Reviewer: JMK
Approver: PEF

Cost Type:
Est=Estimated
Allow.=Allowance
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Wage Rates Based on: BIG SANDY
Labor Productivity = 1.15

Account No.	Item Description	Scope Definition	Cost Type	Quantity	Unit of Measure	Unit Equip.Cost	Unit Material Cost	Total Equipment Cost	Total Material Cost	Unit Man-hours (Base)	Total Man-hours (w/ productivity)	Crew Code	Crew Wage Rate	Total Construction & Erection Cost	Total Projected Cost
6.1	BYPRODUCT WASTE HANDLING - MECHANICAL EQUIPMENT	INCLUDES PNEUMATIC HANDLING SYSTEM, THREE PRESSURE BLOWERS, ONE BIN VENT FILTER, ASH UNLOADING SYSTEM	EST	1	LT	2,900,000		2,900,000	0	15800.00	18,170	MECH	88.89	1,615,100	4,515,100
6.2	ECONOMIZER ASH HANDLING - MECHANICAL EQUIPMENT	INCLUDES JET PUMPS AND PIPING / SUPPORTS TO THE BOTTOM ASH POND	EST	1	LT	400,000		400,000	0	2900.00	3,335	MECH	88.89	296,400	696,400
6.3	BUILDING SUMP PUMPS	FOR BUILDINGS - DUPLEX. INCLUDES CHECK & ISOLATION VALVES.		2	EA	14,000		28,000	0	60.00	138	MECH	88.89	12,300	40,300
6.4	AGITATOR FOR SUMP PUMPS	5 HP		1	EA	12,000		12,000	0	45.00	52	MECH	88.89	4,600	16,600
6.5	PIPING - MECHANICAL		EST	1	LT			142,800	131,000					408,700	682,500
	LARGE BORE PIPING	4" SS, SCHEDULE 40, WELDED - ON PIPE RACK	EST	300	LF		45.1	0	13,500	0.87	300	SPNG	94.41	28,300	41,800
	LARGE BORE PIPING	6" CS, SCH 40 WELDED - ON PIPE RACK	EST	200	LF		32.2	0	6,400	0.88	202	SPNG	94.41	19,100	25,500
	LARGE BORE PIPING	6" CS, SCH 40 WELDED	EST	100	LF		41.7	0	4,200	1.61	185	SPNG	94.41	17,500	21,700
	LARGE BORE PIPING	8" HDPE (UNDERGROUND)	EST	400	LF		14.1	0	5,600	0.83	382	SPNG	94.41	36,000	41,600
	LARGE BORE PIPING	10" CS, SCH 40 WELDED	EST	300	LF		110.3	0	33,100	2.40	828	SPNG	94.41	78,200	111,300
	LARGE BORE PIPING	20" HDPE (UNDERGROUND)	EST	600	LF		72.8	0	43,700	1.45	1,001	SPNG	94.41	94,500	138,200
	SMALL BORE PIPING	2" CS, SCH 80 WELDED	EST	50	LF		22.20	0	1,100	1.26	72	SPNG	94.41	6,800	7,900
	SMALL BORE PIPING	2" SS, SCH 80 WELDED	EST	50	LF		48.80	0	2,400	1.44	83	SPNG	94.41	7,800	10,200
	SMALL BORE PIPING	ALLOWANCE FOR MISC SIZE <2" SS, SCH 80 WELDED	EST	100	LF		33.70	0	3,400	1.32	152	SPNG	94.41	14,300	17,700
	VALVE	2" GLOBE, 150# SS, WELDED	EST	15	EA	1,450		21,800	0	5.64	97	SPNG	94.41	9,200	31,000
	VALVE	4" GATE, 150 #, CS, WELDED	EST	10	EA	2,500		25,000	0	7.70	89	SPNG	94.41	8,400	33,400
	VALVE	6" AIR OPERATED, 150 #, CS, FLANGED	EST	2	EA	14,000		28,000	0	17.30	40	SPNG	94.41	3,800	31,800
	VALVE	8" AIR OPERATED, 150 #, CS, FLANGED	EST	4	EA	17,000		68,000	0	19.30	89	SPNG	94.41	8,400	76,400
	EXCAVATION / BACKFILL	FOR UNDERGROUND PIPING	EST	2,000	CY			0	0	0.20	460	EXFD	90.00	41,400	41,400
	BEDDING	FOR UNDERGROUND PIPING	EST	267	CY		35.0	0	9,300	0.25	77	EXFD	90.00	6,900	16,200
	PIPE SUPPORTS	AVERAGE COST FOR MISC PIPE SIZES	EST	110	EA		75.00	0	8,300	2.50	316	MECH	88.89	28,100	36,400
6.6	BYPRODUCT WASTE SILO	CONCRETE SILO 65' DIA X 151' H - 6652 TONS -SUBCONTRACT COST INCLUDES LABOR	EST	1	EA	2,994,000		2,994,000	0	0.00	0	CONP	79.64	0	2,994,000
6.7	RECYCLE SILO	NOT REQUIRED FOR NID													
6.8	FLY ASH SILO	NOT REQUIRED - ECONOMIZER FLY ASH SLUICD TO BOTTOM ASH POND						0	0					0	0
	SILO BIN		EST	0	EA	50,000		0	0	450.00	0	TANK	89.16	0	0
	SUPPORT STEEL FOR SILO		EST	0	TN		2,900.00	0	0	24.00	0	STST	105.71	0	0
6.9	BYPRODUCT WASTE STORAGE SILO - FOUNDATIONS							0	188,700					349,900	538,600
	EXCAVATION / BACKFILL		EST	1,500	CY			0	0	0.36	621	EXFD	90.00	55,900	55,900
	REINFORCING		EST	75.0	TN		1,150.00	0	86,300	20.00	1,725	REIN	78.27	135,000	221,300
	FORMWORK		EST	1,300	SF		2.50	0	3,300	0.14	209	FORM	99.43	20,800	24,100
	CONCRETE		EST	780	CY		105.00	0	81,900	1.50	1,346	CONP	79.64	107,200	189,100
	MUD MAT		EST	45	CY		105.00	0	4,700	1.50	78	CONP	79.64	6,200	10,900

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				BIG SANDY UNIT 2										Project No.:	12721-000
				FGD PROJECT - NID EST (N/ESP)-3B - 4.5 LB/MM BTU										Date:	9/29/2010
				ORDER OF MAGNITUDE COST ESTIMATE										Preparer:	MNO
		Cost Type:												Reviewer:	JMK
		Est=Estimated												Approver:	PEF
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	EMBEDDED STEEL		EST	5,000	LB		2.50	0	12,500	0.06	345	CARP	71.88	24,800	37,300
6.10	FLY ASH SILO - FOUNDATIONS	NOT REQUIRED						0	0					0	0
	EXCAVATION / BACKFILL		EST	0	CY			0	0	0.36	0	EXFD	90.00	0	0
	REINFORCING		EST	0.0	TN		1,150.00	0	0	20.00	0	REIN	78.27	0	0
	FORMWORK		EST	0	SF		2.50	0	0	0.14	0	FORM	99.43	0	0
	CONCRETE		EST	0	CY		105.00	0	0	1.50	0	CONP	79.64	0	0
	MUD MAT		EST	0	CY		105.00	0	0	1.50	0	CONP	79.64	0	0
	EMBEDDED STEEL		EST	0	LB		2.50	0	0	0.06	0	CARP	71.88	0	0
6.11	BYPRODUCT TRANSPORT BLOWER BUILDING - FOUNDATIONS							0	97,600					172,100	269,700
	EXCAVATION / BACKFILL		EST	470	CY			0	0	0.36	195	EXFD	90.00	17,500	17,500
	REINFORCING		EST	38	TN		1,150.00	0	43,700	20.00	874	REIN	78.27	68,400	112,100
	FORMWORK		EST	960	SF		2.50	0	2,400	0.14	155	FORM	99.43	15,400	17,800
	CONCRETE		EST	400	CY		105.00	0	42,000	1.50	690	CONP	79.64	55,000	97,000
	MUD MAT		EST	43	CY		105.00	0	4,500	1.50	74	CONP	79.64	5,900	10,400
	EMBEDDED STEEL		EST	2,000	LB		2.50	0	5,000	0.06	138	CARP	71.88	9,900	14,900
6.12	BYPRODUCT TRANSPORT BLOWER BUILDING	90' L X 30' W X 20' H						40,000	241,500					26,200	307,700
	PRE-ENGINEERED BUILDING INCLUDING H&V AND LIGHTING	SUBCONTRACT PRICE, INCLUDES LABOR	EST	2,700	SF		85	0	229,500	0.00	0	STST	105.71	0	229,500
	ADDITIONAL HVAC UNIT FOR ELECTRICAL ROOM & CONTROLS	20T PACKAGED UNIT FOR ELECTRICAL EQUIPMENT ROOM. INCLUDES ALLOWANCE FOR CONCRETE PAD AND ELECTRICAL WORK	EST	1	LT	40000	12000	40,000	12,000	280.00	322	HVAC	81.24	26,200	78,200
6.13	FLY ASH BLOWER AND ELECTRICAL BUILDING - FOUNDATIONS	NOT REQUIRED						0	0					0	0
	EXCAVATION / BACKFILL		EST	0	CY			0	0	0.36	0	EXFD	90.00	0	0
	REINFORCING		EST	0	TN		1,150.00	0	0	20.00	0	REIN	78.27	0	0
	FORMWORK		EST	0	SF		2.50	0	0	0.14	0	FORM	99.43	0	0
	CONCRETE		EST	0	CY		105.00	0	0	1.50	0	CONP	79.64	0	0
	MUD MAT		EST	0	CY		105.00	0	0	1.50	0	CONP	79.64	0	0
	EMBEDDED STEEL		EST	0	LB		2.50	0	0	0.06	0	CARP	71.88	0	0
6.14	FLY ASH BLOWER AND ELECTRICAL BUILDING	NOT REQUIRED						0	0					0	0
	PREENGINEERED BUILDING INCLUDING H&V AND LIGHTING		EST	0	SF		95	0	0	0.00	0	STST	105.71	0	0
	ADDITONAL HVAC UNIT FOR ELECTRICAL ROOM & CONTROLS		EST	0	LT	75000	20000	0	0	350.00	0	HVAC	81.24	0	0
6.15	LOAD OUT AREA PDC	SUBCONTRACT PRICE INCLUDES LABOR. COMPLETE WITH HVAC, & FINISHES.	EST	600	SF		500.00	0	300,000	0.00	0	STST	105.71	0	300,000
6.16	MCC	480V MCC PER LINE UP	EST	2	EA	30000		60,000	0	16.00	37	WIRE	98.84	3,600	63,600
6.17	EMERGENBCY POWER SYSTEM							92,800	0					19,900	112,700
	UPS PANEL BOARDS		EST	1	EA	15500		15,500	0	40.00	46	WIRE	98.84	4,500	20,000
	SATELLITE UPS		EST	1	EA	41200		41,200	0	16.00	18	WIRE	98.84	1,800	43,000
	VRLA BATTERIES		EST	1	LT	36050		36,100	0	120.00	138	WIRE	98.84	13,600	49,700
6.18	LIGHTING/ TRANSFORMERS & PANELS							18,500	60,000					44,100	122,600
	LIGHT FIXTURES		EST	80	EA		750	0	60,000	4.00	368	WIRE	98.84	36,400	96,400
	45KVA, 480V, 3 PHASE	LOW VOLTAGE XFMR	EST	1	EA	10000		10,000	0	40.00	46	WIRE	98.84	4,500	14,500
	200A, 480-277V, 3 PHASE- RECEPTACLE PANEL	INCLUDING BREAKERS	EST	1	EA	5000		5,000	0	16.00	18	WIRE	98.84	1,800	6,800
	200A, 277V-120V, 3 PHASE- LIGHTING PANELS	INCLUDING BREAKERS	EST	1	EA	3500		3,500	0	12.00	14	WIRE	98.84	1,400	4,900

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6.19	RACEWAY, CABLE TRAY, & CONDUIT							0	32,500					189,100	221,600
	24" X 6" AL CABLE TRAY	INCLUDING SUPPORT & FITTINGS	EST	280	LF		27.10	0	7,600	1.75	564	WIRE	98.84	55700	63,300
	4" RGS CONDUIT	INCLUDING SUPPORT & FITTINGS	EST	280	LF		31.00	0	8,700	0.81	260	WIRE	98.84	25700	34,400
	1" RGS CONDUIT	INCLUDING SUPPORT & FITTINGS	EST	1,040	LF		4.44	0	4,600	0.24	286	WIRE	98.84	28300	32,900
	3/4" RGS CONDUIT	INCLUDING SUPPORT & FITTINGS	EST	3,600	LF		3.23	0	11,600	0.19	803	WIRE	98.84	79400	91,000
6.20	GROUNDING							0	4,500					10,900	15,400
	GROUND ROD	3/4" - 20' LONG EACH	EST	4	EA		150	0	600	4.00	18	WIRE	98.84	1,800	2,400
	500 MCM	BARE COPPER WIRE	EST	500	FT		7.65	0	3,800	0.12	69	WIRE	98.84	6,800	10,600
	CADWELD		EST	8	EA		15	0	100	2.00	18	WIRE	98.84	1,800	1,900
	GROUNDING TEST	TEST & DOCUMENTATION	EST	1	LT			0	0	4.00	5	WIRE	98.84	500	500
6.21	MEDIUM VOLTAGE POWER CABLE & TERMINATION	1/C # 2/0-5KV	EST	3,600	LF		2.63	0	9,500	0.12	484	WIRE	98.84	47,900	57,400
6.22	LOW VOLTAGE POWER CABLE & TERMINATION							0	64,700					80,500	145,200
	#4/0 - #12 AWG-600V		EST	8,960	LF		7.22	0	64,700	0.08	814	WIRE	98.84	80,500	145,200
6.23	CONTROL & INSTRUMENT CABLE	#14, #16 & PR # 20 & SHLD WIRE	EST	9,600	LF		3.20	0	30,700	0.08	872	WIRE	98.84	86,200	116,900
6.24	DUCT BANK	DUCT BANK WITH 4-5" & 4-3" CONDUITS	EST	30	LF		205.00	0	6,200	4.05	140	ECND	75.97	10600	16,800
6.25	COMMUNICATIONS		EST	1	LT		34,000.00	0	34,000	229.00	263	WIRE	98.84	26,000	60,000
6.26	LIGHTNING PROTECTION		EST	1	LT		16,000.00	0	16,000	123.00	141	WIRE	98.84	14,000	30,000
6.27	SECURITY SYSTEM		EST	1	LT		8,000.00	0	8,000	62.00	71	WIRE	98.84	7,000	15,000
90.00	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS							6,688,100	1,224,900		38,332			3,425,100	11,338,100
	OTHER DIRECT & CONSTRUCTION INDIRECT COSTS														
	ADDITIONAL CRANE ALLOWANCE								0					0	0
	MOBILIZATION / DEMOBILIZATION - INCLUDED IN WAGE RATES ABOVE														0
	COST DUE TO OVERTIME WORKING 5 X10 HOUR DAYS			1	LS										570,290
	COST DUE TO OVERTIME INEFFICIENCY - SPECIFY % INEFFICIENCY			8.00	%						3,333		83.48	278,000	278,000
	COST DUE TO OVERTIME PAY @1.5 TIMES OVERTIME PAY RATE SPECIFY % ADDITIONAL HOURS PAID ON ACTUAL HOURS WORKED			10.00	%						4,167			292,290	292,290
	PER DIEM	NONE		0.00	HR						45,832			0	0
	CONSUMABLES - % of ACCT NO. 90			0.5	%				6,125					17,126	23,250
	FREIGHT ON MATERIAL - % of ACCT NO. 90			5.0	%				61,245						61,245
	FREIGHT ON EQUIPMENT - % of ACCT NO. 90			5.0	%			334,405							334,405
	SCAFFOLDING - % OF ACCT NO. 90			5.0	%				61,245					171,255	232,500
	CONTRACTOR'S GENERAL AND ADMINISTRATION & PROFIT - % of ACCT NO. 90			15	%				183,735					513,765	697,500
	SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS							334,400	312,300					1,272,400	1,919,200
	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	BYPRODUCT WASTE & FLY ASH HANDLING SYSTEMS						7,022,500	1,537,200					4,697,500	13,257,300
7.0	ABSORBER ISLAND	NOT REQUIRED FOR NID													0
8.0	ACTIVATED CARBON INJECTION SYSTEM														0
9.0	COMPRESSED AIR SYSTEM														
10.0	SERVICE WATER SYSTEM														
11.0	POTABLE WATER SYSTEM														
12.0	FGD SUBSTATION														

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13.0	FGD DCS SYSTEM														0
14.0	CEM SYSTEM														0
15.0	TRUCK & RAIL INFRASTRUCTURE														0
16.0	SITE IMPROVEMENTS - CIVIL WORK														
17.0	BOP ITEMS														0
17.1	PIPE INSULATION	AVERAGE 6" PIPE SIZE	EST	3,400	LF		10	0	34,000	0.39	1,525	PINS	69.50	106,000	140,000
17.2	HEAT TRACING							0	175,600					248,500	424,100
	CABLE	AVERAGE 6" PIPE SIZE	EST	3,000	LF		10.35	0	31,100	0.05	173	WIRE	98.84	17,000	48,100
	POWER CONNECTOR AND OTHER ACCESSORIES INCLUDING THERMOSTATS FOR HEAT TRACING (BY ZONES)		EST	55	EA		450	0	24,500	8.00	502	WIRE	98.84	49,600	74,100
	HEAT TRACING BALANCE OF PLANT INCL PANELS, POWER WIRING AND CONDUITS		EST	4	LT		30000	0	120,000	400.00	1,840	WIRE	98.84	181,900	301,900
17.3	TOUCH UP PAINT (INCLUDES PAINTING CS PIPE)							0	176,700					677,900	854,600
	TOUCH UP PAINT FOR SHOP PAINTED STEEL		EST	31,200	SF		3	0	93,600	0.15	5,382	PNTR	66.72	359,100	452,700
	TOUCH UP PAINT FOR EQUIPMENT		EST	12,000	SF		3	0	36,000	0.15	2,070	PNTR	66.72	138,100	174,100
	PAINTING CS PIPE ONLY	AVERAGE 6" PIPE SIZE, ALLOWANCE FOR 10,000 LF PIPE	EST	15,700	SF		3	0	47,100	0.15	2,708	PNTR	66.72	180,700	227,800
17.4	HOISTS & TROLLEYS							150,000	175,000					204,400	529,400
	MISC HOISTS & TROLLEYS	IN BUILDINGS FOR EQUIPMENT MAINTENANCE AND FOR ID FANS	EST	10	EA	15000	17500	150,000	175,000	200.00	2,300	MECH	88.89	204,400	529,400
17.5	MISC AUX STEEL FOR PIPE SUPPORTS	FIELD FABRICATED	EST	35	TN		3500	0	122,500	120.00	4,830	STST	105.71	510,600	633,100
17.6	MISC PIPE SUPPORT FOUNDATIONS							0	10,500					21,000	31,500
	EXCAVATION / BACKFILL		EST	65	CY			0	0	0.36	27	EXFD	90.00	2,400	2,400
	REINFORCING		EST	5.0	TN		1,150.00	0	5,800	20.00	115	REIN	78.27	9,000	14,800
	FORMWORK		EST	260	SF		2.50	0	700	0.14	42	FORM	99.43	4,200	4,900
	CONCRETE		EST	25	CY		105.00	0	2,600	1.50	43	CONP	79.64	3,400	6,000
	MUD MAT		EST	10	CY		105.00	0	1,100	1.50	17	CONP	79.64	1,400	2,500
	EMBEDDED STEEL		EST	125	LB		2.50	0	300	0.06	9	CARP	71.88	600	900
17.7	EYE WASH STATIONS	WITH 50 KW HEATERS	EST	5	EA	6000	1000	30,000	5,000	60.00	345	MECH	88.89	30,700	65,700
17.8	FIRE PROTECTION FOR MISC BUILDINGS & AREAS	STAND PIPE FOR BUILDINGS	EST	10	EA		30000	0	300,000	240.00	2,760	MECH	88.89	245,300	545,300
90.00	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS							180,000	999,300		24,687			2,044,400	3,223,700
	OTHER DIRECT & CONSTRUCTION INDIRECT COSTS														
	ADDITIONAL CRANE ALLOWANCE								0					0	0
	MOBILIZATION / DEMOBILIZATION - INCLUDED IN WAGE RATES ABOVE														0
	COST DUE TO OVERTIME WORKING 5 X10 HOUR DAYS			1	LS										367,244
	COST DUE TO OVERTIME INEFFICIENCY - SPECIFY % INEFFICIENCY			8.00	%						2,147		83.48	179,000	179,000
	COST DUE TO OVERTIME PAY @1.5 TIMES OVERTIME PAY RATE SPECIFY % ADDITIONAL HOURS PAID ON ACTUAL HOURS WORKED			10.00	%						2,683			188,244	188,244
	PER DIEM	NONE		0.00	HR						29,517			0	0
	CONSUMABLES - % of ACCT NO. 90			0.5	%				4,997					10,222	15,219
	FREIGHT ON MATERIAL - % of ACCT NO. 90			5.0	%				49,965						49,965

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	FREIGHT ON EQUIPMENT - % of ACCT NO. 90			5.0	%			9,000							9,000
	SCAFFOLDING - % OF ACCT NO. 90			5.0	%				49,965					102,220	152,185
	CONTRACTOR'S GENERAL AND ADMINISTRATION & PROFIT - % of ACCT NO. 90			15	%				149,895					306,660	456,555
	SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS							9,000	254,822					786,346	1,050,167
	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	BOP ITEMS						189,000	1,254,100					2,830,700	4,273,900
18.0	CAPITAL REPLACEMENTS - REMOVAL AND RELOCATION OF EXISTING EQUIPMENT AND INFRASTRUCTURE														0
19.0	ARSENIC, ASBESTOS , LEAD ABATEMENT														0
99.00	OVERALL - EQUIPMENT, MATERIAL AND LABOR COSTS							104,022,900	44,926,100		1,284,778			119,489,300	288,538,300
	OTHER DIRECT & CONSTRUCTION INDIRECT COSTS														
	ADDITIONAL CRANE ALLOWANCE			9	MN	75,000.00		675,000	0		7,452			662,400	1,337,400
	MOBILIZATION / DEMOBILIZATION - INCLUDED IN WAGE RATES ABOVE														0
	COST DUE TO OVERTIME WORKING 5 X10 HOUR DAYS			1	LS										19,174,889
	COST DUE TO OVERTIME INEFFICIENCY - SPECIFY % INEFFICIENCY			8.00	%						111,720		93.00	9,326,000	9,326,000
	COST DUE TO OVERTIME PAY @1.5 TIMES OVERTIME PAY RATE SPECIFY % ADDITIONAL HOURS PAID ON ACTUAL HOURS WORKED			10.00	%						140,395			9,848,889	9,848,889
	PER DIEM	NONE		0.00	HR									0	0
	CONSUMABLES - % of ACCT NO. 90			0.5	%				221,931					595,897	817,827
	FREIGHT ON MATERIAL - % of ACCT NO. 90			5.0	%				2,219,305						2,219,305
	FREIGHT ON EQUIPMENT - % of ACCT NO. 90			5.0	%			5,138,145							5,138,145
	SCAFFOLDING - % OF ACCT NO. 90			5.0	%				2,219,305					5,958,965	8,178,270
	CONTRACTOR'S GENERAL AND ADMINISTRATION & PROFIT - % of ACCT NO. 90			15	%				6,738,915					17,876,895	27,866,310
	OVERALL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS							5,813,100	11,399,500					44,269,000	64,732,100
	OVERALL TOTAL DIRECT & CONSTRUCTION INDIRECT COST							109,836,000	56,325,600					163,758,300	353,270,400
	TOTAL PROJECT DIRECT AND CONSTRUCTION INDIRECT COSTS							109,836,000	56,325,600					163,758,300	353,270,400
								0	0					0	0
	INDIRECT COSTS														
	ENGINEERING, PROCUREMENT, & PROJECT SERVICES			1.0	LT										25,000,000
	CONSTRUCTION MANAGEMENT			3.0	%										10,598,100
	S-U / COMMISSIONING			1.0											3,532,700
	CRAFT START-UP SUPPORT	1% OF TOTAL LABOR MANHOURS (INCLUDES OVERTIME INEFFICIENCY & COST DUE TO OVERTIME PAY @1.5 TIMES OVERTIME PAY RATE - BASED ON ASSUMED 5X10 WORKWEEK)		1.0	%						13,965		93.00	1,407,900	1,407,900
	INITIAL FILLS			0.3	%										1,059,800
	OPERATOR & TRAINING MANUALS			1.0	LT										300,000
	SUBCONTRACTORS (NOISE & DUCTWORK CONSULTANT, GEOTECHNICAL INVESTIGATION)			1.0	LT										400,000
	NOISE ABATEMENT FOR 85 DBA REQUIREMENT	FOR ID FAN, NID MODULES, TRANSFORMERS, BOP, DUCTWORK, ACOUSTIC BARRIERS FOR BOUNDARY LIMITS		1.0	LT										2,600,000
	SUBTOTAL - INDIRECT COSTS														44,898,500

				AEP										Estimate No.:	30728C
				BIG SANDY UNIT 2										Project No.:	12721-000
				FGD PROJECT - NID EST (N/ESP)-3B - 4.5 LB/MM BTU										Date:	9/29/2010
				ORDER OF MAGNITUDE COST ESTIMATE										Preparer:	MNO
		Cost Type:												Reviewer:	JMK
		Est=Estimated												Approver:	PEF
		Allow.=Allowance								Wage Rates Based on:		BIG SANDY			
		Q=Vendor Quote								Labor Productivity =		1.15			

Account No.	Item Description	Scope Definition	Cost Type	Quantity	Unit of Measure	Unit Equip.Cost	Unit Material Cost	Total Equipment Cost	Total Material Cost	Unit Man-hours (Base)	Total Man-hours (w/ productivity)	Crew Code	Crew Wage Rate	Total Construction & Erection Cost	Total Projected Cost
	TOTAL PROJECT DIRECT AND INDIRECT COSTS														398,168,900
	SPARE PARTS:			1.5	%			1,647,500							1,647,500
	SPARE PARTS - CAPITALIZED			0.90	%			988,500							988,500
	SPARE PARTS - FIRST YEAR OF OPERATION			0.60	%			659,000							659,000
	CONTINGENCY			14.1	%										56,319,300
	ESCALATION														50,762,200
	EQUIPMENT	4.0%/yr		4.0	%			17,452,200							17,452,200
	MATERIAL	2.0%/yr		2.0	%				5,887,100						5,887,100
	LABOR	2.5%/yr		2.5	%									22,146,200	22,146,200
	INDIRECTS	2.5%/yr		2.5	%									5,276,700	5,276,700
	TOTAL PROJECT COST														506,897,900
	REFERENCE COSTS:														
A	ESP DEMOLITION	ALLOWANCE FOR 1000T STRUCTURE	ALLOW	1,000	TN			0	0	6.00	6,900	WRKG	120.63	832,300	832,300
B	REMOVE BOOSTER AIR FANS		ALLOW	2	EA			0	0	400.00	920	WRKG	120.63	111,000	111,000
C	REMOVAL OF FUEL OIL TANK							1,200,000	80,000					469,400	1,749,400
	REMOVE FUEL OIL TANK & SOIL REMEDIATION	LABOR COST IS FOR REMOVAL OF TANK ONLY. ALLOWANCE FOR SOIL REMEDIATION AND DISPOSAL IN AN EPA APPROVED LANDFILL. SUBCONTRACT COST INCLUDES LABOR. USED LOWER END OF THE RANGE $118-355/CY. COST COULD BE LOWER ($59-118/CY) IF SOLD TO A BITUMINOUS CONCRETE BATCH PLANT	EST	8,000	CY	150		1,200,000	0		0	MECH	88.89	0	1,200,000
	REMOVE DIKE & RECOMPACT FILL IN TANK AREA		EST	3,500	CY			0	0	0.60	2,415	ETWK	177.49	428,600	428,600
	FILL FROM OFF SITE COURSE		EST	5,000	CY		16	0	80,000	0.04	230	ETWK	177.49	40,800	120,800

ATTACHMENT 5-12
NID Detailed Capital Cost Estimate No. 30725 Est-4A ESP in Service*
(7.5 lb SO_2/MMbtu)

* - Estimates 2A, 2B, 3A, 3B, 4A and 4B contain only accounts whose costs are different from the corresponding base estimates 1A and 1B.

AEP

BIG SANDY UNIT 2

FGD PROJECT - NID EST (ESP)-4A - 7.5 LB/MM BTU

ORDER OF MAGNITUDE COST ESTIMATE

Estimate No.: 30725C
Project No.: 12721-000
Date: 9/29/2010
Preparer: MNO
Reviewer: JMK
Approver: PEF

Cost Type:
Est=Estimated
Allow.=Allowance
Q=Vendor Quote

Wage Rates Based on: BIG SANDY
Labor Productivity = 1.15

Account No.	Item Description	Scope Definition	Cost Type	Quantity	Unit of Measure	Unit Equip.Cost	Unit Material Cost	Total Equipment Cost	Total Material Cost	Unit Man-hours (Base)	Total Man-hours (w/ productivity)	Crew Code	Crew Wage Rate	Total Construction & Erection Cost	Total Projected Cost
1.0	ID FANS														
2.0	NID MODULES														
2.1	MECHANICAL EQUIPMENT	A 14-MODULE NID SYSTEM (160' X 185') INCLUDING LIME DAY SILOS, HYDRATORS, MIXERS, J-DUCTS, FABRIC FILTER MODULES, ALL INTERNAL ELEMENTS (BAGS, CAGES, ASH HOPPERS, 2 BROKEN BAG DETECTORS/COMPARTMENT), ASH RECYCLE SYSTEM, VACUUM PIPING, AND ALL INTERNAL PIPING & DUCTWORK FOR THE VARIOUS MODULES.	EST	1	LT	66,387,200		66,387,200	0	368500.00	483,104	MECH	88.89	42,943,100	109,330,300
2.2	INSULATION FOR NID MODULES	SUBCONTRACT COST INCLUDES LABOR	EST	103,040	SF	30		3,091,200	0	0.00	0	DINS	81.75	0	3,091,200
2.3	PENTHOUSE FOR NID MODULES	14 FT HIGH, 29600 SF						65,500	1,544,800					2,059,900	3,670,200
	SUPPORT STEEL AND PURLINS	THREE COAT PAINT	EST	234	TN		2,900.00	0	677,700	24.00	6,450	STST	105.71	681,800	1,359,500
	SIDING FOR PENTHOUSE		EST	9,902	SF		12.00	0	118,800	0.11	1,253	SDNG	93.41	117,000	235,800
	CONCRETE FLOOR FOR PENTHOUSE		EST	765	CY		230.00	0	176,000	7.50	6,598	SDNG	93.41	616,300	792,300
	ROOFING FOR PENTHOUSE		EST	30,340	SF		18.00	0	546,100	0.22	7,676	ROOF	69.12	530,600	1,076,700
	H&V		EST	1	LT	65500	26200	65,500	26,200	1223	1,406	HVAC	81.24	114,200	205,900
2.4	BOTTOM ENCLOSURE FOR NID MODULES	40 FT HIGH						104,400	2,687,100					2,817,400	5,608,900
	SUPPORT STEEL AND PURLINS	THREE COAT PAINT	EST	607	TN		2,900.00	0	1,759,700	24.00	16,748	STST	105.71	1,770,400	3,530,100
	SIDING FOR BOTTOM ENCLOSURE		EST	28,290	SF		12.00	0	339,500	0.11	3,579	SDNG	93.41	334,300	673,800
	ROOFING FOR BOTTOM ENCLOSURE		EST	30,340	SF		18.00	0	546,100	0.22	7,676	ROOF	69.12	530,600	1,076,700
	H&V		EST	1	LT	104400	41760	104,400	41,800	1949.33	2,242	HVAC	81.24	182,100	328,300
2.5	PIPING & SUPPORTS - MECHANICAL							125,200	174,500					385,900	685,600
	LARGE BORE PIPING	4" CS, SCHEDULE 40, WELDED	EST	300	LF		23.0	0	6,900	1.48	511	SPNG	94.41	48,200	55,100
	LARGE BORE PIPING	6" SS, SCH 40 WELDED	EST	400	LF		111.00	0	44,400	2.02	929	SPNG	94.41	87,700	132,100
	LARGE BORE PIPING	18" CS, STD WELDED	EST	400	LF		234.10	0	93,600	2.34	1,076	SPNG	94.41	101,600	195,200
	SMALL BORE PIPING	2" CS, SCH 80 WELDED	EST	150	LF		22.20	0	3,300	1.26	217	SPNG	94.41	20,500	23,800
	SMALL BORE PIPING	2" SS, SCH 80 WELDED	EST	100	LF		48.80	0	4,900	1.44	166	SPNG	94.41	15,600	20,500
	SMALL BORE PIPING	ALLOWANCE FOR MISC SIZE <2" SS, SCH 80 WELDED	EST	300	LF		33.70	0	10,100	1.32	455	SPNG	94.41	43,000	53,100
	VALVE	18" GATE, 150 #, CS, WELDED	EST	4	EA	17,500		70,000	0	28.30	130	SPNG	94.41	12,300	82,300
	VALVE	6" GATE, 150 #, SS, WELDED	EST	6	EA	4,700		28,200	0	12.96	89	SPNG	94.41	8,400	36,600
	VALVE	4" GATE, 150 #, CS, WELDED	EST	5	EA	2,500		12,500	0	7.70	44	SPNG	94.41	4,200	16,700
	VALVE	2" GLOBE, 150# SS, WELDED	EST	10	EA	1,450		14,500	0	5.64	65	SPNG	94.41	6,100	20,600
	PIPE SUPPORTS		EST	150	EA		75.00	0	11,300	2.50	431	MECH	88.89	38,300	49,600
2.6	DUCTWORK							0	6,175,000					11,794,600	17,969,600
	NID MODULE INLET	INCLUDES INTERNAL BRACING AND TURNING VANES	EST	1,900	TN		3,250.00	0	6,175,000	50.00	109,250	FLDU	107.96	11,794,600	17,969,600
2.7	DUCT SUPPORT STEEL	THREE COAT SHOP PAINT	EST	950	TN		2,900.00	0	2,755,000	24.00	26,220	STST	105.71	2,771,700	5,526,700
2.8	DUCTWORK INSULATION & LAGGING		EST	170,000	SF		12.00	0	2,040,000	0.25	48,875	DINS	81.75	3,995,500	6,035,500
2.9	NID MODULE- FOUNDATIONS							0	1,203,400					1,965,300	3,168,700
	EXCAVATION / BACKFILL		EST	5,000	CY			0	0	0.36	2,070	EXFD	90.00	186,300	186,300
.	REINFORCING		EST	475	TN		1,150.00	0	546,300	20.00	10,925	REIN	78.27	855,100	1,401,400
	FORMWORK		EST	3,450	SF		2.50	0	8,600	0.14	555	FORM	99.43	55,200	63,800
	CONCRETE		EST	5,500	CY		105.00	0	577,500	1.50	9,488	CONP	79.64	755,600	1,333,100
	MUD MAT		EST	390	CY		105.00	0	41,000	1.50	673	CONP	79.64	53,600	94,600
	EMBEDDED STEEL		EST	12,000	LB		2.50	0	30,000	0.06	828	CARP	71.88	59,500	89,500
2.10	NID MODULE - SUPPORT STEEL AND ACCESS GALLERY							0	1,332,000					3,486,100	4,818,100
	SUPPORT STEEL	MATERIAL INCLUDED WITH OEM EQUIPMENT	EST	800	TN			0	0	24.00	22,080	STST	105.71	2,334,100	2,334,100
	ACCESS GALLERY		EST	29,600	SF		45.00	0	1,332,000	0.40	13,616	GALL	84.61	1,152,000	2,484,000

				AEP										Estimate No.:	30725C
				BIG SANDY UNIT 2										Project No.:	12721-000
				FGD PROJECT - NID EST (ESP)-4A - 7.5 LB/MM BTU										Date:	9/29/2010
				ORDER OF MAGNITUDE COST ESTIMATE										Preparer:	MNO
		Cost Type:												Reviewer:	JMK
		Est=Estimated												Approver:	PEF
		Allow.=Allowance								Wage Rates Based on:		BIG SANDY			
		Q=Vendor Quote								Labor Productivity =		1.15			

Account No.	Item Description	Scope Definition	Cost Type	Quantity	Unit of Measure	Unit Equip.Cost	Unit Material Cost	Total Equipment Cost	Total Material Cost	Unit Man-hours (Base)	Total Man-hours (w/ productivity)	Crew Code	Crew Wage Rate	Total Construction & Erection Cost	Total Projected Cost
2.11	GROUNDING							0	16,000		0			46,100	62,100
	GROUND ROD	3/4" - 20' LONG	EST	16	EA		150	0	2,400	4.00	74	WIRE	98.84	7,300	9,700
	500 MCM	BARE COPPER WIRE	EST	1,650	FT		7.65	0	12,600	0.12	228	WIRE	98.84	22,500	35,100
	CADWELD		EST	64	EA		15	0	1,000	2.00	147	WIRE	98.84	14,500	15,500
	GROUNDING TEST	TEST & DOCUMENTATION	EST	1	LT			0	0	16.00	18	WIRE	98.84	1,800	1,800
2.12	LIGHTING/ TRANSFORMERS & PANELS							27,000	75,000		0			57,300	159,300
	LIGHT FIXTURES		EST	100	EA		750	0	75,000	4.00	460	WIRE	98.84	45,500	120,500
	45KVA, 480V, 3 PHASE	LOW VOLTAGE XFMR	EST	2	EA	10000		20,000	0	40.00	92	WIRE	98.84	9,100	29,100
	200A, 277V-120V, 3 PHASE- LIGHTING PANELS	INCLUDING BREAKERS	EST	2	EA	3500		7,000	0	12.00	28	WIRE	98.84	2,700	9,700
2.13	RACEWAY, CABLE TRAY, & CONDUIT	INCLUDED IN ID FANS, 1.0													
90.00	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS							69,800,500	18,002,800		786,471			72,322,900	160,126,200
	OTHER DIRECT & CONSTRUCTION INDIRECT COSTS														
	ADDITIONAL CRANE ALLOWANCE			9	MN	75000		675,000		720.00	7,452	MECH	88.89	662400	1,337,400
	MOBILIZATION / DEMOBILIZATION - INCLUDED IN WAGE RATES ABOVE														0
	COST DUE TO OVERTIME WORKING 5 X10 HOUR DAYS			1	LS										11,758,228
	COST DUE TO OVERTIME INEFFICIENCY - SPECIFY % INEFFICIENCY			8.00	%						68,389		83.48	5,709,000	5,709,000
	COST DUE TO OVERTIME PAY @1.5 TIMES OVERTIME PAY RATE SPECIFY % ADDITIONAL HOURS PAID ON ACTUAL HOURS WORKED			10.00	%						86,231			6,049,228	6,049,228
	PER DIEM	NONE		0.00	HR						948,543			0	0
	CONSUMABLES - % of ACCT NO. 90			0.5	%				90,014					361,615	451,629
	FREIGHT ON MATERIAL - % of ACCT NO. 90			5.0	%				900,140						900,140
	FREIGHT ON EQUIPMENT - % of ACCT NO. 90			5.0	%			3,490,025							3,490,025
	SCAFFOLDING - % OF ACCT NO. 90			5.0	%				900,140					3,616,145	4,516,285
	CONTRACTOR'S GENERAL AND ADMINISTRATION & PROFIT EXPENSE - % of ACCT NO. 90			15	%				2,700,420					10,848,435	13,548,855
	SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS							4,165,000	4,590,700					27,246,800	36,002,600
	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	NID MODULES						73,965,500	22,593,500					99,569,700	196,128,800
3.0	NEW STACK														
4.0	LIME HANDLING SYSTEM														
4.1	LIME STORAGE SILO							12,790,000	0					0	12,790,000
	SILO	CONCRETE SILO 100' DIA X 133' H - 15624 TONS -SUBCONTRACT COST INCLUDES LABOR	EST	2	EA	6,250,000.00		12,500,000	0	0.00	0	CONP	79.64	0	12,500,000
	ELEVATOR	MAINTENANCE ELEVATOR COMMON FOR BOTH SILOS - SUBCONTRACT COST INCLUDES LABOR	EST	1	EA	290,000.00		290,000	0	0.00	0	MECH	88.89	0	290,000
4.2	LIME UNLOADING SYSTEM	INCLUDE PNEUMATIC HANDLING SYSTEM, THREE VACUUM EXHAUSTER, TWO FILTER SEPARATORS	EST	1	LT	1,100,000		1,100,000	0	5800.00	6,670	MECH	88.89	592,900	1,692,900
4.3	LIME TRANSPORT SYSTEM TO DAY BINS	INCLUDE PNEUMATIC HANDLING SYSTEM, THREE VACUUM EXHAUSTERS, TWO FILTER SEPARATORS	EST	1	LT	4,100,000		4,100,000	0	21800.00	25,070	MECH	88.89	2,228,500	6,328,500
4.4	PIPING - MECHANICAL							88,700	130,300					342,600	561,600
	LARGE BORE PIPING	14" CS, SCH 40 WELDED - ON PIPE RACK	EST	500	LF		163.1	0	81,600	1.67	960	SPNG	94.41	90,700	172,300
	LARGE BORE PIPING	8" HDPE (UNDERGROUND)	EST	1,200	LF		14.1	0	16,900	0.83	1,145	SPNG	94.41	108,100	125,000

				AEP											Estimate No.:	30725C
				BIG SANDY UNIT 2											Project No.:	12721-000
				FGD PROJECT - NID EST (ESP)-4A - 7.5 LB/MM BTU											Date:	9/29/2010
				ORDER OF MAGNITUDE COST ESTIMATE											Preparer:	MNO
		Cost Type:													Reviewer:	JMK
		Est=Estimated													Approver:	PEF
		Allow.=Allowance								Wage Rates Based on:		BIG SANDY				
		Q=Vendor Quote								Labor Productivity =		1.15				

Account No.	Item Description	Scope Definition	Cost Type	Quantity	Unit of Measure	Unit Equip.Cost	Unit Material Cost	Total Equipment Cost	Total Material Cost	Unit Man-hours (Base)	Total Man-hours (w/ productivity)	Crew Code	Crew Wage Rate	Total Construction & Erection Cost	Total Projected Cost
	LARGE BORE PIPING	6" CS, SCH 40 WELDED	EST	200	LF		41.7	0	8,300	1.61	370	SPNG	94.41	35,000	43,300
	SMALL BORE PIPING	2" CS, SCH 80 WELDED	EST	50	LF		22.20	0	1,100	1.26	72	SPNG	94.41	6,800	7,900
	SMALL BORE PIPING	2" SS, SCH 80 WELDED	EST	50	LF		48.80	0	2,400	1.44	83	SPNG	94.41	7,800	10,200
	SMALL BORE PIPING	ALLOWANCE FOR MISC SIZE <2" SS, SCH 80 WELDED	EST	100	LF		33.70	0	3,400	1.32	152	SPNG	94.41	14,300	17,700
	VALVE	2" GLOBE, 150# SS, WELDED	EST	6	EA	1,450		8,700	0	5.64	39	SPNG	94.41	3,700	12,400
	VALVE	8" AIR OPERATED, 150 #, CS, FLANGED	EST	4	EA	17,000		68,000	0	19.30	89	SPNG	94.41	8,400	76,400
	VALVE	14" BFLY 150# CS, FLANGED	EST	4	EA	3,000		12,000	0	16.60	76	SPNG	94.41	7,200	19,200
	EXCAVATION / BACKFILL	FOR UNDERGROUND PIPING	EST	1,000	CY			0	0	0.20	230	EXFD	90.00	20,700	20,700
	BEDDING	FOR UNDERGROUND PIPING	EST	133	CY		35.0	0	4,700	0.25	38	EXFD	90.00	3,500	8,200
	PIPE SUPPORTS		EST	238	EA		50.00	0	11,900	1.50	410	MECH	88.89	36,400	48,300
4.5	LIME STORAGE SILO ACCESS STAIR TOWER	INCLUDES CATWALK TO THE SECOND SILO - THREE COAT SHOP PAINT	EST	55	TN		2,900.00	0	159,500	24.00	1,518	STST	105.71	160,500	320,000
4.6	PIPE RACK FOR LIME HANDLING, WASTE HANDLING AND MISC MECHANICAL PIPING	THREE COAT SHOP PAINT	EST	650	TN		2,900.00	0	1,885,000	24.00	17,940	STST	105.71	1,896,400	3,781,400
4.7	RAIL CAR UNLOADING AREA - FOUNDATIONS	20' X 120' - NO SIDING						0	42,700					90,100	132,800
	EXCAVATION / BACKFILL		EST	500	CY			0	0	0.36	207	EXFD	90.00	18,600	18,600
	REINFORCING		EST	15	TN		1,150.00	0	17,300	20.00	345	REIN	78.27	27,000	44,300
	FORMWORK		EST	750	SF		2.50	0	1,900	0.14	121	FORM	99.43	12,000	13,900
	CONCRETE		EST	200	CY		105.00	0	21,000	1.50	345	CONP	79.64	27,500	48,500
	MUD MAT		EST	0	CY		105.00	0	0	1.50	0	CONP	79.64	0	0
	EMBEDDED STEEL		EST	1,000	LB		2.50	0	2,500	0.06	69	CARP	71.88	5,000	7,500
4.8	LIME UNLOADING BLOWER / ELECTRICAL BUILDING - FOUNDATIONS							0	69,600					147,600	217,200
	EXCAVATION / BACKFILL		EST	800	CY			0	0	0.36	331	EXFD	90.00	29,800	29,800
	REINFORCING		EST	25	TN		1,150.00	0	28,800	20.00	575	REIN	78.27	45,000	73,800
	FORMWORK		EST	1,200	SF		2.50	0	3,000	0.14	193	FORM	99.43	19,200	22,200
	CONCRETE		EST	300	CY		105.00	0	31,500	1.50	518	CONP	79.64	41,200	72,700
	MUD MAT		EST	0	CY		105.00	0	0	1.50	0	CONP	79.64	0	0
	EMBEDDED STEEL		EST	2,500	LB		2.50	0	6,300	0.06	173	CARP	71.88	12,400	18,700
4.9	LIME UNLOADING BLOWER / ELECTRICAL BUILDING	100' L X 30' W X 30' H						75,000	335,000					24,400	434,400
	PRE-ENGINEERED BUILDING INCLUDING H&V AND LIGHTING	SUBCONTRACT PRICE, INCLUDES LABOR	EST	3,000	SF		105	0	315,000	0.00	0	STST	105.71	0	315,000
	ADDITIONAL HVAC UNIT FOR ELECTRICAL ROOM & CONTROLS	40T PACKAGED UNIT FOR ELECTRICAL EQUIPMENT ROOM. INCLUDES ALLOWANCE FOR CONCRETE PAD AND ELECTRICAL WORK	EST	1	LT	75000	20000	75,000	20,000	350.00	300	HVAC	81.24	24,400	119,400
4.10	CONCRETE PIT FOR THE ELEVATOR		EST	10	CY		230.00	0	2,300	7.50	86	CONP	79.64	6,900	9,200
4.11	LIME STORAGE SILO - FOUNDATIONS	INCLUDES FOUNDATIONS FOR LIME TRANSPORT SYSTEM PRESSURE BLOWERS						0	847,500					1,485,400	2,332,900
	EXCAVATION / BACKFILL		EST	5,500	CY			0	0	0.36	2,277	EXFD	90.00	204,900	204,900
	REINFORCING		EST	350.0	TN		1,150.00	0	402,500	20.00	8,050	REIN	78.27	630,100	1,032,600
	FORMWORK		EST	4,000	SF		2.50	0	10,000	0.14	644	FORM	99.43	64,000	74,000
	CONCRETE		EST	3,700	CY		105.00	0	388,500	1.50	6,383	CONP	79.64	508,300	896,800
	MUD MAT		EST	200	CY		105.00	0	21,000	1.50	345	CONP	79.64	27,500	48,500
	EMBEDDED STEEL		EST	10,206	LB		2.50	0	25,500	0.06	704	CARP	71.88	50,600	76,100
4.12	LIME STORAGE SILO ACCESS STAIR TOWER - FOUNDATIONS							0	14,200					28,600	42,800
	EXCAVATION / BACKFILL		EST	110	CY			0	0	0.36	46	EXFD	90.00	4,100	4,100
	REINFORCING		EST	4.8	TN		1,150.00	0	5,500	20.00	110	REIN	78.27	8,600	14,100
	FORMWORK		EST	320	SF		2.50	0	800	0.14	52	FORM	99.43	5,100	5,900

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	CONCRETE		EST	60	CY		105.00	0	6,300	1.50	104	CONP	79.64	8,200	14,500
	MUD MAT		EST	8	CY		105.00	0	800	1.50	14	CONP	79.64	1,100	1,900
	EMBEDDED STEEL		EST	300	LB		2.50	0	800	0.06	21	CARP	71.88	1,500	2,300
4.13	PIPE RACK - FOUNDATIONS							0	239,600					588,600	828,200
	EXCAVATION / BACKFILL		EST	3,200	CY			0	0	0.36	1,325	EXFD	90.00	119,200	119,200
	REINFORCING		EST	90.0	TN		1,150.00	0	103,500	20.00	2,070	REIN	78.27	162,000	265,500
	FORMWORK		EST	9,500	SF		2.50	0	23,800	0.14	1,530	FORM	99.43	152,100	175,900
	CONCRETE		EST	950	CY		105.00	0	99,800	1.50	1,639	CONP	79.64	130,500	230,300
	MUD MAT		EST	0	CY		105.00	0	0	1.50	0	CONP	79.64	0	0
	EMBEDDED STEEL		EST	5,000	LB		2.50	0	12,500	0.06	345	CARP	71.88	24,800	37,300
4.14	TRANSFORMERS	SUS TRANSFORMERS: 33F, 33G, 13.8KV-480V,3PHASE, 3 WINDING XFMR	EST	2	EA	85000		170,000	0	300.00	690	EHEA	79.16	54,600	224,600
4.15	SWITCHGEAR	480V LOW VOLTAGE (33F/G), SWITCHGEAR	EST	5	EA	39200		196,000	0	230.00	1,323	EHEA	79.16	104,700	300,700
4.16	CABLE BUS DUCT							134,700	10,800					200,200	345,700
	480V CABLE BUS	BUS DUCT ONLY	EST	150	FT	898		134,700	0	10.30	1,777	WIRE	98.84	175,600	310,300
	CABLE BUS TERMINATION	750MCM- 480V TERMINATIONS	EST	4	EA		2,700.00	0	10,800	54.00	248	WIRE	98.84	24,600	35,400
4.17	MCC							61,800	0					3,600	65,400
	480V MCC	PER LINE UP	EST	2	EA	30900		61,800	0	16.00	37	WIRE	98.84	3,600	65,400
4.18	MIMIC PANELS		EST	1	EA	17500		17,500	0	12.00	14	WIRE	98.84	1,400	18,900
4.19	EMERGENCY POWER SYSTEM							108,300	0					24,400	132,700
	DC PANEL BOARD		EST	1	EA	15450		15,500	0	40.00	46	WIRE	98.84	4,500	20,000
	UPS PANEL BOARDS		EST	1	EA	15450		15,500	0	40.00	46	WIRE	98.84	4,500	20,000
	SATELLITE UPS		EST	1	EA	41200		41,200	0	16.00	18	WIRE	98.84	1,800	43,000
	VRLA BATTERIES		EST	1	LT	36050		36,100	0	120.00	138	WIRE	98.84	13,600	49,700
4.20	GROUNDING							13,300	0					41,300	54,600
	GROUND ROD	3/4" - 20' LONG	EST	16	EA	150		2,400	0	4.00	74	WIRE	98.84	7,300	9,700
	500 MCM	BARE COPPER WIRE	EST	1,300	FT	7.65		9,900	0	0.12	179	WIRE	98.84	17,700	27,600
	CADWELD		EST	64	EA	15		1,000	0	2.00	147	WIRE	98.84	14,500	15,500
	GROUNDING TEST	TEST & DOCUMENTATION	EST	1	LT			0	0	16.00	18	WIRE	98.84	1,800	1,800
4.21	LIGHTING/ TRANSFORMERS & PANELS							52,000	135,000					104,500	291,500
	LIGHT FIXTURES		EST	180	EA		750	0	135,000	4.00	828	WIRE	98.84	81,800	216,800
	45KVA, 480V, 3 PHASE	LOW VOLTAGE XFMR	EST	2	EA	10000		20,000	0	40.00	92	WIRE	98.84	9,100	29,100
	37.7KVA, 480V, 3 PHASE	LOW VOLTAGE XFMR	EST	2	EA	7500		15,000	0	32.00	74	WIRE	98.84	7,300	22,300
	200A, 480-277V, 3 PHASE- RECEPTACLE PANEL	INCLUDING BREAKERS	EST	2	EA	5000		10,000	0	16.00	37	WIRE	98.84	3,600	13,600
	200A, 277V-120V, 3 PHASE- LIGHTING PANELS	INCLUDING BREAKERS	EST	2	EA	3500		7,000	0	12.00	28	WIRE	98.84	2,700	9,700
4.22	RACEWAY, CABLE TRAY, & CONDUIT							0	310,900					1,537,100	1,848,000
	12" X 6" AL CABLE TRAY	INCLUDING SUPPORT & FITTINGS	EST	1,050	LF		18.25	0	19,200	1.10	1,328	WIRE	98.84	131,300	150,500
	18" X 6" AL CABLE TRAY	INCLUDING SUPPORT & FITTINGS	EST	600	LF		21.50	0	12,900	1.45	1,001	WIRE	98.84	98,900	111,800
	24" X 6" AL CABLE TRAY	INCLUDING SUPPORT & FITTINGS	EST	1,700	LF		27.10	0	46,100	1.75	3,421	WIRE	98.84	338,200	384,300
	36" X 6" AL CABLE TRAY	INCLUDING SUPPORT & FITTINGS	EST	500	LF		30.30	0	15,200	1.95	1,121	WIRE	98.84	110,800	126,000
	5" RGS CONDUIT	INCLUDING SUPPORT & FITTINGS	EST	750	LF		61.00	0	45,800	1.13	972	WIRE	98.84	96,100	141,900
	4" RGS CONDUIT	INCLUDING SUPPORT & FITTINGS	EST	1,450	LF		31.00	0	45,000	0.81	1,346	WIRE	98.84	133,000	178,000
	3" RGS CONDUIT	INCLUDING SUPPORT & FITTINGS	EST	1,550	LF		21.50	0	33,300	0.65	1,150	WIRE	98.84	113,600	146,900

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	2" RGS CONDUIT	INCLUDING SUPPORT & FITTINGS	EST	2,400	LF		9.25	0	22,200	0.35	972	WIRE	98.84	96,000	118,200
	1-1/2" RGS CONDUIT	INCLUDING SUPPORT & FITTINGS	EST	3,050	LF		7.15	0	21,800	0.28	996	WIRE	98.84	98,500	120,300
	1" RGS CONDUIT	INCLUDING SUPPORT & FITTINGS	EST	5,150	LF		4.44	0	22,900	0.24	1,415	WIRE	98.84	139,900	162,800
	3/4" RGS CONDUIT	INCLUDING SUPPORT & FITTINGS	EST	8,200	LF		3.23	0	26,500	0.19	1,829	WIRE	98.84	180,800	207,300
4.23	HIGH VOLTAGE POWER CABLE & TERMINATION	1/C # 500KCMIL- 15KV	EST	15,600	LF		9.27	0	144,600	0.23	4,126	WIRE	98.84	407,800	552,400
4.24	MEDIUM VOLTAGE POWER CABLE & TERMINATION	1/C 350KCMIL-5KV	EST	10,800	LF		6.13	0	66,200	0.23	2,857	WIRE	98.84	282,300	348,500
4.25	LOW VOLTAGE POWER CABLE & TERMINATION							0	93,000					143,200	236,200
	3/C # 500KCMIL- 600V		EST	600	LF		26.12	0	15,700	0.69	476	WIRE	98.84	47,100	62,800
	#4/0 - #12 AWG-600V		EST	10,700	LF		7.22	0	77,300	0.08	972	WIRE	98.84	96,100	173,400
4.26	CONTROL & INSTRUMENT CABLE	#14, #16 & PR # 20 & SHLD WIRE	EST	8,200	LF		3.20	0	26,200	0.08	745	WIRE	98.84	73,600	99,800
4.27	DUCT BANK	DUCT BANK WITH 4-5" & 4-3" CONDUITS, 2.38' H X 3.79' W	EST	350	LF		174.67	0	61,100	3.80	1,530	ECND	75.97	116,200	177,300
4.28	FOUNDATIONS FOR TRANSFORMERS	FOR XFMR 33F, 33G, INCLUDES MUD MAT	EST	14.0	CY		250	0	3,500	8.00	129	CONP	79.64	10,300	13,800
4.29	COMMUNICATIONS		EST	1	LT		34,000.00	0	34,000	229.00	263	WIRE	98.84	26,000	60,000
4.30	LIGHTNING PROTECTION		EST	1	LT		6,000.00	0	6,000	41.00	47	WIRE	98.84	4,700	10,700
4.31	SECURITY SYSTEM		EST	1	LT		8,000.00	0	8,000	62.00	71	WIRE	98.84	7,000	15,000
90.00	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS							18,907,300	4,625,000		116,362			10,735,400	34,267,700
	OTHER DIRECT & CONSTRUCTION INDIRECT COSTS														
	ADDITIONAL CRANE ALLOWANCE								0					0	0
	MOBILIZATION / DEMOBILIZATION - INCLUDED IN WAGE RATES ABOVE														0
	COST DUE TO OVERTIME WORKING 5 X10 HOUR DAYS			1	LS										1,732,278
	COST DUE TO OVERTIME INEFFICIENCY - SPECIFY % INEFFICIENCY			8.00	%						10,118		83.48	845,000	845,000
	COST DUE TO OVERTIME PAY @1.5 TIMES OVERTIME PAY RATE SPECIFY % ADDITIONAL HOURS PAID ON ACTUAL HOURS WORKED			10.00	%						12,648			887,278	887,278
	PER DIEM	NONE		0.00	HR						139,129			0	0
	CONSUMABLES - % of ACCT NO. 90			0.5	%				23,125					53,677	76,802
	FREIGHT ON MATERIAL - % of ACCT NO. 90			5.0	%				231,250						231,250
	FREIGHT ON EQUIPMENT - % of ACCT NO. 90			5.0	%			945,365							945,365
	SCAFFOLDING - % OF ACCT NO. 90			5.0	%				231,250					536,770	768,020
	CONTRACTOR'S GENERAL AND ADMINISTRATION & PROFIT EXPENSE - % of ACCT NO. 90			15	%				693,750					1,610,310	2,304,060
	SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS							945,400	1,179,400					3,933,000	6,057,800
	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	LIME HANDLING SYSTEM						19,852,700	5,804,400					14,668,400	40,325,500
5.0	LIME SLAKER BUILDING	NOT REQUIRED FOR NID													0
6.0	BYPRODUCT WASTE & FLY ASH HANDLING SYSTEMS														0

AEP
BIG SANDY UNIT 2
FGD PROJECT - NID EST (ESP)-4A - 7.5 LB/MM BTU
ORDER OF MAGNITUDE COST ESTIMATE

Estimate No.: 30725C
Project No.: 12721-000
Date: 9/29/2010
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Cost Type:
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Wage Rates Based on: BIG SANDY
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6.1	BYPRODUCT WASTE HANDLING - MECHANICAL EQUIPMENT	INCLUDES PNEUMATIC HANDLING SYSTEM, THREE PRESSURE BLOWERS, ONE BIN VENT FILTER, ASH UNLOADING SYSTEM	EST	1	LT	2,900,000		2,900,000	0	15800.00	18,170	MECH	88.89	1,615,100	4,515,100
6.2	FLY ASH HANDLING - MECHANICAL EQUIPMENT	INCLUDES PNEUMATIC HANDLING SYSTEM, TWO PRESSURE EXHAUSTERS, TRANSFER STATION, ONE BIN VENT FILTER, ASH UNLOADING SYSTEM	EST	1	LT	2,285,000		2,285,000	0	14000.00	16,100	MECH	88.89	1,431,100	3,716,100
6.3	BUILDING SUMP PUMPS	FOR BUILDINGS - DUPLEX. INCLUDES CHECK & ISOLATION VALVES.		2	EA	14,000		28,000	0	60.00	138	MECH	88.89	12,300	40,300
6.4	AGITATOR FOR SUMP PUMPS	5 HP		1	EA	12,000		12,000	0	45.00	52	MECH	88.89	4,600	16,600
6.5	PIPING - MECHANICAL		EST	1	LT			142,800	131,000					408,700	682,500
	LARGE BORE PIPING	4" SS, SCHEDULE 40, WELDED - ON PIPE RACK	EST	300	LF		45.1	0	13,500	0.87	300	SPNG	94.41	28,300	41,800
	LARGE BORE PIPING	6" CS, SCH 40 WELDED - ON PIPE RACK	EST	200	LF		32.2	0	6,400	0.88	202	SPNG	94.41	19,100	25,500
	LARGE BORE PIPING	6" CS, SCH 40 WELDED	EST	100	LF		41.7	0	4,200	1.61	185	SPNG	94.41	17,500	21,700
	LARGE BORE PIPING	8" HDPE (UNDERGROUND)	EST	400	LF		14.1	0	5,600	0.83	382	SPNG	94.41	36,000	41,600
	LARGE BORE PIPING	10" CS, SCH 40 WELDED	EST	300	LF		110.3	0	33,100	2.40	828	SPNG	94.41	78,200	111,300
	LARGE BORE PIPING	20" HDPE (UNDERGROUND)	EST	600	LF		72.8	0	43,700	1.45	1,001	SPNG	94.41	94,500	138,200
	SMALL BORE PIPING	2" CS, SCH 80 WELDED	EST	50	LF		22.20	0	1,100	1.26	72	SPNG	94.41	6,800	7,900
	SMALL BORE PIPING	2" SS, SCH 80 WELDED	EST	50	LF		48.80	0	2,400	1.44	83	SPNG	94.41	7,800	10,200
	SMALL BORE PIPING	ALLOWANCE FOR MISC SIZE <2" SS, SCH 80 WELDED	EST	100	LF		33.70	0	3,400	1.32	152	SPNG	94.41	14,300	17,700
	VALVE	2" GLOBE, 150# SS, WELDED	EST	15	EA	1,450		21,800	0	5.64	97	SPNG	94.41	9,200	31,000
	VALVE	4" GATE, 150 #, CS, WELDED	EST	10	EA	2,500		25,000	0	7.70	89	SPNG	94.41	8,400	33,400
	VALVE	6" AIR OPERATED, 150 #, CS, FLANGED	EST	2	EA	14,000		28,000	0	17.30	40	SPNG	94.41	3,800	31,800
	VALVE	8" AIR OPERATED, 150 #, CS, FLANGED	EST	4	EA	17,000		68,000	0	19.30	89	SPNG	94.41	8,400	76,400
	EXCAVATION / BACKFILL	FOR UNDERGROUND PIPING	EST	2,000	CY			0	0	0.20	460	EXFD	90.00	41,400	41,400
	BEDDING	FOR UNDERGROUND PIPING	EST	267	CY		35.0	0	9,300	0.25	77	EXFD	90.00	6,900	16,200
	PIPE SUPPORTS	AVERAGE COST FOR MISC PIPE SIZES	EST	110	EA		75.00	0	8,300	2.50	316	MECH	88.89	28,100	36,400
6.6	BYPRODUCT WASTE SILO	CONCRETE SILO 60' DIA X 88' H - 3071 TONS -SUBCONTRACT COST INCLUDES LABOR	EST	2	EA	1,382,000		2,764,000	0	0.00	0	CONP	79.64	0	2,764,000
6.7	RECYCLE SILO	NOT REQUIRED FOR NID													
6.8	FLY ASH SILO	STEEL -STORAGE SILO, 20' DIA X 21' H, 100 TONS						75,000	43,500					115,600	234,100
	SILO BIN	PIN MIXERS INCLUDED WITH FLY ASH HANDLING MECHANICAL EQUIPMENT	EST	1	EA	75,000		75,000	0	700.00	805	TANK	89.16	71,800	146,800
	SUPPORT STEEL FOR SILO	THREE-COAT SHOP PAINT	EST	15	TN		2,900.00	0	43,500	24.00	414	STST	105.71	43,800	87,300
6.9	BYPRODUCT WASTE STORAGE SILO - FOUNDATIONS	TOTAL FOR TWO SILOS						0	314,000					586,300	900,300
	EXCAVATION / BACKFILL		EST	2,600	CY			0	0	0.36	1,076	EXFD	90.00	96,900	96,900
	REINFORCING		EST	125	TN		1,150.00	0	143,800	20.00	2,875	REIN	78.27	225,000	368,800
	FORMWORK		EST	2,400	SF		2.50	0	6,000	0.14	386	FORM	99.43	38,400	44,400

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	CONCRETE		EST	1,330	CY		105.00	0	139,700	1.50	2,294	CONP	79.64	182,700	322,400
	MUD MAT		EST	75	CY		105.00	0	7,900	1.50	129	CONP	79.64	10,300	18,200
	EMBEDDED STEEL		EST	6,650	LB		2.50	0	16,600	0.06	459	CARP	71.88	33,000	49,600
6.10	FLY ASH SILO - FOUNDATIONS							0	19,900					48,700	68,600
	EXCAVATION / BACKFILL		EST	380	CY			0	0	0.36	157	EXFD	90.00	14,200	14,200
	REINFORCING		EST	7.0	TN		1,150.00	0	8,100	20.00	161	REIN	78.27	12,600	20,700
	FORMWORK		EST	400	SF		2.50	0	1,000	0.14	64	FORM	99.43	6,400	7,400
	CONCRETE		EST	75	CY		105.00	0	7,900	1.50	129	CONP	79.64	10,300	18,200
	MUD MAT		EST	9	CY		105.00	0	900	1.50	16	CONP	79.64	1,200	2,100
	EMBEDDED STEEL		EST	800	LB		2.50	0	2,000	0.06	55	CARP	71.88	4,000	6,000
6.11	BYPRODUCT TRANSPORT BLOWER BUILDING - FOUNDATIONS							0	97,600					172,100	269,700
	EXCAVATION / BACKFILL		EST	470	CY			0	0	0.36	195	EXFD	90.00	17,500	17,500
	REINFORCING		EST	38	TN		1,150.00	0	43,700	20.00	874	REIN	78.27	68,400	112,100
	FORMWORK		EST	960	SF		2.50	0	2,400	0.14	155	FORM	99.43	15,400	17,800
	CONCRETE		EST	400	CY		105.00	0	42,000	1.50	690	CONP	79.64	55,000	97,000
	MUD MAT		EST	43	CY		105.00	0	4,500	1.50	74	CONP	79.64	5,900	10,400
	EMBEDDED STEEL		EST	2,000	LB		2.50	0	5,000	0.06	138	CARP	71.88	9,900	14,900
6.12	BYPRODUCT TRANSPORT BLOWER BUILDING	90' L X 30' W X 20' H						40,000	241,500					26,200	307,700
	PRE-ENGINEERED BUILDING INCLUDING H&V AND LIGHTING	SUBCONTRACT PRICE, INCLUDES LABOR	EST	2,700	SF		85	0	229,500	0.00	0	STST	105.71	0	229,500
	ADDITIONAL HVAC UNIT FOR ELECTRICAL ROOM & CONTROLS	20T PACKAGED UNIT FOR ELECTRICAL EQUIPMENT ROOM. INCLUDES ALLOWANCE FOR CONCRETE PAD AND ELECTRICAL WORK	EST	1	LT	40000	12000	40,000	12,000	280.00	322	HVAC	81.24	26,200	78,200
6.13	FLY ASH BLOWER AND ELECTRICAL BUILDING - FOUNDATIONS							0	82,800					150,900	233,700
	EXCAVATION / BACKFILL		EST	450	CY			0	0	0.36	186	EXFD	90.00	16,800	16,800
	REINFORCING		EST	30	TN		1,150.00	0	34,500	20.00	690	REIN	78.27	54,000	88,500
	FORMWORK		EST	1,100	SF		2.50	0	2,800	0.14	177	FORM	99.43	17,600	20,400
	CONCRETE		EST	350	CY		105.00	0	36,800	1.50	604	CONP	79.64	48,100	84,900
	MUD MAT		EST	40	CY		105.00	0	4,200	1.50	69	CONP	79.64	5,500	9,700
	EMBEDDED STEEL		EST	1,800	LB		2.50	0	4,500	0.06	124	CARP	71.88	8,900	13,400
6.14	FLY ASH BLOWER AND ELECTRICAL BUILDING	110' L X 30' W X 25' H						75,000	276,500					24,400	375,900
	PREENGINEERED BUILDING INCLUDING H&V AND LIGHTING	SUBCONTRACT PRICE, INCLUDES LABOR	EST	2,700	SF		95	0	256,500	0.00	0	STST	105.71	0	256,500
	ADDITONAL HVAC UNIT FOR ELECTRICAL ROOM & CONTROLS	40T PACKAGED UNIT FOR ELECTRICAL EQUIPMENT ROOM. INCLUDES ALLOWANCE FOR CONCRETE PAD AND ELECTRICAL WORK	EST	1	LT	75000	20000	75,000	20,000	350.00	300	HVAC	81.24	24,400	119,400
6.15	LOAD OUT AREA PDC	SUBCONTRACT PRICE INCLUDES LABOR. COMPLETE WITH HVAC, & FINISHES.	EST	600	SF		500.00	0	300,000	0.00	0	STST	105.71	0	300,000
6.16	MCC	480V MCC PER LINE UP	EST	4	EA	30000		120,000	0	16.00	74	WIRE	98.84	7,300	127,300
6.17	EMERGENBCY POWER SYSTEM							185,500	0					40,000	225,500
	UPS PANEL BOARDS		EST	2	EA	15500		31,000	0	40.00	92	WIRE	98.84	9,100	40,100
	SATELLITE UPS		EST	2	EA	41200		82,400	0	16.00	37	WIRE	98.84	3,600	86,000
	VRLA BATTERIES		EST	2	LT	36050		72,100	0	120.00	276	WIRE	98.84	27,300	99,400
6.18	LIGHTING/ TRANSFORMERS & PANELS							18,500	75,000					53,200	146,700
	LIGHT FIXTURES		EST	100	EA		750	0	75,000	4.00	460	WIRE	98.84	45,500	120,500
	45KVA, 480V, 3 PHASE	LOW VOLTAGE XFMR	EST	1	EA	10000		10,000	0	40.00	46	WIRE	98.84	4,500	14,500

				AEP										Estimate No.:	30725C
				BIG SANDY UNIT 2										Project No.:	12721-000
				FGD PROJECT - NID EST (ESP)-4A - 7.5 LB/MM BTU										Date:	9/29/2010
				ORDER OF MAGNITUDE COST ESTIMATE										Preparer:	MNO
		Cost Type:												Reviewer:	JMK
		Est=Estimated												Approver:	PEF
		Allow.=Allowance								Wage Rates Based on:		BIG SANDY			
		Q=Vendor Quote								Labor Productivity =		1.15			

Account No.	Item Description	Scope Definition	Cost Type	Quantity	Unit of Measure	Unit Equip.Cost	Unit Material Cost	Total Equipment Cost	Total Material Cost	Unit Man-hours (Base)	Total Man-hours (w/ productivity)	Crew Code	Crew Wage Rate	Total Construction & Erection Cost	Total Projected Cost
	200A, 480-277V, 3 PHASE- RECEPTACLE PANEL	INCLUDING BREAKERS	EST	1	EA	5000		5,000	0	16.00	18	WIRE	98.84	1,800	6,800
	200A, 277V-120V, 3 PHASE- LIGHTING PANELS	INCLUDING BREAKERS	EST	1	EA	3500		3,500	0	12.00	14	WIRE	98.84	1,400	4,900
6.19	RACEWAY, CABLE TRAY, & CONDUIT							0	40,700					236,200	276,900
	24" X 6" AL CABLE TRAY	INCLUDING SUPPORT & FITTINGS	EST	350	LF		27.10	0	9,500	1.75	704	WIRE	98.84	69600	79,100
	4" RGS CONDUIT	INCLUDING SUPPORT & FITTINGS	EST	350	LF		31.00	0	10,900	0.81	325	WIRE	98.84	32100	43,000
	1" RGS CONDUIT	INCLUDING SUPPORT & FITTINGS	EST	1,300	LF		4.44	0	5,800	0.24	357	WIRE	98.84	35300	41,100
	3/4" RGS CONDUIT	INCLUDING SUPPORT & FITTINGS	EST	4,500	LF		3.23	0	14,500	0.19	1,004	WIRE	98.84	99200	113,700
6.20	GROUNDING							0	4,500					10,900	15,400
	GROUND ROD	3/4" - 20' LONG EACH	EST	4	EA		150	0	600	4.00	18	WIRE	98.84	1,800	2,400
	500 MCM	BARE COPPER WIRE	EST	500	FT		7.65	0	3,800	0.12	69	WIRE	98.84	6,800	10,600
	CADWELD		EST	8	EA		15	0	100	2.00	18	WIRE	98.84	1,800	1,900
	GROUNDING TEST	TEST & DOCUMENTATION	EST	1	LT			0	0	4.00	5	WIRE	98.84	500	500
6.21	MEDIUM VOLTAGE POWER CABLE & TERMINATION	1/C # 2/0-5KV	EST	3,600	LF		2.63	0	9,500	0.12	484	WIRE	98.84	47,900	57,400
6.22	LOW VOLTAGE POWER CABLE & TERMINATION							0	80,900					100,600	181,500
	#4/0 - #12 AWG-600V		EST	11,200	LF		7.22	0	80,900	0.08	1,018	WIRE	98.84	100,600	181,500
6.23	CONTROL & INSTRUMENT CABLE	#14, #16 & PR # 20 & SHLD WIRE	EST	12,000	LF		3.20	0	38,400	0.08	1,090	WIRE	98.84	107,800	146,200
6.24	DUCT BANK	DUCT BANK WITH 4-5" & 4-3" CONDUITS	EST	30	LF		205.00	0	6,200	4.05	140	ECND	75.97	10600	16,800
6.25	COMMUNICATIONS		EST	1	LT		70,000.00	0	70,000	440.00	506	WIRE	98.84	50,000	120,000
6.26	LIGHTNING PROTECTION		EST	1	LT		19,000.00	0	19,000	123.00	141	WIRE	98.84	14,000	33,000
6.27	SECURITY SYSTEM		EST	1	LT		16,000.00	0	16,000	123.00	141	WIRE	98.84	14,000	30,000
90.00	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS							8,645,800	1,867,000		59,490			5,288,500	15,801,300
	OTHER DIRECT & CONSTRUCTION INDIRECT COSTS														
	ADDITIONAL CRANE ALLOWANCE								0					0	0
	MOBILIZATION / DEMOBILIZATION - INCLUDED IN WAGE RATES ABOVE														0
	COST DUE TO OVERTIME WORKING 5 X10 HOUR DAYS			1	LS										885,620
	COST DUE TO OVERTIME INEFFICIENCY - SPECIFY % INEFFICIENCY			8.00	%						5,173		83.48	432,000	432,000
	COST DUE TO OVERTIME PAY @1.5 TIMES OVERTIME PAY RATE SPECIFY % ADDITIONAL HOURS PAID ON ACTUAL HOURS WORKED			10.00	%						6,466			453,620	453,620
	PER DIEM	NONE		0.00	HR						71,129			0	0
	CONSUMABLES - % of ACCT NO. 90			0.5	%				9,335					26,443	35,778
	FREIGHT ON MATERIAL - % of ACCT NO. 90			5.0	%				93,350						93,350
	FREIGHT ON EQUIPMENT - % of ACCT NO. 90			5.0	%			432,290							432,290
	SCAFFOLDING - % OF ACCT NO. 90			5.0	%				93,350					264,425	357,775
	CONTRACTOR'S GENERAL AND ADMINISTRATION & PROFIT EXPENSE - % of ACCT NO. 90			15	%				280,050					793,275	1,073,325
	SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS							432,300	476,100					1,969,800	2,878,100
	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	BYPRODUCT WASTE & FLY ASH HANDLING SYSTEMS						9,078,100	2,343,100					7,258,300	18,679,400
7.0	ABSORBER ISLAND	NOT REQUIRED FOR NID													0
8.0	ACTIVATED CARBON INJECTION SYSTEM														0
9.0	COMPRESSED AIR SYSTEM														
10.0	SERVICE WATER SYSTEM														
11.0	POTABLE WATER SYSTEM														

				AEP										Estimate No.:	30725C
				BIG SANDY UNIT 2										Project No.:	12721-000
				FGD PROJECT - NID EST (ESP)-4A - 7.5 LB/MM BTU										Date:	9/29/2010
				ORDER OF MAGNITUDE COST ESTIMATE										Preparer:	MNO
		Cost Type:												Reviewer:	JMK
		Est=Estimated												Approver:	PEF
		Allow.=Allowance								Wage Rates Based on:		BIG SANDY			
		Q=Vendor Quote								Labor Productivity =		1.15			

Account No.	Item Description	Scope Definition	Cost Type	Quantity	Unit of Measure	Unit Equip.Cost	Unit Material Cost	Total Equipment Cost	Total Material Cost	Unit Man-hours (Base)	Total Man-hours (w/ productivity)	Crew Code	Crew Wage Rate	Total Construction & Erection Cost	Total Projected Cost
12.0	FGD SUBSTATION														
13.0	FGD DCS SYSTEM														0
14.0	CEM SYSTEM														0
15.0	TRUCK & RAIL INFRASTRUCTURE														0
16.0	SITE IMPROVEMENTS - CIVIL WORK														
17.0	BOP ITEMS														0
17.1	PIPE INSULATION	AVERAGE 6" PIPE SIZE	EST	3,400	LF		10	0	34,000	0.39	1,525	PINS	69.50	106,000	140,000
17.2	HEAT TRACING							0	175,600					248,500	424,100
	CABLE	AVERAGE 6" PIPE SIZE	EST	3,000	LF		10.35	0	31,100	0.05	173	WIRE	98.84	17,000	48,100
	POWER CONNECTOR AND OTHER ACCESSORIES INCLUDING THERMOSTATS FOR HEAT TRACING (BY ZONES)		EST	55	EA		450	0	24,500	8.00	502	WIRE	98.84	49,600	74,100
	HEAT TRACING BALANCE OF PLANT INCL PANELS, POWER WIRING AND CONDUITS		EST	4	LT		30000	0	120,000	400.00	1,840	WIRE	98.84	181,900	301,900
17.3	TOUCH UP PAINT (INCLUDES PAINTING CS PIPE)							0	188,100					721,600	909,700
	TOUCH UP PAINT FOR SHOP PAINTED STEEL		EST	35,000	SF		3	0	105,000	0.15	6,038	PNTR	66.72	402,800	507,800
	TOUCH UP PAINT FOR EQUIPMENT		EST	12,000	SF		3	0	36,000	0.15	2,070	PNTR	66.72	138,100	174,100
	PAINTING CS PIPE ONLY	AVERAGE 6" PIPE SIZE, ALLOWANCE FOR 10,000 LF PIPE	EST	15,700	SF		3	0	47,100	0.15	2,708	PNTR	66.72	180,700	227,800
17.4	HOISTS & TROLLEYS							150,000	175,000					204,400	529,400
	MISC HOISTS & TROLLEYS	IN BUILDINGS FOR EQUIPMENT MAINTENANCE AND FOR ID FANS	EST	10	EA	15000	17500	150,000	175,000	200.00	2,300	MECH	88.89	204,400	529,400
17.5	MISC AUX STEEL FOR PIPE SUPPORTS	FIELD FABRICATED	EST	35	TN		3500	0	122,500	120.00	4,830	STST	105.71	510,600	633,100
17.6	MISC PIPE SUPPORT FOUNDATIONS							0	10,500					21,000	31,500
	EXCAVATION / BACKFILL		EST	65	CY			0	0	0.36	27	EXFD	90.00	2,400	2,400
	REINFORCING		EST	5.0	TN		1,150.00	0	5,800	20.00	115	REIN	78.27	9,000	14,800
	FORMWORK		EST	260	SF		2.50	0	700	0.14	42	FORM	99.43	4,200	4,900
	CONCRETE		EST	25	CY		105.00	0	2,600	1.50	43	CONP	79.64	3,400	6,000
	MUD MAT		EST	10	CY		105.00	0	1,100	1.50	17	CONP	79.64	1,400	2,500
	EMBEDDED STEEL		EST	125	LB		2.50	0	300	0.06	9	CARP	71.88	600	900
17.7	EYE WASH STATIONS	WITH 50 KW HEATERS	EST	5	EA	6000	1000	30,000	5,000	60.00	345	MECH	88.89	30,700	65,700
17.8	FIRE PROTECTION FOR MISC BUILDINGS & AREAS	STAND PIPE FOR BUILDINGS	EST	10	EA		30000	0	300,000	240.00	2,760	MECH	88.89	245,300	545,300
90.00	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS							180,000	1,010,700		25,343			2,088,100	3,278,800
	OTHER DIRECT & CONSTRUCTION INDIRECT COSTS														
	ADDITIONAL CRANE ALLOWANCE								0					0	0
	MOBILIZATION / DEMOBILIZATION - INCLUDED IN WAGE RATES ABOVE														0
	COST DUE TO OVERTIME WORKING 5 X10 HOUR DAYS			1	LS										377,242
	COST DUE TO OVERTIME INEFFICIENCY - SPECIFY % INEFFICIENCY			8.00	%						2,204		83.48	184,000	184,000
	COST DUE TO OVERTIME PAY @1.5 TIMES OVERTIME PAY RATE SPECIFY % ADDITIONAL HOURS PAID ON ACTUAL HOURS WORKED			10.00	%						2,755			193,242	193,242

				AEP										Estimate No.:	30725C
				BIG SANDY UNIT 2										Project No.:	12721-000
				FGD PROJECT - NID EST (ESP)-4A - 7.5 LB/MM BTU										Date:	9/29/2010
				ORDER OF MAGNITUDE COST ESTIMATE										Preparer:	MNO
		Cost Type:												Reviewer:	JMK
		Est=Estimated												Approver:	PEF
		Allow.=Allowance								Wage Rates Based on:		BIG SANDY			
		Q=Vendor Quote								Labor Productivity =		1.15			

Account No.	Item Description	Scope Definition	Cost Type	Quantity	Unit of Measure	Unit Equip.Cost	Unit Material Cost	Total Equipment Cost	Total Material Cost	Unit Man-hours (Base)	Total Man-hours (w/ productivity)	Crew Code	Crew Wage Rate	Total Construction & Erection Cost	Total Projected Cost
	PER DIEM	NONE		0.00	HR						30,301			0	0
	CONSUMABLES - % of ACCT NO. 90			0.5	%				5,054					10,441	15,494
	FREIGHT ON MATERIAL - % of ACCT NO. 90			5.0	%				50,535						50,535
	FREIGHT ON EQUIPMENT - % of ACCT NO. 90			5.0	%			9,000							9,000
	SCAFFOLDING - % OF ACCT NO. 90			5.0	%				50,535					104,405	154,940
	CONTRACTOR'S GENERAL AND ADMINISTRATION & PROFIT EXPENSE - % of ACCT NO. 90			15	%				151,605					313,215	464,820
	SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS							9,000	257,729					805,302	1,072,031
	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	BOP ITEMS						189,000	1,268,400					2,893,400	4,350,800
18.0	CAPITAL REPLACEMENTS - REMOVAL AND RELOCATION OF EXISTING EQUIPMENT AND INFRASTRUCTURE														0
19.0	ARSENIC, ASBESTOS , LEAD ABATEMENT														0
99.00	OVERALL - EQUIPMENT, MATERIAL AND LABOR COSTS							123,436,400	49,049,700		1,476,605			136,993,900	329,580,000
	OTHER DIRECT & CONSTRUCTION INDIRECT COSTS														
	ADDITIONAL CRANE ALLOWANCE			9	MN	75,000.00		675,000	0		7,452			662,400	1,337,400
	MOBILIZATION / DEMOBILIZATION - INCLUDED IN WAGE RATES ABOVE														0
	COST DUE TO OVERTIME WORKING 5 X10 HOUR DAYS			1	LS										22,030,591
	COST DUE TO OVERTIME INEFFICIENCY - SPECIFY % INEFFICIENCY			8.00	%						128,400		92.78	10,719,000	10,719,000
	COST DUE TO OVERTIME PAY @1.5 TIMES OVERTIME PAY RATE SPECIFY % ADDITIONAL HOURS PAID ON ACTUAL HOURS WORKED			10.00	%						161,246			11,311,591	11,311,591
	PER DIEM	NONE		0.00	HR									0	0
	CONSUMABLES - % of ACCT NO. 90			0.5	%				242,549					683,420	925,968
	FREIGHT ON MATERIAL - % of ACCT NO. 90			5.0	%				2,425,485						2,425,485
	FREIGHT ON EQUIPMENT - % of ACCT NO. 90			5.0	%			6,108,820							6,108,820
	SCAFFOLDING - % OF ACCT NO. 90			5.0	%				2,425,485					6,834,195	9,259,680
	CONTRACTOR'S GENERAL AND ADMINISTRATION & PROFIT EXPENSE - % of ACCT NO. 90			15	%				7,357,455					20,502,585	31,110,540
	OVERALL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS							6,783,800	12,451,000					50,713,200	73,198,500
	OVERALL TOTAL DIRECT & CONSTRUCTION INDIRECT COST							130,220,200	61,500,700					187,707,100	402,778,500
	TOTAL PROJECT DIRECT AND CONSTRUCTION INDIRECT COSTS							130,220,200	61,500,700					187,707,100	402,778,500
								0	0					0	0
	INDIRECT COSTS														
	ENGINEERING, PROCUREMENT, & PROJECT SERVICES			1.0	LT										25,000,000
	CONSTRUCTION MANAGEMENT			3.0	%										12,083,400
	S-U / COMMISSIONING			1.0											4,027,800
	CRAFT START-UP SUPPORT	1% OF TOTAL LABOR MANHOURS (INCLUDES OVERTIME INEFFICIENCY & COST DUE TO OVERTIME PAY @1.5 TIMES OVERTIME PAY RATE - BASED ON ASSUMED 5X10 WORKWEEK)		1.0	%						16,050		92.78	1,614,200	1,614,200
	INITIAL FILLS			0.3	%										1,208,300
	OPERATOR & TRAINING MANUALS			1.0	LT										300,000
	SUBCONTRACTORS (NOISE & DUCTWORK CONSULTANT, GEOTECHNICAL INVESTIGATION)			1.0	LT										400,000

				AEP											Estimate No.:	30725C
				BIG SANDY UNIT 2											Project No.:	12721-000
				FGD PROJECT - NID EST (ESP)-4A - 7.5 LB/MM BTU											Date:	9/29/2010
				ORDER OF MAGNITUDE COST ESTIMATE											Preparer:	MNO
		Cost Type:													Reviewer:	JMK
		Est=Estimated													Approver:	PEF
		Allow.=Allowance								Wage Rates Based on:		BIG SANDY				
		Q=Vendor Quote								Labor Productivity =		1.15				

Account No.	Item Description	Scope Definition	Cost Type	Quantity	Unit of Measure	Unit Equip.Cost	Unit Material Cost	Total Equipment Cost	Total Material Cost	Unit Man-hours (Base)	Total Man-hours (w/ productivity)	Crew Code	Crew Wage Rate	Total Construction & Erection Cost	Total Projected Cost
	NOISE ABATEMENT FOR 85 DBA REQUIREMENT	FOR ID FAN, NID MODULES, TRANSFORMERS, BOP, DUCTWORK, ACOUSTIC BARRIERS FOR BOUNDARY LIMITS		1.0	LT										2,600,000
	SUBTOTAL - INDIRECT COSTS														47,233,700
	TOTAL PROJECT DIRECT AND INDIRECT COSTS														450,012,200
	SPARE PARTS:			1.5	%			1,953,300							1,953,300
	SPARE PARTS - CAPITALIZED			0.90	%			1,171,980							1,171,980
	SPARE PARTS - FIRST YEAR OF OPERATION			0.60	%			781,320							781,320
	CONTINGENCY			14.0	%										63,352,700
	ESCALATION														57,746,800
	EQUIPMENT	4.0%/yr		4.0	%			20,691,100							20,691,100
	MATERIAL	2.0%/yr		2.0	%				6,335,100						6,335,100
	LABOR	2.5%/yr		2.5	%									25,169,400	25,169,400
	INDIRECTS	2.5%/yr		2.5	%									5,551,200	5,551,200
	TOTAL PROJECT COST														573,065,000
	REFERENCE COSTS:														
A	REMOVAL OF FUEL OIL TANK							1,200,000	80,000					469,400	1,749,400
	REMOVE FUEL OIL TANK & SOIL REMEDIATION	LABOR COST IS FOR REMOVAL OF TANK ONLY. ALLOWANCE FOR SOIL REMEDIATION AND DISPOSAL IN AN EPA APPROVED LANDFILL. SUBCONTRACT COST INCLUDES LABOR. USED LOWER END OF THE RANGE $118-355/CY. COST COULD BE LOWER ($59-118/CY) IF SOLD TO A BITUMINOUS CONCRETE BATCH PLANT	EST	8,000	CY	150		1,200,000	0		0	MECH	88.89	0	1,200,000
	REMOVE DIKE & RECOMPACT FILL IN TANK AREA		EST	3,500	CY			0	0	0.60	2,415	ETWK	177.49	428,600	428,600
	FILL FROM OFF SITE COURSE		EST	5,000	CY		16	0	80,000	0.04	230	ETWK	177.49	40,800	120,800

ATTACHMENT 5-13
NID Detailed Capital Cost Estimate No. 30729 Est-4B ESP not in Service*
(7.5 lb SO_2/MMbtu)

* - Estimates 2A, 2B, 3A, 3B, 4A and 4B contain only accounts whose costs are different from the corresponding base estimates 1A and 1B.

				AEP										Estimate No.:	30729C
				BIG SANDY UNIT 2										Project No.:	12721-000
				FGD PROJECT - NID EST (N/ESP) - 4B - 7.5 LB/MM BTU										Date:	9/29/2010
				ORDER OF MAGNITUDE COST ESTIMATE										Preparer:	MNO
		Cost Type:												Reviewer:	JMK
		Est=Estimated												Approver:	PEF
		Allow.=Allowance								Wage Rates Based on:		BIG SANDY			
		Q=Vendor Quote								Labor Productivity =		1.15			

Account No.	Item Description	Scope Definition	Cost Type	Quantity	Unit of Measure	Unit Equip.Cost	Unit Material Cost	Total Equipment Cost	Total Material Cost	Unit Man-hours (Base)	Total Man-hours (w/ productivity)	Crew Code	Crew Wage Rate	Total Construction & Erection Cost	Total Projected Cost
1.0	ID FANS														
2.0	NID MODULES														
2.1	MECHANICAL EQUIPMENT	A 14-MODULE NID SYSTEM (160' X 185') INCLUDING LIME DAY SILOS, HYDRATORS, MIXERS, J-DUCTS, FABRIC FILTER MODULES, ALL INTERNAL ELEMENTS (BAGS, CAGES, ASH HOPPERS, 2 BROKEN BAG DETECTORS / COMPARTMENT), ASH RECYCLE SYSTEM, VACUUM PIPING, AND ALL INTERNAL PIPING & DUCTWORK FOR THE VARIOUS MODULES.	EST	1	LT	67,447,500		67,447,500	0	372000.00	491,970	MECH	88.89	43,731,200	111,178,700
2.2	INSULATION FOR NID MODULES	SUBCONTRACT COST INCLUDES LABOR	EST	103,040	SF	30		3,091,200	0	0.00	0	DINS	81.75	0	3,091,200
2.3	PENTHOUSE FOR NID MODULES	14 FT HIGH, 29600 SF						65,500	1,544,800					2,059,900	3,670,200
	SUPPORT STEEL AND PURLINS	THREE COAT PAINT	EST	234	TN		2,900.00	0	677,700	24.00	6,450	STST	105.71	681,800	1,359,500
	SIDING FOR PENTHOUSE		EST	9,902	SF		12.00	0	118,800	0.11	1,253	SDNG	93.41	117,000	235,800
	CONCRETE FLOOR FOR PENTHOUSE		EST	765	CY		230.00	0	176,000	7.50	6,598	SDNG	93.41	616,300	792,300
	ROOFING FOR PENTHOUSE		EST	30,340	SF		18.00	0	546,100	0.22	7,676	ROOF	69.12	530,600	1,076,700
	H&V		EST	1	LT	65500	26200	65,500	26,200	1223	1,406	HVAC	81.24	114,200	205,900
2.4	BOTTOM ENCLOSURE FOR NID MODULES	40 FT HIGH						104,400	2,687,100					2,817,400	5,608,900
	SUPPORT STEEL AND PURLINS	THREE COAT PAINT	EST	607	TN		2,900.00	0	1,759,700	24.00	16,748	STST	105.71	1,770,400	3,530,100
	SIDING FOR BOTTOM ENCLOSURE		EST	28,290	SF		12.00	0	339,500	0.11	3,579	SDNG	93.41	334,300	673,800
	ROOFING FOR BOTTOM ENCLOSURE		EST	30,340	SF		18.00	0	546,100	0.22	7,676	ROOF	69.12	530,600	1,076,700
	H&V		EST	1	LT	104400	41760	104,400	41,800	1949.33	2,242	HVAC	81.24	182,100	328,300
2.5	PIPING & SUPPORTS - MECHANICAL							125,200	174,500					385,900	685,600
	LARGE BORE PIPING	4" CS, SCHEDULE 40, WELDED	EST	300	LF		23.0	0	6,900	1.48	511	SPNG	94.41	48,200	55,100
	LARGE BORE PIPING	6" SS, SCH 40 WELDED	EST	400	LF		111.00	0	44,400	2.02	929	SPNG	94.41	87,700	132,100
	LARGE BORE PIPING	18" CS, STD WELDED	EST	400	LF		234.10	0	93,600	2.34	1,076	SPNG	94.41	101,600	195,200
	SMALL BORE PIPING	2" CS, SCH 80 WELDED	EST	150	LF		22.20	0	3,300	1.26	217	SPNG	94.41	20,500	23,800
	SMALL BORE PIPING	2" SS, SCH 80 WELDED	EST	100	LF		48.80	0	4,900	1.44	166	SPNG	94.41	15,600	20,500
	SMALL BORE PIPING	ALLOWANCE FOR MISC SIZE <2" SS, SCH 80 WELDED	EST	300	LF		33.70	0	10,100	1.32	455	SPNG	94.41	43,000	53,100
	VALVE	18" GATE, 150 #, CS, WELDED	EST	4	EA	17,500		70,000	0	28.30	130	SPNG	94.41	12,300	82,300
	VALVE	6" GATE, 150 #, SS, WELDED	EST	6	EA	4,700		28,200	0	12.96	89	SPNG	94.41	8,400	36,600
	VALVE	4" GATE, 150 #, CS, WELDED	EST	5	EA	2,500		12,500	0	7.70	44	SPNG	94.41	4,200	16,700
	VALVE	2" GLOBE, 150# SS, WELDED	EST	10	EA	1,450		14,500	0	5.64	65	SPNG	94.41	6,100	20,600
	PIPE SUPPORTS		EST	150	EA		75.00	0	11,300	2.50	431	MECH	88.89	38,300	49,600
2.6	DUCTWORK							0	4,797,000					9,162,600	13,959,600
	NID MODULE INLET	INCLUDES INTERNAL BRACING AND TURNING VANES	EST	1,476	TN		3,250.00	0	4,797,000	50.00	84,870	FLDU	107.96	9,162,600	13,959,600
2.7	DUCT SUPPORT STEEL	THREE COAT SHOP PAINT	EST	738	TN		2,900.00	0	2,140,200	24.00	20,369	STST	105.71	2,153,200	4,293,400
2.8	DUCTWORK INSULATION & LAGGING		EST	136,000	SF		12.00	0	1,632,000	0.25	39,100	DINS	81.75	3,196,400	4,828,400
2.9	NID MODULE- FOUNDATIONS							0	1,203,400					1,965,300	3,168,700
	EXCAVATION / BACKFILL		EST	5,000	CY			0	0	0.36	2,070	EXFD	90.00	186,300	186,300
	REINFORCING		EST	475	TN		1,150.00	0	546,300	20.00	10,925	REIN	78.27	855,100	1,401,400
	FORMWORK		EST	3,450	SF		2.50	0	8,600	0.14	555	FORM	99.43	55,200	63,800
	CONCRETE		EST	5,500	CY		105.00	0	577,500	1.50	9,488	CONP	79.64	755,600	1,333,100
	MUD MAT		EST	390	CY		105.00	0	41,000	1.50	673	CONP	79.64	53,600	94,600
	EMBEDDED STEEL		EST	12,000	LB		2.50	0	30,000	0.06	828	CARP	71.88	59,500	89,500
2.10	NID MODULE - SUPPORT STEEL AND ACCESS GALLERY							0	1,332,000					3,486,100	4,818,100
	SUPPORT STEEL	MATERIAL INCLUDED WITH OEM EQUIPMENT	EST	800	TN			0	0	24.00	22,080	STST	105.71	2,334,100	2,334,100

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	ACCESS GALLERY		EST	29,600	SF		45.00	0	1,332,000	0.40	13,616	GALL	84.61	1,152,000	2,484,000
2.11	GROUNDING							0	16,000		0			46,100	62,100
	GROUND ROD	3/4" - 20' LONG	EST	16	EA		150	0	2,400	4.00	74	WIRE	98.84	7,300	9,700
	500 MCM	BARE COPPER WIRE	EST	1,650	FT		7.65	0	12,600	0.12	228	WIRE	98.84	22,500	35,100
	CADWELD		EST	64	EA		15	0	1,000	2.00	147	WIRE	98.84	14,500	15,500
	GROUNDING TEST	TEST & DOCUMENTATION	EST	1	LT			0	0	16.00	18	WIRE	98.84	1,800	1,800
2.12	LIGHTING/ TRANSFORMERS & PANELS							27,000	75,000		0			57,300	159,300
	LIGHT FIXTURES		EST	100	EA		750	0	75,000	4.00	460	WIRE	98.84	45,500	120,500
	45KVA, 480V, 3 PHASE	LOW VOLTAGE XFMR	EST	2	EA	10000		20,000	0	40.00	92	WIRE	98.84	9,100	29,100
	200A, 277V-120V, 3 PHASE- LIGHTING PANELS	INCLUDING BREAKERS	EST	2	EA	3500		7,000	0	12.00	28	WIRE	98.84	2,700	9,700
2.13	RACEWAY, CABLE TRAY, & CONDUIT	INCLUDED IN ID FANS, 1.0													
90.00	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS							70,860,800	15,602,000		755,332			69,061,400	155,524,200
	OTHER DIRECT & CONSTRUCTION INDIRECT COSTS														
	ADDITIONAL CRANE ALLOWANCE			9	MN	75000		675,000		720.00	7,452	MECH	88.89	662400	1,337,400
	MOBILIZATION / DEMOBILIZATION - INCLUDED IN WAGE RATES ABOVE														0
	COST DUE TO OVERTIME WORKING 5 X10 HOUR DAYS			1	LS										11,294,783
	COST DUE TO OVERTIME INEFFICIENCY - SPECIFY % INEFFICIENCY			8.00	%						65,681		83.48	5,483,000	5,483,000
	COST DUE TO OVERTIME PAY @1.5 TIMES OVERTIME PAY RATE SPECIFY % ADDITIONAL HOURS PAID ON ACTUAL HOURS WORKED			10.00	%						82,846			5,811,783	5,811,783
	PER DIEM	NONE		0.00	HR						911,311			0	0
	CONSUMABLES - % of ACCT NO. 90			0.5	%				78,010					345,307	423,317
	FREIGHT ON MATERIAL - % of ACCT NO. 90			5.0	%				780,100						780,100
	FREIGHT ON EQUIPMENT - % of ACCT NO. 90			5.0	%			3,543,040							3,543,040
	SCAFFOLDING - % OF ACCT NO. 90			5.0	%				780,100					3,453,070	4,233,170
	CONTRACTOR'S GENERAL AND ADMINISTRATION & PROFIT - % of ACCT NO. 90			15	%				2,340,300					10,359,210	12,699,510
	SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS							4,218,000	3,978,500					26,114,800	34,311,300
	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	NID MODULES						75,078,800	19,580,500					95,176,200	189,835,500
3.0	NEW STACK														
4.0	LIME HANDLING SYSTEM														
4.1	LIME STORAGE SILO							12,790,000	0					0	12,790,000
	SILO	CONCRETE SILO 100' DIA X 133' H - 15624 TONS -SUBCONTRACT COST INCLUDES LABOR	EST	2	EA	6,250,000.00		12,500,000	0	0.00	0	CONP	79.64	0	12,500,000
	ELEVATOR	MAINTENANCE ELEVATOR COMMON FOR BOTH SILOS - SUBCONTRACT COST INCLUDES LABOR	EST	1	EA	290,000.00		290,000	0	0.00	0	MECH	88.89	0	290,000
4.2	LIME UNLOADING SYSTEM	INCLUDE PNEUMATIC HANDLING SYSTEM, THREE VACUUM EXHAUSTER, TWO FILTER SEPARATORS	EST	1	LT	1,100,000		1,100,000	0	5800.00	6,670	MECH	88.89	592,900	1,692,900
4.3	LIME TRANSPORT SYSTEM TO DAY BINS	INCLUDE PNEUMATIC HANDLING SYSTEM, THREE VACUUM EXHAUSTERS, TWO FILTER SEPARATORS	EST	1	LT	4,100,000		4,100,000	0	21800.00	25,070	MECH	88.89	2,228,500	6,328,500
4.4	PIPING - MECHANICAL							88,700	130,300					342,600	561,600

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	LARGE BORE PIPING	14" CS, SCH 40 WELDED - ON PIPE RACK	EST	500	LF		163.1	0	81,600	1.67	960	SPNG	94.41	90,700	172,300
	LARGE BORE PIPING	8" HDPE (UNDERGROUND)	EST	1,200	LF		14.1	0	16,900	0.83	1,145	SPNG	94.41	108,100	125,000
	LARGE BORE PIPING	6" CS, SCH 40 WELDED	EST	200	LF		41.7	0	8,300	1.61	370	SPNG	94.41	35,000	43,300
	SMALL BORE PIPING	2" CS, SCH 80 WELDED	EST	50	LF		22.20	0	1,100	1.26	72	SPNG	94.41	6,800	7,900
	SMALL BORE PIPING	2" SS, SCH 80 WELDED	EST	50	LF		48.80	0	2,400	1.44	83	SPNG	94.41	7,800	10,200
	SMALL BORE PIPING	ALLOWANCE FOR MISC SIZE <2" SS, SCH 80 WELDED	EST	100	LF		33.70	0	3,400	1.32	152	SPNG	94.41	14,300	17,700
	VALVE	2" GLOBE, 150# SS, WELDED	EST	6	EA	1,450		8,700	0	5.64	39	SPNG	94.41	3,700	12,400
	VALVE	8" AIR OPERATED, 150 #, CS, FLANGED	EST	4	EA	17,000		68,000	0	19.30	89	SPNG	94.41	8,400	76,400
	VALVE	14" BFLY 150# CS, FLANGED	EST	4	EA	3,000		12,000	0	16.60	76	SPNG	94.41	7,200	19,200
	EXCAVATION / BACKFILL	FOR UNDERGROUND PIPING	EST	1,000	CY			0	0	0.20	230	EXFD	90.00	20,700	20,700
	BEDDING	FOR UNDERGROUND PIPING	EST	133	CY		35.0	0	4,700	0.25	38	EXFD	90.00	3,500	8,200
	PIPE SUPPORTS		EST	238	EA		50.00	0	11,900	1.50	410	MECH	88.89	36,400	48,300
4.5	LIME STORAGE SILO ACCESS STAIR TOWER	INCLUDES CATWALK TO THE SECOND SILO - THREE COAT SHOP PAINT	EST	55	TN		2,900.00	0	159,500	24.00	1,518	STST	105.71	160,500	320,000
4.6	PIPE RACK FOR LIME HANDLING, WASTE HANDLING AND MISC MECHANICAL PIPING	THREE COAT SHOP PAINT	EST	650	TN		2,900.00	0	1,885,000	24.00	17,940	STST	105.71	1,896,400	3,781,400
4.7	RAIL CAR UNLOADING AREA - FOUNDATIONS	20' X 120' - NO SIDING						0	42,700					90,100	132,800
	EXCAVATION / BACKFILL		EST	500	CY			0	0	0.36	207	EXFD	90.00	18,600	18,600
	REINFORCING		EST	15	TN		1,150.00	0	17,300	20.00	345	REIN	78.27	27,000	44,300
	FORMWORK		EST	750	SF		2.50	0	1,900	0.14	121	FORM	99.43	12,000	13,900
	CONCRETE		EST	200	CY		105.00	0	21,000	1.50	345	CONP	79.64	27,500	48,500
	MUD MAT		EST	0	CY		105.00	0	0	1.50	0	CONP	79.64	0	0
	EMBEDDED STEEL		EST	1,000	LB		2.50	0	2,500	0.06	69	CARP	71.88	5,000	7,500
4.8	LIME UNLOADING BLOWER / ELECTRICAL BUILDING - FOUNDATIONS							0	69,600					147,600	217,200
	EXCAVATION / BACKFILL		EST	800	CY			0	0	0.36	331	EXFD	90.00	29,800	29,800
	REINFORCING		EST	25	TN		1,150.00	0	28,800	20.00	575	REIN	78.27	45,000	73,800
	FORMWORK		EST	1,200	SF		2.50	0	3,000	0.14	193	FORM	99.43	19,200	22,200
	CONCRETE		EST	300	CY		105.00	0	31,500	1.50	518	CONP	79.64	41,200	72,700
	MUD MAT		EST	0	CY		105.00	0	0	1.50	0	CONP	79.64	0	0
	EMBEDDED STEEL		EST	2,500	LB		2.50	0	6,300	0.06	173	CARP	71.88	12,400	18,700
4.9	LIME UNLOADING BLOWER / ELECTRICAL BUILDING	100' L X 30' W X 30' H						75,000	335,000					24,400	434,400
	PRE-ENGINEERED BUILDING INCLUDING H&V AND LIGHTING	SUBCONTRACT PRICE, INCLUDES LABOR	EST	3,000	SF		105	0	315,000	0.00	0	STST	105.71	0	315,000
	ADDITIONAL HVAC UNIT FOR ELECTRICAL ROOM & CONTROLS	40T PACKAGED UNIT FOR ELECTRICAL EQUIPMENT ROOM. INCLUDES ALLOWANCE FOR CONCRETE PAD AND ELECTRICAL WORK	EST	1	LT	75000	20000	75,000	20,000	350.00	300	HVAC	81.24	24,400	119,400
4.10	CONCRETE PIT FOR THE ELEVATOR		EST	10	CY		230.00	0	2,300	7.50	86	CONP	79.64	6,900	9,200
4.11	LIME STORAGE SILO - FOUNDATIONS	INCLUDES FOUNDATIONS FOR LIME TRANSPORT SYSTEM PRESSURE BLOWERS						0	847,500					1,485,400	2,332,900
	EXCAVATION / BACKFILL		EST	5,500	CY			0	0	0.36	2,277	EXFD	90.00	204,900	204,900
	REINFORCING		EST	350.0	TN		1,150.00	0	402,500	20.00	8,050	REIN	78.27	630,100	1,032,600
	FORMWORK		EST	4,000	SF		2.50	0	10,000	0.14	644	FORM	99.43	64,000	74,000
	CONCRETE		EST	3,700	CY		105.00	0	388,500	1.50	6,383	CONP	79.64	508,300	896,800
	MUD MAT		EST	200	CY		105.00	0	21,000	1.50	345	CONP	79.64	27,500	48,500
	EMBEDDED STEEL		EST	10,206	LB		2.50	0	25,500	0.06	704	CARP	71.88	50,600	76,100
4.12	LIME STORAGE SILO ACCESS STAIR TOWER - FOUNDATIONS							0	14,200					28,600	42,800

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	EXCAVATION / BACKFILL		EST	110	CY			0	0	0.36	46	EXFD	90.00	4,100	4,100
	REINFORCING		EST	4.8	TN		1,150.00	0	5,500	20.00	110	REIN	78.27	8,600	14,100
	FORMWORK		EST	320	SF		2.50	0	800	0.14	52	FORM	99.43	5,100	5,900
	CONCRETE		EST	60	CY		105.00	0	6,300	1.50	104	CONP	79.64	8,200	14,500
	MUD MAT		EST	8	CY		105.00	0	800	1.50	14	CONP	79.64	1,100	1,900
	EMBEDDED STEEL		EST	300	LB		2.50	0	800	0.06	21	CARP	71.88	1,500	2,300
4.13	PIPE RACK - FOUNDATIONS							0	239,600					588,600	828,200
	EXCAVATION / BACKFILL		EST	3,200	CY			0	0	0.36	1,325	EXFD	90.00	119,200	119,200
	REINFORCING		EST	90.0	TN		1,150.00	0	103,500	20.00	2,070	REIN	78.27	162,000	265,500
	FORMWORK		EST	9,500	SF		2.50	0	23,800	0.14	1,530	FORM	99.43	152,100	175,900
	CONCRETE		EST	950	CY		105.00	0	99,800	1.50	1,639	CONP	79.64	130,500	230,300
	MUD MAT		EST	0	CY		105.00	0	0	1.50	0	CONP	79.64	0	0
	EMBEDDED STEEL		EST	5,000	LB		2.50	0	12,500	0.06	345	CARP	71.88	24,800	37,300
4.14	TRANSFORMERS	SUS TRANSFORMERS: 33F, 33G, 13.8KV-480V,3PHASE, 3 WINDING XFMR	EST	2	EA	85000		170,000	0	300.00	690	EHEA	79.16	54,600	224,600
4.15	SWITCHGEAR	480V LOW VOLTAGE (33F/G), SWITCHGEAR	EST	5	EA	39200		196,000	0	230.00	1,323	EHEA	79.16	104,700	300,700
4.16	CABLE BUS DUCT							134,700	10,800					200,200	345,700
	480V CABLE BUS	BUST DUCT ONLY	EST	150	FT	898		134,700	0	10.30	1,777	WIRE	98.84	175,600	310,300
	CABLE BUS TERMINATION	750MCM- 480V TERMINATIONS	EST	4	EA		2,700.00	0	10,800	54.00	248	WIRE	98.84	24,600	35,400
4.17	MCC							61,800	0					3,600	65,400
	480V MCC	PER LINE UP	EST	2	EA	30900		61,800	0	16.00	37	WIRE	98.84	3,600	65,400
4.18	MIMIC PANELS		EST	1	EA	17500		17,500	0	12.00	14	WIRE	98.84	1,400	18,900
4.19	EMERGENCY POWER SYSTEM							108,300	0					24,400	132,700
	DC PANEL BOARD		EST	1	EA	15450		15,500	0	40.00	46	WIRE	98.84	4,500	20,000
	UPS PANEL BOARDS		EST	1	EA	15450		15,500	0	40.00	46	WIRE	98.84	4,500	20,000
	SATELLITE UPS		EST	1	EA	41200		41,200	0	16.00	18	WIRE	98.84	1,800	43,000
	VRLA BATTERIES		EST	1	LT	36050		36,100	0	120.00	138	WIRE	98.84	13,600	49,700
4.20	GROUNDING							13,300	0					41,300	54,600
	GROUND ROD	3/4" - 20' LONG	EST	16	EA	150		2,400	0	4.00	74	WIRE	98.84	7,300	9,700
	500 MCM	BARE COPPER WIRE	EST	1,300	FT	7.65		9,900	0	0.12	179	WIRE	98.84	17,700	27,600
	CADWELD		EST	64	EA	15		1,000	0	2.00	147	WIRE	98.84	14,500	15,500
	GROUNDING TEST	TEST & DOCUMENTATION	EST	1	LT			0	0	16.00	18	WIRE	98.84	1,800	1,800
4.21	LIGHTING/ TRANSFORMERS & PANELS							52,000	135,000					104,500	291,500
	LIGHT FIXTURES		EST	180	EA		750	0	135,000	4.00	828	WIRE	98.84	81,800	216,800
	45KVA, 480V, 3 PHASE	LOW VOLTAGE XFMR	EST	2	EA	10000		20,000	0	40.00	92	WIRE	98.84	9,100	29,100
	37.7KVA, 480V, 3 PHASE	LOW VOLTAGE XFMR	EST	2	EA	7500		15,000	0	32.00	74	WIRE	98.84	7,300	22,300
	200A, 480-277V, 3 PHASE- RECEPTACLE PANEL	INCLUDING BREAKERS	EST	2	EA	5000		10,000	0	16.00	37	WIRE	98.84	3,600	13,600
	200A, 277V-120V, 3 PHASE- LIGHTING PANELS	INCLUDING BREAKERS	EST	2	EA	3500		7,000	0	12.00	28	WIRE	98.84	2,700	9,700
4.22	RACEWAY, CABLE TRAY, & CONDUIT							0	310,900					1,537,100	1,848,000
	12" X 6" AL CABLE TRAY	INCLUDING SUPPORT & FITTINGS	EST	1,050	LF		18.25	0	19,200	1.10	1,328	WIRE	98.84	131,300	150,500
	18" X 6" AL CABLE TRAY	INCLUDING SUPPORT & FITTINGS	EST	600	LF		21.50	0	12,900	1.45	1,001	WIRE	98.84	98,900	111,800
	24" X 6" AL CABLE TRAY	INCLUDING SUPPORT & FITTINGS	EST	1,700	LF		27.10	0	46,100	1.75	3,421	WIRE	98.84	338,200	384,300
	36" X 6" AL CABLE TRAY	INCLUDING SUPPORT & FITTINGS	EST	500	LF		30.30	0	15,200	1.95	1,121	WIRE	98.84	110,800	126,000
	5" RGS CONDUIT	INCLUDING SUPPORT & FITTINGS	EST	750	LF		61.00	0	45,800	1.13	972	WIRE	98.84	96,100	141,900
	4" RGS CONDUIT	INCLUDING SUPPORT & FITTINGS	EST	1,450	LF		31.00	0	45,000	0.81	1,346	WIRE	98.84	133,000	178,000

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				ORDER OF MAGNITUDE COST ESTIMATE										Preparer:	MNO
		Cost Type:												Reviewer:	JMK
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	3" RGS CONDUIT	INCLUDING SUPPORT & FITTINGS	EST	1,550	LF		21.50	0	33,300	0.65	1,150	WIRE	98.84	113,600	146,900
	2" RGS CONDUIT	INCLUDING SUPPORT & FITTINGS	EST	2,400	LF		9.25	0	22,200	0.35	972	WIRE	98.84	96,000	118,200
	1-1/2" RGS CONDUIT	INCLUDING SUPPORT & FITTINGS	EST	3,050	LF		7.15	0	21,800	0.28	996	WIRE	98.84	98,500	120,300
	1" RGS CONDUIT	INCLUDING SUPPORT & FITTINGS	EST	5,150	LF		4.44	0	22,900	0.24	1,415	WIRE	98.84	139,900	162,800
	3/4" RGS CONDUIT	INCLUDING SUPPORT & FITTINGS	EST	8,200	LF		3.23	0	26,500	0.19	1,829	WIRE	98.84	180,800	207,300
4.23	HIGH VOLTAGE POWER CABLE & TERMINATION	1/C # 500KCMIL- 15KV	EST	15,600	LF		9.27	0	144,600	0.23	4,126	WIRE	98.84	407,800	552,400
4.24	MEDIUM VOLTAGE POWER CABLE & TERMINATION	1/C 350KCMIL-5KV	EST	10,800	LF		6.13	0	66,200	0.23	2,857	WIRE	98.84	282,300	348,500
4.25	LOW VOLTAGE POWER CABLE & TERMINATION							0	93,000					143,200	236,200
	3/C # 500KCMIL- 600V		EST	600	LF		26.12	0	15,700	0.69	476	WIRE	98.84	47,100	62,800
	#4/0 - #12 AWG-600V		EST	10,700	LF		7.22	0	77,300	0.08	972	WIRE	98.84	96,100	173,400
4.26	CONTROL & INSTRUMENT CABLE	#14, #16 & PR # 20 & SHLD WIRE	EST	8,200	LF		3.20	0	26,200	0.08	745	WIRE	98.84	73,600	99,800
4.27	DUCT BANK	DUCT BANK WITH 4-5" & 4-3" CONDUITS, 2.38' H X 3.79' W	EST	350	LF		174.67	0	61,100	3.80	1,530	ECND	75.97	116,200	177,300
4.28	FOUNDATIONS FOR TRANSFORMERS	FOR XFMR 33F, 33G, INCLUDES MUD MAT	EST	14.0	CY		250	0	3,500	8.00	129	CONP	79.64	10,300	13,800
4.29	COMMUNICATIONS		EST	1	LT		34,000.00	0	34,000	229.00	263	WIRE	98.84	26,000	60,000
4.30	LIGHTNING PROTECTION		EST	1	LT		6,000.00	0	6,000	41.00	47	WIRE	98.84	4,700	10,700
4.31	SECURITY SYSTEM		EST	1	LT		8,000.00	0	8,000	62.00	71	WIRE	98.84	7,000	15,000
90.00	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS							18,907,300	4,625,000		116,362			10,735,400	34,267,700
	OTHER DIRECT & CONSTRUCTION INDIRECT COSTS														
	ADDITIONAL CRANE ALLOWANCE								0					0	0
	MOBILIZATION / DEMOBILIZATION - INCLUDED IN WAGE RATES ABOVE														0
	COST DUE TO OVERTIME WORKING 5 X10 HOUR DAYS			1	LS										1,732,278
	COST DUE TO OVERTIME INEFFICIENCY - SPECIFY % INEFFICIENCY			8.00	%						10,118		83.48	845,000	845,000
	COST DUE TO OVERTIME PAY @1.5 TIMES OVERTIME PAY RATE SPECIFY % ADDITIONAL HOURS PAID ON ACTUAL HOURS WORKED			10.00	%						12,648			887,278	887,278
	PER DIEM	NONE		0.00	HR						139,129			0	0
	CONSUMABLES - % of ACCT NO. 90			0.5	%				23,125					53,677	76,802
	FREIGHT ON MATERIAL - % of ACCT NO. 90			5.0	%				231,250						231,250
	FREIGHT ON EQUIPMENT - % of ACCT NO. 90			5.0	%			945,365							945,365
	SCAFFOLDING - % OF ACCT NO. 90			5.0	%				231,250					536,770	768,020
	CONTRACTOR'S GENERAL AND ADMINISTRATION & PROFIT - % of ACCT NO. 90			15	%				693,750					1,610,310	2,304,060
	SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS							945,400	1,179,400					3,933,000	6,057,800
	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	LIME HANDLING SYSTEM						19,852,700	5,804,400					14,668,400	40,325,500
5.0	LIME SLAKER BUILDING	NOT REQUIRED FOR NID													0
6.0	BYPRODUCT WASTE & FLY ASH HANDLING SYSTEMS														0

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6.1	BYPRODUCT WASTE HANDLING - MECHANICAL EQUIPMENT	INCLUDES PNEUMATIC HANDLING SYSTEM, THREE PRESSURE BLOWERS, ONE BIN VENT FILTER, ASH UNLOADING SYSTEM	EST	1	LT	3,045,000		3,045,000	0	16590.00	19,079	MECH	88.89	1,695,900	4,740,900
6.2	ECONOMIZER ASH HANDLING - MECHANICAL EQUIPMENT	INCLUDES JET PUMPS AND PIPING / SUPPORTS TO THE BOTTOM ASH POND	EST	1	LT	400,000		400,000	0	2900.00	3,335	MECH	88.89	296,400	696,400
6.3	BUILDING SUMP PUMPS	FOR BUILDINGS - DUPLEX. INCLUDES CHECK & ISOLATION VALVES.		2	EA	14,000		28,000	0	60.00	138	MECH	88.89	12,300	40,300
6.4	AGITATOR FOR SUMP PUMPS	5 HP		1	EA	12,000		12,000	0	45.00	52	MECH	88.89	4,600	16,600
6.5	PIPING - MECHANICAL		EST	1	LT			142,800	131,000					408,700	682,500
	LARGE BORE PIPING	4" SS, SCHEDULE 40, WELDED - ON PIPE RACK	EST	300	LF		45.1	0	13,500	0.87	300	SPNG	94.41	28,300	41,800
	LARGE BORE PIPING	6" CS, SCH 40 WELDED - ON PIPE RACK	EST	200	LF		32.2	0	6,400	0.88	202	SPNG	94.41	19,100	25,500
	LARGE BORE PIPING	6" CS, SCH 40 WELDED	EST	100	LF		41.7	0	4,200	1.61	185	SPNG	94.41	17,500	21,700
	LARGE BORE PIPING	8" HDPE (UNDERGROUND)	EST	400	LF		14.1	0	5,600	0.83	382	SPNG	94.41	36,000	41,600
	LARGE BORE PIPING	10" CS, SCH 40 WELDED	EST	300	LF		110.3	0	33,100	2.40	828	SPNG	94.41	78,200	111,300
	LARGE BORE PIPING	20" HDPE (UNDERGROUND)	EST	600	LF		72.8	0	43,700	1.45	1,001	SPNG	94.41	94,500	138,200
	SMALL BORE PIPING	2" CS, SCH 80 WELDED	EST	50	LF		22.20	0	1,100	1.26	72	SPNG	94.41	6,800	7,900
	SMALL BORE PIPING	2" SS, SCH 80 WELDED	EST	50	LF		48.80	0	2,400	1.44	83	SPNG	94.41	7,800	10,200
	SMALL BORE PIPING	ALLOWANCE FOR MISC SIZE <2" SS, SCH 80 WELDED	EST	100	LF		33.70	0	3,400	1.32	152	SPNG	94.41	14,300	17,700
	VALVE	2" GLOBE, 150# SS, WELDED	EST	15	EA	1,450		21,800	0	5.64	97	SPNG	94.41	9,200	31,000
	VALVE	4" GATE, 150 #, CS, WELDED	EST	10	EA	2,500		25,000	0	7.70	89	SPNG	94.41	8,400	33,400
	VALVE	6" AIR OPERATED, 150 #, CS, FLANGED	EST	2	EA	14,000		28,000	0	17.30	40	SPNG	94.41	3,800	31,800
	VALVE	8" AIR OPERATED, 150 #, CS, FLANGED	EST	4	EA	17,000		68,000	0	19.30	89	SPNG	94.41	8,400	76,400
	EXCAVATION / BACKFILL	FOR UNDERGROUND PIPING	EST	2,000	CY			0	0	0.20	460	EXFD	90.00	41,400	41,400
	BEDDING	FOR UNDERGROUND PIPING	EST	267	CY		35.0	0	9,300	0.25	77	EXFD	90.00	6,900	16,200
	PIPE SUPPORTS	AVERAGE COST FOR MISC PIPE SIZES	EST	110	EA		75.00	0	8,300	2.50	316	MECH	88.89	28,100	36,400
6.6	BYPRODUCT WASTE SILO	CONCRETE SILO 65' DIA X 107' H - 4496 TONS -SUBCONTRACT COST INCLUDES LABOR	EST	2	EA	2,023,000		4,046,000	0	0.00	0	CONP	79.64	0	4,046,000
6.7	RECYCLE SILO	NOT REQUIRED FOR NID													
6.8	FLY ASH SILO	NOT REQUIRED - ECONOMIZER FLY ASH SLUICD TO BOTTOM ASH POND						0	0					0	0
	SILO BIN		EST	0	EA	50,000		0	0	450.00	0	TANK	89.16	0	0
	SUPPORT STEEL FOR SILO		EST	0	TN		2,900.00	0	0	24.00	0	STST	105.71	0	0
6.9	BYPRODUCT WASTE STORAGE SILO - FOUNDATIONS	TOTAL FOR TWO SILOS						0	377,100					738,300	1,115,400
	EXCAVATION / BACKFILL		EST	4,000	CY			0	0	0.36	1,656	EXFD	90.00	149,000	149,000
	REINFORCING		EST	150.0	TN		1,150.00	0	172,500	20.00	3,450	REIN	78.27	270,000	442,500
	FORMWORK		EST	3,000	SF		2.50	0	7,500	0.14	483	FORM	99.43	48,000	55,500
	CONCRETE		EST	1,596	CY		105.00	0	167,600	1.50	2,753	CONP	79.64	219,300	386,900
	MUD MAT		EST	90	CY		105.00	0	9,500	1.50	155	CONP	79.64	12,400	21,900

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	EMBEDDED STEEL		EST	7,980	LB		2.50	0	20,000	0.06	551	CARP	71.88	39,600	59,600
6.10	FLY ASH SILO - FOUNDATIONS	NOT REQUIRED						0	0					0	0
	EXCAVATION / BACKFILL		EST	0	CY			0	0	0.36	0	EXFD	90.00	0	0
	REINFORCING		EST	0.0	TN		1,150.00	0	0	20.00	0	REIN	78.27	0	0
	FORMWORK		EST	0	SF		2.50	0	0	0.14	0	FORM	99.43	0	0
	CONCRETE		EST	0	CY		105.00	0	0	1.50	0	CONP	79.64	0	0
	MUD MAT		EST	0	CY		105.00	0	0	1.50	0	CONP	79.64	0	0
	EMBEDDED STEEL		EST	0	LB		2.50	0	0	0.06	0	CARP	71.88	0	0
6.11	BYPRODUCT TRANSPORT BLOWER BUILDING - FOUNDATIONS							0	97,600					172,100	269,700
	EXCAVATION / BACKFILL		EST	470	CY			0	0	0.36	195	EXFD	90.00	17,500	17,500
	REINFORCING		EST	38	TN		1,150.00	0	43,700	20.00	874	REIN	78.27	68,400	112,100
	FORMWORK		EST	960	SF		2.50	0	2,400	0.14	155	FORM	99.43	15,400	17,800
	CONCRETE		EST	400	CY		105.00	0	42,000	1.50	690	CONP	79.64	55,000	97,000
	MUD MAT		EST	43	CY		105.00	0	4,500	1.50	74	CONP	79.64	5,900	10,400
	EMBEDDED STEEL		EST	2,000	LB		2.50	0	5,000	0.06	138	CARP	71.88	9,900	14,900
6.12	BYPRODUCT TRANSPORT BLOWER BUILDING	90' L X 30' W X 20' H						40,000	241,500					26,200	307,700
	PRE-ENGINEERED BUILDING INCLUDING H&V AND LIGHTING	SUBCONTRACT PRICE, INCLUDES LABOR	EST	2,700	SF		85	0	229,500	0.00	0	STST	105.71	0	229,500
	ADDITIONAL HVAC UNIT FOR ELECTRICAL ROOM & CONTROLS	20T PACKAGED UNIT FOR ELECTRICAL EQUIPMENT ROOM. INCLUDES ALLOWANCE FOR CONCRETE PAD AND ELECTRICAL WORK	EST	1	LT	40000	12000	40,000	12,000	280.00	322	HVAC	81.24	26,200	78,200
6.13	FLY ASH BLOWER AND ELECTRICAL BUILDING - FOUNDATIONS	NOT REQUIRED						0	0					0	0
	EXCAVATION / BACKFILL		EST	0	CY			0	0	0.36	0	EXFD	90.00	0	0
	REINFORCING		EST	0	TN		1,150.00	0	0	20.00	0	REIN	78.27	0	0
	FORMWORK		EST	0	SF		2.50	0	0	0.14	0	FORM	99.43	0	0
	CONCRETE		EST	0	CY		105.00	0	0	1.50	0	CONP	79.64	0	0
	MUD MAT		EST	0	CY		105.00	0	0	1.50	0	CONP	79.64	0	0
	EMBEDDED STEEL		EST	0	LB		2.50	0	0	0.06	0	CARP	71.88	0	0
6.14	FLY ASH BLOWER AND ELECTRICAL BUILDING	NOT REQUIRED						0	0					0	0
	PREENGINEERED BUILDING INCLUDING H&V AND LIGHTING		EST	0	SF		95	0	0	0.00	0	STST	105.71	0	0
	ADDITONAL HVAC UNIT FOR ELECTRICAL ROOM & CONTROLS		EST	0	LT	75000	20000	0	0	350.00	0	HVAC	81.24	0	0
6.15	LOAD OUT AREA PDC	SUBCONTRACT PRICE INCLUDES LABOR. COMPLETE WITH HVAC, & FINISHES.	EST	600	SF		500.00	0	300,000	0.00	0	STST	105.71	0	300,000
6.16	MCC	480V MCC PER LINE UP	EST	2	EA	30000		60,000	0	16.00	37	WIRE	98.84	3,600	63,600
6.17	EMERGENBCY POWER SYSTEM							92,800	0					19,900	112,700
	UPS PANEL BOARDS		EST	1	EA	15500		15,500	0	40.00	46	WIRE	98.84	4,500	20,000
	SATELLITE UPS		EST	1	EA	41200		41,200	0	16.00	18	WIRE	98.84	1,800	43,000
	VRLA BATTERIES		EST	1	LT	36050		36,100	0	120.00	138	WIRE	98.84	13,600	49,700
6.18	LIGHTING/ TRANSFORMERS & PANELS							18,500	60,000					44,100	122,600
	LIGHT FIXTURES		EST	80	EA		750	0	60,000	4.00	368	WIRE	98.84	36,400	96,400
	45KVA, 480V, 3 PHASE	LOW VOLTAGE XFMR	EST	1	EA	10000		10,000	0	40.00	46	WIRE	98.84	4,500	14,500
	200A, 480-277V, 3 PHASE- RECEPTACLE PANEL	INCLUDING BREAKERS	EST	1	EA	5000		5,000	0	16.00	18	WIRE	98.84	1,800	6,800
	200A, 277V-120V, 3 PHASE- LIGHTING PANELS	INCLUDING BREAKERS	EST	1	EA	3500		3,500	0	12.00	14	WIRE	98.84	1,400	4,900

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6.19	RACEWAY, CABLE TRAY, & CONDUIT							0	32,500					189,100	221,600
	24" X 6" AL CABLE TRAY	INCLUDING SUPPORT & FITTINGS	EST	280	LF		27.10	0	7,600	1.75	564	WIRE	98.84	55700	63,300
	4" RGS CONDUIT	INCLUDING SUPPORT & FITTINGS	EST	280	LF		31.00	0	8,700	0.81	260	WIRE	98.84	25700	34,400
	1" RGS CONDUIT	INCLUDING SUPPORT & FITTINGS	EST	1,040	LF		4.44	0	4,600	0.24	286	WIRE	98.84	28300	32,900
	3/4" RGS CONDUIT	INCLUDING SUPPORT & FITTINGS	EST	3,600	LF		3.23	0	11,600	0.19	803	WIRE	98.84	79400	91,000
6.20	GROUNDING							0	4,500					10,900	15,400
	GROUND ROD	3/4" - 20' LONG EACH	EST	4	EA		150	0	600	4.00	18	WIRE	98.84	1,800	2,400
	500 MCM	BARE COPPER WIRE	EST	500	FT		7.65	0	3,800	0.12	69	WIRE	98.84	6,800	10,600
	CADWELD		EST	8	EA		15	0	100	2.00	18	WIRE	98.84	1,800	1,900
	GROUNDING TEST	TEST & DOCUMENTATION	EST	1	LT			0	0	4.00	5	WIRE	98.84	500	500
6.21	MEDIUM VOLTAGE POWER CABLE & TERMINATION	1/C # 2/0-5KV	EST	3,600	LF		2.63	0	9,500	0.12	484	WIRE	98.84	47,900	57,400
6.22	LOW VOLTAGE POWER CABLE & TERMINATION							0	64,700					80,500	145,200
	#4/0 - #12 AWG-600V		EST	8,960	LF		7.22	0	64,700	0.08	814	WIRE	98.84	80,500	145,200
6.23	CONTROL & INSTRUMENT CABLE	#14, #16 & PR # 20 & SHLD WIRE	EST	9,600	LF		3.20	0	30,700	0.08	872	WIRE	98.84	86,200	116,900
6.24	DUCT BANK	DUCT BANK WITH 4-5" & 4-3" CONDUITS	EST	30	LF		205.00	0	6,200	4.05	140	ECND	75.97	10600	16,800
6.25	COMMUNICATIONS		EST	1	LT		34,000.00	0	34,000	229.00	263	WIRE	98.84	26,000	60,000
6.26	LIGHTNING PROTECTION		EST	1	LT		16,000.00	0	16,000	123.00	141	WIRE	98.84	14,000	30,000
6.27	SECURITY SYSTEM		EST	1	LT		8,000.00	0	8,000	62.00	71	WIRE	98.84	7,000	15,000
90.00	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS							7,885,100	1,413,300		43,965			3,894,300	13,192,700
	OTHER DIRECT & CONSTRUCTION INDIRECT COSTS														
	ADDITIONAL CRANE ALLOWANCE								0					0	0
	MOBILIZATION / DEMOBILIZATION - INCLUDED IN WAGE RATES ABOVE														0
	COST DUE TO OVERTIME WORKING 5 X10 HOUR DAYS			1	LS										654,243
	COST DUE TO OVERTIME INEFFICIENCY - SPECIFY % INEFFICIENCY			8.00	%						3,823		83.48	319,000	319,000
	COST DUE TO OVERTIME PAY @1.5 TIMES OVERTIME PAY RATE SPECIFY % ADDITIONAL HOURS PAID ON ACTUAL HOURS WORKED			10.00	%						4,779			335,243	335,243
	PER DIEM	NONE		0.00	HR						52,567			0	0
	CONSUMABLES - % of ACCT NO. 90			0.5	%				7,067					19,472	26,538
	FREIGHT ON MATERIAL - % of ACCT NO. 90			5.0	%				70,665						70,665
	FREIGHT ON EQUIPMENT - % of ACCT NO. 90			5.0	%			394,255							394,255
	SCAFFOLDING - % OF ACCT NO. 90			5.0	%				70,665					194,715	265,380
	CONTRACTOR'S GENERAL AND ADMINISTRATION & PROFIT - % of ACCT NO. 90			15	%				211,995					584,145	796,140
	SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS							394,300	360,400					1,452,600	2,207,200
	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	BYPRODUCT WASTE & FLY ASH HANDLING SYSTEMS						8,279,400	1,773,700					5,346,900	15,399,900
7.0	ABSORBER ISLAND	NOT REQUIRED FOR NID													0
8.0	ACTIVATED CARBON INJECTION SYSTEM														0
9.0	COMPRESSED AIR SYSTEM														
10.0	SERVICE WATER SYSTEM														
11.0	POTABLE WATER SYSTEM														
12.0	FGD SUBSTATION														

				AEP										Estimate No.:	30729C
				BIG SANDY UNIT 2										Project No.:	12721-000
				FGD PROJECT - NID EST (N/ESP) - 4B - 7.5 LB/MM BTU										Date:	9/29/2010
				ORDER OF MAGNITUDE COST ESTIMATE										Preparer:	MNO
		Cost Type:												Reviewer:	JMK
		Est=Estimated												Approver:	PEF
		Allow.=Allowance								Wage Rates Based on:		BIG SANDY			
		Q=Vendor Quote								Labor Productivity =		1.15			

Account No.	Item Description	Scope Definition	Cost Type	Quantity	Unit of Measure	Unit Equip.Cost	Unit Material Cost	Total Equipment Cost	Total Material Cost	Unit Man-hours (Base)	Total Man-hours (w/ productivity)	Crew Code	Crew Wage Rate	Total Construction & Erection Cost	Total Projected Cost
13.0	FGD DCS SYSTEM														0
14.0	CEM SYSTEM														0
15.0	TRUCK & RAIL INFRASTRUCTURE														0
16.0	SITE IMPROVEMENTS - CIVIL WORK														
17.0	BOP ITEMS														0
17.1	PIPE INSULATION	AVERAGE 6" PIPE SIZE	EST	3,400	LF		10	0	34,000	0.39	1,525	PINS	69.50	106,000	140,000
17.2	HEAT TRACING							0	175,600					248,500	424,100
	CABLE	AVERAGE 6" PIPE SIZE	EST	3,000	LF		10.35	0	31,100	0.05	173	WIRE	98.84	17,000	48,100
	POWER CONNECTOR AND OTHER ACCESSORIES INCLUDING THERMOSTATS FOR HEAT TRACING (BY ZONES)		EST	55	EA		450	0	24,500	8.00	502	WIRE	98.84	49,600	74,100
	HEAT TRACING BALANCE OF PLANT INCL PANELS, POWER WIRING AND CONDUITS		EST	4	LT		30000	0	120,000	400.00	1,840	WIRE	98.84	181,900	301,900
17.3	TOUCH UP PAINT (INCLUDES PAINTING CS PIPE)							0	188,100					721,600	909,700
	TOUCH UP PAINT FOR SHOP PAINTED STEEL		EST	35,000	SF		3	0	105,000	0.15	6,038	PNTR	66.72	402,800	507,800
	TOUCH UP PAINT FOR EQUIPMENT		EST	12,000	SF		3	0	36,000	0.15	2,070	PNTR	66.72	138,100	174,100
	PAINTING CS PIPE ONLY	AVERAGE 6" PIPE SIZE, ALLOWANCE FOR 10,000 LF PIPE	EST	15,700	SF		3	0	47,100	0.15	2,708	PNTR	66.72	180,700	227,800
17.4	HOISTS & TROLLEYS							150,000	175,000					204,400	529,400
	MISC HOISTS & TROLLEYS	IN BUILDINGS FOR EQUIPMENT MAINTENANCE AND FOR ID FANS	EST	10	EA	15000	17500	150,000	175,000	200.00	2,300	MECH	88.89	204,400	529,400
17.5	MISC AUX STEEL FOR PIPE SUPPORTS	FIELD FABRICATED	EST	35	TN		3500	0	122,500	120.00	4,830	STST	105.71	510,600	633,100
17.6	MISC PIPE SUPPORT FOUNDATIONS							0	10,500					21,000	31,500
	EXCAVATION / BACKFILL		EST	65	CY			0	0	0.36	27	EXFD	90.00	2,400	2,400
	REINFORCING		EST	5.0	TN		1,150.00	0	5,800	20.00	115	REIN	78.27	9,000	14,800
	FORMWORK		EST	260	SF		2.50	0	700	0.14	42	FORM	99.43	4,200	4,900
	CONCRETE		EST	25	CY		105.00	0	2,600	1.50	43	CONP	79.64	3,400	6,000
	MUD MAT		EST	10	CY		105.00	0	1,100	1.50	17	CONP	79.64	1,400	2,500
	EMBEDDED STEEL		EST	125	LB		2.50	0	300	0.06	9	CARP	71.88	600	900
17.7	EYE WASH STATIONS	WITH 50 KW HEATERS	EST	5	EA	6000	1000	30,000	5,000	60.00	345	MECH	88.89	30,700	65,700
17.8	FIRE PROTECTION FOR MISC BUILDINGS & AREAS	STAND PIPE FOR BUILDINGS	EST	10	EA		30000	0	300,000	240.00	2,760	MECH	88.89	245,300	545,300
90.00	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS							180,000	1,010,700		25,343			2,088,100	3,278,800
	OTHER DIRECT & CONSTRUCTION INDIRECT COSTS														
	ADDITIONAL CRANE ALLOWANCE								0					0	0
	MOBILIZATION / DEMOBILIZATION - INCLUDED IN WAGE RATES ABOVE														0
	COST DUE TO OVERTIME WORKING 5 X10 HOUR DAYS			1	LS										377,242
	COST DUE TO OVERTIME INEFFICIENCY - SPECIFY % INEFFICIENCY			8.00	%						2,204		83.48	184,000	184,000
	COST DUE TO OVERTIME PAY @1.5 TIMES OVERTIME PAY RATE SPECIFY % ADDITIONAL HOURS PAID ON ACTUAL HOURS WORKED			10.00	%						2,755			193,242	193,242
	PER DIEM	NONE		0.00	HR						30,301			0	0
	CONSUMABLES - % of ACCT NO. 90			0.5	%				5,054					10,441	15,494
	FREIGHT ON MATERIAL - % of ACCT NO. 90			5.0	%				50,535						50,535

				AEP										Estimate No.:	30729C
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				FGD PROJECT - NID EST (N/ESP) - 4B - 7.5 LB/MM BTU										Date:	9/29/2010
				ORDER OF MAGNITUDE COST ESTIMATE										Preparer:	MNO
		Cost Type:												Reviewer:	JMK
		Est=Estimated												Approver:	PEF
		Allow.=Allowance								Wage Rates Based on:		BIG SANDY			
		Q=Vendor Quote								Labor Productivity =		1.15			

Account No.	Item Description	Scope Definition	Cost Type	Quantity	Unit of Measure	Unit Equip.Cost	Unit Material Cost	Total Equipment Cost	Total Material Cost	Unit Man-hours (Base)	Total Man-hours (w/ productivity)	Crew Code	Crew Wage Rate	Total Construction & Erection Cost	Total Projected Cost
	FREIGHT ON EQUIPMENT - % of ACCT NO. 90			5.0	%			9,000							9,000
	SCAFFOLDING - % OF ACCT NO. 90			5.0	%				50,535					104,405	154,940
	CONTRACTOR'S GENERAL AND ADMINISTRATION & PROFIT - % of ACCT NO. 90			15	%				151,605					313,215	464,820
	SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS							9,000	257,729					805,302	1,072,031
	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	BOP ITEMS						189,000	1,268,400					2,893,400	4,350,800
18.0	CAPITAL REPLACEMENTS - REMOVAL AND RELOCATION OF EXISTING EQUIPMENT AND INFRASTRUCTURE														0
19.0	ARSENIC, ASBESTOS , LEAD ABATEMENT														0
99.00	OVERALL - EQUIPMENT, MATERIAL AND LABOR COSTS							124,458,000	46,195,200		1,430,976			132,428,800	323,182,000
	OTHER DIRECT & CONSTRUCTION INDIRECT COSTS														
	ADDITIONAL CRANE ALLOWANCE			9	MN	75,000.00		675,000	0		7,452			662,400	1,337,400
	MOBILIZATION / DEMOBILIZATION - INCLUDED IN WAGE RATES ABOVE														0
	COST DUE TO OVERTIME WORKING 5 X10 HOUR DAYS			1	LS										21,351,661
	COST DUE TO OVERTIME INEFFICIENCY - SPECIFY % INEFFICIENCY			8.00	%						124,433		92.54	10,388,000	10,388,000
	COST DUE TO OVERTIME PAY @1.5 TIMES OVERTIME PAY RATE SPECIFY % ADDITIONAL HOURS PAID ON ACTUAL HOURS WORKED			10.00	%						156,286			10,963,661	10,963,661
	PER DIEM	NONE		0.00	HR									0	0
	CONSUMABLES - % of ACCT NO. 90			0.5	%				228,276					660,594	888,870
	FREIGHT ON MATERIAL - % of ACCT NO. 90			5.0	%				2,282,760						2,282,760
	FREIGHT ON EQUIPMENT - % of ACCT NO. 90			5.0	%			6,159,900							6,159,900
	SCAFFOLDING - % OF ACCT NO. 90			5.0	%				2,282,760					6,605,940	8,888,700
	CONTRACTOR'S GENERAL AND ADMINISTRATION & PROFIT - % of ACCT NO. 90			15	%				6,929,280					19,817,820	29,997,600
	OVERALL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS							6,834,900	11,723,100					49,098,400	70,906,900
	OVERALL TOTAL DIRECT & CONSTRUCTION INDIRECT COST							131,292,900	57,918,300					181,527,200	394,088,900
	TOTAL PROJECT DIRECT AND CONSTRUCTION INDIRECT COSTS							131,292,900	57,918,300					181,527,200	394,088,900
	INDIRECT COSTS														
	ENGINEERING, PROCUREMENT, & PROJECT SERVICES			1.0	LT										25,000,000
	CONSTRUCTION MANAGEMENT			3.0	%										11,822,700
	S-U / COMMISSIONING			1.0											3,940,900
	CRAFT START-UP SUPPORT	1% OF TOTAL LABOR MANHOURS (INCLUDES OVERTIME INEFFICIENCY & COST DUE TO OVERTIME PAY @1.5 TIMES OVERTIME PAY RATE - BASED ON ASSUMED 5X10 WORKWEEK)		1.0	%						15,554		92.54	1,560,400	1,560,400
	INITIAL FILLS			0.3	%										1,182,300
	OPERATOR & TRAINING MANUALS			1.0	LT										300,000
	SUBCONTRACTORS (NOISE & DUCTWORK CONSULTANT, GEOTECHNICAL INVESTIGATION)			1.0	LT										400,000
	NOISE ABATEMENT FOR 85 DBA REQUIREMENT	FOR ID FAN, NID MODULES, TRANSFORMERS, BOP, DUCTWORK, ACOUSTIC BARRIERS FOR BOUNDARY LIMITS		1.0	LT										2,600,000
	SUBTOTAL - INDIRECT COSTS														46,806,300

				AEP											Estimate No.:	30729C
				BIG SANDY UNIT 2											Project No.:	12721-000
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				ORDER OF MAGNITUDE COST ESTIMATE											Preparer:	MNO
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		Allow.=Allowance								Wage Rates Based on:		BIG SANDY				
		Q=Vendor Quote								Labor Productivity =		1.15				

Account No.	Item Description	Scope Definition	Cost Type	Quantity	Unit of Measure	Unit Equip.Cost	Unit Material Cost	Total Equipment Cost	Total Material Cost	Unit Man-hours (Base)	Total Man-hours (w/ productivity)	Crew Code	Crew Wage Rate	Total Construction & Erection Cost	Total Projected Cost
	TOTAL PROJECT DIRECT AND INDIRECT COSTS														440,895,200
	SPARE PARTS:			1.5	%			1,969,400							1,969,400
	SPARE PARTS - CAPITALIZED			0.90	%			1,221,028							1,221,028
	SPARE PARTS - FIRST YEAR OF OPERATION			0.60	%			748,372							748,372
	CONTINGENCY			14.1	%										62,612,800
	ESCALATION														56,776,800
	EQUIPMENT	4.0%/yr		4.0	%			20,861,500							20,861,500
	MATERIAL	2.0%/yr		2.0	%				6,025,000						6,025,000
	LABOR	2.5%/yr		2.5	%									24,389,300	24,389,300
	INDIRECTS	2.5%/yr		2.5	%									5,501,000	5,501,000
	TOTAL PROJECT COST														562,254,200
	REFERENCE COSTS:														
A	ESP DEMOLITION	ALLOWANCE FOR 1000T STRUCTURE	ALLOW	1,000	TN			0	0	6.00	6,900	WRKG	120.63	832,300	832,300
B	REMOVE BOOSTER AIR FANS		ALLOW	2	EA			0	0	400.00	920	WRKG	120.63	111,000	111,000
C	REMOVAL OF FUEL OIL TANK							1,200,000	80,000					469,400	1,749,400
	REMOVE FUEL OIL TANK & SOIL REMEDIATION	LABOR COST IS FOR REMOVAL OF TANK ONLY. ALLOWANCE FOR SOIL REMEDIATION AND DISPOSAL IN AN EPA APPROVED LANDFILL. SUBCONTRACT COST INCLUDES LABOR. USED LOWER END OF THE RANGE $118-355/CY. COST COULD BE LOWER ($59-118/CY) IF SOLD TO A BITUMINOUS CONCRETE BATCH PLANT	EST	8,000	CY	150		1,200,000	0		0	MECH	88.89	0	1,200,000
	REMOVE DIKE & RECOMPACT FILL IN TANK AREA		EST	3,500	CY			0	0	0.60	2,415	ETWK	177.49	428,600	428,600
	FILL FROM OFF SITE COURSE		EST	5,000	CY		16	0	80,000	0.04	230	ETWK	177.49	40,800	120,800

ATTACHMENT 5-14
NID Summary Capital Cost Estimate No. 30723 Base Est-1A ESP in Service (3.0 lb SO_2/MMbtu)

Sargent & Lundy, LLC

AEP
BIG SANDY UNIT 2
FGD PROJECT - NID BASE EST (ESP)-1A - 3.0 LB/MM BTU
COST ESTIMATE SUMMARY

Estimate No.: 30723C
Project No.: 12721-000
Date: 9/29/2010
Preparer: MNO
Reviewer: JMK
Approver: PEF

Account No.	Item Description	Scope Definition	Total Equipment Cost	Total Material Cost	Total Construction & Erection Cost	Total Projected Cost
1.0	ID FANS					
1.1	ID FANS - OEM EQUIPMENT	1,795,000 ACFM WITH 14,600 HP MOTORS ($625,000 EACH). INCLUDES HYDRAULIC OIL UNITS, SEAL AIR FAN SKIDS, VIBRATION MONITORING EQUIPMENT, FAN STALL EQUIPMENT, FIELD SERVICE REP FOR 140 DAYS	$ 6,288,000	$ -	$ 1,594,700	$ 7,882,700
1.2	PIPING & SUPPORTS - MECHANICAL		$ 21,800	$ 28,700	$ 120,500	$ 171,000
1.3	DAMPERS		$ 781,000	$ -	$ 352,600	$ 1,133,600
1.4	EXPANSION JOINTS		$ -	$ 131,100	$ 116,500	$ 247,600
1.5	DUCTWORK	NID MODULE OUTLET TO ID FANS AND FROM ID FANS TO STACK - INCLUDES INTERNAL BRACING AND TURNING VANES	$ -	$ 2,600,000	$ 4,966,200	$ 7,566,200
1.6	DUCT SUPPORT STEEL	THREE COAT SHOP PAINT	$ -	$ 1,160,000	$ 1,167,000	$ 2,327,000
1.7	ID FAN INSULATION & LAGGING	TOTAL FOR TWO FANS. PRICING REFLECTS STANDARD ACOUSTICAL INSULATION	$ -	$ 168,000	$ 217,200	$ 385,200
1.8	DUCTWORK INSULATION & LAGGING	INCLUDES INSULATION FOR SPRAY DRYER OUTLET DUCT TO NID MODULES SUPPLIED WITH THE OEM EQUIPMENT	$ -	$ 864,000	$ 1,692,200	$ 2,556,200

Sargent & Lundy, LLC	AEP	Estimate No.:	30723C
	BIG SANDY UNIT 2	Project No.:	12721-000
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Account No.	Item Description	Scope Definition	Total Equipment Cost	Total Material Cost	Total Construction & Erection Cost	Total Projected Cost
1.9	DUCT SUPPORT STEEL - FOUNDATIONS		$ -	$ 295,500	$ 574,000	$ 869,500
1.10	ID FAN FOUNDATIONS INCLUDING ID FAN AUX EQUIPMENT		$ -	$ 106,000	$ 198,700	$ 304,700
1.11	NID CONTROL & SWITCHGEAR BUILDING - FOUNDATIONS		$ -	$ 273,800	$ 458,900	$ 732,700
1.12	NID CONTROL & SWITCHGEAR BUILDING	SUBCONTRACT PRICE INCLUDES LABOR. COMPLETE WITH HVAC, FINISHES AND SANITARY FACILITIES	$ -	$ 3,937,500	$ -	$ 3,937,500
1.13	TRANSFORMERS		$ 770,000	$ -	$ 145,600	$ 915,600
1.14	SWITCHGEAR		$ 1,082,000	$ -	$ 569,000	$ 1,651,000
1.15	CABLE BUS & TERMINATIONS		$ 756,300	$ 35,800	$ 1,316,200	$ 2,108,300
1.16	MCC		$ 120,000	$ -	$ 7,200	$ 127,200
1.17	MIMIC PANELS		$ 17,500	$ -	$ 4,500	$ 22,000
1.18	EMERGENCY POWER SYSTEM		$ 285,500	$ -	$ 38,900	$ 324,400
1.19	HIGH VOLTAGE POWER CABLE & TERMINATION	1/C 750KCMIL- 13.8KV	$ -	$ 186,300	$ 283,200	$ 469,500
1.20	MEDIUM VOLTAGE POWER CABLE & TERMINATION		$ -	$ 91,600	$ 393,700	$ 485,300
1.21	LOW VOLTAGE POWER CABLE & TERMINATION		$ -	$ 543,000	$ 794,800	$ 1,337,800
1.22	CONTROL & INSTRUMENT CABLE	#14, #16 & PR # 20 & SHLD WIRE	$ -	$ 345,000	$ 968,000	$ 1,313,000
1.23	GROUNDING		$ 11,100	$ -	$ 37,200	$ 48,300
1.24	LIGHTING/ TRANSFORMERS & PANELS		$ 26,000	$ 30,000	$ 29,500	$ 85,500
1.25	RACEWAY, CABLE TRAY, & CONDUIT		$ -	$ 1,651,700	$ 8,113,100	$ 9,764,800

Sargent & Lundy, LLC	AEP	Estimate No.:	30723C
	BIG SANDY UNIT 2	Project No.:	12721-000
	FGD PROJECT - NID BASE EST (ESP)-1A - 3.0 LB/MM BTU	Date:	9/29/2010
	COST ESTIMATE SUMMARY	Preparer:	MNO
		Reviewer:	JMK
		Approver:	PEF

Account No.	Item Description	Scope Definition	Total Equipment Cost	Total Material Cost	Total Construction & Erection Cost	Total Projected Cost
1.26	DUCT BANK		$ -	$ 40,800	$ 280,000	$ 320,800
1.27	FOUNDATION FOR TRANSFORMERS		$ -	$ 64,600	$ 188,900	$ 253,500
1.28	FIREWALL FOR TRANSFORMERS		$ -	$ 3,200	$ 8,300	$ 11,500
1.29	COMMUNICATIONS		$ -	$ 17,000	$ 13,000	$ 30,000
1.30	LIGHTNING PROTECTION		$ -	$ 12,000	$ 9,200	$ 21,200
1.31	SECURITY SYSTEM		$ -	$ 8,000	$ 7,000	$ 15,000
90.00	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS		$ 10,159,200	$ 12,593,600	$ 24,665,800	$ 47,418,600
	SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS		$ 508,000	$ 3,211,400	$ 8,874,500	$ 12,593,800
	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	ID FANS	$ 10,667,200	$ 15,805,000	$ 33,540,300	$ 60,012,400
2.0	NID MODULES					
2.1	MECHANICAL EQUIPMENT	A 12-MODULE NID SYSTEM (160' X 160') INCLUDING LIME DAY SILOS, HYDRATORS, MIXERS, J-DUCTS, FABRIC FILTER MODULES, ALL INTERNAL ELEMENTS (BAGS, CAGES, ASH HOPPERS, 2 BROKEN BAG DETECTORS/COMPARTMENT), ASH RECYCLE SYSTEM, VACUUM PIPING, AND ALL INTERNAL PIPING & DUCTWORK FOR THE VARIOUS MODULES.	$ 49,311,000	$ -	$ 31,852,800	$ 81,163,800

Sargent & Lundy, LLC	AEP	Estimate No.:	30723C
	BIG SANDY UNIT 2	Project No.:	12721-000
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	COST ESTIMATE SUMMARY	Preparer:	MNO
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Account No.	Item Description	Scope Definition	Total Equipment Cost	Total Material Cost	Total Construction & Erection Cost	Total Projected Cost
2.2	INSULATION FOR NID MODULES	SUBCONTRACT COST INCLUDES LABOR	$ 2,419,200	$ -	$ -	$ 2,419,200
2.3	PENTHOUSE FOR NID MODULES	14 FT HIGH, 25600 SF	$ 58,100	$ 1,316,900	$ 1,747,600	$ 3,122,600
2.4	BOTTOM ENCLOSURE FOR NID MODULES	40 FT HIGH	$ 92,200	$ 2,428,900	$ 2,544,900	$ 5,066,000
2.5	PIPING & SUPPORTS - MECHANICAL		$ 125,200	$ 174,500	$ 385,900	$ 685,600
2.6	DUCTWORK		$ -	$ 6,175,000	$ 11,794,600	$ 17,969,600
2.7	DUCT SUPPORT STEEL	THREE COAT SHOP PAINT	$ -	$ 2,755,000	$ 2,771,700	$ 5,526,700
2.8	DUCTWORK INSULATION & LAGGING		$ -	$ 2,040,000	$ 3,995,500	$ 6,035,500
2.9	NID MODULE- FOUNDATIONS		$ -	$ 1,087,000	$ 1,778,100	$ 2,865,100
2.10	NID MODULE - SUPPORT STEEL AND ACCESS GALLERY		$ -	$ 1,152,000	$ 2,863,700	$ 4,015,700
2.11	GROUNDING		$ -	$ 16,000	$ 46,100	$ 62,100
2.12	LIGHTING/ TRANSFORMERS & PANELS		$ 27,000	$ 75,000	$ 57,300	$ 159,300
2.13	RACEWAY, CABLE TRAY, & CONDUIT	INCLUDED IN ID FANS, 1.0	$ -	$ -	$ -	$ -
90.00	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS		$ 52,032,700	$ 17,220,300	$ 59,838,200	$ 129,091,200
	SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS		$ 3,276,600	$ 4,391,200	$ 22,604,000	$ 30,271,800
	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	NID MODULES	$ 55,309,300	$ 21,611,500	$ 82,442,200	$ 159,363,000

Sargent & Lundy, LLC	AEP	Estimate No.:	30723C
	BIG SANDY UNIT 2	Project No.:	12721-000
	FGD PROJECT - NID BASE EST (ESP)-1A - 3.0 LB/MM BTU	Date:	9/29/2010
	COST ESTIMATE SUMMARY	Preparer:	MNO
		Reviewer:	JMK
		Approver:	PEF

Account No.	Item Description	Scope Definition	Total Equipment Cost	Total Material Cost	Total Construction & Erection Cost	Total Projected Cost
3.0	NEW STACK					
3.1	CONCRETE STACK (DRY)	PROVIDED BY AEP	$ -	$ -	$ -	$ 19,350,000
90.0	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS		$ -	$ -	$ -	$ 19,350,000
	SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS		$ -	$ -	$ -	$ 2,902,500
	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	NEW STACK	$ -	$ -	$ -	$ 22,252,500
4.0	LIME HANDLING SYSTEM					
4.1	LIME STORAGE SILO		$ 6,770,000	$ -	$ -	$ 6,770,000
4.2	LIME UNLOADING SYSTEM	INCLUDE PNEUMATIC HANDLING SYSTEM, THREE VACUUM EXHAUSTERS, TWO FILTER SEPARATORS	$ 595,000	$ -	$ 477,900	$ 1,072,900
4.3	LIME TRANSPORT SYSTEM TO DAY BINS	INCLUDE PNEUMATIC HANDLING SYSTEM, THREE VACUUM EXHAUSTERS, TWO FILTER SEPARATORS	$ 1,100,000	$ -	$ 654,200	$ 1,754,200
4.4	PIPING - MECHANICAL		$ 88,700	$ 130,300	$ 342,600	$ 561,600
4.5	LIME STORAGE SILO ACCESS STAIR TOWER	INCLUDES CATWALK TO THE SECOND SILO - THREE COAT SHOP PAINT	$ -	$ 159,500	$ 160,500	$ 320,000
4.6	PIPE RACK FOR LIME HANDLING, WASTE HANDLING AND MISC MECHANICAL PIPING	THREE COAT SHOP PAINT	$ -	$ 1,885,000	$ 1,896,400	$ 3,781,400
4.7	RAIL CAR UNLOADING AREA - FOUNDATIONS	20' X 120' - NO SIDING	$ -	$ 42,700	$ 90,100	$ 132,800
4.8	LIME UNLOADING BLOWER / ELECTRICAL BUILDING - FOUNDATIONS		$ -	$ 69,600	$ 147,600	$ 217,200
4.9	LIME UNLOADING BLOWER / ELECTRICAL BUILDING	100' L X 30' W X 30' H	$ 75,000	$ 335,000	$ 24,400	$ 434,400

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4.10	CONCRETE PIT FOR THE ELEVATOR		$ -	$ 2,300	$ 6,900	$ 9,200
4.11	LIME STORAGE SILO - FOUNDATIONS	INCLUDES FOUNDATIONS FOR LIME TRANSPORT SYSTEM PRESSURE BLOWERS	$ -	$ 368,100	$ 676,300	$ 1,044,400
4.12	LIME STORAGE SILO ACCESS STAIR TOWER - FOUNDATIONS		$ -	$ 14,200	$ 28,600	$ 42,800
4.13	PIPE RACK - FOUNDATIONS		$ -	$ 239,600	$ 588,600	$ 828,200
4.14	TRANSFORMERS	SUS TRANSFORMERS: 33F, 33G, 13.8KV-480V,3PHASE, 3 WINDING XFMR	$ 170,000	$ -	$ 54,600	$ 224,600
4.15	SWITCHGEAR	480V LOW VOLTAGE (33F/G), SWITCHGEAR	$ 196,000	$ -	$ 104,700	$ 300,700
4.16	CABLE BUS DUCT		$ 134,700	$ 10,800	$ 200,200	$ 345,700
4.17	MCC		$ 61,800	$ -	$ 3,600	$ 65,400
4.18	MIMIC PANELS		$ 17,500	$ -	$ 1,400	$ 18,900
4.19	EMERGENCY POWER SYSTEM		$ 108,300	$ -	$ 24,400	$ 132,700
4.20	GROUNDING		$ 13,300	$ -	$ 41,300	$ 54,600
4.21	LIGHTING/ TRANSFORMERS & PANELS		$ 52,000	$ 135,000	$ 104,500	$ 291,500
4.22	RACEWAY, CABLE TRAY, & CONDUIT		$ -	$ 310,900	$ 1,537,100	$ 1,848,000
4.23	HIGH VOLTAGE POWER CABLE & TERMINATION	1/C # 500KCMIL- 15KV	$ -	$ 144,600	$ 407,800	$ 552,400
4.24	MEDIUM VOLTAGE POWER CABLE & TERMINATION	1/C 350KCMIL-15KV	$ -	$ 66,200	$ 282,300	$ 348,500
4.25	LOW VOLTAGE POWER CABLE & TERMINATION	0	$ -	$ 93,000	$ 143,200	$ 236,200
4.26	CONTROL & INSTRUMENT CABLE	#14, #16 & PR # 20 & SHLD WIRE	$ -	$ 26,200	$ 73,600	$ 99,800
4.27	DUCT BANK	DUCT BANK WITH 4-5" & 4-3" CONDUITS, 2.38' H X 3.79' W	$ -	$ 61,100	$ 116,200	$ 177,300

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4.28	FOUNDATIONS FOR TRANSFORMERS	FOR XFMR 33F, 33G, INCLUDES MUD MAT	$ -	$ 3,500	$ 10,300	$ 13,800
4.29	COMMUNICATIONS		$ -	$ 34,000	$ 26,000	$ 60,000
4.30	LIGHTNING PROTECTION		$ -	$ 6,000	$ 4,700	$ 10,700
4.31	SECURITY SYSTEM		$ -	$ 8,000	$ 7,000	$ 15,000
90.00	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS		$ 9,382,300	$ 4,145,600	$ 8,237,000	$ 21,764,900
	SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS		$ 469,100	$ 1,057,100	$ 2,988,100	$ 4,514,400
	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	LIME HANDLING SYSTEM	$ 9,851,400	$ 5,202,700	$ 11,225,100	$ 26,279,300
5.0	LIME SLAKER BUILDING	NOT REQUIRED FOR NID				
6.0	BYPRODUCT WASTE & FLY ASH HANDLING SYSTEMS					
6.1	BYPRODUCT WASTE HANDLING - MECHANICAL EQUIPMENT	INCLUDES PNEUMATIC HANDLING SYSTEM, THREE PRESSURE BLOWERS, ONE BIN VENT FILTER, ASH UNLOADING SYSTEM	$ 2,386,000	$ -	$ 1,451,600	$ 3,837,600

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6.2	FLY ASH HANDLING - MECHANICAL EQUIPMENT	INCLUDES PNEUMATIC HANDLING SYSTEM, TWO PRESSURE EXHAUSTERS, TRANSFER STATION, ONE BIN VENT FILTER, ASH UNLOADING SYSTEM	$ 2,285,000	$ -	$ 1,431,100	$ 3,716,100
6.3	BUILDING SUMP PUMPS	FOR BUILDINGS - DUPLEX. INCLUDES CHECK & ISOLATION VALVES.	$ 28,000	$ -	$ 12,300	$ 40,300
6.4	AGITATOR FOR SUMP PUMPS	5 HP	$ 12,000	$ -	$ 4,600	$ 16,600
6.5	PIPING - MECHANICAL	0	$ 142,800	$ 131,000	$ 408,700	$ 682,500
6.6	BYPRODUCT WASTE SILO	CONCRETE SILO 60' DIA X 92' H - 3225 TONS - SUBCONTRACT COST INCLUDES LABOR	$ 1,885,000	$ -	$ -	$ 1,885,000
6.7	RECYCLE SILO	NOT REQUIRED FOR NID	$ -	$ -	$ -	$ -
6.8	FLY ASH SILO	STEEL -STORAGE SILO, 16' DIA X 18' H, 48TONS	$ 45,000	$ 23,200	$ 64,300	$ 132,500
6.9	BYPRODUCT WASTE STORAGE SILO - FOUNDATIONS		$ -	$ 162,400	$ 301,900	$ 464,300
6.10	FLY ASH SILO - FOUNDATIONS		$ -	$ 13,900	$ 35,900	$ 49,800
6.11	BYPRODUCT TRANSPORT BLOWER BUILDING - FOUNDATIONS		$ -	$ 97,600	$ 172,100	$ 269,700
6.12	BYPRODUCT TRANSPORT BLOWER BUILDING	90' L X 30' W X 20' H	$ 40,000	$ 241,500	$ 26,200	$ 307,700

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6.13	FLY ASH BLOWER AND ELECTRICAL BUILDING - FOUNDATIONS		$ -	$ 82,800	$ 150,900	$ 233,700
6.14	FLY ASH BLOWER AND ELECTRICAL BUILDING	110' L X 30' W X 25' H	$ 75,000	$ 276,500	$ 24,400	$ 375,900
6.15	LOAD OUT AREA PDC	SUBCONTRACT PRICE INCLUDES LABOR. COMPLETE WITH HVAC, & FINISHES.	$ -	$ 300,000	$ -	$ 300,000
6.16	MCC	480V MCC PER LINE UP	$ 120,000	$ -	$ 7,300	$ 127,300
6.17	EMERGENBCY POWER SYSTEM		$ 185,500	$ -	$ 40,000	$ 225,500
6.18	LIGHTING/ TRANSFORMERS & PANELS		$ 18,500	$ 75,000	$ 53,200	$ 146,700
6.19	RACEWAY, CABLE TRAY, & CONDUIT		$ -	$ 40,700	$ 236,200	$ 276,900
6.20	GROUNDING		$ -	$ 4,500	$ 10,900	$ 15,400
6.21	MEDIUM VOLTAGE POWER CABLE & TERMINATION	1/C # 2/0-5KV	$ -	$ 9,500	$ 47,900	$ 57,400
6.22	LOW VOLTAGE POWER CABLE & TERMINATION	0	$ -	$ 80,900	$ 100,600	$ 181,500
6.23	CONTROL & INSTRUMENT CABLE	#14, #16 & PR # 20 & SHLD WIRE	$ -	$ 38,400	$ 107,800	$ 146,200
6.24	DUCT BANK	DUCT BANK WITH 4-5" & 4-3" CONDUITS	$ -	$ 6,200	$ 10,600	$ 16,800
6.25	COMMUNICATIONS		$ -	$ 70,000	$ 50,000	$ 120,000
6.26	LIGHTNING PROTECTION		$ -	$ 19,000	$ 14,000	$ 33,000
6.27	SECURITY SYSTEM		$ -	$ 16,000	$ 14,000	$ 30,000
90.0	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS		$ 7,267,800	$ 1,712,300	$ 4,776,500	$ 13,688,400
	SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS		$ 363,400	$ 436,600	$ 1,774,800	$ 2,574,900
	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	BYPRODUCT WASTE & FLY ASH HANDLING SYSTEMS	$ 7,631,200	$ 2,148,900	$ 6,551,300	$ 16,263,300

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7.0	ABSORBER ISLAND	NOT REQUIRED FOR NID				
8.0	ACTIVATED CARBON INJECTION SYSTEM					
8.1	ACI MECHANICAL EQUIPMENT:		$ 3,046,400	$ -	$ 1,012,000	$ 4,058,400
8.2	PIPING - MECHANICAL		$ 29,800	$ 149,800	$ 377,100	$ 556,700
8.3	ACI SYSTEM - FOUNDATIONS		$ -	$ 41,500	$ 88,000	$ 129,500
8.4	MCC		$ 61,800	$ -	$ 3,600	$ 65,400
8.5	GROUNDING		$ 5,500	$ -	$ 18,600	$ 24,100
8.6	LIGHTING / TRANSFORMERS & PANELS		$ 26,000	$ 15,000	$ 20,400	$ 61,400
8.7	RACEWAY, CABLE TRAY, & CONDUIT		$ -	$ 89,900	$ 302,900	$ 392,800
8.8	LOW VOLTAGE POWER CABLE & TERMINATION	#4/0 - #12 AWG-600V	$ -	$ 14,400	$ 18,000	$ 32,400
8.9	CONTROL & INSTRUMENT CABLE	#14, #16 & PR # 20 & SHLD WIRE	$ -	$ 16,000	$ 44,900	$ 60,900
90.0	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS		$ 3,169,500	$ 326,600	$ 1,885,500	$ 5,381,600
	SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS		$ 158,500	$ 83,300	$ 694,500	$ 936,300
	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	ACTIVATED CARBON INJECTION SYSTEM	$ 3,328,000	$ 409,900	$ 2,580,000	$ 6,317,900
9.0	COMPRESSED AIR SYSTEM					
9.1	AIR COMPRESSOR & AUXILIARIES		$ 848,000	$ -	$ 184,600	$ 1,032,600
9.2	PIPING - MECHANICAL		$ 320,600	$ 344,800	$ 875,600	$ 1,541,000
9.3	AIR COMPRESSOR BUILDING - FOUNDATIONS		$ -	$ 249,800	$ 419,700	$ 669,500
9.4	AIR COMPRESSOR BUILDING	120' L X 60' W X 20' H	$ -	$ 612,000	$ -	$ 612,000
9.5	LIGHTING/ TRANSFORMERS & PANELS		$ 11,000	$ 10,500	$ 11,400	$ 32,900
9.6	RACEWAY, CABLE TRAY, & CONDUIT	INCLUDED IN ID FANS, 1.0	$ -	$ -	$ -	$ -
9.7	GROUNDING		$ 4,500	$ -	$ 10,900	$ 15,400
9.8	COMMUNICATIONS		$ -	$ 34,000	$ 26,000	$ 60,000

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9.9	LIGHTNING PROTECTION		$ -	$ 10,500	$ 7,500	$ 18,000
90.00	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS		$ 1,184,100	$ 1,261,600	$ 1,535,700	$ 3,981,400
	SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS		$ 59,200	$ 321,700	$ 570,900	$ 951,800
	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	COMPRESSED AIR SYSTEM	$ 1,243,300	$ 1,583,300	$ 2,106,600	$ 4,933,200
10.0	SERVICE WATER SYSTEM					
10.1	PUMPS	INCLUDES SELF-CLEANING STRAIINERS	$ 174,000	$ -	$ 85,900	$ 259,900
10.2	PIPING - MECHANICAL		$ 298,400	$ 342,800	$ 688,300	$ 1,329,500
10.3	PIPING - FIRE PROTECTION SYSTEM		$ 181,200	$ 284,600	$ 673,300	$ 1,139,100
10.4	TANKS		$ -	$ 120,000	$ -	$ 120,000
10.5	SERVICE WATER TANK & PUMP - FOUNDATIONS		$ -	$ 17,300	$ 41,400	$ 58,700
10.7	ELECTRICAL	INCLUDED IN ID FANS, 1.0	$ -	$ -	$ -	$ -
90.0	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS		$ 653,600	$ 764,700	$ 1,488,900	$ 2,907,200
	SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS		$ 32,700	$ 195,000	$ 542,900	$ 770,600
	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	SERVICE WATER SYSTEM	$ 686,300	$ 959,700	$ 2,031,800	$ 3,677,800
11.0	POTABLE WATER SYSTEM					
11.1	PUMPS		$ 30,000	$ -	$ 18,400	$ 48,400
11.2	PIPING - MECHANICAL		$ 99,500	$ 181,900	$ 448,200	$ 729,600
11.3	TANKS		$ -	$ 8,500	$ -	$ 8,500
11.4	POTABLE WATER TANK & PUMP - FOUNDATIONS		$ -	$ 5,200	$ 9,200	$ 14,400
11.5	ELECTRICAL	INCLUDED IN ID FANS, 1.0	$ -	$ -	$ -	$ -

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90.0	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS		$ 129,500	$ 195,600	$ 475,800	$ 800,900
	SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS		$ 6,500	$ 49,900	$ 173,400	$ 229,800
	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	POTABLE WATER SYSTEM	$ 136,000	$ 245,500	$ 649,200	$ 1,030,700
12.0	FGD SUBSTATION					
12.1	TRANSFORMERS		$ 1,370,000	$ -	$ 254,900	$ 1,624,900
12.2	TRANSFORMER PDC	15W X 45' X 10'H. SUBCONTRACT PRICE INCLUDES LABOR	$ 202,500	$ -	$ -	$ 202,500
12.3	TRANSFORMER PDC - FOUNDATION		$ -	$ 73,200	$ 146,900	$ 220,100
12.4	138KV MAIN FEEDER & TERMINATIONS		$ 264,000	$ -	$ 254,000	$ 518,000
12.5	SWITCHGEAR		$ 814,200	$ -	$ 128,900	$ 943,100
12.6	MCC	480V MCC, PER LINE UP	$ 60,000	$ -	$ 3,600	$ 63,600
12.7	CABLE BUS		$ 181,100	$ 18,000	$ 290,200	$ 489,300
12.8	PANELS - RELAY		$ 100,000	$ -	$ 9,100	$ 109,100
12.9	MIMIC PANELS		$ 17,500	$ -	$ 4,500	$ 22,000
12.10	EMERGENCY POWER SYSTEM		$ 108,300	$ -	$ 24,400	$ 132,700
12.11	GROUNDING		$ 23,300	$ -	$ 59,100	$ 82,400
12.12	LIGHTING/ TRANSFORMERS & PANELS		$ 26,000	$ 30,000	$ 29,500	$ 85,500
12.13	OUTDOOR LIGHTING	NEW AUX YARD LIGHTING ALLOWANCE	$ 25,000	$ -	$ 56,800	$ 81,800
12.14	RACEWAY, CABLE TRAY, & CONDUIT		$ -	$ 390,600	$ 1,918,600	$ 2,309,200
12.15	DUCT BANK		$ -	$ 26,200	$ 54,300	$ 80,500
12.16	HIGH VOLTAGE POWER CABLE & TERMINATION	1/C # 500KCMIL- 15KV	$ -	$ 16,700	$ 47,100	$ 63,800
12.17	LOW VOLTAGE POWER CABLE & TERMINATION		$ -	$ 96,600	$ 147,700	$ 244,300
12.18	CONTROL & INSTRUMENT CABLE	#14, #16 & PR # 20 & SHLD WIRE	$ -	$ 21,800	$ 61,100	$ 82,900
12.19	FOUNDATION FOR AUX TRANSFORMER		$ -	$ 70,200	$ 205,400	$ 275,600

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12.20	FIREWALL FOR TRANSFORMERS		$ -	$ 4,300	$ 7,600	$ 11,900
12.21	COMMUNICATIONS		$ -	$ 17,000	$ 13,000	$ 30,000
12.22	LIGHTNING PROTECTION		$ -	$ 4,000	$ 2,000	$ 6,000
12.23	SECURITY SYSTEM		$ -	$ 8,000	$ 7,000	$ 15,000
90.0	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS		$ 3,191,900	$ 776,600	$ 3,725,700	$ 7,694,200
	SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS		$ 159,600	$ 198,000	$ 1,346,496	$ 1,704,100
	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	FGD SUBSTATION	$ 3,351,500	$ 974,600	$ 5,072,200	$ 9,398,300
13.0	FGD DCS SYSTEM					
13.1	DCS	3200 I/O POINTS	$ 2,400,000	$ -	$ 813,600	$ 3,213,600
13.2	DCS - VENDOR FIELD SUPPORT	200 MAN DAYS @	$ 300,000	$ -	$ -	$ 300,000
13.3	LOCALLY MOUNTED INSTRUMENTS		$ -	$ 650,400	$ 852,900	$ 1,503,300
90.0	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS		$ 2,700,000	$ 650,400	$ 1,666,500	$ 5,016,900
	SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS		$ 135,000	$ 165,900	$ 622,300	$ 923,200
	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	FGD DCS SYSTEM	$ 2,835,000	$ 816,300	$ 2,288,800	$ 5,940,100
14.0	CEM SYSTEM					
14.1	CEM	PROVIDED BY AEP	$ 1,260,000	$ 540,000	$ 310,000	$ 2,110,000
90.0	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS		$ 1,260,000	$ 540,000	$ 310,000	$ 2,110,000
	SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS		$ -	$ -	$ -	$ 316,500
	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	CEM SYSTEM	$ -	$ -	$ -	$ 2,426,500

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15.0	TRUCK & RAIL INFRASTRUCTURE					
15.1	EXISTING RAILROAD IMPROVEMENTS	FOR FULL RAILCAR STORAGE TRACK IMPROVEMENTS - 3250 LF	$ -	$ 660,200	$ 689,200	$ 1,349,400
15.2	EXISTING RAILROAD IMPROVEMENTS	FOR LOOP TRACK UPGRADE - 5000 LF	$ -	$ 1,008,800	$ 1,055,600	$ 2,064,400
15.3	NEW RAILROAD TRACK	INCLUDES, 132LB RAIL, 7" TIMBERS, TIE PLATES, SPIKES, BOLTS, 12: SUB BALLAST, 12" BALLAST, 12 OZ/SY GEOTEXTILE MEMBRANE, 12" SUBGRADE PREP	$ -	$ 252,000	$ 213,100	$ 465,100
15.4	FIELD FABRICATED TURNOUTS	#8 TURNOUT	$ -	$ 90,000	$ 54,800	$ 144,800
15.5	RAIL SCALE	SUBCONTRACT COST, INCLUDES FOUNDATIONS	$ 212,500	$ -	$ -	$ 212,500
15.6	NEW CONCRETE ENCASEMENT	OVER AND AROUND DUCT BANK CONNECTING THE PLANT TO SWITCHYARD. THIS IS UNDER THE NEW TRACK WORK EXTENSION	$ -	$ 33,200	$ 71,400	$ 104,600
90.0	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS		$ 212,500	$ 2,044,200	$ 2,084,100	$ 4,340,800
	SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS		$ 10,600	$ 521,300	$ 779,600	$ 1,311,500
	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	TRUCK & RAIL INFRASTRUCTURE	$ 223,100	$ 2,565,500	$ 2,863,700	$ 5,652,300
16.0	SITE IMPROVEMENTS - CIVIL WORK					
16.1	SITE GRADING		$ -	$ -	$ 555,200	$ 555,200

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16.2	ROADS & SURFACING		$ -	$ 1,204,900	$ 1,667,500	$ 2,872,400
16.3	NEW CONCRETE ENCASEMENT	16' X 4' X 40' - FOR EXISTING ASH PIPE HAUL ROAD CROSSING	$ -	$ 36,500	$ 73,000	$ 109,500
16.4	TRUCK SCALE & CONCRETE APPROACH		$ 170,000	$ 27,300	$ 92,000	$ 289,300
16.5	PROCESS WATER STORAGE BASIN		$ 60,000	$ 81,600	$ 240,300	$ 381,900
16.6	PROCESS WATER STORAGE BASIN PUMP STRUCTURE - CONCRETE		$ -	$ 47,000	$ 105,400	$ 152,400
16.7	STORM WATER DRAINAGE TRENCH	2' W X 3' DEEP CAST-IN-PLACE CONCRETE TRENCH W/REINFORCING & HS-20 RATED GRATE COVERS	$ -	$ 526,500	$ 535,800	$ 1,062,300
16.8	STORM WATER RUNOFF POND		$ -	$ 15,000	$ 122,600	$ 137,600
16.9	STORM WATER RUNOFF POND PUMP STRUCTURE - CONCRETE		$ 90,000	$ 42,300	$ 182,200	$ 314,500
16.10	OILY WATER SEWER		$ 4,500	$ 112,600	$ 236,000	$ 353,100
16.11	OIL SEPARATOR	500 GPM W/ INTEGRAL LIFT STATION	$ 100,000	$ -	$ 116,100	$ 216,100
16.12	SANITARY SEWER		$ -	$ 22,200	$ 96,900	$ 119,100
16.13	SANITARY LIFT STATION	PACKAGED TYPE COMPLETE WITH PUMPS, 100,000 GPD	$ 150,000	$ -	$ 49,200	$ 199,200

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	COST ESTIMATE SUMMARY	Preparer:	MNO
		Reviewer:	JMK
		Approver:	PEF

Account No.	Item Description	Scope Definition	Total Equipment Cost	Total Material Cost	Total Construction & Erection Cost	Total Projected Cost
16.14	CONSTRUCTION LAYDOWN AREA	ALLOWANCE FOR 10 ACRES, DOES NOT INCLUDE LAND ACQUISITION, IF REQUIRED	$ -	$ 700,000	$ 828,000	$ 1,528,000
16.15	CRAFT PARKING	DOES NOT INCLUDE LAND ACQUISITION, IF REQUIRED. ALLOWANCE FOR 20,000 SY INCLUDES: 6" BASE COURSE 10 OZ/SY GEOTEXTILE 12" SUBGRADE PREP	$ -	$ 180,000	$ 414,200	$ 594,200
16.16	CONTRACTOR OFFICES (AREA)	DOES NOT INCLUDE LAND ACQUISITION, IF REQUIRED. ALLOWANCE FOR 5,000 SY AREA (TRAILERS BY CONTRACTORS) INCLUDES: 6" BASE COURSE 10 OZ/SY GEOTEXTILE 12" SUBGRADE PREP	$ -	$ 45,000	$ 103,600	$ 148,600
16.17	TRUCK WASH AREA		$ -	$ 47,300	$ 83,100	$ 130,400
16.18	NEW PERMANENT STORAGE	INCLUDES LIGHTING AND H&V. SUBCONTRACT PRICE INCLUDES ELECTRICAL AND H&V	$ 850,000	$ -	$ -	$ 850,000

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16.19	FOUNDATIONS FOR THE NEW WAREHOUSE		$ -	$ 273,500	$ 450,200	$ 723,700
16.20	NEW TEMPORARY STORAGE	WEATHER TIGHT CANVAS ENCLOSURE. INCLUDES LIGHTING AND H&V. SUBCONTRACT PRICE INCLUDES ELECTRICAL AND H&V	$ 450,000	$ -	$ -	$ 450,000
16.21	FOUNDATIONS FOR TEMPORARY STORAGE		$ -	$ 99,500	$ 157,200	$ 256,700
16.22	LABOR BUS SERVICE FROM PARKING LOT TO CONSTRUCTION AREA AND ACCESS CONTROL	ALLOWANCE FOR 36 MONTHS BASED ON 2 BUSES OPERATING CONTINUOUSLY FOR 5X10 WORKWEEK. SUBCONTRACT COST INCLUDES EQUIPMENT, MATERIAL AND LABOR	$ 1,368,000	$ -	$ -	$ 1,368,000
16.23	EROSION & SEDIMENT CONTROL		$ -	$ 12,500	$ 20,500	$ 33,000
90.0	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS		$ 3,242,500	$ 3,473,700	$ 6,129,000	$ 12,845,200
	SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS		$ 162,100	$ 885,800	$ 2,226,600	$ 3,274,500
	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	SITE IMPROVEMENTS - CIVIL WORK	$ 3,404,600	$ 4,359,500	$ 8,355,600	$ 16,119,700
17.0	BOP ITEMS					
17.1	PIPE INSULATION	AVERAGE 6" PIPE SIZE	$ -	$ 34,000	$ 106,000	$ 140,000
17.2	HEAT TRACING		$ -	$ 175,600	$ 248,500	$ 424,100
17.3	TOUCH UP PAINT (INCLUDES PAINTING CS PIPE)		$ -	$ 176,700	$ 677,900	$ 854,600
17.4	HOISTS & TROLLEYS		$ 150,000	$ 175,000	$ 204,400	$ 529,400
17.5	MISC AUX STEEL FOR PIPE SUPPORTS	FIELD FABRICATED	$ -	$ 122,500	$ 510,600	$ 633,100
17.6	MISC PIPE SUPPORT FOUNDATIONS		$ -	$ 10,500	$ 21,000	$ 31,500

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17.7	EYE WASH STATIONS	WITH 50 KW HEATERS	$ 30,000	$ 5,000	$ 30,700	$ 65,700
17.8	FIRE PROTECTION FOR MISC BUILDINGS & AREAS	STAND PIPE FOR	$ -	$ 300,000	$ 245,300	$ 545,300
90.0	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS		$ 180,000	$ 999,300	$ 2,044,400	$ 3,223,700
	SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS		$ 9,000	$ 254,822	$ 786,346	$ 1,050,167
	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	BOP ITEMS	$ 189,000	$ 1,254,100	$ 2,830,700	$ 4,273,900
18.0	CAPITAL REPLACEMENTS - REMOVAL AND RELOCATION OF EXISTING EQUIPMENT AND INFRASTRUCTURE					
18.1	RELOCATE HYDROGEN STORAGE TANK		$ -	$ 15,600	$ 86,800	$ 102,400
18.2	NEW HYDROGEN LINE TO PLANT		$ -	$ 62,100	$ 150,600	$ 212,700
18.3	RELOCATE MISC. UNDERGROUND UTILITIES	ALLOWANCE	$ -	$ 125,000	$ 170,500	$ 295,500
18.4	OUTAGE TIE-IN DUCTWORK	ALLOWANCE FOR 85 TON DUCTWORK	$ -	$ 276,300	$ 527,700	$ 804,000
18.5	RELOCATED WAREHOUSE - FOUNDATIONS		$ -	$ 342,600	$ 534,900	$ 877,500
18.6	RELOCATE EXISTING WAREHOUSE BUILDING	150' L X 75' W X 25' H	$ -	$ 95,600	$ 1,121,500	$ 1,217,100
90.0	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS		$ -	$ 917,200	$ 2,592,000	$ 3,509,200

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	SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS		$ -	$ 233,900	$ 927,100	$ 1,161,000
	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	CAPITAL REPLACEMENTS - REMOVAL AND RELOCATION OF EXISTING EQUIPMENT AND INFRASTRUCTURE	$ -	$ 1,151,100	$ 3,519,100	$ 4,670,200
19.0	ARSENIC, ASBESTOS , LEAD ABATEMENT					
19.1	ARSENIC, ASBESTOS , LEAD ABATEMENT	PROVIDED BY AEP	$ -	$ -	$ -	$ 750,000
90.0	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS		$ -	$ -	$ -	$ 750,000
	SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS		$ -	$ -	$ -	$ 112,500
	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	ARSENIC, ASBESTOS , LEAD ABATEMENT	$ -	$ -	$ -	$ 862,500
99.0	OVERALL - EQUIPMENT, MATERIAL AND LABOR COSTS		$ 94,765,600	$ 47,621,700	$ 121,455,100	$ 283,874,200
	OVERALL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS		$ 5,350,300	$ 12,086,800	$ 44,911,600	$ 65,599,200
	OVERALL TOTAL DIRECT & CONSTRUCTION INDIRECT COST		$ 100,115,900	$ 59,708,500	$ 166,366,700	$ 349,473,400
	OVERALL PROJECT INDIRECT COSTS					
	ENGINEERING, PROCUREMENT, & PROJECT SERVICES					$ 25,000,000
	CONSTRUCTION MANAGEMENT					$ 10,484,200
	S-U / COMMISSIONING					$ 3,494,700

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	CRAFT START-UP SUPPORT					$ 1,431,100
	INITIAL FILLS					$ 1,048,400
	OPERATOR & TRAINING MANUALS					$ 300,000
	SUBCONTRACTORS (NOISE & DUCTWORK CONSULTANT, GEOTECHNICAL INVESTIGATION)					$ 400,000
	NOISE ABATEMENT FOR 85 DBA REQUIREMENT	FOR ID FAN, NID MODULES, TRANSFORMERS, BOP, DUCTWORK, ACOUSTIC BARRIERS FOR BOUNDARY LIMITS				$ 2,600,000
	SUBTOTAL - INDIRECT COSTS					$ 44,758,400
	TOTAL PROJECT DIRECT AND INDIRECT COSTS					$ 394,231,800
	SPARE PARTS:					$ 1,501,700
	SPARE PARTS - CAPITALIZED	0.9				$ 901,020
	SPARE PARTS - FIRST YEAR OF OPERATION	0.6				$ 600,680
	CONTINGENCY	14.125				$ 55,898,200
	ESCALATION					$ 49,816,200
	EQUIPMENT					$ 15,907,700
	MATERIAL					$ 6,177,000
	LABOR					$ 22,471,200
	INDIRECTS					$ 5,260,300
	TOTAL PROJECT COST					$ 501,447,900
	REFERENCE COSTS:					
A	REMOVAL OF FUEL OIL TANK		$ 1,200,000	$ 80,000	$ 469,400	$ 1,749,400

ATTACHMENT 5-15
NID Summary Capital Cost Estimate No. 30727 Base Est-1B ESP not in Service (3.0 lb SO_2/MMbtu)

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1.0	ID FANS					
1.1	ID FANS - OEM EQUIPMENT	1,875,000 ACFM WITH 19,500 HP MOTORS ($750,000 EACH). INCLUDES HYDRAULIC OIL UNITS, SEAL AIR FAN SKIDS, VIBRATION MONITORING EQUIPMENT, FAN STALL EQUIPMENT, FIELD SERVICE REP FOR 140 DAYS	$ 6,920,000	$ -	$ 1,674,400	$ 8,594,400
1.2	PIPING & SUPPORTS - MECHANICAL		$ 21,800	$ 28,700	$ 120,500	$ 171,000
1.3	DAMPERS		$ 781,000	$ -	$ 352,600	$ 1,133,600
1.4	EXPANSION JOINTS		$ -	$ 131,100	$ 116,500	$ 247,600
1.5	DUCTWORK	NID MODULE OUTLET TO ID FANS AND FROM ID FANS TO STACK - INCLUDES INTERNAL BRACING AND TURNING VANES	$ -	$ 2,600,000	$ 4,966,200	$ 7,566,200
1.6	DUCT SUPPORT STEEL	THREE COAT SHOP PAINT	$ -	$ 1,160,000	$ 1,167,000	$ 2,327,000
1.7	ID FAN INSULATION & LAGGING	TOTAL FOR TWO FANS. PRICING REFLECTS STANDARD ACOUSTICAL INSULATION	$ -	$ 168,000	$ 217,200	$ 385,200
1.8	DUCTWORK INSULATION & LAGGING	INCLUDES INSULATION FOR SPRAY DRYER OUTLET DUCT TO NID MODULES SUPPLIED WITH THE OEM EQUIPMENT	$ -	$ 864,000	$ 1,692,200	$ 2,556,200

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1.9	DUCT SUPPORT STEEL - FOUNDATIONS		$ -	$ 295,500	$ 574,000	$ 869,500
1.10	ID FAN FOUNDATIONS INCLUDING ID FAN AUX EQUIPMENT		$ -	$ 106,000	$ 198,700	$ 304,700
1.11	NID CONTROL & SWITCHGEAR BUILDING - FOUNDATIONS		$ -	$ 273,800	$ 458,900	$ 732,700
1.12	NID CONTROL & SWITCHGEAR BUILDING	SUBCONTRACT PRICE INCLUDES LABOR. COMPLETE WITH HVAC, FINISHES AND SANITARY FACILITIES	$ -	$ 3,937,500	$ -	$ 3,937,500
1.13	TRANSFORMERS		$ 770,000	$ -	$ 145,600	$ 915,600
1.14	SWITCHGEAR		$ 1,082,000	$ -	$ 569,000	$ 1,651,000
1.15	CABLE BUS & TERMINATIONS		$ 756,300	$ 35,800	$ 1,316,200	$ 2,108,300
1.16	MCC		$ 120,000	$ -	$ 7,200	$ 127,200
1.17	MIMIC PANELS		$ 17,500	$ -	$ 4,500	$ 22,000
1.18	EMERGENCY POWER SYSTEM		$ 285,500	$ -	$ 38,900	$ 324,400
1.19	HIGH VOLTAGE POWER CABLE & TERMINATION	1/C 750KCMIL- 13.8KV	$ -	$ 186,300	$ 283,200	$ 469,500
1.20	MEDIUM VOLTAGE POWER CABLE & TERMINATION		$ -	$ 91,600	$ 393,700	$ 485,300
1.21	LOW VOLTAGE POWER CABLE & TERMINATION		$ -	$ 543,000	$ 794,800	$ 1,337,800
1.22	CONTROL & INSTRUMENT CABLE	#14, #16 & PR # 20 & SHLD WIRE	$ -	$ 345,000	$ 968,000	$ 1,313,000
1.23	GROUNDING		$ 11,100	$ -	$ 37,200	$ 48,300
1.24	LIGHTING/ TRANSFORMERS & PANELS		$ 26,000	$ 30,000	$ 29,500	$ 85,500
1.25	RACEWAY, CABLE TRAY, & CONDUIT		$ -	$ 1,651,700	$ 8,113,100	$ 9,764,800

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1.26	DUCT BANK		$ -	$ 40,800	$ 280,000	$ 320,800
1.27	FOUNDATION FOR TRANSFORMERS		$ -	$ 64,600	$ 188,900	$ 253,500
1.28	FIREWALL FOR TRANSFORMERS		$ -	$ 3,200	$ 8,300	$ 11,500
1.29	COMMUNICATIONS		$ -	$ 17,000	$ 13,000	$ 30,000
1.30	LIGHTNING PROTECTION		$ -	$ 12,000	$ 9,200	$ 21,200
1.31	SECURITY SYSTEM		$ -	$ 8,000	$ 7,000	$ 15,000
90.00	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS		$ 10,791,200	$ 12,593,600	$ 24,745,500	$ 48,130,300
	SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS		$ 539,600	$ 3,211,400	$ 8,904,700	$ 12,655,600
	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	ID FANS	$ 11,330,800	$ 15,805,000	$ 33,650,200	$ 60,785,900
2.0	NID MODULES					
2.1	MECHANICAL EQUIPMENT	A 12-MODULE NID SYSTEM (160' X 160') INCLUDING LIME DAY SILOS, HYDRATORS, MIXERS, J-DUCTS, FABRIC FILTER MODULES, ALL INTERNAL ELEMENTS (BAGS, CAGES, ASH HOPPERS, 2 BROKEN BAG DETECTORS / COMPARTMENT), ASH RECYCLE SYSTEM, VACUUM PIPING, AND ALL INTERNAL PIPING & DUCTWORK FOR THE VARIOUS MODULES.	$ 50,231,000	$ -	$ 32,415,100	$ 82,646,100

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2.2	INSULATION FOR NID MODULES	SUBCONTRACT COST INCLUDES LABOR	$ 2,419,200	$ -	$ -	$ 2,419,200
2.3	PENTHOUSE FOR NID MODULES	14 FT HIGH, 25600 SF	$ 58,100	$ 1,316,900	$ 1,747,600	$ 3,122,600
2.4	BOTTOM ENCLOSURE FOR NID MODULES	40 FT HIGH	$ 92,200	$ 2,428,900	$ 2,544,900	$ 5,066,000
2.5	PIPING & SUPPORTS - MECHANICAL		$ 125,200	$ 174,500	$ 385,900	$ 685,600
2.6	DUCTWORK		$ -	$ 4,797,000	$ 9,162,600	$ 13,959,600
2.7	DUCT SUPPORT STEEL	THREE COAT SHOP PAINT	$ -	$ 2,140,200	$ 2,153,200	$ 4,293,400
2.8	DUCTWORK INSULATION & LAGGING		$ -	$ 1,632,000	$ 3,196,400	$ 4,828,400
2.9	NID MODULE- FOUNDATIONS		$ -	$ 1,087,000	$ 1,778,100	$ 2,865,100
2.10	NID MODULE - SUPPORT STEEL AND ACCESS GALLERY		$ -	$ 1,152,000	$ 2,863,700	$ 4,015,700
2.11	GROUNDING		$ -	$ 16,000	$ 46,100	$ 62,100
2.12	LIGHTING/ TRANSFORMERS & PANELS		$ 27,000	$ 75,000	$ 57,300	$ 159,300
2.13	RACEWAY, CABLE TRAY, & CONDUIT	INCLUDED IN ID FANS, 1.0	$ -	$ -	$ -	$ -
90.00	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS		$ 52,952,700	$ 14,819,500	$ 56,350,900	$ 124,123,100
	SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS		$ 3,322,600	$ 3,779,000	$ 21,387,300	$ 28,488,900
	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	NID MODULES	$ 56,275,300	$ 18,598,500	$ 77,738,200	$ 152,612,000

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3.0	NEW STACK					
3.1	CONCRETE STACK (DRY)	PROVIDED BY AEP	$ -	$ -	$ -	$ 19,350,000
90.0	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS		$ -	$ -	$ -	$ 19,350,000
	SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS		$ -	$ -	$ -	$ 2,902,500
	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	NEW STACK	$ -	$ -	$ -	$ 22,252,500
4.0	LIME HANDLING SYSTEM					
4.1	LIME STORAGE SILO		$ 6,770,000	$ -	$ -	$ 6,770,000
4.2	LIME UNLOADING SYSTEM	INCLUDE PNEUMATIC HANDLING SYSTEM, THREE VACUUM EXHAUSTERS, TWO FILTER SEPARATORS	$ 595,000	$ -	$ 477,900	$ 1,072,900
4.3	LIME TRANSPORT SYSTEM TO DAY BINS	INCLUDE PNEUMATIC HANDLING SYSTEM, THREE VACUUM EXHAUSTERS, TWO FILTER SEPARATORS	$ 1,100,000	$ -	$ 654,200	$ 1,754,200
4.4	PIPING - MECHANICAL		$ 88,700	$ 130,300	$ 342,600	$ 561,600
4.5	LIME STORAGE SILO ACCESS STAIR TOWER		$ -	$ 159,500	$ 160,500	$ 320,000
4.6	PIPE RACK FOR LIME HANDLING, WASTE HANDLING AND MISC MECHANICAL PIPING	THREE COAT SHOP PAINT	$ -	$ 1,885,000	$ 1,896,400	$ 3,781,400
4.7	RAIL CAR UNLOADING AREA - FOUNDATIONS	20' X 120' - NO SIDING	$ -	$ 42,700	$ 90,100	$ 132,800
4.8	LIME UNLOADING BLOWER / ELECTRICAL BUILDING - FOUNDATIONS		$ -	$ 69,600	$ 147,600	$ 217,200
4.9	LIME UNLOADING BLOWER / ELECTRICAL BUILDING	100' L X 30' W X 30' H	$ 75,000	$ 335,000	$ 24,400	$ 434,400
4.10	CONCRETE PIT FOR THE ELEVATOR		$ -	$ 2,300	$ 6,900	$ 9,200
4.11	LIME STORAGE SILO - FOUNDATIONS	INCLUDES FOUNDATIONS FOR LIME TRANSPORT SYSTEM PRESSURE BLOWERS	$ -	$ 368,100	$ 676,300	$ 1,044,400
4.12	LIME STORAGE SILO ACCESS STAIR TOWER - FOUNDATIONS		$ -	$ 14,200	$ 28,600	$ 42,800

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4.13	PIPE RACK - FOUNDATIONS		$ -	$ 239,600	$ 588,600	$ 828,200
4.14	TRANSFORMERS	SUS TRANSFORMERS: 33F, 33G, 13.8KV-480V,3PHASE, 3 WINDING XFMR	$ 170,000	$ -	$ 54,600	$ 224,600
4.15	SWITCHGEAR	480V LOW VOLTAGE (33F/G), SWITCHGEAR	$ 196,000	$ -	$ 104,700	$ 300,700
4.16	CABLE BUS DUCT		$ 134,700	$ 10,800	$ 200,200	$ 345,700
4.17	MCC		$ 61,800	$ -	$ 3,600	$ 65,400
4.18	MIMIC PANELS		$ 17,500	$ -	$ 1,400	$ 18,900
4.19	EMERGENCY POWER SYSTEM		$ 108,300	$ -	$ 24,400	$ 132,700
4.20	GROUNDING		$ 13,300	$ -	$ 41,300	$ 54,600
4.21	LIGHTING/ TRANSFORMERS & PANELS		$ 52,000	$ 135,000	$ 104,500	$ 291,500
4.22	RACEWAY, CABLE TRAY, & CONDUIT		$ -	$ 310,900	$ 1,537,100	$ 1,848,000
4.23	HIGH VOLTAGE POWER CABLE & TERMINATION	1/C # 500KCMIL- 15KV	$ -	$ 144,600	$ 407,800	$ 552,400
4.24	MEDIUM VOLTAGE POWER CABLE & TERMINATION	1/C 350KCMIL-5KV	$ -	$ 66,200	$ 282,300	$ 348,500
4.25	LOW VOLTAGE POWER CABLE & TERMINATION		$ -	$ 93,000	$ 143,200	$ 236,200
4.26	CONTROL & INSTRUMENT CABLE	#14, #16 & PR # 20 & SHLD WIRE	$ -	$ 26,200	$ 73,600	$ 99,800
4.27	DUCT BANK	DUCT BANK WITH 4-5" & 4-3" CONDUITS, 2.38' H X 3.79' W	$ -	$ 61,100	$ 116,200	$ 177,300
4.28	FOUNDATIONS FOR TRANSFORMERS	FOR XFMR 33F, 33G, INCLUDES MUD MAT	$ -	$ 3,500	$ 10,300	$ 13,800
4.29	COMMUNICATIONS		$ -	$ 34,000	$ 26,000	$ 60,000
4.30	LIGHTNING PROTECTION		$ -	$ 6,000	$ 4,700	$ 10,700
4.31	SECURITY SYSTEM		$ -	$ 8,000	$ 7,000	$ 15,000

Sargent & Lundy, LLC

AEP
BIG SANDY UNIT 2
FGD PROJECT - NID BASE EST (N/ESP)-1B - 3.0 LB/MM BTU
COST ESTIMATE SUMMARY

Estimate No.: 30727C
Project No.: 12721-000
Date: 9/29/2010
Preparer: MNO
Reviewer: JMK
Approver: PEF

Account No.	Item Description	Scope Definition	Total Equipment Cost	Total Material Cost	Total Construction & Erection Cost	Total Projected Cost
90.00	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS		$ 9,382,300	$ 4,145,600	$ 8,237,000	$ 21,764,900
	SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS		$ 469,100	$ 1,057,100	$ 2,988,100	$ 4,514,400
	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	LIME HANDLING SYSTEM	$ 9,851,400	$ 5,202,700	$ 11,225,100	$ 26,279,300
5.0	LIME SLAKER BUILDING	NOT REQUIRED FOR NID				
6.0	BYPRODUCT WASTE & FLY ASH HANDLING SYSTEMS					
6.1	BYPRODUCT WASTE HANDLING - MECHANICAL EQUIPMENT	INCLUDES PNEUMATIC HANDLING SYSTEM, THREE PRESSURE BLOWERS, ONE BIN VENT FILTER, ASH UNLOADING SYSTEM	$ 2,822,000	$ -	$ 1,609,000	$ 4,431,000
6.2	ECONOMIZER ASH HANDLING - MECHANICAL EQUIPMENT	INCLUDES JET PUMPS AND PIPING / SUPPORTS TO THE BOTTOM ASH POND	$ 400,000	$ -	$ 296,400	$ 696,400
6.3	BUILDING SUMP PUMPS	FOR BUILDINGS - DUPLEX. INCLUDES CHECK & ISOLATION VALVES.	$ 28,000	$ -	$ 12,300	$ 40,300
6.4	AGITATOR FOR SUMP PUMPS	5 HP	$ 12,000	$ -	$ 4,600	$ 16,600
6.5	PIPING - MECHANICAL		$ 142,800	$ 131,000	$ 408,700	$ 682,500
6.6	BYPRODUCT WASTE SILO	CONCRETE SILO 65' DIA X 111' H - 4700 TONS - SUBCONTRACT COST INCLUDES LABOR	$ 2,630,000	$ -	$ -	$ 2,630,000

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6.7	RECYCLE SILO	NOT REQUIRED FOR NID	$ -	$ -	$ -	$ -
6.8	FLY ASH SILO	NOT REQUIRED - ECONOMIZER FLY ASH SLUICD TO BOTTOM ASH POND	$ -	$ -	$ -	$ -
6.9	BYPRODUCT WASTE STORAGE SILO - FOUNDATIONS		$ -	$ 162,400	$ 301,900	$ 464,300
6.10	FLY ASH SILO - FOUNDATIONS	NOT REQUIRED	$ -	$ -	$ -	$ -
6.11	BYPRODUCT TRANSPORT BLOWER BUILDING - FOUNDATIONS		$ -	$ 97,600	$ 172,100	$ 269,700
6.12	BYPRODUCT TRANSPORT BLOWER BUILDING	90' L X 30' W X 20' H	$ 40,000	$ 241,500	$ 26,200	$ 307,700
6.13	FLY ASH BLOWER AND ELECTRICAL BUILDING - FOUNDATIONS	NOT REQUIRED	$ -	$ -	$ -	$ -
6.14	FLY ASH BLOWER AND ELECTRICAL BUILDING	NOT REQUIRED	$ -	$ -	$ -	$ -
6.15	LOAD OUT AREA PDC	SUBCONTRACT PRICE INCLUDES LABOR. COMPLETE WITH HVAC, & FINISHES.	$ -	$ 300,000	$ -	$ 300,000
6.16	MCC	480V MCC PER LINE UP	$ 60,000	$ -	$ 3,600	$ 63,600
6.17	EMERGENBCY POWER SYSTEM		$ 92,800	$ -	$ 19,900	$ 112,700
6.18	LIGHTING/ TRANSFORMERS & PANELS		$ 18,500	$ 60,000	$ 44,100	$ 122,600
6.19	RACEWAY, CABLE TRAY, & CONDUIT		$ -	$ 32,500	$ 189,100	$ 221,600
6.20	GROUNDING		$ -	$ 4,500	$ 10,900	$ 15,400
6.21	MEDIUM VOLTAGE POWER CABLE & TERMINATION	1/C # 2/0-5KV	$ -	$ 9,500	$ 47,900	$ 57,400
6.22	LOW VOLTAGE POWER CABLE & TERMINATION		$ -	$ 64,700	$ 80,500	$ 145,200
6.23	CONTROL & INSTRUMENT CABLE	#14, #16 & PR # 20 & SHLD WIRE	$ -	$ 30,700	$ 86,200	$ 116,900
6.24	DUCT BANK		$ -	$ 6,200	$ 10,600	$ 16,800
6.25	COMMUNICATIONS		$ -	$ 34,000	$ 26,000	$ 60,000
6.26	LIGHTNING PROTECTION		$ -	$ 16,000	$ 14,000	$ 30,000

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6.27	SECURITY SYSTEM		$ -	$ 8,000	$ 7,000	$ 15,000
90.0	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS		$ 6,246,100	$ 1,198,600	$ 3,371,000	$ 10,815,700
	SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS		$ 312,300	$ 305,600	$ 1,251,300	$ 1,869,200
	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	BYPRODUCT WASTE & FLY ASH HANDLING SYSTEMS	$ 6,558,400	$ 1,504,200	$ 4,622,300	$ 12,684,900
7.0	ABSORBER ISLAND	NOT REQUIRED FOR NID				
8.0	ACTIVATED CARBON INJECTION SYSTEM					
8.1	ACI MECHANICAL EQUIPMENT:		$ 3,046,400	$ -	$ 1,012,000	$ 4,058,400
8.2	PIPING - MECHANICAL		$ 29,800	$ 149,800	$ 377,100	$ 556,700
8.3	ACI SYSTEM - FOUNDATIONS		$ -	$ 41,500	$ 88,000	$ 129,500
8.4	MCC		$ 61,800	$ -	$ 3,600	$ 65,400
8.5	GROUNDING		$ 5,500	$ -	$ 18,600	$ 24,100
8.6	LIGHTING / TRANSFORMERS & PANELS		$ 26,000	$ 15,000	$ 20,400	$ 61,400
8.7	RACEWAY, CABLE TRAY, & CONDUIT		$ -	$ 89,900	$ 302,900	$ 392,800
8.8	LOW VOLTAGE POWER CABLE & TERMINATION	#4/0 - #12 AWG-600V	$ -	$ 14,400	$ 18,000	$ 32,400
8.9	CONTROL & INSTRUMENT CABLE	#14, #16 & PR # 20 & SHLD WIRE	$ -	$ 16,000	$ 44,900	$ 60,900
90.0	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS		$ 3,169,500	$ 326,600	$ 1,885,500	$ 5,381,600
	SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS		$ 158,500	$ 83,300	$ 694,500	$ 936,300
	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	ACTIVATED CARBON INJECTION SYSTEM	$ 3,328,000	$ 409,900	$ 2,580,000	$ 6,317,900

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9.0	COMPRESSED AIR SYSTEM					
9.1	AIR COMPRESSOR & AUXILIARIES		$ 848,000	$ -	$ 184,600	$ 1,032,600
9.2	PIPING - MECHANICAL		$ 320,600	$ 344,800	$ 875,600	$ 1,541,000
9.3	AIR COMPRESSOR BUILDING - FOUNDATIONS		$ -	$ 249,800	$ 419,700	$ 669,500
9.4	AIR COMPRESSOR BUILDING	120' L X 60' W X 20' H	$ -	$ 612,000	$ -	$ 612,000
9.5	LIGHTING/ TRANSFORMERS & PANELS		$ 11,000	$ 10,500	$ 11,400	$ 32,900
9.6	RACEWAY, CABLE TRAY, & CONDUIT	INCLUDED IN ID FANS, 1.0	$ -	$ -	$ -	$ -
9.7	GROUNDING		$ 4,500	$ -	$ 10,900	$ 15,400
9.8	COMMUNICATIONS		$ -	$ 34,000	$ 26,000	$ 60,000
9.9	LIGHTNING PROTECTION		$ -	$ 10,500	$ 7,500	$ 18,000
90.00	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS		$ 1,184,100	$ 1,261,600	$ 1,535,700	$ 3,981,400
	SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS		$ 59,200	$ 321,700	$ 570,900	$ 951,800
	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	COMPRESSED AIR SYSTEM	$ 1,243,300	$ 1,583,300	$ 2,106,600	$ 4,933,200
10.0	SERVICE WATER SYSTEM					
10.1	PUMPS	INCLUDES SELF-CLEANING STRAIINERS	$ 174,000	$ -	$ 85,900	$ 259,900
10.2	PIPING - MECHANICAL		$ 298,400	$ 342,800	$ 688,300	$ 1,329,500
10.3	PIPING - FIRE PROTECTION SYSTEM		$ 181,200	$ 284,600	$ 673,300	$ 1,139,100
10.4	TANKS		$ -	$ 120,000	$ -	$ 120,000
10.5	SERVICE WATER TANK & PUMP - FOUNDATIONS		$ -	$ 17,300	$ 41,400	$ 58,700
10.6	ELECTRICAL	INCLUDED IN ID FANS, 1.0	$ -	$ -	$ -	$ -
90.0	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS		$ 653,600	$ 764,700	$ 1,488,900	$ 2,907,200
	SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS		$ 32,700	$ 195,000	$ 542,900	$ 770,600
	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	SERVICE WATER SYSTEM	$ 686,300	$ 959,700	$ 2,031,800	$ 3,677,800

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11.0	POTABLE WATER SYSTEM					
11.1	PUMPS		$ 30,000	$ -	$ 18,400	$ 48,400
11.2	PIPING - MECHANICAL		$ 99,500	$ 181,900	$ 448,200	$ 729,600
11.3	TANKS		$ -	$ 8,500	$ -	$ 8,500
11.4	POTABLE WATER TANK & PUMP - FOUNDATIONS		$ -	$ 5,200	$ 9,200	$ 14,400
11.5	ELECTRICAL	INCLUDED IN ID FANS, 1.0	$ -	$ -	$ -	$ -
90.0	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS		$ 129,500	$ 195,600	$ 475,800	$ 800,900
	SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS		$ 6,500	$ 49,900	$ 173,400	$ 229,800
	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	POTABLE WATER SYSTEM	$ 136,000	$ 245,500	$ 649,200	$ 1,030,700
12.0	FGD SUBSTATION					
12.1	TRANSFORMERS		$ 1,560,000	$ -	$ 273,100	$ 1,833,100
12.2	TRANSFORMER PDC	15W X 45' X 10'H. SUBCONTRACT PRICE INCLUDES LABOR	$ 202,500	$ -	$ -	$ 202,500
12.3	TRANSFORMER PDC - FOUNDATION		$ -	$ 73,200	$ 146,900	$ 220,100
12.4	138KV MAIN FEEDER & TERMINATIONS		$ 264,000	$ -	$ 254,000	$ 518,000
12.5	SWITCHGEAR		$ 714,200	$ -	$ 121,600	$ 835,800
12.6	MCC	480V MCC, PER LINE UP	$ 60,000	$ -	$ 3,600	$ 63,600
12.7	CABLE BUS		$ 181,100	$ 18,000	$ 290,200	$ 489,300

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12.8	PANELS - RELAY		$ 100,000	$ -	$ 9,100	$ 109,100
12.9	MIMIC PANELS		$ 17,500	$ -	$ 4,500	$ 22,000
12.10	EMERGENCY POWER SYSTEM		$ 108,300	$ -	$ 24,400	$ 132,700
12.11	GROUNDING		$ 23,300	$ -	$ 59,100	$ 82,400
12.12	LIGHTING/ TRANSFORMERS & PANELS		$ 26,000	$ 30,000	$ 29,500	$ 85,500
12.13	OUTDOOR LIGHTING	NEW AUX YARD LIGHTING - ALLOWANCE	$ 25,000	$ -	$ 56,800	$ 81,800
12.14	RACEWAY, CABLE TRAY, & CONDUIT		$ -	$ 390,600	$ 1,918,600	$ 2,309,200
12.15	DUCT BANK		$ -	$ 26,200	$ 54,300	$ 80,500
12.16	HIGH VOLTAGE POWER CABLE & TERMINATION	1/C # 500KCMIL- 15KV	$ -	$ 16,700	$ 47,100	$ 63,800
12.17	LOW VOLTAGE POWER CABLE & TERMINATION		$ -	$ 96,600	$ 147,700	$ 244,300
12.18	CONTROL & INSTRUMENT CABLE	#14, #16 & PR # 20 & SHLD WIRE	$ -	$ 21,800	$ 61,100	$ 82,900
12.19	FOUNDATION FOR AUX TRANSFORMER		$ -	$ 70,200	$ 205,400	$ 275,600
12.20	FIREWALL FOR TRANSFORMERS		$ -	$ 4,300	$ 7,600	$ 11,900
12.21	COMMUNICATIONS		$ -	$ 17,000	$ 13,000	$ 30,000
12.22	LIGHTNING PROTECTION		$ -	$ 4,000	$ 2,000	$ 6,000
12.23	SECURITY SYSTEM		$ -	$ 8,000	$ 7,000	$ 15,000

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90.0	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS		$ 3,281,900	$ 776,600	$ 3,736,600	$ 7,795,100
	SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS		$ 164,100	$ 198,000	$ 1,350,783	$ 1,712,900
	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	FGD SUBSTATION	$ 3,446,000	$ 974,600	$ 5,087,400	$ 9,508,000
13.0	FGD DCS SYSTEM					
13.1	DCS	3200 I/O POINTS	$ 2,400,000	$ -	$ 813,600	$ 3,213,600
13.2	DCS - VENDOR FIELD SUPPORT	200 MAN DAYS @	$ 300,000	$ -	$ -	$ 300,000
13.3	LOCALLY MOUNTED INSTRUMENTS		$ -	$ 650,400	$ 852,900	$ 1,503,300
90.0	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS		$ 2,700,000	$ 650,400	$ 1,666,500	$ 5,016,900
	SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS		$ 135,000	$ 165,900	$ 622,300	$ 923,200
	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	FGD DCS SYSTEM	$ 2,835,000	$ 816,300	$ 2,288,800	$ 5,940,100
14.0	CEM SYSTEM					
14.1	CEM	PROVIDED BY AEP	$ 1,260,000	$ 540,000	$ 310,000	$ 2,110,000
90.0	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS		$ 1,260,000	$ 540,000	$ 310,000	$ 2,110,000
	SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS		$ -	$ -	$ -	$ 316,500
	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	CEM SYSTEM	$ -	$ -	$ -	$ 2,426,500
15.0	TRUCK & RAIL INFRASTRUCTURE					
15.1	EXISTING RAILROAD IMPROVEMENTS	FOR FULL RAILCAR STORAGE TRACK IMPROVEMENTS - 3250 LF	$ -	$ 660,200	$ 689,200	$ 1,349,400

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15.2	EXISTING RAILROAD IMPROVEMENTS	FOR LOOP TRACK UPGRADE - 5000 LF	$ -	$ 1,008,800	$ 1,055,600	$ 2,064,400
15.3	NEW RAILROAD TRACK	INCLUDES, 132LB RAIL, 7" TIMBERS, TIE PLATES, SPIKES, BOLTS, 12: SUB BALLAST, 12" BALLAST, 12 OZ/SY GEOTEXTILE MEMBRANE, 12" SUBGRADE PREP	$ -	$ 252,000	$ 213,100	$ 465,100
15.4	FIELD FABRICATED TURNOUTS	#8 TURNOUT	$ -	$ 90,000	$ 54,800	$ 144,800
15.5	RAIL SCALE	SUBCONTRACT COST, INCLUDES FOUNDATIONS	$ 212,500	$ -	$ -	$ 212,500
15.6	NEW CONCRETE ENCASEMENT	OVER AND AROUND DUCT BANK CONNECTING THE PLANT TO SWITCHYARD. THIS IS UNDER THE NEW TRACK WORK EXTENSION	$ -	$ 33,200	$ 71,400	$ 104,600
90.0	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS		$ 212,500	$ 2,044,200	$ 2,084,100	$ 4,340,800
	SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS		$ 10,600	$ 521,300	$ 779,600	$ 1,311,500
	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	TRUCK & RAIL INFRASTRUCTURE	$ 223,100	$ 2,565,500	$ 2,863,700	$ 5,652,300
16.0	SITE IMPROVEMENTS - CIVIL WORK					
16.1	SITE GRADING		$ -	$ -	$ 555,200	$ 555,200
16.2	ROADS & SURFACING		$ -	$ 1,204,900	$ 1,667,500	$ 2,872,400
16.3	NEW CONCRETE ENCASEMENT	16' X 4' X 40' - FOR EXISTING ASH PIPE HAUL ROAD CROSSING	$ -	$ 36,500	$ 73,000	$ 109,500

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16.4	TRUCK SCALE & CONCRETE APPROACH		$ 170,000	$ 27,300	$ 92,000	$ 289,300
16.5	PROCESS WATER STORAGE BASIN		$ 60,000	$ 81,600	$ 240,300	$ 381,900
16.6	PROCESS WATER STORAGE BASIN PUMP STRUCTURE - CONCRETE		$ -	$ 47,000	$ 105,400	$ 152,400
16.7	STORM WATER DRAINAGE TRENCH	2' W X 3' DEEP CAST-IN-PLACE CONCRETE TRENCH W/REINFORCING & HS-20 RATED GRATE COVERS	$ -	$ 526,500	$ 535,800	$ 1,062,300
16.8	STORM WATER RUNOFF POND		$ -	$ 15,000	$ 122,600	$ 137,600
16.9	STORM WATER RUNOFF POND PUMP STRUCTURE - CONCRETE		$ 90,000	$ 42,300	$ 182,200	$ 314,500
16.10	OILY WATER SEWER		$ 4,500	$ 112,600	$ 236,000	$ 353,100
16.11	OIL SEPARATOR	500 GPM W/ INTEGRAL LIFT STATION	$ 100,000	$ -	$ 116,100	$ 216,100
16.12	SANITARY SEWER		$ -	$ 22,200	$ 96,900	$ 119,100
16.13	SANITARY LIFT STATION	PACKAGED TYPE COMPLETE WITH PUMPS, 100,000 GPD	$ 150,000	$ -	$ 49,200	$ 199,200
16.14	CONSTRUCTION LAYDOWN AREA	ALLOWANCE FOR 10 ACRES, DOES NOT INCLUDE LAND ACQUISITION, IF REQUIRED	$ -	$ 700,000	$ 828,000	$ 1,528,000
16.15	CRAFT PARKING	DOES NOT INCLUDE LAND ACQUISITION, IF REQUIRED. ALLOWANCE FOR 20,000 SY INCLUDES: 6" BASE COURSE 10 OZ/SY GEOTEXTILE 12" SUBGRADE PREP	$ -	$ 180,000	$ 414,200	$ 594,200

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16.16	CONTRACTOR OFFICES (AREA)	DOES NOT INCLUDE LAND ACQUISITION, IF REQUIRED. ALLOWANCE FOR 5,000 SY AREA (TRAILERS BY CONTRACTORS) INCLUDES: 6" BASE COURSE 10 OZ/SY GEOTEXTILE 12" SUBGRADE PREP	$ -	$ 45,000	$ 103,600	$ 148,600
16.17	TRUCK WASH AREA		$ -	$ 47,300	$ 83,100	$ 130,400
16.18	NEW PERMANENT STORAGE	INCLUDES LIGHTING AND H&V. SUBCONTRACT PRICE INCLUDES ELECTRICAL AND H&V	$ 850,000	$ -	$ -	$ 850,000
16.19	FOUNDATIONS FOR THE NEW WAREHOUSE		$ -	$ 273,500	$ 450,200	$ 723,700
16.20	NEW TEMPORARY STORAGE	WEATHER TIGHT CANVAS ENCLOSURE. INCLUDES LIGHTING AND H&V. SUBCONTRACT PRICE INCLUDES ELECTRICAL AND H&V	$ 450,000	$ -	$ -	$ 450,000
16.21	FOUNDATIONS FOR TEMPORARY STORAGE		$ -	$ 99,500	$ 157,200	$ 256,700
16.22	LABOR BUS SERVICE FROM PARKING LOT TO CONSTRUCTION AREA AND ACCESS CONTROL	ALLOWANCE FOR 36 MONTHS BASED ON 2 BUSES OPERATING CONTINUOUSLY FOR 5X10 WORKWEEK. SUBCONTRACT COST INCLUDES EQUIPMENT, MATERIAL AND LABOR	$ 1,368,000	$ -	$ -	$ 1,368,000

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16.23	EROSION & SEDIMENT CONTROL	0	$ -	$ 12,500	$ 20,500	$ 33,000
90.0	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS		$ 3,242,500	$ 3,473,700	$ 6,129,000	$ 12,845,200
	SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS		$ 162,100	$ 885,800	$ 2,226,600	$ 3,274,500
	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	SITE IMPROVEMENTS - CIVIL WORK	$ 3,404,600	$ 4,359,500	$ 8,355,600	$ 16,119,700
17.0	BOP ITEMS					
17.1	PIPE INSULATION	AVERAGE 6" PIPE SIZE	$ -	$ 34,000	$ 106,000	$ 140,000
17.2	HEAT TRACING		$ -	$ 175,600	$ 248,500	$ 424,100
17.3	TOUCH UP PAINT (INCLUDES PAINTING CS PIPE)		$ -	$ 176,700	$ 677,900	$ 854,600
17.4	HOISTS & TROLLEYS		$ 150,000	$ 175,000	$ 204,400	$ 529,400
17.5	MISC AUX STEEL FOR PIPE SUPPORTS	FIELD FABRICATED	$ -	$ 122,500	$ 510,600	$ 633,100
17.6	MISC PIPE SUPPORT FOUNDATIONS		$ -	$ 10,500	$ 21,000	$ 31,500
17.7	EYE WASH STATIONS	WITH 50 KW HEATERS	$ 30,000	$ 5,000	$ 30,700	$ 65,700

Sargent & Lundy, LLC	AEP	Estimate No.:	30727C
	BIG SANDY UNIT 2	Project No.:	12721-000
	FGD PROJECT - NID BASE EST (N/ESP)-1B - 3.0 LB/MM BTU	Date:	9/29/2010
	COST ESTIMATE SUMMARY	Preparer:	MNO
		Reviewer:	JMK
		Approver:	PEF

Account No.	Item Description	Scope Definition	Total Equipment Cost	Total Material Cost	Total Construction & Erection Cost	Total Projected Cost
17.8	FIRE PROTECTION FOR MISC BUILDINGS & AREAS	STAND PIPE FOR BUILDINGS	$ -	$ 300,000	$ 245,300	$ 545,300
90.0	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS		$ 180,000	$ 999,300	$ 2,044,400	$ 3,223,700
	SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS		$ 9,000	$ 254,822	$ 786,346	$ 1,050,167
	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	BOP ITEMS	$ 189,000	$ 1,254,100	$ 2,830,700	$ 4,273,900
18.0	CAPITAL REPLACEMENTS - REMOVAL AND RELOCATION OF EXISTING EQUIPMENT AND INFRASTRUCTURE					
18.1	RELOCATE HYDROGEN STORAGE TANK		$ -	$ 15,600	$ 86,800	$ 102,400
18.2	NEW HYDROGEN LINE TO PLANT		$ -	$ 62,100	$ 150,600	$ 212,700
18.3	RELOCATE MISC. UNDERGROUND UTILITIES	ALLOWANCE	$ -	$ 125,000	$ 170,500	$ 295,500
18.4	OUTAGE TIE-IN DUCTWORK	ALLOWANCE FOR 85 TON DUCTWORK	$ -	$ 276,300	$ 527,700	$ 804,000
18.5	RELOCATED WAREHOUSE - FOUNDATIONS		$ -	$ 342,600	$ 534,900	$ 877,500
18.6	RELOCATE EXISTING WAREHOUSE BUILDING	150' L X 75' W X 25' H	$ -	$ 95,600	$ 1,121,500	$ 1,217,100
90.0	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS		$ -	$ 917,200	$ 2,592,000	$ 3,509,200

Sargent & Lundy, LLC

AEP
BIG SANDY UNIT 2
FGD PROJECT - NID BASE EST (N/ESP)-1B - 3.0 LB/MM BTU
COST ESTIMATE SUMMARY

Estimate No.: 30727C
Project No.: 12721-000
Date: 9/29/2010
Preparer: MNO
Reviewer: JMK
Approver: PEF

Account No.	Item Description	Scope Definition	Total Equipment Cost	Total Material Cost	Total Construction & Erection Cost	Total Projected Cost
	SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS		$ -	$ 233,900	$ 927,100	$ 1,161,000
	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	CAPITAL REPLACEMENTS - REMOVAL AND RELOCATION OF EXISTING EQUIPMENT AND INFRASTRUCTURE	$ -	$ 1,151,100	$ 3,519,100	$ 4,670,200
19.0	ARSENIC, ASBESTOS , LEAD ABATEMENT					
19.1	ARSENIC, ASBESTOS , LEAD ABATEMENT	PROVIDED BY AEP	$ -	$ -	$ -	$ 750,000
90.0	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS		$ -	$ -	$ -	$ 750,000
	SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS		$ -	$ -	$ -	$ 112,500
	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	ARSENIC, ASBESTOS , LEAD ABATEMENT	$ -	$ -	$ -	$ 862,500
99.0	OVERALL - EQUIPMENT, MATERIAL AND LABOR COSTS		$ 95,385,900	$ 44,707,200	$ 116,652,900	$ 276,846,000
	OVERALL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS		$ 5,381,300	$ 11,343,600	$ 43,205,800	$ 63,181,200
	OVERALL TOTAL DIRECT & CONSTRUCTION INDIRECT COST		$ 100,767,200	$ 56,050,800	$ 159,858,700	$ 340,027,200
	OVERALL PROJECT INDIRECT COSTS					
	ENGINEERING, PROCUREMENT, & PROJECT SERVICES					$ 25,000,000
	CONSTRUCTION MANAGEMENT					$ 10,200,800
	S-U / COMMISSIONING					$ 3,400,300
	CRAFT START-UP SUPPORT					$ 1,374,500
	INITIAL FILLS					$ 1,020,100

Sargent & Lundy, LLC

AEP
BIG SANDY UNIT 2
FGD PROJECT - NID BASE EST (N/ESP)-1B - 3.0 LB/MM BTU
COST ESTIMATE SUMMARY

Estimate No.: 30727C
Project No.: 12721-000
Date: 9/29/2010
Preparer: MNO
Reviewer: JMK
Approver: PEF

Account No.	Item Description	Scope Definition	Total Equipment Cost	Total Material Cost	Total Construction & Erection Cost	Total Projected Cost
	OPERATOR & TRAINING MANUALS					$ 300,000
	SUBCONTRACTORS (NOISE & DUCTWORK CONSULTANT, GEOTECHNICAL INVESTIGATION)					$ 400,000
	NOISE ABATEMENT FOR 85 DBA REQUIREMENT	FOR ID FAN, NID MODULES, TRANSFORMERS, BOP, DUCTWORK, ACOUSTIC BARRIERS FOR BOUNDARY LIMITS				$ 2,600,000
	SUBTOTAL - INDIRECT COSTS					$ 44,295,700
	TOTAL PROJECT DIRECT AND INDIRECT COSTS					$ 384,322,900
	SPARE PARTS:					$ 1,511,500
	SPARE PARTS - CAPITALIZED	0.90				$ 906,900
	SPARE PARTS - FIRST YEAR OF OPERATION	0.60				$ 604,600
	CONTINGENCY	14.287				$ 55,124,800
	ESCALATION					$ 48,734,300
	EQUIPMENT					$ 16,011,200
	MATERIAL					$ 5,863,300
	LABOR					$ 21,653,900
	INDIRECTS					$ 5,205,900
	TOTAL PROJECT COST					$ 489,693,500
	REFERENCE COSTS:					
A	ESP DEMOLITION					$ 832,300
B	REMOVE BOOSTER AIR FANS					$ 111,000
C	REMOVAL OF FUEL OIL TANK		$ 1,200,000	$ 80,000	$ 469,400	$ 1,749,400

ATTACHMENT 5-16
NID Summary Capital Cost Estimate No. 30722 Est-2A ESP in Service*
(1.7 lb SO_2/MMbtu)

* - Estimates 2A, 2B, 3A, 3B, 4A and 4B contain only accounts whose costs are different from the corresponding base estimates 1A and 1B.

Sargent & Lundy, LLC

AEP
BIG SANDY UNIT 2
FGD PROJECT - NID EST (ESP) - 2A - 1.7 LB/MM BTU
COST ESTIMATE SUMMARY

Estimate No.: 30722C
Project No.: 12721-000
Date: 9/29/2010
Preparer: MNO
Reviewer: JMK
Approver: PEF

Account No.	Item Description	Scope Definition	Total Equipment Cost	Total Material Cost	Total Construction & Erection Cost	Total Projected Cost
1.0	ID FANS					
2.0	NID MODULES					
2.1	MECHANICAL EQUIPMENT	A 12-MODULE NID SYSTEM (160' X 160') INCLUDING LIME DAY SILOS, HYDRATORS, MIXERS, J-DUCTS, FABRIC FILTER MODULES, ALL INTERNAL ELEMENTS (BAGS, CAGES, ASH HOPPERS, 2 BROKEN BAG DETECTORS/COMPARTMENT), ASH RECYCLE SYSTEM, VACUUM PIPING, AND ALL INTERNAL PIPING & DUCTWORK FOR THE VARIOUS MODULES.	$ 48,579,000	$ -	$ 31,564,800	$ 80,143,800
2.2	INSULATION FOR NID MODULES	SUBCONTRACT COST INCLUDES LABOR	$ 2,419,200	$ -	$ -	$ 2,419,200
2.3	PENTHOUSE FOR NID MODULES	14 FT HIGH, 25600 SF	$ 58,100	$ 1,316,900	$ 1,747,600	$ 3,122,600
2.4	BOTTOM ENCLOSURE FOR NID MODULES	40 FT HIGH	$ 92,200	$ 2,428,900	$ 2,544,900	$ 5,066,000
2.5	PIPING & SUPPORTS - MECHANICAL		$ 125,200	$ 174,500	$ 385,900	$ 685,600
2.6	DUCTWORK		$ -	$ 6,175,000	$ 11,794,600	$ 17,969,600
2.7	DUCT SUPPORT STEEL	THREE COAT SHOP PAINT	$ -	$ 2,755,000	$ 2,771,700	$ 5,526,700

Sargent & Lundy, LLC	AEP	Estimate No.:	30722C
	BIG SANDY UNIT 2	Project No.:	12721-000
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	COST ESTIMATE SUMMARY	Preparer:	MNO
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		Approver:	PEF

Account No.	Item Description	Scope Definition	Total Equipment Cost	Total Material Cost	Total Construction & Erection Cost	Total Projected Cost
2.8	DUCTWORK INSULATION & LAGGING		$ -	$ 2,040,000	$ 3,995,500	$ 6,035,500
2.9	NID MODULE- FOUNDATIONS		$ -	$ 1,087,000	$ 1,778,100	$ 2,865,100
2.10	NID MODULE - SUPPORT STEEL AND ACCESS GALLERY		$ -	$ 1,152,000	$ 2,863,700	$ 4,015,700
2.11	GROUNDING		$ -	$ 16,000	$ 46,100	$ 62,100
2.12	LIGHTING/ TRANSFORMERS & PANELS		$ 27,000	$ 75,000	$ 57,300	$ 159,300
2.13	RACEWAY, CABLE TRAY, & CONDUIT	INCLUDED IN ID FANS, 1.0	$ -	$ -	$ -	$ -
90.00	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS		$ 51,300,700	$ 17,220,300	$ 59,550,200	$ 128,071,200
	SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS		$ 3,240,000	$ 4,391,200	$ 22,496,200	$ 30,127,400
	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	NID MODULES	$ 54,540,700	$ 21,611,500	$ 82,046,400	$ 158,198,600
3.0	NEW STACK					
4.0	LIME HANDLING SYSTEM					
4.1	LIME STORAGE SILO		$ 3,054,000	$ -	$ -	$ 3,054,000
4.2	LIME UNLOADING SYSTEM	INCLUDE PNEUMATIC HANDLING SYSTEM, THREE VACUUM EXHAUSTER, TWO FILTER SEPARATORS	$ 350,000	$ -	$ 281,100	$ 631,100
4.3	LIME TRANSPORT SYSTEM TO DAY BINS	INCLUDE PNEUMATIC HANDLING SYSTEM, THREE VACUUM EXHAUSTERS, TWO FILTER SEPARATORS	$ 1,100,000	$ -	$ 654,200	$ 1,754,200
4.4	PIPING - MECHANICAL		$ 88,700	$ 130,300	$ 342,600	$ 561,600

Sargent & Lundy, LLC	AEP	Estimate No.:	30722C
	BIG SANDY UNIT 2	Project No.:	12721-000
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	COST ESTIMATE SUMMARY	Preparer:	MNO
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Account No.	Item Description	Scope Definition	Total Equipment Cost	Total Material Cost	Total Construction & Erection Cost	Total Projected Cost
4.5	LIME STORAGE SILO ACCESS STAIR TOWER		$ -	$ 159,500	$ 160,500	$ 320,000
4.6	PIPE RACK FOR LIME HANDLING, WASTE HANDLING AND MISC MECHANICAL PIPING	THREE COAT SHOP PAINT	$ -	$ 1,885,000	$ 1,896,400	$ 3,781,400
4.7	RAIL CAR UNLOADING AREA - FOUNDATIONS	20' X 120' - NO SIDING	$ -	$ 42,700	$ 90,100	$ 132,800
4.8	LIME UNLOADING BLOWER / ELECTRICAL BUILDING - FOUNDATIONS		$ -	$ 69,600	$ 147,600	$ 217,200
4.9	LIME UNLOADING BLOWER / ELECTRICAL BUILDING	100' L X 30' W X 30' H	$ 75,000	$ 335,000	$ 24,400	$ 434,400
4.10	CONCRETE PIT FOR THE ELEVATOR		$ -	$ 2,300	$ 6,900	$ 9,200
4.11	LIME STORAGE SILO - FOUNDATIONS	INCLUDES FOUNDATIONS FOR LIME TRANSPORT SYSTEM PRESSURE BLOWERS	$ -	$ 224,100	$ 405,200	$ 629,300
4.12	LIME STORAGE SILO ACCESS STAIR TOWER - FOUNDATIONS		$ -	$ 14,200	$ 28,600	$ 42,800
4.13	PIPE RACK - FOUNDATIONS		$ -	$ 239,600	$ 588,600	$ 828,200
4.14	TRANSFORMERS	SUS TRANSFORMERS: 33F, 33G, 13.8KV-480V,3PHASE, 3 WINDING XFMR	$ 170,000	$ -	$ 54,600	$ 224,600
4.15	SWITCHGEAR	480V LOW VOLTAGE (33F/G), SWITCHGEAR	$ 196,000	$ -	$ 104,700	$ 300,700
4.16	CABLE BUS DUCT		$ 134,700	$ 10,800	$ 200,200	$ 345,700
4.17	MCC		$ 61,800	$ -	$ 3,600	$ 65,400
4.18	MIMIC PANELS		$ 17,500	$ -	$ 1,400	$ 18,900
4.19	EMERGENCY POWER SYSTEM		$ 108,300	$ -	$ 24,400	$ 132,700
4.20	GROUNDING		$ 13,300	$ -	$ 41,300	$ 54,600
4.21	LIGHTING/ TRANSFORMERS & PANELS		$ 52,000	$ 135,000	$ 104,500	$ 291,500
4.22	RACEWAY, CABLE TRAY, & CONDUIT		$ -	$ 310,900	$ 1,537,100	$ 1,848,000
4.23	HIGH VOLTAGE POWER CABLE & TERMINATION	1/C # 500KCMIL- 15KV	$ -	$ 144,600	$ 407,800	$ 552,400
4.24	MEDIUM VOLTAGE POWER CABLE & TERMINATION	1/C 350KCMIL-5KV	$ -	$ 66,200	$ 282,300	$ 348,500

Sargent & Lundy, LLC

AEP
BIG SANDY UNIT 2
FGD PROJECT - NID EST (ESP) - 2A - 1.7 LB/MM BTU
COST ESTIMATE SUMMARY

Estimate No.: 30722C
Project No.: 12721-000
Date: 9/29/2010
Preparer: MNO
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Approver: PEF

Account No.	Item Description	Scope Definition	Total Equipment Cost	Total Material Cost	Total Construction & Erection Cost	Total Projected Cost
4.25	LOW VOLTAGE POWER CABLE & TERMINATION		$ -	$ 93,000	$ 143,200	$ 236,200
4.26	CONTROL & INSTRUMENT CABLE	#14, #16 & PR # 20 & SHLD WIRE	$ -	$ 26,200	$ 73,600	$ 99,800
4.27	DUCT BANK	DUCT BANK WITH 4-5" & 4-3" CONDUITS, 2.38' H X 3.79' W	$ -	$ 61,100	$ 116,200	$ 177,300
4.28	FOUNDATIONS FOR TRANSFORMERS	FOR XFMR 33F, 33G, INCLUDES MUD MAT	$ -	$ 3,500	$ 10,300	$ 13,800
4.29	COMMUNICATIONS		$ -	$ 34,000	$ 26,000	$ 60,000
4.30	LIGHTNING PROTECTION		$ -	$ 6,000	$ 4,700	$ 10,700
4.31	SECURITY SYSTEM		$ -	$ 8,000	$ 7,000	$ 15,000
90.00	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS		$ 5,421,300	$ 4,001,600	$ 7,769,100	$ 17,192,000
	SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS		$ 271,100	$ 1,020,400	$ 2,809,000	$ 4,100,500
	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	LIME HANDLING SYSTEM	$ 5,692,400	$ 5,022,000	$ 10,578,100	$ 21,292,500
5.0	LIME SLAKER BUILDING	NOT REQUIRED FOR NID				
6.0	BYPRODUCT WASTE & FLY ASH HANDLING SYSTEMS					
6.1	BYPRODUCT WASTE HANDLING - MECHANICAL EQUIPMENT	INCLUDES PNEUMATIC HANDLING SYSTEM, THREE PRESSURE BLOWERS, ONE BIN VENT FILTER, ASH UNLOADING SYSTEM	$ 1,767,000	$ -	$ 1,075,400	$ 2,842,400

Sargent & Lundy, LLC	AEP	Estimate No.:	30722C
	BIG SANDY UNIT 2	Project No.:	12721-000
	FGD PROJECT - NID EST (ESP) - 2A - 1.7 LB/MM BTU	Date:	9/29/2010
	COST ESTIMATE SUMMARY	Preparer:	MNO
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		Approver:	PEF

Account No.	Item Description	Scope Definition	Total Equipment Cost	Total Material Cost	Total Construction & Erection Cost	Total Projected Cost
6.2	FLY ASH HANDLING - MECHANICAL EQUIPMENT	INCLUDES PNEUMATIC HANDLING SYSTEM, TWO PRESSURE EXHAUSTERS, TRANSFER STATION, ONE BIN VENT FILTER, ASH UNLOADING SYSTEM	$ 2,285,000	$ -	$ 1,431,100	$ 3,716,100
6.3	BUILDING SUMP PUMPS	FOR BUILDINGS - DUPLEX. INCLUDES CHECK & ISOLATION VALVES.	$ 28,000	$ -	$ 12,300	$ 40,300
6.4	AGITATOR FOR SUMP PUMPS	5 HP	$ 12,000	$ -	$ 4,600	$ 16,600
6.5	PIPING - MECHANICAL		$ 142,800	$ 131,000	$ 408,700	$ 682,500
6.6	BYPRODUCT WASTE SILO	CONCRETE SILO 45' DIA X 80' H - 1625 TONS - SUBCONTRACT COST INCLUDES LABOR	$ 1,375,000	$ -	$ -	$ 1,375,000
6.7	RECYCLE SILO	NOT REQUIRED FOR NID	$ -	$ -	$ -	$ -
6.8	FLY ASH SILO	STEEL -STORAGE SILO, 12' DIA X 13' H, 25TONS	$ 25,000	$ 20,300	$ 61,400	$ 106,700
6.9	BYPRODUCT WASTE STORAGE SILO - FOUNDATIONS		$ -	$ 132,300	$ 253,100	$ 385,400
6.10	FLY ASH SILO - FOUNDATIONS		$ -	$ 9,500	$ 26,500	$ 36,000
6.11	BYPRODUCT TRANSPORT BLOWER BUILDING - FOUNDATIONS		$ -	$ 97,600	$ 172,100	$ 269,700
6.12	BYPRODUCT TRANSPORT BLOWER BUILDING	90' L X 30' W X 20' H	$ 40,000	$ 241,500	$ 26,200	$ 307,700
6.13	FLY ASH BLOWER AND ELECTRICAL BUILDING - FOUNDATIONS		$ -	$ 82,800	$ 150,900	$ 233,700
6.14	FLY ASH BLOWER AND ELECTRICAL BUILDING	110' L X 30' W X 25' H	$ 75,000	$ 276,500	$ 24,400	$ 375,900

Sargent & Lundy, LLC

AEP
BIG SANDY UNIT 2
FGD PROJECT - NID EST (ESP) - 2A - 1.7 LB/MM BTU
COST ESTIMATE SUMMARY

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Project No.: 12721-000
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Account No.	Item Description	Scope Definition	Total Equipment Cost	Total Material Cost	Total Construction & Erection Cost	Total Projected Cost
6.15	LOAD OUT AREA PDC	SUBCONTRACT PRICE INCLUDES LABOR. COMPLETE WITH HVAC, & FINISHES.	$ -	$ 300,000	$ -	$ 300,000
6.16	MCC	480V MCC PER LINE UP	$ 120,000	$ -	$ 7,300	$ 127,300
6.17	EMERGENBCY POWER SYSTEM		$ 185,500	$ -	$ 40,000	$ 225,500
6.18	LIGHTING/ TRANSFORMERS & PANELS		$ 18,500	$ 75,000	$ 53,200	$ 146,700
6.19	RACEWAY, CABLE TRAY, & CONDUIT		$ -	$ 40,700	$ 236,200	$ 276,900
6.20	GROUNDING		$ -	$ 4,500	$ 10,900	$ 15,400
6.21	MEDIUM VOLTAGE POWER CABLE & TERMINATION	1/C # 2/0-5KV	$ -	$ 9,500	$ 47,900	$ 57,400
6.22	LOW VOLTAGE POWER CABLE & TERMINATION		$ -	$ 80,900	$ 100,600	$ 181,500
6.23	CONTROL & INSTRUMENT CABLE	#14, #16 & PR # 20 & SHLD WIRE	$ -	$ 38,400	$ 107,800	$ 146,200
6.24	DUCT BANK	DUCT BANK WITH 4-5" & 4-3" CONDUITS	$ -	$ 6,200	$ 10,600	$ 16,800
6.25	COMMUNICATIONS		$ -	$ 70,000	$ 50,000	$ 120,000
6.26	LIGHTNING PROTECTION		$ -	$ 19,000	$ 14,000	$ 33,000
6.27	SECURITY SYSTEM		$ -	$ 16,000	$ 14,000	$ 30,000
90.0	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS		$ 6,098,800	$ 1,672,000	$ 4,339,200	$ 12,064,700
	SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS		$ 304,900	$ 426,400	$ 1,611,200	$ 2,342,500
	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	BYPRODUCT WASTE & FLY ASH HANDLING SYSTEMS	$ 6,403,700	$ 2,098,400	$ 5,950,400	$ 14,407,200
7.0	ABSORBER ISLAND	NOT REQUIRED FOR NID				
8.0	ACTIVATED CARBON INJECTION SYSTEM					

Sargent & Lundy, LLC

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9.0	COMPRESSED AIR SYSTEM					
10.0	SERVICE WATER SYSTEM					
11.0	POTABLE WATER SYSTEM					
12.0	FGD SUBSTATION					
13.0	FGD DCS SYSTEM					
14.0	CEM SYSTEM					
15.0	TRUCK & RAIL INFRASTRUCTURE					
16.0	SITE IMPROVEMENTS - CIVIL WORK					
17.0	BOP ITEMS					
17.1	PIPE INSULATION		$ -	$ 34,000	$ 106,000	$ 140,000
17.2	HEAT TRACING		$ -	$ 175,600	$ 248,500	$ 424,100
17.3	TOUCH UP PAINT (INCLUDES PAINTING CS PIPE)		$ -	$ 176,700	$ 677,900	$ 854,600
17.4	HOISTS & TROLLEYS		$ 150,000	$ 175,000	$ 204,400	$ 529,400
17.5	MISC AUX STEEL FOR PIPE SUPPORTS		$ -	$ 122,500	$ 510,600	$ 633,100
17.6	MISC PIPE SUPPORT FOUNDATIONS		$ -	$ 10,500	$ 21,000	$ 31,500
17.7	EYE WASH STATIONS		$ 30,000	$ 5,000	$ 30,700	$ 65,700
17.8	FIRE PROTECTION FOR MISC BUILDINGS & AREAS		$ -	$ 300,000	$ 245,300	$ 545,300
90.0	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS		$ 180,000	$ 999,300	$ 2,044,400	$ 3,223,700
	SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS		$ 9,000	$ 254,822	$ 786,346	$ 1,050,167
	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	BOP ITEMS	$ 189,000	$ 1,254,100	$ 2,830,700	$ 4,273,900

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18.0	CAPITAL REPLACEMENTS - REMOVAL AND RELOCATION OF EXISTING EQUIPMENT AND INFRASTRUCTURE					
19.0	ARSENIC, ASBESTOS , LEAD ABATEMENT					
99.0	OVERALL - EQUIPMENT, MATERIAL AND LABOR COSTS		$ 88,903,600	$ 47,437,400	$ 120,261,900	$ 276,657,600
	OVERALL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS		$ 5,057,200	$ 12,039,800	$ 44,461,100	$ 64,808,600
	OVERALL TOTAL DIRECT & CONSTRUCTION INDIRECT COST		$ 93,960,800	$ 59,477,200	$ 164,723,000	$ 341,466,200
	OVERALL PROJECT INDIRECT COSTS					
	ENGINEERING, PROCUREMENT, & PROJECT SERVICES					$ 25,000,000
	CONSTRUCTION MANAGEMENT					$ 10,244,000
	S-U / COMMISSIONING					$ 3,414,700
	CRAFT START-UP SUPPORT					$ 1,417,000
	INITIAL FILLS					$ 1,024,400
	OPERATOR & TRAINING MANUALS					$ 300,000
	SUBCONTRACTORS (NOISE & DUCTWORK CONSULTANT, GEOTECHNICAL INVESTIGATION)					$ 400,000
	NOISE ABATEMENT FOR 85 DBA REQUIREMENT	FOR ID FAN, NID MODULES, TRANSFORMERS, BOP, DUCTWORK, ACOUSTIC BARRIERS FOR BOUNDARY LIMITS				$ 2,600,000
	SUBTOTAL - INDIRECT COSTS					$ 44,400,100
	TOTAL PROJECT DIRECT AND INDIRECT COSTS					$ 385,866,300

Sargent & Lundy, LLC

AEP
BIG SANDY UNIT 2
FGD PROJECT - NID EST (ESP) - 2A - 1.7 LB/MM BTU
COST ESTIMATE SUMMARY

Estimate No.: 30722C
Project No.: 12721-000
Date: 9/29/2010
Preparer: MNO
Reviewer: JMK
Approver: PEF

Account No.	Item Description	Scope Definition	Total Equipment Cost	Total Material Cost	Total Construction & Erection Cost	Total Projected Cost
	SPARE PARTS:					$ 1,409,400
	SPARE PARTS - CAPITALIZED	0.90				$ 845,640
	SPARE PARTS - FIRST YEAR OF OPERATION	0.60				$ 563,760
	CONTINGENCY	14.2				$ 54,896,800
	ESCALATION					$ 48,570,900
	EQUIPMENT					$ 14,929,700
	MATERIAL					$ 6,158,000
	LABOR					$ 22,265,100
	INDIRECTS					$ 5,218,100
	TOTAL PROJECT COST					$ 490,743,400
	REFERENCE COSTS:					
A	REMOVAL OF FUEL OIL TANK		$ 1,200,000	$ 80,000	$ 469,400	$ 1,749,400

ATTACHMENT 5-17
NID Summary Capital Cost Estimate No. 30726 Est-2B ESP not in Service*
(1.7 lb SO_2/MMbtu)

* - Estimates 2A, 2B, 3A, 3B, 4A and 4B contain only accounts whose costs are different from the corresponding base estimates 1A and 1B.

Sargent & Lundy, LLC

AEP
BIG SANDY UNIT 2
FGD PROJECT - NID EST (N/ESP)-2B - 1.7 LB/MM BTU
COST ESTIMATE SUMMARY

Estimate No.: 30726C
Project No.: 12721-000
Date: 9/29/2010
Preparer: MNO
Reviewer: JMK
Approver: PEF

Account No.	Item Description	Scope Definition	Total Equipment Cost	Total Material Cost	Total Construction & Erection Cost	Total Projected Cost
1.0	ID FANS					
2.0	NID MODULES					
2.1	MECHANICAL EQUIPMENT	A 12-MODULE NID SYSTEM	$ 49,600,000	$ -	$ 31,965,300	$ 81,565,300
2.2	INSULATION FOR NID MODULES	SUBCONTRACT COST	$ 2,419,200	$ -	$ -	$ 2,419,200
2.3	PENTHOUSE FOR NID MODULES	14 FT HIGH, 25600 SF	$ 58,100	$ 1,316,900	$ 1,747,600	$ 3,122,600
2.4	BOTTOM ENCLOSURE FOR NID MODULES	40 FT HIGH	$ 92,200	$ 2,428,900	$ 2,544,900	$ 5,066,000
2.5	PIPING & SUPPORTS - MECHANICAL		$ 125,200	$ 174,500	$ 385,900	$ 685,600
2.6	DUCTWORK		$ -	$ 4,797,000	$ 9,162,600	$ 13,959,600
2.7	DUCT SUPPORT STEEL	THREE COAT SHOP PAINT	$ -	$ 2,140,200	$ 2,153,200	$ 4,293,400
2.8	DUCTWORK INSULATION & LAGGING		$ -	$ 1,632,000	$ 3,196,400	$ 4,828,400
2.9	NID MODULE- FOUNDATIONS		$ -	$ 1,087,000	$ 1,778,100	$ 2,865,100
2.10	NID MODULE - SUPPORT STEEL AND ACCESS GALLERY		$ -	$ 1,152,000	$ 2,863,700	$ 4,015,700
2.11	GROUNDING		$ -	$ 16,000	$ 46,100	$ 62,100
2.12	LIGHTING/ TRANSFORMERS & PANELS		$ 27,000	$ 75,000	$ 57,300	$ 159,300
2.13	RACEWAY, CABLE TRAY, & CONDUIT	INCLUDED IN ID FANS, 1.0	$ -	$ -	$ -	$ -
90.00	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS		$ 52,321,700	$ 14,819,500	$ 55,901,100	$ 123,042,300
	SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS		$ 3,291,100	$ 3,779,000	$ 21,220,500	$ 28,290,500
	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	NID MODULES	$ 55,612,800	$ 18,598,500	$ 77,121,600	$ 151,332,800
3.0	NEW STACK					
4.0	LIME HANDLING SYSTEM					
4.1	LIME STORAGE SILO		$ 3,054,000	$ -	$ -	$ 3,054,000
4.2	LIME UNLOADING SYSTEM	INCLUDE PNEUMATIC	$ 350,000	$ -	$ 281,100	$ 631,100
4.3	LIME TRANSPORT SYSTEM TO DAY BINS	INCLUDE PNEUMATIC	$ 1,100,000	$ -	$ 654,200	$ 1,754,200
4.4	PIPING - MECHANICAL		$ 88,700	$ 130,300	$ 342,600	$ 561,600
4.5	LIME STORAGE SILO ACCESS STAIR TOWER		$ -	$ 159,500	$ 160,500	$ 320,000

Sargent & Lundy, LLC	AEP	Estimate No.:	30726C
	BIG SANDY UNIT 2	Project No.:	12721-000
	FGD PROJECT - NID EST (N/ESP)-2B - 1.7 LB/MM BTU	Date:	9/29/2010
	COST ESTIMATE SUMMARY	Preparer:	MNO
		Reviewer:	JMK
		Approver:	PEF

Account No.	Item Description	Scope Definition	Total Equipment Cost	Total Material Cost	Total Construction & Erection Cost	Total Projected Cost
4.6	PIPE RACK FOR LIME HANDLING, WASTE HANDLING AND MISC MECHANICAL PIPING	THREE COAT SHOP PAINT	$ -	$ 1,885,000	$ 1,896,400	$ 3,781,400
4.7	RAIL CAR UNLOADING AREA - FOUNDATIONS	20' X 120' - NO SIDING	$ -	$ 42,700	$ 90,100	$ 132,800
4.8	LIME UNLOADING BLOWER / ELECTRICAL BUILDING - FOUNDATIONS		$ -	$ 69,600	$ 147,600	$ 217,200
4.9	LIME UNLOADING BLOWER / ELECTRICAL BUILDING	100' L X 30' W X 30' H	$ 75,000	$ 335,000	$ 24,400	$ 434,400
4.10	CONCRETE PIT FOR THE ELEVATOR		$ -	$ 2,300	$ 6,900	$ 9,200
4.11	LIME STORAGE SILO - FOUNDATIONS	INCLUDES FOUNDATIONS	$ -	$ 224,100	$ 405,200	$ 629,300
4.12	LIME STORAGE SILO ACCESS STAIR TOWER - FOUNDATIONS		$ -	$ 14,200	$ 28,600	$ 42,800
4.13	PIPE RACK - FOUNDATIONS		$ -	$ 239,600	$ 588,600	$ 828,200
4.14	TRANSFORMERS	SUS TRANSFORMERS: 33F,	$ 170,000	$ -	$ 54,600	$ 224,600
4.15	SWITCHGEAR	480V LOW VOLTAGE	$ 196,000	$ -	$ 104,700	$ 300,700
4.16	CABLE BUS DUCT		$ 134,700	$ 10,800	$ 200,200	$ 345,700
4.17	MCC		$ 61,800	$ -	$ 3,600	$ 65,400
4.18	MIMIC PANELS		$ 17,500	$ -	$ 1,400	$ 18,900
4.19	EMERGENCY POWER SYSTEM		$ 108,300	$ -	$ 24,400	$ 132,700
4.20	GROUNDING		$ 13,300	$ -	$ 41,300	$ 54,600
4.21	LIGHTING/ TRANSFORMERS & PANELS		$ 52,000	$ 135,000	$ 104,500	$ 291,500
4.22	RACEWAY, CABLE TRAY, & CONDUIT		$ -	$ 310,900	$ 1,537,100	$ 1,848,000
4.23	HIGH VOLTAGE POWER CABLE & TERMINATION	1/C # 500KCMIL- 15KV	$ -	$ 144,600	$ 407,800	$ 552,400
4.24	MEDIUM VOLTAGE POWER CABLE & TERMINATION	1/C 350KCMIL-5KV	$ -	$ 66,200	$ 282,300	$ 348,500
4.25	LOW VOLTAGE POWER CABLE & TERMINATION		$ -	$ 93,000	$ 143,200	$ 236,200
4.26	CONTROL & INSTRUMENT CABLE	#14, #16 & PR # 20 & SHLD	$ -	$ 26,200	$ 73,600	$ 99,800
4.27	DUCT BANK	DUCT BANK WITH 4-5" & 4-	$ -	$ 61,100	$ 116,200	$ 177,300
4.28	FOUNDATIONS FOR TRANSFORMERS	FOR XFMR 33F, 33G,	$ -	$ 3,500	$ 10,300	$ 13,800
4.29	COMMUNICATIONS		$ -	$ 34,000	$ 26,000	$ 60,000
4.30	LIGHTNING PROTECTION		$ -	$ 6,000	$ 4,700	$ 10,700
4.31	SECURITY SYSTEM		$ -	$ 8,000	$ 7,000	$ 15,000

Sargent & Lundy, LLC

AEP
BIG SANDY UNIT 2
FGD PROJECT - NID EST (N/ESP)-2B - 1.7 LB/MM BTU
COST ESTIMATE SUMMARY

Estimate No.: 30726C
Project No.: 12721-000
Date: 9/29/2010
Preparer: MNO
Reviewer: JMK
Approver: PEF

Account No.	Item Description	Scope Definition	Total Equipment Cost	Total Material Cost	Total Construction & Erection Cost	Total Projected Cost
90.00	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS		$ 5,421,300	$ 4,001,600	$ 7,769,100	$ 17,192,000
	SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS		$ 271,100	$ 1,020,400	$ 2,809,000	$ 4,100,500
	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	LIME HANDLING SYSTEM	$ 5,692,400	$ 5,022,000	$ 10,578,100	$ 21,292,500
5.0	LIME SLAKER BUILDING	NOT REQUIRED FOR NID				
6.0	BYPRODUCT WASTE & FLY ASH HANDLING SYSTEMS					
6.1	BYPRODUCT WASTE HANDLING - MECHANICAL EQUIPMENT	INCLUDES PNEUMATIC HANDLING SYSTEM, THREE PRESSURE BLOWERS, ONE BIN VENT FILTER, ASH UNLOADING SYSTEM	$ 2,386,000	$ -	$ 1,451,600	$ 3,837,600
6.2	ECONOMIZER ASH HANDLING - MECHANICAL EQUIPMENT	INCLUDES JET PUMPS AND PIPING / SUPPORTS TO THE BOTTOM ASH POND	$ 400,000	$ -	$ 296,400	$ 696,400
6.3	BUILDING SUMP PUMPS	FOR BUILDINGS - DUPLEX. INCLUDES CHECK & ISOLATION VALVES.	$ 28,000	$ -	$ 12,300	$ 40,300
6.4	AGITATOR FOR SUMP PUMPS	5 HP	$ 12,000	$ -	$ 4,600	$ 16,600
6.5	PIPING - MECHANICAL		$ 142,800	$ 131,000	$ 408,700	$ 682,500
6.6	BYPRODUCT WASTE SILO	CONCRETE SILO 55' DIA X 111' H - 4700 TONS - SUBCONTRACT COST INCLUDES LABOR	$ 1,800,000	$ -	$ -	$ 1,800,000
6.7	RECYCLE SILO	NOT REQUIRED FOR NID	$ -	$ -	$ -	$ -

Sargent & Lundy, LLC

AEP
BIG SANDY UNIT 2
FGD PROJECT - NID EST (N/ESP)-2B - 1.7 LB/MM BTU
COST ESTIMATE SUMMARY

Estimate No.: 30726C
Project No.: 12721-000
Date: 9/29/2010
Preparer: MNO
Reviewer: JMK
Approver: PEF

Account No.	Item Description	Scope Definition	Total Equipment Cost	Total Material Cost	Total Construction & Erection Cost	Total Projected Cost
6.8	FLY ASH SILO	NOT REQUIRED - ECONOMIZER FLY ASH SLUICD TO BOTTOM ASH POND	$ -	$ -	$ -	$ -
6.9	BYPRODUCT WASTE STORAGE SILO - FOUNDATIONS		$ -	$ 132,300	$ 253,100	$ 385,400
6.10	FLY ASH SILO - FOUNDATIONS	NOT REQUIRED	$ -	$ -	$ -	$ -
6.11	BYPRODUCT TRANSPORT BLOWER BUILDING - FOUNDATIONS		$ -	$ 97,600	$ 172,100	$ 269,700
6.12	BYPRODUCT TRANSPORT BLOWER BUILDING	90' L X 30' W X 20' H	$ 40,000	$ 241,500	$ 26,200	$ 307,700
6.13	FLY ASH BLOWER AND ELECTRICAL BUILDING - FOUNDATIONS	NOT REQUIRED	$ -	$ -	$ -	$ -
6.14	FLY ASH BLOWER AND ELECTRICAL BUILDING	NOT REQUIRED	$ -	$ -	$ -	$ -
6.15	LOAD OUT AREA PDC	SUBCONTRACT PRICE INCLUDES LABOR. COMPLETE WITH HVAC, & FINISHES.	$ -	$ 300,000	$ -	$ 300,000
6.16	MCC	480V MCC PER LINE UP	$ 60,000	$ -	$ 3,600	$ 63,600
6.17	EMERGENBCY POWER SYSTEM		$ 92,800	$ -	$ 19,900	$ 112,700
6.18	LIGHTING/ TRANSFORMERS & PANELS		$ 18,500	$ 60,000	$ 44,100	$ 122,600
6.19	RACEWAY, CABLE TRAY, & CONDUIT		$ -	$ 32,500	$ 189,100	$ 221,600
6.20	GROUNDING		$ -	$ 4,500	$ 10,900	$ 15,400
6.21	MEDIUM VOLTAGE POWER CABLE & TERMINATION	1/C # 2/0-5KV	$ -	$ 9,500	$ 47,900	$ 57,400
6.22	LOW VOLTAGE POWER CABLE & TERMINATION		$ -	$ 64,700	$ 80,500	$ 145,200
6.23	CONTROL & INSTRUMENT CABLE	#14, #16 & PR # 20 & SHLD WIRE	$ -	$ 30,700	$ 86,200	$ 116,900
6.24	DUCT BANK	DUCT BANK WITH 4-5" & 4-3" CONDUITS	$ -	$ 6,200	$ 10,600	$ 16,800
6.25	COMMUNICATIONS		$ -	$ 34,000	$ 26,000	$ 60,000
6.26	LIGHTNING PROTECTION		$ -	$ 16,000	$ 14,000	$ 30,000
6.27	SECURITY SYSTEM		$ -	$ 8,000	$ 7,000	$ 15,000
90.0	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS		$ 4,980,100	$ 1,168,500	$ 3,164,800	$ 9,313,400

Sargent & Lundy, LLC	AEP	Estimate No.:	30726C
	BIG SANDY UNIT 2	Project No.:	12721-000
	FGD PROJECT - NID EST (N/ESP)-2B - 1.7 LB/MM BTU	Date:	9/29/2010
	COST ESTIMATE SUMMARY	Preparer:	MNO
		Reviewer:	JMK
		Approver:	PEF

Account No.	Item Description	Scope Definition	Total Equipment Cost	Total Material Cost	Total Construction & Erection Cost	Total Projected Cost
	SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS		$ 249,000	$ 298,000	$ 1,173,800	$ 1,720,800
	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	BYPRODUCT WASTE & FLY ASH HANDLING SYSTEMS	$ 5,229,100	$ 1,466,500	$ 4,338,600	$ 11,034,200
7.0	ABSORBER ISLAND	NOT REQUIRED FOR NID				
8.0	ACTIVATED CARBON INJECTION SYSTEM					
9.0	COMPRESSED AIR SYSTEM					
10.0	SERVICE WATER SYSTEM					
11.0	POTABLE WATER SYSTEM					
12.0	FGD SUBSTATION					
13.0	FGD DCS SYSTEM					
14.0	CEM SYSTEM					
15.0	TRUCK & RAIL INFRASTRUCTURE					
16.0	SITE IMPROVEMENTS - CIVIL WORK					
17.0	BOP ITEMS					
17.1	PIPE INSULATION	AVERAGE 6" PIPE SIZE	$ -	$ 34,000	$ 106,000	$ 140,000
17.2	HEAT TRACING		$ -	$ 175,600	$ 248,500	$ 424,100
17.3	TOUCH UP PAINT (INCLUDES PAINTING CS PIPE)		$ -	$ 176,700	$ 677,900	$ 854,600
17.4	HOISTS & TROLLEYS		$ 150,000	$ 175,000	$ 204,400	$ 529,400
17.5	MISC AUX STEEL FOR PIPE SUPPORTS	FIELD FABRICATED	$ -	$ 122,500	$ 510,600	$ 633,100

Sargent & Lundy, LLC

AEP
BIG SANDY UNIT 2
FGD PROJECT - NID EST (N/ESP)-2B - 1.7 LB/MM BTU
COST ESTIMATE SUMMARY

Estimate No.: 30726C
Project No.: 12721-000
Date: 9/29/2010
Preparer: MNO
Reviewer: JMK
Approver: PEF

Account No.	Item Description	Scope Definition	Total Equipment Cost	Total Material Cost	Total Construction & Erection Cost	Total Projected Cost
17.6	MISC PIPE SUPPORT FOUNDATIONS		$ -	$ 10,500	$ 21,000	$ 31,500
17.7	EYE WASH STATIONS	WITH 50 KW HEATERS	$ 30,000	$ 5,000	$ 30,700	$ 65,700
17.8	FIRE PROTECTION FOR MISC BUILDINGS & AREAS	STAND PIPE FOR	$ -	$ 300,000	$ 245,300	$ 545,300
90.0	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS		$ 180,000	$ 999,300	$ 2,044,400	$ 3,223,700
	SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS		$ 9,000	$ 254,822	$ 786,346	$ 1,050,167
	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	BOP ITEMS	$ 189,000	$ 1,254,100	$ 2,830,700	$ 4,273,900
18.0	CAPITAL REPLACEMENTS - REMOVAL AND RELOCATION OF EXISTING EQUIPMENT AND INFRASTRUCTURE					
19.0	ARSENIC, ASBESTOS , LEAD ABATEMENT					
99.0	OVERALL - EQUIPMENT, MATERIAL AND LABOR COSTS		$ 89,527,900	$ 44,533,100	$ 115,529,000	$ 269,690,000
	OVERALL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS		$ 5,088,400	$ 11,299,200	$ 42,782,400	$ 62,420,600
	OVERALL TOTAL DIRECT & CONSTRUCTION INDIRECT COST		$ 94,616,300	$ 55,832,300	$ 158,311,400	$ 332,110,600
	OVERALL PROJECT INDIRECT COSTS					
	ENGINEERING, PROCUREMENT, & PROJECT SERVICES					$ 25,000,000
	CONSTRUCTION MANAGEMENT					$ 9,963,300
	S-U / COMMISSIONING					$ 3,321,100
	CRAFT START-UP SUPPORT					$ 1,361,300
	INITIAL FILLS					$ 996,300
	OPERATOR & TRAINING MANUALS					$ 300,000

Sargent & Lundy, LLC

AEP
BIG SANDY UNIT 2
FGD PROJECT - NID EST (N/ESP)-2B - 1.7 LB/MM BTU
COST ESTIMATE SUMMARY

Estimate No.: 30726C
Project No.: 12721-000
Date: 9/29/2010
Preparer: MNO
Reviewer: JMK
Approver: PEF

Account No.	Item Description	Scope Definition	Total Equipment Cost	Total Material Cost	Total Construction & Erection Cost	Total Projected Cost
	SUBCONTRACTORS (NOISE & DUCTWORK CONSULTANT, GEOTECHNICAL INVESTIGATION)					$ 400,000
	NOISE ABATEMENT FOR 85 DBA REQUIREMENT	FOR ID FAN, NID MODULES, TRANSFORMERS, BOP, DUCTWORK, ACOUSTIC BARRIERS FOR BOUNDARY LIMITS				$ 2,600,000
	SUBTOTAL - INDIRECT COSTS					$ 43,942,000
	TOTAL PROJECT DIRECT AND INDIRECT COSTS					$ 376,052,600
	SPARE PARTS:					$ 1,419,200
	SPARE PARTS - CAPITALIZED	0.9				$ 851,520
	SPARE PARTS - FIRST YEAR OF OPERATION	0.6				$ 567,680
	CONTINGENCY	14.251				$ 53,792,000
	ESCALATION					$ 47,501,200
	EQUIPMENT					$ 15,033,900
	MATERIAL					$ 5,844,400
	LABOR					$ 21,458,600
	INDIRECTS					$ 5,164,300
	TOTAL PROJECT COST					$ 478,765,000
	REFERENCE COSTS:					
A	ESP DEMOLITION					$ 832,300
B	REMOVE BOOSTER AIR FANS					$ 111,000
C	REMOVAL OF FUEL OIL TANK		$ 1,200,000	$ 80,000	$ 469,400	$ 1,749,400

ATTACHMENT 5-18
NID Summary Capital Cost Estimate No. 30724 Est-3A ESP in Service*
(4.5 lb SO_2/MMbtu)

* - Estimates 2A, 2B, 3A, 3B, 4A and 4B contain only accounts whose costs are different from the corresponding base estimates 1A and 1B.

Sargent & Lundy, LLC	AEP	Estimate No.:	30724C
	BIG SANDY UNIT 2	Project No.:	12721-000
	FGD PROJECT - NID EST (ESP)-3A - 4.5 LB/MM BTU	Date:	9/29/2010
	COST ESTIMATE SUMMARY	Preparer:	MNO
		Reviewer:	JMK
		Approver:	PEF

Account No.	Item Description	Scope Definition	Total Equipment Cost	Total Material Cost	Total Construction & Erection Cost	Total Projected Cost
1.0	ID FANS					
2.0	NID MODULES					
2.1	MECHANICAL EQUIPMENT	A 12-MODULE NID SYSTEM (160' X 160') INCLUDING LIME DAY SILOS, HYDRATORS, MIXERS, J-DUCTS, FABRIC FILTER MODULES, ALL INTERNAL ELEMENTS (BAGS, CAGES, ASH HOPPERS, 2 BROKEN BAG DETECTORS/COMPARTMENT), ASH RECYCLE SYSTEM, VACUUM PIPING, AND ALL INTERNAL PIPING & DUCTWORK FOR THE VARIOUS MODULES.	$ 53,053,000	$ -	$ 33,938,200	$ 86,991,200
2.2	INSULATION FOR NID MODULES	SUBCONTRACT COST INCLUDES LABOR	$ 2,419,200	$ -	$ -	$ 2,419,200
2.3	PENTHOUSE FOR NID MODULES	14 FT HIGH, 25600 SF	$ 58,100	$ 1,316,900	$ 1,747,600	$ 3,122,600
2.4	BOTTOM ENCLOSURE FOR NID MODULES	40 FT HIGH	$ 92,200	$ 2,428,900	$ 2,544,900	$ 5,066,000
2.5	PIPING & SUPPORTS - MECHANICAL		$ 125,200	$ 174,500	$ 385,900	$ 685,600
2.6	DUCTWORK		$ -	$ 6,175,000	$ 11,794,600	$ 17,969,600
2.7	DUCT SUPPORT STEEL	THREE COAT SHOP PAINT	$ -	$ 2,755,000	$ 2,771,700	$ 5,526,700

Sargent & Lundy, LLC

AEP
BIG SANDY UNIT 2
FGD PROJECT - NID EST (ESP)-3A - 4.5 LB/MM BTU
COST ESTIMATE SUMMARY

Estimate No.: 30724C
Project No.: 12721-000
Date: 9/29/2010
Preparer: MNO
Reviewer: JMK
Approver: PEF

Account No.	Item Description	Scope Definition	Total Equipment Cost	Total Material Cost	Total Construction & Erection Cost	Total Projected Cost
2.8	DUCTWORK INSULATION & LAGGING		$ -	$ 2,040,000	$ 3,995,500	$ 6,035,500
2.9	NID MODULE- FOUNDATIONS		$ -	$ 1,087,000	$ 1,778,100	$ 2,865,100
2.10	NID MODULE - SUPPORT STEEL AND ACCESS GALLERY		$ -	$ 1,152,000	$ 2,863,700	$ 4,015,700
2.11	GROUNDING		$ -	$ 16,000	$ 46,100	$ 62,100
2.12	LIGHTING/ TRANSFORMERS & PANELS		$ 27,000	$ 75,000	$ 57,300	$ 159,300
2.13	RACEWAY, CABLE TRAY, & CONDUIT	INCLUDED IN ID FANS, 1.0	$ -	$ -	$ -	$ -
90.00	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS		$ 55,774,700	$ 17,220,300	$ 61,923,600	$ 134,918,600
	SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS		$ 3,463,700	$ 4,391,200	$ 23,380,400	$ 31,235,300
	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	NID MODULES	$ 59,238,400	$ 21,611,500	$ 85,304,000	$ 166,153,900
3.0	NEW STACK					
4.0	LIME HANDLING SYSTEM					
4.1	LIME STORAGE SILO		$ 8,952,000	$ -	$ -	$ 8,952,000
4.2	LIME UNLOADING SYSTEM	INCLUDE PNEUMATIC HANDLING SYSTEM, THREE VACUUM EXHAUSTER, TWO FILTER SEPARATORS	$ 1,100,000	$ -	$ 592,900	$ 1,692,900
4.3	LIME TRANSPORT SYSTEM TO DAY BINS	INCLUDE PNEUMATIC HANDLING SYSTEM, THREE VACUUM EXHAUSTERS, TWO FILTER SEPARATORS	$ 2,866,000	$ -	$ 1,564,000	$ 4,430,000
4.4	PIPING - MECHANICAL		$ 88,700	$ 130,300	$ 342,600	$ 561,600

Sargent & Lundy, LLC	AEP	Estimate No.:	30724C
	BIG SANDY UNIT 2	Project No.:	12721-000
	FGD PROJECT - NID EST (ESP)-3A - 4.5 LB/MM BTU	Date:	9/29/2010
	COST ESTIMATE SUMMARY	Preparer:	MNO
		Reviewer:	JMK
		Approver:	PEF

Account No.	Item Description	Scope Definition	Total Equipment Cost	Total Material Cost	Total Construction & Erection Cost	Total Projected Cost
4.5	LIME STORAGE SILO ACCESS STAIR TOWER	INCLUDES CATWALK TO THE SECOND SILO - THREE COAT SHOP PAINT	$ -	$ 159,500	$ 160,500	$ 320,000
4.6	PIPE RACK FOR LIME HANDLING, WASTE HANDLING AND MISC MECHANICAL PIPING	THREE COAT SHOP PAINT	$ -	$ 1,885,000	$ 1,896,400	$ 3,781,400
4.7	RAIL CAR UNLOADING AREA - FOUNDATIONS	20' X 120' - NO SIDING	$ -	$ 42,700	$ 90,100	$ 132,800
4.8	LIME UNLOADING BLOWER / ELECTRICAL BUILDING - FOUNDATIONS		$ -	$ 69,600	$ 147,600	$ 217,200
4.9	LIME UNLOADING BLOWER / ELECTRICAL BUILDING	100' L X 30' W X 30' H	$ 75,000	$ 335,000	$ 24,400	$ 434,400
4.10	CONCRETE PIT FOR THE ELEVATOR		$ -	$ 2,300	$ 6,900	$ 9,200
4.11	LIME STORAGE SILO - FOUNDATIONS	INCLUDES FOUNDATIONS FOR LIME TRANSPORT SYSTEM PRESSURE BLOWERS	$ -	$ 560,700	$ 1,002,700	$ 1,563,400
4.12	LIME STORAGE SILO ACCESS STAIR TOWER - FOUNDATIONS		$ -	$ 14,200	$ 28,600	$ 42,800
4.13	PIPE RACK - FOUNDATIONS		$ -	$ 239,600	$ 588,600	$ 828,200
4.14	TRANSFORMERS	SUS TRANSFORMERS: 33F, 33G, 13.8KV-480V,3PHASE, 3 WINDING XFMR	$ 170,000	$ -	$ 54,600	$ 224,600
4.15	SWITCHGEAR	480V LOW VOLTAGE (33F/G), SWITCHGEAR	$ 196,000	$ -	$ 104,700	$ 300,700
4.16	CABLE BUS DUCT		$ 134,700	$ 10,800	$ 200,200	$ 345,700
4.17	MCC		$ 61,800	$ -	$ 3,600	$ 65,400
4.18	MIMIC PANELS		$ 17,500	$ -	$ 1,400	$ 18,900

Sargent & Lundy, LLC

AEP
BIG SANDY UNIT 2
FGD PROJECT - NID EST (ESP)-3A - 4.5 LB/MM BTU
COST ESTIMATE SUMMARY

Estimate No.: 30724C
Project No.: 12721-000
Date: 9/29/2010
Preparer: MNO
Reviewer: JMK
Approver: PEF

Account No.	Item Description	Scope Definition	Total Equipment Cost	Total Material Cost	Total Construction & Erection Cost	Total Projected Cost
4.19	EMERGENCY POWER SYSTEM		$ 108,300	$ -	$ 24,400	$ 132,700
4.20	GROUNDING		$ 13,300	$ -	$ 41,300	$ 54,600
4.21	LIGHTING/ TRANSFORMERS & PANELS		$ 52,000	$ 135,000	$ 104,500	$ 291,500
4.22	RACEWAY, CABLE TRAY, & CONDUIT		$ -	$ 310,900	$ 1,537,100	$ 1,848,000
4.23	HIGH VOLTAGE POWER CABLE & TERMINATION	1/C # 500KCMIL- 15KV	$ -	$ 144,600	$ 407,800	$ 552,400
4.24	MEDIUM VOLTAGE POWER CABLE & TERMINATION	1/C 350KCMIL-5KV	$ -	$ 66,200	$ 282,300	$ 348,500
4.25	LOW VOLTAGE POWER CABLE & TERMINATION		$ -	$ 93,000	$ 143,200	$ 236,200
4.26	CONTROL & INSTRUMENT CABLE	#14, #16 & PR # 20 & SHLD WIRE	$ -	$ 26,200	$ 73,600	$ 99,800
4.27	DUCT BANK	DUCT BANK WITH 4-5" & 4-3" CONDUITS, 2.38' H X 3.79' W	$ -	$ 61,100	$ 116,200	$ 177,300
4.28	FOUNDATIONS FOR TRANSFORMERS	FOR XFMR 33F, 33G, INCLUDES MUD MAT	$ -	$ 3,500	$ 10,300	$ 13,800
4.29	COMMUNICATIONS		$ -	$ 34,000	$ 26,000	$ 60,000
4.30	LIGHTNING PROTECTION		$ -	$ 6,000	$ 4,700	$ 10,700
4.31	SECURITY SYSTEM		$ -	$ 8,000	$ 7,000	$ 15,000

Sargent & Lundy, LLC	AEP	Estimate No.:	30724C
	BIG SANDY UNIT 2	Project No.:	12721-000
	FGD PROJECT - NID EST (ESP)-3A - 4.5 LB/MM BTU	Date:	9/29/2010
	COST ESTIMATE SUMMARY	Preparer:	MNO
		Reviewer:	JMK
		Approver:	PEF

Account No.	Item Description	Scope Definition	Total Equipment Cost	Total Material Cost	Total Construction & Erection Cost	Total Projected Cost
90.00	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS		$ 13,835,300	$ 4,338,200	$ 9,588,200	$ 27,761,700
	SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS		$ 691,800	$ 1,106,200	$ 3,497,100	$ 5,295,100
	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	LIME HANDLING SYSTEM	$ 14,527,100	$ 5,444,400	$ 13,085,300	$ 33,056,800
5.0	LIME SLAKER BUILDING	NOT REQUIRED FOR NID				
6.0	BYPRODUCT WASTE & FLY ASH HANDLING SYSTEMS					
6.1	BYPRODUCT WASTE HANDLING - MECHANICAL EQUIPMENT	INCLUDES PNEUMATIC HANDLING SYSTEM, THREE PRESSURE BLOWERS, ONE BIN VENT FILTER, ASH UNLOADING SYSTEM	$ 2,386,000	$ -	$ 1,451,600	$ 3,837,600
6.2	FLY ASH HANDLING - MECHANICAL EQUIPMENT	INCLUDES PNEUMATIC HANDLING SYSTEM, TWO PRESSURE EXHAUSTERS, TRANSFER STATION, ONE BIN VENT FILTER, ASH UNLOADING SYSTEM	$ 2,285,000	$ -	$ 1,431,100	$ 3,716,100
6.3	BUILDING SUMP PUMPS	FOR BUILDINGS - DUPLEX. INCLUDES CHECK & ISOLATION VALVES.	$ 28,000	$ -	$ 12,300	$ 40,300
6.4	AGITATOR FOR SUMP PUMPS	5 HP	$ 12,000	$ -	$ 4,600	$ 16,600
6.5	PIPING - MECHANICAL		$ 142,800	$ 131,000	$ 408,700	$ 682,500

Sargent & Lundy, LLC	AEP	Estimate No.:	30724C
	BIG SANDY UNIT 2	Project No.:	12721-000
	FGD PROJECT - NID EST (ESP)-3A - 4.5 LB/MM BTU	Date:	9/29/2010
	COST ESTIMATE SUMMARY	Preparer:	MNO
		Reviewer:	JMK
		Approver:	PEF

Account No.	Item Description	Scope Definition	Total Equipment Cost	Total Material Cost	Total Construction & Erection Cost	Total Projected Cost
6.6	BYPRODUCT WASTE SILO	CONCRETE SILO 65' DIA X 110' H - 4644 TONS - SUBCONTRACT COST INCLUDES LABOR	$ 2,090,000	$ -	$ -	$ 2,090,000
6.7	RECYCLE SILO	NOT REQUIRED FOR NID	$ -	$ -	$ -	$ -
6.8	FLY ASH SILO	STEEL -STORAGE SILO, 18' DIA X 19' H, 69 TONS	$ 55,000	$ 29,000	$ 80,500	$ 164,500
6.9	BYPRODUCT WASTE STORAGE SILO - FOUNDATIONS		$ -	$ 188,700	$ 349,900	$ 538,600
6.10	FLY ASH SILO - FOUNDATIONS		$ -	$ 16,200	$ 41,700	$ 57,900
6.11	BYPRODUCT TRANSPORT BLOWER BUILDING - FOUNDATIONS		$ -	$ 97,600	$ 172,100	$ 269,700
6.12	BYPRODUCT TRANSPORT BLOWER BUILDING	90' L X 30' W X 20' H	$ 40,000	$ 241,500	$ 26,200	$ 307,700
6.13	FLY ASH BLOWER AND ELECTRICAL BUILDING - FOUNDATIONS		$ -	$ 82,800	$ 150,900	$ 233,700
6.14	FLY ASH BLOWER AND ELECTRICAL BUILDING	110' L X 30' W X 25' H	$ 75,000	$ 276,500	$ 24,400	$ 375,900
6.15	LOAD OUT AREA PDC	SUBCONTRACT PRICE INCLUDES LABOR. COMPLETE WITH HVAC, & FINISHES.	$ -	$ 300,000	$ -	$ 300,000
6.16	MCC	480V MCC PER LINE UP	$ 120,000	$ -	$ 7,300	$ 127,300
6.17	EMERGENBCY POWER SYSTEM		$ 185,500	$ -	$ 40,000	$ 225,500
6.18	LIGHTING/ TRANSFORMERS & PANELS		$ 18,500	$ 75,000	$ 53,200	$ 146,700
6.19	RACEWAY, CABLE TRAY, & CONDUIT		$ -	$ 40,700	$ 236,200	$ 276,900
6.20	GROUNDING		$ -	$ 4,500	$ 10,900	$ 15,400
6.21	MEDIUM VOLTAGE POWER CABLE & TERMINATION	1/C # 2/0-5KV	$ -	$ 9,500	$ 47,900	$ 57,400
6.22	LOW VOLTAGE POWER CABLE & TERMINATION		$ -	$ 80,900	$ 100,600	$ 181,500
6.23	CONTROL & INSTRUMENT CABLE	#14, #16 & PR # 20 & SHLD WIRE	$ -	$ 38,400	$ 107,800	$ 146,200

Sargent & Lundy, LLC

AEP
BIG SANDY UNIT 2
FGD PROJECT - NID EST (ESP)-3A - 4.5 LB/MM BTU
COST ESTIMATE SUMMARY

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Project No.: 12721-000
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Account No.	Item Description	Scope Definition	Total Equipment Cost	Total Material Cost	Total Construction & Erection Cost	Total Projected Cost
6.24	DUCT BANK	DUCT BANK WITH 4-5" & 4-3" CONDUITS	$ -	$ 6,200	$ 10,600	$ 16,800
6.25	COMMUNICATIONS		$ -	$ 70,000	$ 50,000	$ 120,000
6.26	LIGHTNING PROTECTION		$ -	$ 19,000	$ 14,000	$ 33,000
6.27	SECURITY SYSTEM		$ -	$ 16,000	$ 14,000	$ 30,000
90.0	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS		$ 7,437,800	$ 1,723,500	$ 4,846,500	$ 14,007,800
	SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS		$ 371,900	$ 439,500	$ 1,801,600	$ 2,613,000
	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	BYPRODUCT WASTE & FLY ASH HANDLING SYSTEMS	$ 7,809,700	$ 2,163,000	$ 6,648,100	$ 16,620,800
7.0	ABSORBER ISLAND	NOT REQUIRED FOR NID				
8.0	ACTIVATED CARBON INJECTION SYSTEM					
9.0	COMPRESSED AIR SYSTEM					
10.0	SERVICE WATER SYSTEM					
11.0	POTABLE WATER SYSTEM					
12.0	FGD SUBSTATION					
13.0	FGD DCS SYSTEM					
14.0	CEM SYSTEM					
15.0	TRUCK & RAIL INFRASTRUCTURE					

Sargent & Lundy, LLC

AEP
BIG SANDY UNIT 2
FGD PROJECT - NID EST (ESP)-3A - 4.5 LB/MM BTU
COST ESTIMATE SUMMARY

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Account No.	Item Description	Scope Definition	Total Equipment Cost	Total Material Cost	Total Construction & Erection Cost	Total Projected Cost
16.0	SITE IMPROVEMENTS - CIVIL WORK					
17.0	BOP ITEMS					
17.1	PIPE INSULATION	AVERAGE 6" PIPE SIZE	$ -	$ 34,000	$ 106,000	$ 140,000
17.2	HEAT TRACING		$ -	$ 175,600	$ 248,500	$ 424,100
17.3	TOUCH UP PAINT (INCLUDES PAINTING CS PIPE)		$ -	$ 176,700	$ 677,900	$ 854,600
17.4	HOISTS & TROLLEYS		$ 150,000	$ 175,000	$ 204,400	$ 529,400
17.5	MISC AUX STEEL FOR PIPE SUPPORTS	FIELD FABRICATED	$ -	$ 122,500	$ 510,600	$ 633,100
17.6	MISC PIPE SUPPORT FOUNDATIONS		$ -	$ 10,500	$ 21,000	$ 31,500
17.7	EYE WASH STATIONS	WITH 50 KW HEATERS	$ 30,000	$ 5,000	$ 30,700	$ 65,700
17.8	FIRE PROTECTION FOR MISC BUILDINGS & AREAS	STAND PIPE FOR BUILDINGS	$ -	$ 300,000	$ 245,300	$ 545,300
90.0	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS		$ 180,000	$ 999,300	$ 2,044,400	$ 3,223,700
	SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS		$ 9,000	$ 254,822	$ 786,346	$ 1,050,167

Sargent & Lundy, LLC

AEP
BIG SANDY UNIT 2
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Account No.	Item Description	Scope Definition	Total Equipment Cost	Total Material Cost	Total Construction & Erection Cost	Total Projected Cost
	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	BOP ITEMS	$ 189,000	$ 1,254,100	$ 2,830,700	$ 4,273,900
18.0	CAPITAL REPLACEMENTS - REMOVAL AND RELOCATION OF EXISTING EQUIPMENT AND INFRASTRUCTURE					
19.0	ARSENIC, ASBESTOS , LEAD ABATEMENT					
99.0	OVERALL - EQUIPMENT, MATERIAL AND LABOR COSTS		$ 103,130,600	$ 47,825,500	$ 124,961,700	$ 296,017,800
	OVERALL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS		$ 5,768,500	$ 12,138,800	$ 46,223,700	$ 67,381,500
	OVERALL TOTAL DIRECT & CONSTRUCTION INDIRECT COST		$ 108,899,100	$ 59,964,300	$ 171,185,400	$ 363,399,300
	OVERALL PROJECT INDIRECT COSTS					
	ENGINEERING, PROCUREMENT, & PROJECT SERVICES					$ 25,000,000
	CONSTRUCTION MANAGEMENT					$ 10,902,000
	S-U / COMMISSIONING					$ 3,634,000
	CRAFT START-UP SUPPORT					$ 1,472,400
	INITIAL FILLS					$ 1,090,200
	OPERATOR & TRAINING MANUALS					$ 300,000
	SUBCONTRACTORS (NOISE & DUCTWORK CONSULTANT, GEOTECHNICAL INVESTIGATION)					$ 400,000
	NOISE ABATEMENT FOR 85 DBA REQUIREMENT	FOR ID FAN, NID MODULES, TRANSFORMERS, BOP, DUCTWORK, ACOUSTIC BARRIERS FOR BOUNDARY LIMITS				$ 2,600,000

Sargent & Lundy, LLC

AEP
BIG SANDY UNIT 2
FGD PROJECT - NID EST (ESP)-3A - 4.5 LB/MM BTU
COST ESTIMATE SUMMARY

Estimate No.: 30724C
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Account No.	Item Description	Scope Definition	Total Equipment Cost	Total Material Cost	Total Construction & Erection Cost	Total Projected Cost
	SUBTOTAL - INDIRECT COSTS					$ 45,398,600
	TOTAL PROJECT DIRECT AND INDIRECT COSTS					$ 408,797,900
	SPARE PARTS:					$ 1,633,500
	SPARE PARTS - CAPITALIZED	0.9				$ 980,100
	SPARE PARTS - FIRST YEAR OF OPERATION	0.6				$ 653,400
	CONTINGENCY	14.075				$ 57,769,600
	ESCALATION					$ 51,924,700
	EQUIPMENT					$ 17,303,300
	MATERIAL					$ 6,202,100
	LABOR					$ 23,083,800
	INDIRECTS					$ 5,335,500
	TOTAL PROJECT COST					$ 520,125,700
	REFERENCE COSTS:					
A	REMOVAL OF FUEL OIL TANK		$ 1,200,000	$ 80,000	$ 469,400	$ 1,749,400

ATTACHMENT 5-19
NID Summary Capital Cost Estimate No. 30728 Est-3B ESP not in Service*
(4.5 lb SO_2/MMbtu)

* - Estimates 2A, 2B, 3A, 3B, 4A and 4B contain only accounts whose costs are different from the corresponding base estimates 1A and 1B.

Sargent & Lundy, LLC

AEP
BIG SANDY UNIT 2
FGD PROJECT - NID EST (N/ESP)-3B - 4.5 LB/MM BTU
COST ESTIMATE SUMMARY

Estimate No.: 30728C
Project No.: 12721-000
Date: 9/29/2010
Preparer: MNO
Reviewer: JMK
Approver: PEF

Account No.	Item Description	Scope Definition	Total Equipment Cost	Total Material Cost	Total Construction & Erection Cost	Total Projected Cost
1.0	ID FANS					
2.0	NID MODULES					
2.1	MECHANICAL EQUIPMENT	A 12-MODULE NID SYSTEM (160' X 160') INCLUDING LIME DAY SILOS, HYDRATORS, MIXERS, J-DUCTS, FABRIC FILTER MODULES, ALL INTERNAL ELEMENTS (BAGS, CAGES, ASH HOPPERS, 2 BROKEN BAG DETECTORS / COMPARTMENT), ASH RECYCLE SYSTEM, VACUUM PIPING, AND ALL INTERNAL PIPING & DUCTWORK FOR THE VARIOUS MODULES.	$ 53,973,000	$ -	$ 33,846,200	$ 87,819,200
2.2	INSULATION FOR NID MODULES	SUBCONTRACT COST INCLUDES LABOR	$ 2,419,200	$ -	$ -	$ 2,419,200
2.3	PENTHOUSE FOR NID MODULES	14 FT HIGH, 25600 SF	$ 58,100	$ 1,316,900	$ 1,747,600	$ 3,122,600
2.4	BOTTOM ENCLOSURE FOR NID MODULES	40 FT HIGH	$ 92,200	$ 2,428,900	$ 2,544,900	$ 5,066,000
2.5	PIPING & SUPPORTS - MECHANICAL		$ 125,200	$ 174,500	$ 385,900	$ 685,600
2.6	DUCTWORK		$ -	$ 4,797,000	$ 9,162,600	$ 13,959,600
2.7	DUCT SUPPORT STEEL	THREE COAT SHOP PAINT	$ -	$ 2,140,200	$ 2,153,200	$ 4,293,400

Sargent & Lundy, LLC	AEP	Estimate No.:	30728C
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Account No.	Item Description	Scope Definition	Total Equipment Cost	Total Material Cost	Total Construction & Erection Cost	Total Projected Cost
2.8	DUCTWORK INSULATION & LAGGING		$ -	$ 1,632,000	$ 3,196,400	$ 4,828,400
2.9	NID MODULE- FOUNDATIONS		$ -	$ 1,087,000	$ 1,778,100	$ 2,865,100
2.10	NID MODULE - SUPPORT STEEL AND ACCESS GALLERY		$ -	$ 1,152,000	$ 2,863,700	$ 4,015,700
2.11	GROUNDING		$ -	$ 16,000	$ 46,100	$ 62,100
2.12	LIGHTING/ TRANSFORMERS & PANELS		$ 27,000	$ 75,000	$ 57,300	$ 159,300
2.13	RACEWAY, CABLE TRAY, & CONDUIT	INCLUDED IN ID FANS, 1.0	$ -	$ -	$ -	$ -
90.00	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS		$ 56,694,700	$ 14,819,500	$ 57,782,000	$ 129,296,200
	SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS		$ 3,509,700	$ 3,779,000	$ 21,920,400	$ 29,209,100
	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	NID MODULES	$ 60,204,400	$ 18,598,500	$ 79,702,400	$ 158,505,300
3.0	NEW STACK	PROVIDED BY AEP	$ -	$ -	$ -	$ -
4.0	LIME HANDLING SYSTEM					
4.1	LIME STORAGE SILO		$ 8,952,000	$ -	$ -	$ 8,952,000
4.2	LIME UNLOADING SYSTEM	INCLUDE PNEUMATIC HANDLING SYSTEM, THREE VACUUM EXHAUSTER, TWO FILTER SEPARATORS	$ 1,100,000	$ -	$ 592,900	$ 1,692,900
4.3	LIME TRANSPORT SYSTEM TO DAY BINS	INCLUDE PNEUMATIC HANDLING SYSTEM, THREE VACUUM EXHAUSTERS, TWO FILTER SEPARATORS	$ 2,866,000	$ -	$ 1,564,000	$ 4,430,000
4.4	PIPING - MECHANICAL		$ 88,700	$ 130,300	$ 342,600	$ 561,600

Sargent & Lundy, LLC	AEP	Estimate No.:	30728C
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Account No.	Item Description	Scope Definition	Total Equipment Cost	Total Material Cost	Total Construction & Erection Cost	Total Projected Cost
4.5	LIME STORAGE SILO ACCESS STAIR TOWER	INCLUDES CATWALK TO THE SECOND SILO - THREE COAT SHOP PAINT	$ -	$ 159,500	$ 160,500	$ 320,000
4.6	PIPE RACK FOR LIME HANDLING, WASTE HANDLING AND MISC MECHANICAL PIPING	THREE COAT SHOP PAINT	$ -	$ 1,885,000	$ 1,896,400	$ 3,781,400
4.7	RAIL CAR UNLOADING AREA - FOUNDATIONS	20' X 120' - NO SIDING	$ -	$ 42,700	$ 90,100	$ 132,800
4.8	LIME UNLOADING BLOWER / ELECTRICAL BUILDING - FOUNDATIONS		$ -	$ 69,600	$ 147,600	$ 217,200
4.9	LIME UNLOADING BLOWER / ELECTRICAL BUILDING	100' L X 30' W X 30' H	$ 75,000	$ 335,000	$ 24,400	$ 434,400
4.10	CONCRETE PIT FOR THE ELEVATOR		$ -	$ 2,300	$ 6,900	$ 9,200
4.11	LIME STORAGE SILO - FOUNDATIONS	INCLUDES FOUNDATIONS FOR LIME TRANSPORT SYSTEM PRESSURE BLOWERS	$ -	$ 560,700	$ 1,002,700	$ 1,563,400
4.12	LIME STORAGE SILO ACCESS STAIR TOWER - FOUNDATIONS		$ -	$ 14,200	$ 28,600	$ 42,800
4.13	PIPE RACK - FOUNDATIONS		$ -	$ 239,600	$ 588,600	$ 828,200
4.14	TRANSFORMERS	SUS TRANSFORMERS: 33F, 33G, 13.8KV-480V,3PHASE, 3 WINDING XFMR	$ 170,000	$ -	$ 54,600	$ 224,600
4.15	SWITCHGEAR	480V LOW VOLTAGE (33F/G), SWITCHGEAR	$ 196,000	$ -	$ 104,700	$ 300,700
4.16	CABLE BUS DUCT		$ 134,700	$ 10,800	$ 200,200	$ 345,700
4.17	MCC		$ 61,800	$ -	$ 3,600	$ 65,400
4.18	MIMIC PANELS		$ 17,500	$ -	$ 1,400	$ 18,900
4.19	EMERGENCY POWER SYSTEM		$ 108,300	$ -	$ 24,400	$ 132,700
4.20	GROUNDING		$ 13,300	$ -	$ 41,300	$ 54,600
4.21	LIGHTING/ TRANSFORMERS & PANELS		$ 52,000	$ 135,000	$ 104,500	$ 291,500

Sargent & Lundy, LLC

AEP
BIG SANDY UNIT 2
FGD PROJECT - NID EST (N/ESP)-3B - 4.5 LB/MM BTU
COST ESTIMATE SUMMARY

Estimate No.: 30728C
Project No.: 12721-000
Date: 9/29/2010
Preparer: MNO
Reviewer: JMK
Approver: PEF

Account No.	Item Description	Scope Definition	Total Equipment Cost	Total Material Cost	Total Construction & Erection Cost	Total Projected Cost
4.22	RACEWAY, CABLE TRAY, & CONDUIT		$ -	$ 310,900	$ 1,537,100	$ 1,848,000
4.23	HIGH VOLTAGE POWER CABLE & TERMINATION	1/C # 500KCMIL- 15KV	$ -	$ 144,600	$ 407,800	$ 552,400
4.24	MEDIUM VOLTAGE POWER CABLE & TERMINATION	1/C 350KCMIL-5KV	$ -	$ 66,200	$ 282,300	$ 348,500
4.25	LOW VOLTAGE POWER CABLE & TERMINATION		$ -	$ 93,000	$ 143,200	$ 236,200
4.26	CONTROL & INSTRUMENT CABLE	#14, #16 & PR # 20 & SHLD WIRE	$ -	$ 26,200	$ 73,600	$ 99,800
4.27	DUCT BANK	DUCT BANK WITH 4-5" & 4-3" CONDUITS, 2.38' H X 3.79' W	$ -	$ 61,100	$ 116,200	$ 177,300
4.28	FOUNDATIONS FOR TRANSFORMERS	FOR XFMR 33F, 33G, INCLUDES MUD MAT	$ -	$ 3,500	$ 10,300	$ 13,800
4.29	COMMUNICATIONS		$ -	$ 34,000	$ 26,000	$ 60,000
4.30	LIGHTNING PROTECTION		$ -	$ 6,000	$ 4,700	$ 10,700
4.31	SECURITY SYSTEM		$ -	$ 8,000	$ 7,000	$ 15,000
90.00	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS		$ 13,835,300	$ 4,338,200	$ 9,588,200	$ 27,761,700
	SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS		$ 691,800	$ 1,106,200	$ 3,497,100	$ 5,295,100
	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	LIME HANDLING SYSTEM	$ 14,527,100	$ 5,444,400	$ 13,085,300	$ 33,056,800
5.0	LIME SLAKER BUILDING	NOT REQUIRED FOR NID				
6.0	BYPRODUCT WASTE & FLY ASH HANDLING SYSTEMS					
6.1	BYPRODUCT WASTE HANDLING - MECHANICAL EQUIPMENT	INCLUDES PNEUMATIC HANDLING SYSTEM, THREE PRESSURE BLOWERS, ONE BIN VENT FILTER, ASH UNLOADING SYSTEM	$ 2,900,000	$ -	$ 1,615,100	$ 4,515,100

Sargent & Lundy, LLC

AEP
BIG SANDY UNIT 2
FGD PROJECT - NID EST (N/ESP)-3B - 4.5 LB/MM BTU
COST ESTIMATE SUMMARY

Estimate No.: 30728C
Project No.: 12721-000
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Reviewer: JMK
Approver: PEF

Account No.	Item Description	Scope Definition	Total Equipment Cost	Total Material Cost	Total Construction & Erection Cost	Total Projected Cost
6.2	ECONOMIZER ASH HANDLING - MECHANICAL EQUIPMENT	INCLUDES JET PUMPS AND PIPING / SUPPORTS TO THE BOTTOM ASH POND	$ 400,000	$ -	$ 296,400	$ 696,400
6.3	BUILDING SUMP PUMPS	FOR BUILDINGS - DUPLEX. INCLUDES CHECK & ISOLATION VALVES.	$ 28,000	$ -	$ 12,300	$ 40,300
6.4	AGITATOR FOR SUMP PUMPS	5 HP	$ 12,000	$ -	$ 4,600	$ 16,600
6.5	PIPING - MECHANICAL		$ 142,800	$ 131,000	$ 408,700	$ 682,500
6.6	BYPRODUCT WASTE SILO	CONCRETE SILO 65' DIA X 151' H - 6652 TONS - SUBCONTRACT COST INCLUDES LABOR	$ 2,994,000	$ -	$ -	$ 2,994,000
6.7	RECYCLE SILO	NOT REQUIRED FOR NID	$ -	$ -	$ -	$ -
6.8	FLY ASH SILO	NOT REQUIRED - ECONOMIZER FLY ASH SLUICD TO BOTTOM ASH POND	$ -	$ -	$ -	$ -
6.9	BYPRODUCT WASTE STORAGE SILO - FOUNDATIONS		$ -	$ 188,700	$ 349,900	$ 538,600
6.10	FLY ASH SILO - FOUNDATIONS	NOT REQUIRED	$ -	$ -	$ -	$ -
6.11	BYPRODUCT TRANSPORT BLOWER BUILDING - FOUNDATIONS		$ -	$ 97,600	$ 172,100	$ 269,700
6.12	BYPRODUCT TRANSPORT BLOWER BUILDING	90' L X 30' W X 20' H	$ 40,000	$ 241,500	$ 26,200	$ 307,700
6.13	FLY ASH BLOWER AND ELECTRICAL BUILDING - FOUNDATIONS	NOT REQUIRED	$ -	$ -	$ -	$ -

Sargent & Lundy, LLC	AEP	Estimate No.:	30728C
	BIG SANDY UNIT 2	Project No.:	12721-000
	FGD PROJECT - NID EST (N/ESP)-3B - 4.5 LB/MM BTU	Date:	9/29/2010
	COST ESTIMATE SUMMARY	Preparer:	MNO
		Reviewer:	JMK
		Approver:	PEF

Account No.	Item Description	Scope Definition	Total Equipment Cost	Total Material Cost	Total Construction & Erection Cost	Total Projected Cost
6.14	FLY ASH BLOWER AND ELECTRICAL BUILDING	NOT REQUIRED	$ -	$ -	$ -	$ -
6.15	LOAD OUT AREA PDC	SUBCONTRACT PRICE INCLUDES LABOR. COMPLETE WITH HVAC, & FINISHES.	$ -	$ 300,000	$ -	$ 300,000
6.16	MCC	480V MCC PER LINE UP	$ 60,000	$ -	$ 3,600	$ 63,600
6.17	EMERGENBCY POWER SYSTEM		$ 92,800	$ -	$ 19,900	$ 112,700
6.18	LIGHTING/ TRANSFORMERS & PANELS		$ 18,500	$ 60,000	$ 44,100	$ 122,600
6.19	RACEWAY, CABLE TRAY, & CONDUIT		$ -	$ 32,500	$ 189,100	$ 221,600
6.20	GROUNDING		$ -	$ 4,500	$ 10,900	$ 15,400
6.21	MEDIUM VOLTAGE POWER CABLE & TERMINATION	1/C # 2/0-5KV	$ -	$ 9,500	$ 47,900	$ 57,400
6.22	LOW VOLTAGE POWER CABLE & TERMINATION		$ -	$ 64,700	$ 80,500	$ 145,200
6.23	CONTROL & INSTRUMENT CABLE	#14, #16 & PR # 20 & SHLD WIRE	$ -	$ 30,700	$ 86,200	$ 116,900
6.24	DUCT BANK	DUCT BANK WITH 4-5" & 4-3" CONDUITS	$ -	$ 6,200	$ 10,600	$ 16,800
6.25	COMMUNICATIONS		$ -	$ 34,000	$ 26,000	$ 60,000
6.26	LIGHTNING PROTECTION		$ -	$ 16,000	$ 14,000	$ 30,000
6.27	SECURITY SYSTEM		$ -	$ 8,000	$ 7,000	$ 15,000
90.0	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS		$ 6,688,100	$ 1,224,900	$ 3,425,100	$ 11,338,100
	SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS		$ 334,400	$ 312,300	$ 1,272,400	$ 1,919,200
	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	BYPRODUCT WASTE & FLY ASH HANDLING SYSTEMS	$ 7,022,500	$ 1,537,200	$ 4,697,500	$ 13,257,300

Sargent & Lundy, LLC

AEP
BIG SANDY UNIT 2
FGD PROJECT - NID EST (N/ESP)-3B - 4.5 LB/MM BTU
COST ESTIMATE SUMMARY

Estimate No.: 30728C
Project No.: 12721-000
Date: 9/29/2010
Preparer: MNO
Reviewer: JMK
Approver: PEF

Account No.	Item Description	Scope Definition	Total Equipment Cost	Total Material Cost	Total Construction & Erection Cost	Total Projected Cost
7.0	ABSORBER ISLAND	NOT REQUIRED FOR NID				
8.0	ACTIVATED CARBON INJECTION SYSTEM					
9.0	COMPRESSED AIR SYSTEM					
10.0	SERVICE WATER SYSTEM					
11.0	POTABLE WATER SYSTEM					
12.0	FGD SUBSTATION					
13.0	FGD DCS SYSTEM					
14.0	CEM SYSTEM					
15.0	TRUCK & RAIL INFRASTRUCTURE					
16.0	SITE IMPROVEMENTS - CIVIL WORK					
17.0	BOP ITEMS					
17.1	PIPE INSULATION	AVERAGE 6" PIPE SIZE	$ -	$ 34,000	$ 106,000	$ 140,000
17.2	HEAT TRACING		$ -	$ 175,600	$ 248,500	$ 424,100
17.3	TOUCH UP PAINT (INCLUDES PAINTING CS PIPE)		$ -	$ 176,700	$ 677,900	$ 854,600
17.4	HOISTS & TROLLEYS		$ 150,000	$ 175,000	$ 204,400	$ 529,400
17.5	MISC AUX STEEL FOR PIPE SUPPORTS	FIELD FABRICATED	$ -	$ 122,500	$ 510,600	$ 633,100
17.6	MISC PIPE SUPPORT FOUNDATIONS		$ -	$ 10,500	$ 21,000	$ 31,500
17.7	EYE WASH STATIONS	WITH 50 KW HEATERS	$ 30,000	$ 5,000	$ 30,700	$ 65,700
17.8	FIRE PROTECTION FOR MISC BUILDINGS & AREAS	STAND PIPE FOR	$ -	$ 300,000	$ 245,300	$ 545,300
90.0	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS		$ 180,000	$ 999,300	$ 2,044,400	$ 3,223,700

Sargent & Lundy, LLC	AEP	Estimate No.:	30728C
	BIG SANDY UNIT 2	Project No.:	12721-000
	FGD PROJECT - NID EST (N/ESP)-3B - 4.5 LB/MM BTU	Date:	9/29/2010
	COST ESTIMATE SUMMARY	Preparer:	MNO
		Reviewer:	JMK
		Approver:	PEF

Account No.	Item Description	Scope Definition	Total Equipment Cost	Total Material Cost	Total Construction & Erection Cost	Total Projected Cost
	SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS		$ 9,000	$ 254,822	$ 786,346	$ 1,050,167
	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	BOP ITEMS	$ 189,000	$ 1,254,100	$ 2,830,700	$ 4,273,900
18.0	CAPITAL REPLACEMENTS - REMOVAL AND RELOCATION OF EXISTING EQUIPMENT AND INFRASTRUCTURE					
19.0	ARSENIC, ASBESTOS , LEAD ABATEMENT					
99.0	OVERALL - EQUIPMENT, MATERIAL AND LABOR COSTS		$ 104,022,900	$ 44,926,100	$ 119,489,300	$ 288,538,300
	OVERALL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS		$ 5,813,100	$ 11,399,500	$ 44,269,000	$ 64,732,100
	OVERALL TOTAL DIRECT & CONSTRUCTION INDIRECT COST		$ 109,836,000	$ 56,325,600	$ 163,758,300	$ 353,270,400
	OVERALL PROJECT INDIRECT COSTS					
	ENGINEERING, PROCUREMENT, & PROJECT SERVICES					$ 25,000,000
	CONSTRUCTION MANAGEMENT					$ 10,598,100
	S-U / COMMISSIONING					$ 3,532,700
	CRAFT START-UP SUPPORT					$ 1,407,900
	INITIAL FILLS					$ 1,059,800
	OPERATOR & TRAINING MANUALS					$ 300,000

Sargent & Lundy, LLC

AEP
BIG SANDY UNIT 2
FGD PROJECT - NID EST (N/ESP)-3B - 4.5 LB/MM BTU
COST ESTIMATE SUMMARY

Estimate No.: 30728C
Project No.: 12721-000
Date: 9/29/2010
Preparer: MNO
Reviewer: JMK
Approver: PEF

Account No.	Item Description	Scope Definition	Total Equipment Cost	Total Material Cost	Total Construction & Erection Cost	Total Projected Cost
	SUBCONTRACTORS (NOISE & DUCTWORK CONSULTANT, GEOTECHNICAL INVESTIGATION)					$ 400,000
	NOISE ABATEMENT FOR 85 DBA REQUIREMENT	FOR ID FAN, NID MODULES, TRANSFORMERS, BOP, DUCTWORK, ACOUSTIC BARRIERS FOR BOUNDARY LIMITS				$ 2,600,000
	SUBTOTAL - INDIRECT COSTS					$ 44,898,500
	TOTAL PROJECT DIRECT AND INDIRECT COSTS					$ 398,168,900
	SPARE PARTS:					$ 1,647,500
	SPARE PARTS - CAPITALIZED	0.9				$ 988,500
	SPARE PARTS - FIRST YEAR OF OPERATION	0.6				$ 659,000
	CONTINGENCY	14.086				$ 56,319,300
	ESCALATION					$ 50,762,200
	EQUIPMENT					$ 17,452,200
	MATERIAL					$ 5,887,100
	LABOR					$ 22,146,200
	INDIRECTS					$ 5,276,700
	TOTAL PROJECT COST					$ 506,897,900
	REFERENCE COSTS:					
A	ESP DEMOLITION					$ 832,300
B	REMOVE BOOSTER AIR FANS					$ 111,000
C	REMOVAL OF FUEL OIL TANK		$ 1,200,000	$ 80,000	$ 469,400	$ 1,749,400

ATTACHMENT 5-20
NID Summary Capital Cost Estimate No. 30725 Est-4A ESP in Service *
(7.5 lb SO_2/MMbtu)

* - Estimates 2A, 2B, 3A, 3B, 4A and 4B contain only accounts whose costs are different from the corresponding base estimates 1A and 1B.

Sargent & Lundy, LLC

AEP
BIG SANDY UNIT 2
FGD PROJECT - NID EST (ESP) - 4A - 7.5 LB/MM BTU
COST ESTIMATE SUMMARY

Estimate No.: 30725C
Project No.: 12721-000
Date: 9/29/2010
Preparer: MNO
Reviewer: JMK
Approver: PEF

Account No.	Item Description	Scope Definition	Total Equipment Cost	Total Material Cost	Total Construction & Erection Cost	Total Projected Cost
1.0	ID FANS					
2.0	NID MODULES					
2.1	MECHANICAL EQUIPMENT	A 14-MODULE NID SYSTEM (160' X 185') INCLUDING LIME DAY SILOS, HYDRATORS, MIXERS, J-DUCTS, FABRIC FILTER MODULES, ALL INTERNAL ELEMENTS (BAGS, CAGES, ASH HOPPERS, 2 BROKEN BAG DETECTORS/COMPARTMENT), ASH RECYCLE SYSTEM, VACUUM PIPING, AND ALL INTERNAL PIPING & DUCTWORK FOR THE VARIOUS MODULES.	$ 66,387,200	$ -	$ 42,943,100	$ 109,330,300
2.2	INSULATION FOR NID MODULES	SUBCONTRACT COST INCLUDES LABOR	$ 3,091,200	$ -	$ -	$ 3,091,200
2.3	PENTHOUSE FOR NID MODULES	14 FT HIGH, 29600 SF	$ 65,500	$ 1,544,800	$ 2,059,900	$ 3,670,200
2.4	BOTTOM ENCLOSURE FOR NID MODULES	40 FT HIGH	$ 104,400	$ 2,687,100	$ 2,817,400	$ 5,608,900
2.5	PIPING & SUPPORTS - MECHANICAL		$ 125,200	$ 174,500	$ 385,900	$ 685,600
2.6	DUCTWORK		$ -	$ 6,175,000	$ 11,794,600	$ 17,969,600
2.7	DUCT SUPPORT STEEL	THREE COAT SHOP PAINT	$ -	$ 2,755,000	$ 2,771,700	$ 5,526,700

Sargent & Lundy, LLC	AEP	Estimate No.:	30725C
	BIG SANDY UNIT 2	Project No.:	12721-000
	FGD PROJECT - NID EST (ESP) - 4A - 7.5 LB/MM BTU	Date:	9/29/2010
	COST ESTIMATE SUMMARY	Preparer:	MNO
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Account No.	Item Description	Scope Definition	Total Equipment Cost	Total Material Cost	Total Construction & Erection Cost	Total Projected Cost
2.8	DUCTWORK INSULATION & LAGGING		$ -	$ 2,040,000	$ 3,995,500	$ 6,035,500
2.9	NID MODULE- FOUNDATIONS		$ -	$ 1,203,400	$ 1,965,300	$ 3,168,700
2.10	NID MODULE - SUPPORT STEEL AND ACCESS GALLERY		$ -	$ 1,332,000	$ 3,486,100	$ 4,818,100
2.11	GROUNDING		$ -	$ 16,000	$ 46,100	$ 62,100
2.12	LIGHTING/ TRANSFORMERS & PANELS		$ 27,000	$ 75,000	$ 57,300	$ 159,300
2.13	RACEWAY, CABLE TRAY, & CONDUIT	INCLUDED IN ID FANS, 1.0	$ -	$ -	$ -	$ -
90.00	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS		$ 69,800,500	$ 18,002,800	$ 72,322,900	$ 160,126,200
	SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS		$ 4,165,000	$ 4,590,700	$ 27,246,800	$ 36,002,600
	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	NID MODULES	$ 73,965,500	$ 22,593,500	$ 99,569,700	$ 196,128,800
3.0	NEW STACK					
4.0	LIME HANDLING SYSTEM					
4.1	LIME STORAGE SILO		$ 12,790,000	$ -	$ -	$ 12,790,000
4.2	LIME UNLOADING SYSTEM	INCLUDE PNEUMATIC HANDLING SYSTEM, THREE VACUUM EXHAUSTER, TWO FILTER SEPARATORS	$ 1,100,000	$ -	$ 592,900	$ 1,692,900
4.3	LIME TRANSPORT SYSTEM TO DAY BINS	INCLUDE PNEUMATIC HANDLING SYSTEM, THREE VACUUM EXHAUSTERS, TWO FILTER SEPARATORS	$ 4,100,000	$ -	$ 2,228,500	$ 6,328,500
4.4	PIPING - MECHANICAL		$ 88,700	$ 130,300	$ 342,600	$ 561,600

Sargent & Lundy, LLC	AEP	Estimate No.:	30725C
	BIG SANDY UNIT 2	Project No.:	12721-000
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	COST ESTIMATE SUMMARY	Preparer:	MNO
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Account No.	Item Description	Scope Definition	Total Equipment Cost	Total Material Cost	Total Construction & Erection Cost	Total Projected Cost
4.5	LIME STORAGE SILO ACCESS STAIR TOWER	INCLUDES CATWALK TO THE SECOND SILO - THREE COAT SHOP PAINT	$ -	$ 159,500	$ 160,500	$ 320,000
4.6	PIPE RACK FOR LIME HANDLING, WASTE HANDLING AND MISC MECHANICAL PIPING	THREE COAT SHOP PAINT	$ -	$ 1,885,000	$ 1,896,400	$ 3,781,400
4.7	RAIL CAR UNLOADING AREA - FOUNDATIONS	20' X 120' - NO SIDING	$ -	$ 42,700	$ 90,100	$ 132,800
4.8	LIME UNLOADING BLOWER / ELECTRICAL BUILDING - FOUNDATIONS		$ -	$ 69,600	$ 147,600	$ 217,200
4.9	LIME UNLOADING BLOWER / ELECTRICAL BUILDING	100' L X 30' W X 30' H	$ 75,000	$ 335,000	$ 24,400	$ 434,400
4.10	CONCRETE PIT FOR THE ELEVATOR		$ -	$ 2,300	$ 6,900	$ 9,200
4.11	LIME STORAGE SILO - FOUNDATIONS	INCLUDES FOUNDATIONS FOR LIME TRANSPORT SYSTEM PRESSURE BLOWERS	$ -	$ 847,500	$ 1,485,400	$ 2,332,900
4.12	LIME STORAGE SILO ACCESS STAIR TOWER - FOUNDATIONS		$ -	$ 14,200	$ 28,600	$ 42,800
4.13	PIPE RACK - FOUNDATIONS		$ -	$ 239,600	$ 588,600	$ 828,200
4.14	TRANSFORMERS	SUS TRANSFORMERS: 33F, 33G, 13.8KV-480V,3PHASE, 3 WINDING XFMR	$ 170,000	$ -	$ 54,600	$ 224,600
4.15	SWITCHGEAR	480V LOW VOLTAGE (33F/G), SWITCHGEAR	$ 196,000	$ -	$ 104,700	$ 300,700
4.16	CABLE BUS DUCT		$ 134,700	$ 10,800	$ 200,200	$ 345,700
4.17	MCC		$ 61,800	$ -	$ 3,600	$ 65,400
4.18	MIMIC PANELS		$ 17,500	$ -	$ 1,400	$ 18,900
4.19	EMERGENCY POWER SYSTEM		$ 108,300	$ -	$ 24,400	$ 132,700
4.20	GROUNDING		$ 13,300	$ -	$ 41,300	$ 54,600
4.21	LIGHTING/ TRANSFORMERS & PANELS		$ 52,000	$ 135,000	$ 104,500	$ 291,500
4.22	RACEWAY, CABLE TRAY, & CONDUIT		$ -	$ 310,900	$ 1,537,100	$ 1,848,000

Sargent & Lundy, LLC	AEP	Estimate No.:	30725C
	BIG SANDY UNIT 2	Project No.:	12721-000
	FGD PROJECT - NID EST (ESP) - 4A - 7.5 LB/MM BTU	Date:	9/29/2010
	COST ESTIMATE SUMMARY	Preparer:	MNO
		Reviewer:	JMK
		Approver:	PEF

Account No.	Item Description	Scope Definition	Total Equipment Cost	Total Material Cost	Total Construction & Erection Cost	Total Projected Cost
4.23	HIGH VOLTAGE POWER CABLE & TERMINATION	1/C # 500KCMIL- 15KV	$ -	$ 144,600	$ 407,800	$ 552,400
4.24	MEDIUM VOLTAGE POWER CABLE & TERMINATION	1/C 350KCMIL-5KV	$ -	$ 66,200	$ 282,300	$ 348,500
4.25	LOW VOLTAGE POWER CABLE & TERMINATION		$ -	$ 93,000	$ 143,200	$ 236,200
4.26	CONTROL & INSTRUMENT CABLE	#14, #16 & PR # 20 & SHLD WIRE	$ -	$ 26,200	$ 73,600	$ 99,800
4.27	DUCT BANK	DUCT BANK WITH 4-5" & 4-3" CONDUITS, 2.38' H X 3.79' W	$ -	$ 61,100	$ 116,200	$ 177,300
4.28	FOUNDATIONS FOR TRANSFORMERS	FOR XFMR 33F, 33G, INCLUDES MUD MAT	$ -	$ 3,500	$ 10,300	$ 13,800
4.29	COMMUNICATIONS		$ -	$ 34,000	$ 26,000	$ 60,000
4.30	LIGHTNING PROTECTION		$ -	$ 6,000	$ 4,700	$ 10,700
4.31	SECURITY SYSTEM		$ -	$ 8,000	$ 7,000	$ 15,000
90.00	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS		$ 18,907,300	$ 4,625,000	$ 10,735,400	$ 34,267,700
	SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS		$ 945,400	$ 1,179,400	$ 3,933,000	$ 6,057,800
	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	LIME HANDLING SYSTEM	$ 19,852,700	$ 5,804,400	$ 14,668,400	$ 40,325,500
5.0	LIME SLAKER BUILDING	NOT REQUIRED FOR NID				
6.0	BYPRODUCT WASTE & FLY ASH HANDLING SYSTEMS					
6.1	BYPRODUCT WASTE HANDLING - MECHANICAL EQUIPMENT	INCLUDES PNEUMATIC HANDLING SYSTEM, THREE PRESSURE BLOWERS, ONE BIN VENT FILTER, ASH UNLOADING SYSTEM	$ 2,900,000	$ -	$ 1,615,100	$ 4,515,100

Sargent & Lundy, LLC	AEP	Estimate No.:	30725C
	BIG SANDY UNIT 2	Project No.:	12721-000
	FGD PROJECT - NID EST (ESP) - 4A - 7.5 LB/MM BTU	Date:	9/29/2010
	COST ESTIMATE SUMMARY	Preparer:	MNO
		Reviewer:	JMK
		Approver:	PEF

Account No.	Item Description	Scope Definition	Total Equipment Cost	Total Material Cost	Total Construction & Erection Cost	Total Projected Cost
6.2	FLY ASH HANDLING - MECHANICAL EQUIPMENT	INCLUDES PNEUMATIC HANDLING SYSTEM, TWO PRESSURE EXHAUSTERS, TRANSFER STATION, ONE BIN VENT FILTER, ASH UNLOADING SYSTEM	$ 2,285,000	$ -	$ 1,431,100	$ 3,716,100
6.3	BUILDING SUMP PUMPS	FOR BUILDINGS - DUPLEX. INCLUDES CHECK & ISOLATION VALVES.	$ 28,000	$ -	$ 12,300	$ 40,300
6.4	AGITATOR FOR SUMP PUMPS	5 HP	$ 12,000	$ -	$ 4,600	$ 16,600
6.5	PIPING - MECHANICAL		$ 142,800	$ 131,000	$ 408,700	$ 682,500
6.6	BYPRODUCT WASTE SILO	CONCRETE SILO 60' DIA X 88' H - 3071 TONS - SUBCONTRACT COST INCLUDES LABOR	$ 2,764,000	$ -	$ -	$ 2,764,000
6.7	RECYCLE SILO	NOT REQUIRED FOR NID	$ -	$ -	$ -	$ -
6.8	FLY ASH SILO	STEEL -STORAGE SILO, 20' DIA X 21' H, 100 TONS	$ 75,000	$ 43,500	$ 115,600	$ 234,100
6.9	BYPRODUCT WASTE STORAGE SILO - FOUNDATIONS	TOTAL FOR TWO SILOS	$ -	$ 314,000	$ 586,300	$ 900,300
6.10	FLY ASH SILO - FOUNDATIONS		$ -	$ 19,900	$ 48,700	$ 68,600
6.11	BYPRODUCT TRANSPORT BLOWER BUILDING - FOUNDATIONS		$ -	$ 97,600	$ 172,100	$ 269,700
6.12	BYPRODUCT TRANSPORT BLOWER BUILDING	90' L X 30' W X 20' H	$ 40,000	$ 241,500	$ 26,200	$ 307,700
6.13	FLY ASH BLOWER AND ELECTRICAL BUILDING - FOUNDATIONS		$ -	$ 82,800	$ 150,900	$ 233,700
6.14	FLY ASH BLOWER AND ELECTRICAL BUILDING	110' L X 30' W X 25' H	$ 75,000	$ 276,500	$ 24,400	$ 375,900

Sargent & Lundy, LLC

AEP
BIG SANDY UNIT 2
FGD PROJECT - NID EST (ESP) - 4A - 7.5 LB/MM BTU
COST ESTIMATE SUMMARY

Estimate No.: 30725C
Project No.: 12721-000
Date: 9/29/2010
Preparer: MNO
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Approver: PEF

Account No.	Item Description	Scope Definition	Total Equipment Cost	Total Material Cost	Total Construction & Erection Cost	Total Projected Cost
6.15	LOAD OUT AREA PDC	SUBCONTRACT PRICE INCLUDES LABOR. COMPLETE WITH HVAC, & FINISHES.	$ -	$ 300,000	$ -	$ 300,000
6.16	MCC	480V MCC PER LINE UP	$ 120,000	$ -	$ 7,300	$ 127,300
6.17	EMERGENBCY POWER SYSTEM		$ 185,500	$ -	$ 40,000	$ 225,500
6.18	LIGHTING/ TRANSFORMERS & PANELS		$ 18,500	$ 75,000	$ 53,200	$ 146,700
6.19	RACEWAY, CABLE TRAY, & CONDUIT		$ -	$ 40,700	$ 236,200	$ 276,900
6.20	GROUNDING		$ -	$ 4,500	$ 10,900	$ 15,400
6.21	MEDIUM VOLTAGE POWER CABLE & TERMINATION	1/C # 2/0-5KV	$ -	$ 9,500	$ 47,900	$ 57,400
6.22	LOW VOLTAGE POWER CABLE & TERMINATION		$ -	$ 80,900	$ 100,600	$ 181,500
6.23	CONTROL & INSTRUMENT CABLE	#14, #16 & PR # 20 & SHLD WIRE	$ -	$ 38,400	$ 107,800	$ 146,200
6.24	DUCT BANK	DUCT BANK WITH 4-5" & 4-3" CONDUITS	$ -	$ 6,200	$ 10,600	$ 16,800
6.25	COMMUNICATIONS		$ -	$ 70,000	$ 50,000	$ 120,000
6.26	LIGHTNING PROTECTION		$ -	$ 19,000	$ 14,000	$ 33,000
6.27	SECURITY SYSTEM		$ -	$ 16,000	$ 14,000	$ 30,000
90.0	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS		$ 8,645,800	$ 1,867,000	$ 5,288,500	$ 15,801,300
	SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS		$ 432,300	$ 476,100	$ 1,969,800	$ 2,878,100
	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	BYPRODUCT WASTE & FLY ASH HANDLING SYSTEMS	$ 9,078,100	$ 2,343,100	$ 7,258,300	$ 18,679,400
7.0	ABSORBER ISLAND	NOT REQUIRED FOR NID				
8.0	ACTIVATED CARBON INJECTION SYSTEM					

Sargent & Lundy, LLC

AEP
BIG SANDY UNIT 2
FGD PROJECT - NID EST (ESP) - 4A - 7.5 LB/MM BTU
COST ESTIMATE SUMMARY

Estimate No.: 30725C
Project No.: 12721-000
Date: 9/29/2010
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Account No.	Item Description	Scope Definition	Total Equipment Cost	Total Material Cost	Total Construction & Erection Cost	Total Projected Cost
9.0	COMPRESSED AIR SYSTEM					
10.0	SERVICE WATER SYSTEM					
11.0	POTABLE WATER SYSTEM					
12.0	FGD SUBSTATION					
13.0	FGD DCS SYSTEM					
13.1	DCS	3200 I/O POINTS	$ 2,400,000	$ -	$ 813,600	$ 3,213,600
13.2	DCS - VENDOR FIELD SUPPORT	200 MAN DAYS @	$ 300,000	$ -	$ -	$ 300,000
13.3	LOCALLY MOUNTED INSTRUMENTS		$ -	$ 650,400	$ 852,900	$ 1,503,300
90.0	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS		$ 2,700,000	$ 650,400	$ 1,666,500	$ 5,016,900
	SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS		$ 135,000	$ 165,900	$ 622,300	$ 923,200
	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	FGD DCS SYSTEM	$ 2,835,000	$ 816,300	$ 2,288,800	$ 5,940,100
14.0	CEM SYSTEM					
15.0	TRUCK & RAIL INFRASTRUCTURE					
16.0	SITE IMPROVEMENTS - CIVIL WORK					
17.0	BOP ITEMS					
17.1	PIPE INSULATION	AVERAGE 6" PIPE SIZE	$ -	$ 34,000	$ 106,000	$ 140,000
17.2	HEAT TRACING		$ -	$ 175,600	$ 248,500	$ 424,100

Sargent & Lundy, LLC	AEP	Estimate No.:	30725C
	BIG SANDY UNIT 2	Project No.:	12721-000
	FGD PROJECT - NID EST (ESP) - 4A - 7.5 LB/MM BTU	Date:	9/29/2010
	COST ESTIMATE SUMMARY	Preparer:	MNO
		Reviewer:	JMK
		Approver:	PEF

Account No.	Item Description	Scope Definition	Total Equipment Cost	Total Material Cost	Total Construction & Erection Cost	Total Projected Cost
17.3	TOUCH UP PAINT (INCLUDES PAINTING CS PIPE)		$ -	$ 188,100	$ 721,600	$ 909,700
17.4	HOISTS & TROLLEYS		$ 150,000	$ 175,000	$ 204,400	$ 529,400
17.5	MISC AUX STEEL FOR PIPE SUPPORTS	FIELD FABRICATED	$ -	$ 122,500	$ 510,600	$ 633,100
17.6	MISC PIPE SUPPORT FOUNDATIONS		$ -	$ 10,500	$ 21,000	$ 31,500
17.7	EYE WASH STATIONS	WITH 50 KW HEATERS	$ 30,000	$ 5,000	$ 30,700	$ 65,700
17.8	FIRE PROTECTION FOR MISC BUILDINGS & AREAS	STAND PIPE FOR BUILDINGS	$ -	$ 300,000	$ 245,300	$ 545,300
90.0	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS		$ 180,000	$ 1,010,700	$ 2,088,100	$ 3,278,800
	SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS		$ 9,000	$ 257,729	$ 805,302	$ 1,072,031
	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	BOP ITEMS	$ 189,000	$ 1,268,400	$ 2,893,400	$ 4,350,800
18.0	CAPITAL REPLACEMENTS - REMOVAL AND RELOCATION OF EXISTING EQUIPMENT AND INFRASTRUCTURE					
19.0	ARSENIC, ASBESTOS , LEAD ABATEMENT					
99.0	OVERALL - EQUIPMENT, MATERIAL AND LABOR COSTS		$ 123,436,400	$ 49,049,700	$ 136,993,900	$ 329,580,000

Sargent & Lundy, LLC

AEP
BIG SANDY UNIT 2
FGD PROJECT - NID EST (ESP) - 4A - 7.5 LB/MM BTU
COST ESTIMATE SUMMARY

Estimate No.: 30725C
Project No.: 12721-000
Date: 9/29/2010
Preparer: MNO
Reviewer: JMK
Approver: PEF

Account No.	Item Description	Scope Definition	Total Equipment Cost	Total Material Cost	Total Construction & Erection Cost	Total Projected Cost
	OVERALL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS		$ 6,783,800	$ 12,451,000	$ 50,713,200	$ 73,198,500
	OVERALL TOTAL DIRECT & CONSTRUCTION INDIRECT COST		$ 130,220,200	$ 61,500,700	$ 187,707,100	$ 402,778,500
	OVERALL PROJECT INDIRECT COSTS					
	ENGINEERING, PROCUREMENT, & PROJECT SERVICES					$ 25,000,000
	CONSTRUCTION MANAGEMENT					$ 12,083,400
	S-U / COMMISSIONING					$ 4,027,800
	CRAFT START-UP SUPPORT					$ 1,614,200
	INITIAL FILLS					$ 1,208,300
	OPERATOR & TRAINING MANUALS					$ 300,000
	SUBCONTRACTORS (NOISE & DUCTWORK CONSULTANT, GEOTECHNICAL INVESTIGATION)					$ 400,000
	NOISE ABATEMENT FOR 85 DBA REQUIREMENT	FOR ID FAN, NID MODULES, TRANSFORMERS, BOP, DUCTWORK, ACOUSTIC BARRIERS FOR BOUNDARY LIMITS				$ 2,600,000
	SUBTOTAL - INDIRECT COSTS					$ 47,233,700
	TOTAL PROJECT DIRECT AND INDIRECT COSTS					$ 450,012,200
	SPARE PARTS:					$ 1,953,300
	SPARE PARTS - CAPITALIZED	0.90				$ 1,171,980
	SPARE PARTS - FIRST YEAR OF OPERATION	0.60				$ 781,320
	CONTINGENCY	14.0				$ 63,352,700
	ESCALATION					$ 57,746,800
	EQUIPMENT					$ 20,691,100

Sargent & Lundy, LLC

AEP
BIG SANDY UNIT 2
FGD PROJECT - NID EST (ESP) - 4A - 7.5 LB/MM BTU
COST ESTIMATE SUMMARY

Estimate No.: 30725C
Project No.: 12721-000
Date: 9/29/2010
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Reviewer: JMK
Approver: PEF

Account No.	Item Description	Scope Definition	Total Equipment Cost	Total Material Cost	Total Construction & Erection Cost	Total Projected Cost
	MATERIAL					$ 6,335,100
	LABOR					$ 25,169,400
	INDIRECTS					$ 5,551,200
	TOTAL PROJECT COST					$ 573,065,000
	REFERENCE COSTS:					
A	REMOVAL OF FUEL OIL TANK		$ 1,200,000	$ 80,000	$ 469,400	$ 1,749,400

ATTACHMENT 5-21
NID Summary Capital Cost Estimate No. 30729 Est-4B ESP not in Service*
(7.5 lb SO_2/MMbtu)

* - Estimates 2A, 2B, 3A, 3B, 4A and 4B contain only accounts whose costs are different from the corresponding base estimates 1A and 1B.

Sargent & Lundy, LLC

AEP
BIG SANDY UNIT 2
FGD PROJECT - NID EST (N/ESP)-4B - 7.5 LB/MM BTU
COST ESTIMATE SUMMARY

Estimate No.: 30729C
Project No.: 12721-000
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Reviewer: JMK
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Account No.	Item Description	Scope Definition	Total Equipment Cost	Total Material Cost	Total Construction & Erection Cost	Total Projected Cost
1.0	ID FANS					
2.0	NID MODULES					
2.1	MECHANICAL EQUIPMENT	A 14-MODULE NID SYSTEM (160' X 185') INCLUDING LIME DAY SILOS, HYDRATORS, MIXERS, J-DUCTS, FABRIC FILTER MODULES, ALL INTERNAL ELEMENTS (BAGS, CAGES, ASH HOPPERS, 2 BROKEN BAG DETECTORS / COMPARTMENT), ASH RECYCLE SYSTEM, VACUUM PIPING, AND ALL INTERNAL PIPING & DUCTWORK FOR THE VARIOUS MODULES.	$ 67,447,500	$ -	$ 43,731,200	$ 111,178,700
2.2	INSULATION FOR NID MODULES	SUBCONTRACT COST INCLUDES LABOR	$ 3,091,200	$ -	$ -	$ 3,091,200
2.3	PENTHOUSE FOR NID MODULES	14 FT HIGH, 29600 SF	$ 65,500	$ 1,544,800	$ 2,059,900	$ 3,670,200
2.4	BOTTOM ENCLOSURE FOR NID MODULES	40 FT HIGH	$ 104,400	$ 2,687,100	$ 2,817,400	$ 5,608,900
2.5	PIPING & SUPPORTS - MECHANICAL		$ 125,200	$ 174,500	$ 385,900	$ 685,600
2.6	DUCTWORK		$ -	$ 4,797,000	$ 9,162,600	$ 13,959,600
2.7	DUCT SUPPORT STEEL	THREE COAT SHOP PAINT	$ -	$ 2,140,200	$ 2,153,200	$ 4,293,400

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Account No.	Item Description	Scope Definition	Total Equipment Cost	Total Material Cost	Total Construction & Erection Cost	Total Projected Cost
2.8	DUCTWORK INSULATION & LAGGING		$ -	$ 1,632,000	$ 3,196,400	$ 4,828,400
2.9	NID MODULE- FOUNDATIONS		$ -	$ 1,203,400	$ 1,965,300	$ 3,168,700
2.10	NID MODULE - SUPPORT STEEL AND ACCESS GALLERY		$ -	$ 1,332,000	$ 3,486,100	$ 4,818,100
2.11	GROUNDING		$ -	$ 16,000	$ 46,100	$ 62,100
2.12	LIGHTING/ TRANSFORMERS & PANELS		$ 27,000	$ 75,000	$ 57,300	$ 159,300
2.13	RACEWAY, CABLE TRAY, & CONDUIT	INCLUDED IN ID FANS, 1.0	$ -	$ -	$ -	$ -
90.00	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS		$ 70,860,800	$ 15,602,000	$ 69,061,400	$ 155,524,200
	SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS		$ 4,218,000	$ 3,978,500	$ 26,114,800	$ 34,311,300
	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	NID MODULES	$ 75,078,800	$ 19,580,500	$ 95,176,200	$ 189,835,500
3.0	NEW STACK					
4.0	LIME HANDLING SYSTEM					
4.1	LIME STORAGE SILO		$ 12,790,000	$ -	$ -	$ 12,790,000
4.2	LIME UNLOADING SYSTEM	INCLUDE PNEUMATIC HANDLING SYSTEM, THREE VACUUM EXHAUSTER, TWO FILTER SEPARATORS	$ 1,100,000	$ -	$ 592,900	$ 1,692,900
4.3	LIME TRANSPORT SYSTEM TO DAY BINS	INCLUDE PNEUMATIC HANDLING SYSTEM, THREE VACUUM EXHAUSTERS, TWO FILTER SEPARATORS	$ 4,100,000	$ -	$ 2,228,500	$ 6,328,500

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Account No.	Item Description	Scope Definition	Total Equipment Cost	Total Material Cost	Total Construction & Erection Cost	Total Projected Cost
4.4	PIPING - MECHANICAL		$ 88,700	$ 130,300	$ 342,600	$ 561,600
4.5	LIME STORAGE SILO ACCESS STAIR TOWER	INCLUDES CATWALK TO THE SECOND SILO - THREE COAT SHOP PAINT	$ -	$ 159,500	$ 160,500	$ 320,000
4.6	PIPE RACK FOR LIME HANDLING, WASTE HANDLING AND MISC MECHANICAL PIPING	THREE COAT SHOP PAINT	$ -	$ 1,885,000	$ 1,896,400	$ 3,781,400
4.7	RAIL CAR UNLOADING AREA - FOUNDATIONS	20' X 120' - NO SIDING	$ -	$ 42,700	$ 90,100	$ 132,800
4.8	LIME UNLOADING BLOWER / ELECTRICAL BUILDING - FOUNDATIONS		$ -	$ 69,600	$ 147,600	$ 217,200
4.9	LIME UNLOADING BLOWER / ELECTRICAL BUILDING	100' L X 30' W X 30' H	$ 75,000	$ 335,000	$ 24,400	$ 434,400
4.10	CONCRETE PIT FOR THE ELEVATOR		$ -	$ 2,300	$ 6,900	$ 9,200
4.11	LIME STORAGE SILO - FOUNDATIONS	INCLUDES FOUNDATIONS FOR LIME TRANSPORT SYSTEM PRESSURE BLOWERS	$ -	$ 847,500	$ 1,485,400	$ 2,332,900
4.12	LIME STORAGE SILO ACCESS STAIR TOWER - FOUNDATIONS		$ -	$ 14,200	$ 28,600	$ 42,800
4.13	PIPE RACK - FOUNDATIONS		$ -	$ 239,600	$ 588,600	$ 828,200
4.14	TRANSFORMERS	SUS TRANSFORMERS: 33F, 33G, 13.8KV-480V,3PHASE, 3 WINDING XFMR	$ 170,000	$ -	$ 54,600	$ 224,600
4.15	SWITCHGEAR	480V LOW VOLTAGE (33F/G), SWITCHGEAR	$ 196,000	$ -	$ 104,700	$ 300,700
4.16	CABLE BUS DUCT		$ 134,700	$ 10,800	$ 200,200	$ 345,700
4.17	MCC		$ 61,800	$ -	$ 3,600	$ 65,400
4.18	MIMIC PANELS		$ 17,500	$ -	$ 1,400	$ 18,900
4.19	EMERGENCY POWER SYSTEM		$ 108,300	$ -	$ 24,400	$ 132,700
4.20	GROUNDING		$ 13,300	$ -	$ 41,300	$ 54,600

Sargent & Lundy, LLC

AEP
BIG SANDY UNIT 2
FGD PROJECT - NID EST (N/ESP)-4B - 7.5 LB/MM BTU
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Project No.: 12721-000
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Account No.	Item Description	Scope Definition	Total Equipment Cost	Total Material Cost	Total Construction & Erection Cost	Total Projected Cost
4.21	LIGHTING/ TRANSFORMERS & PANELS		$ 52,000	$ 135,000	$ 104,500	$ 291,500
4.22	RACEWAY, CABLE TRAY, & CONDUIT		$ -	$ 310,900	$ 1,537,100	$ 1,848,000
4.23	HIGH VOLTAGE POWER CABLE & TERMINATION	1/C # 500KCMIL- 15KV	$ -	$ 144,600	$ 407,800	$ 552,400
4.24	MEDIUM VOLTAGE POWER CABLE & TERMINATION	1/C 350KCMIL-5KV	$ -	$ 66,200	$ 282,300	$ 348,500
4.25	LOW VOLTAGE POWER CABLE & TERMINATION		$ -	$ 93,000	$ 143,200	$ 236,200
4.26	CONTROL & INSTRUMENT CABLE	#14, #16 & PR # 20 & SHLD WIRE	$ -	$ 26,200	$ 73,600	$ 99,800
4.27	DUCT BANK	DUCT BANK WITH 4-5" & 4-3" CONDUITS, 2.38' H X 3.79' W	$ -	$ 61,100	$ 116,200	$ 177,300
4.28	FOUNDATIONS FOR TRANSFORMERS	FOR XFMR 33F, 33G, INCLUDES MUD MAT	$ -	$ 3,500	$ 10,300	$ 13,800
4.29	COMMUNICATIONS		$ -	$ 34,000	$ 26,000	$ 60,000
4.30	LIGHTNING PROTECTION		$ -	$ 6,000	$ 4,700	$ 10,700
4.31	SECURITY SYSTEM		$ -	$ 8,000	$ 7,000	$ 15,000
90.00	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS		$ 18,907,300	$ 4,625,000	$ 10,735,400	$ 34,267,700
	SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS		$ 945,400	$ 1,179,400	$ 3,933,000	$ 6,057,800
	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	LIME HANDLING SYSTEM	$ 19,852,700	$ 5,804,400	$ 14,668,400	$ 40,325,500
5.0	LIME SLAKER BUILDING	NOT REQUIRED FOR NID				
6.0	BYPRODUCT WASTE & FLY ASH HANDLING SYSTEMS					
6.1	BYPRODUCT WASTE HANDLING - MECHANICAL EQUIPMENT	INCLUDES PNEUMATIC HANDLING SYSTEM, THREE PRESSURE BLOWERS, ONE BIN VENT FILTER, ASH UNLOADING SYSTEM	$ 3,045,000	$ -	$ 1,695,900	$ 4,740,900

Sargent & Lundy, LLC	AEP	Estimate No.:	30729C
	BIG SANDY UNIT 2	Project No.:	12721-000
	FGD PROJECT - NID EST (N/ESP)-4B - 7.5 LB/MM BTU	Date:	9/29/2010
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Account No.	Item Description	Scope Definition	Total Equipment Cost	Total Material Cost	Total Construction & Erection Cost	Total Projected Cost
6.2	ECONOMIZER ASH HANDLING - MECHANICAL EQUIPMENT	INCLUDES JET PUMPS AND PIPING / SUPPORTS TO THE BOTTOM ASH POND	$ 400,000	$ -	$ 296,400	$ 696,400
6.3	BUILDING SUMP PUMPS	FOR BUILDINGS - DUPLEX. INCLUDES CHECK & ISOLATION VALVES.	$ 28,000	$ -	$ 12,300	$ 40,300
6.4	AGITATOR FOR SUMP PUMPS	5 HP	$ 12,000	$ -	$ 4,600	$ 16,600
6.5	PIPING - MECHANICAL		$ 142,800	$ 131,000	$ 408,700	$ 682,500
6.6	BYPRODUCT WASTE SILO	CONCRETE SILO 65' DIA X 107' H - 4496 TONS - SUBCONTRACT COST INCLUDES LABOR	$ 4,046,000	$ -	$ -	$ 4,046,000
6.7	RECYCLE SILO	NOT REQUIRED FOR NID	$ -	$ -	$ -	$ -
6.8	FLY ASH SILO	NOT REQUIRED - ECONOMIZER FLY ASH SLUICD TO BOTTOM ASH POND	$ -	$ -	$ -	$ -
6.9	BYPRODUCT WASTE STORAGE SILO - FOUNDATIONS	TOTAL FOR TWO SILOS	$ -	$ 377,100	$ 738,300	$ 1,115,400
6.10	FLY ASH SILO - FOUNDATIONS	NOT REQUIRED	$ -	$ -	$ -	$ -
6.11	BYPRODUCT TRANSPORT BLOWER BUILDING - FOUNDATIONS		$ -	$ 97,600	$ 172,100	$ 269,700
6.12	BYPRODUCT TRANSPORT BLOWER BUILDING	90' L X 30' W X 20' H	$ 40,000	$ 241,500	$ 26,200	$ 307,700
6.13	FLY ASH BLOWER AND ELECTRICAL BUILDING - FOUNDATIONS	NOT REQUIRED	$ -	$ -	$ -	$ -

Sargent & Lundy, LLC	AEP	Estimate No.:	30729C
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Account No.	Item Description	Scope Definition	Total Equipment Cost	Total Material Cost	Total Construction & Erection Cost	Total Projected Cost
6.14	FLY ASH BLOWER AND ELECTRICAL BUILDING	NOT REQUIRED	$ -	$ -	$ -	$ -
6.15	LOAD OUT AREA PDC	SUBCONTRACT PRICE INCLUDES LABOR. COMPLETE WITH HVAC, & FINISHES.	$ -	$ 300,000	$ -	$ 300,000
6.16	MCC	480V MCC PER LINE UP	$ 60,000	$ -	$ 3,600	$ 63,600
6.17	EMERGENBCY POWER SYSTEM		$ 92,800	$ -	$ 19,900	$ 112,700
6.18	LIGHTING/ TRANSFORMERS & PANELS		$ 18,500	$ 60,000	$ 44,100	$ 122,600
6.19	RACEWAY, CABLE TRAY, & CONDUIT		$ -	$ 32,500	$ 189,100	$ 221,600
6.20	GROUNDING		$ -	$ 4,500	$ 10,900	$ 15,400
6.21	MEDIUM VOLTAGE POWER CABLE & TERMINATION	1/C # 2/0-5KV	$ -	$ 9,500	$ 47,900	$ 57,400
6.22	LOW VOLTAGE POWER CABLE & TERMINATION		$ -	$ 64,700	$ 80,500	$ 145,200
6.23	CONTROL & INSTRUMENT CABLE	#14, #16 & PR # 20 & SHLD WIRE	$ -	$ 30,700	$ 86,200	$ 116,900
6.24	DUCT BANK	DUCT BANK WITH 4-5" & 4-3" CONDUITS	$ -	$ 6,200	$ 10,600	$ 16,800
6.25	COMMUNICATIONS		$ -	$ 34,000	$ 26,000	$ 60,000
6.26	LIGHTNING PROTECTION		$ -	$ 16,000	$ 14,000	$ 30,000
6.27	SECURITY SYSTEM		$ -	$ 8,000	$ 7,000	$ 15,000
90.0	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS		$ 7,885,100	$ 1,413,300	$ 3,894,300	$ 13,192,700
	SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS		$ 394,300	$ 360,400	$ 1,452,600	$ 2,207,200
	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	BYPRODUCT WASTE & FLY ASH HANDLING SYSTEMS	$ 8,279,400	$ 1,773,700	$ 5,346,900	$ 15,399,900

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Account No.	Item Description	Scope Definition	Total Equipment Cost	Total Material Cost	Total Construction & Erection Cost	Total Projected Cost
7.0	ABSORBER ISLAND	NOT REQUIRED FOR NID				
8.0	ACTIVATED CARBON INJECTION SYSTEM					
9.0	COMPRESSED AIR SYSTEM					
10.0	SERVICE WATER SYSTEM					
11.0	POTABLE WATER SYSTEM					
12.0	FGD SUBSTATION					
13.0	FGD DCS SYSTEM					
14.0	CEM SYSTEM					
15.0	TRUCK & RAIL INFRASTRUCTURE					
16.0	SITE IMPROVEMENTS - CIVIL WORK					
17.0	BOP ITEMS					
17.1	PIPE INSULATION	AVERAGE 6" PIPE SIZE	$ -	$ 34,000	$ 106,000	$ 140,000
17.2	HEAT TRACING		$ -	$ 175,600	$ 248,500	$ 424,100
17.3	TOUCH UP PAINT (INCLUDES PAINTING CS PIPE)		$ -	$ 188,100	$ 721,600	$ 909,700
17.4	HOISTS & TROLLEYS		$ 150,000	$ 175,000	$ 204,400	$ 529,400

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Account No.	Item Description	Scope Definition	Total Equipment Cost	Total Material Cost	Total Construction & Erection Cost	Total Projected Cost
17.5	MISC AUX STEEL FOR PIPE SUPPORTS	FIELD FABRICATED	$ -	$ 122,500	$ 510,600	$ 633,100
17.6	MISC PIPE SUPPORT FOUNDATIONS		$ -	$ 10,500	$ 21,000	$ 31,500
17.7	EYE WASH STATIONS	WITH 50 KW HEATERS	$ 30,000	$ 5,000	$ 30,700	$ 65,700
17.8	FIRE PROTECTION FOR MISC BUILDINGS & AREAS	STAND PIPE FOR BUILDINGS	$ -	$ 300,000	$ 245,300	$ 545,300
90.0	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS		$ 180,000	$ 1,010,700	$ 2,088,100	$ 3,278,800
	SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS		$ 9,000	$ 257,729	$ 805,302	$ 1,072,031
	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	BOP ITEMS	$ 189,000	$ 1,268,400	$ 2,893,400	$ 4,350,800
18.0	CAPITAL REPLACEMENTS - REMOVAL AND RELOCATION OF EXISTING EQUIPMENT AND INFRASTRUCTURE					
19.0	ARSENIC, ASBESTOS , LEAD ABATEMENT					

Sargent & Lundy, LLC

AEP
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99.0	OVERALL - EQUIPMENT, MATERIAL AND LABOR COSTS		$ 124,458,000	$ 46,195,200	$ 132,428,800	$ 323,182,000
	OVERALL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS		$ 6,834,900	$ 11,723,100	$ 49,098,400	$ 70,906,900
	OVERALL TOTAL DIRECT & CONSTRUCTION INDIRECT COST		$ 131,292,900	$ 57,918,300	$ 181,527,200	$ 394,088,900
	OVERALL PROJECT INDIRECT COSTS					
	ENGINEERING, PROCUREMENT, & PROJECT SERVICES					$ 25,000,000
	CONSTRUCTION MANAGEMENT					$ 11,822,700
	S-U / COMMISSIONING					$ 3,940,900
	CRAFT START-UP SUPPORT					$ 1,560,400
	INITIAL FILLS					$ 1,182,300
	OPERATOR & TRAINING MANUALS					$ 300,000
	SUBCONTRACTORS (NOISE & DUCTWORK CONSULTANT, GEOTECHNICAL INVESTIGATION)					$ 400,000
	NOISE ABATEMENT FOR 85 DBA REQUIREMENT	FOR ID FAN, NID MODULES, TRANSFORMERS, BOP, DUCTWORK, ACOUSTIC BARRIERS FOR BOUNDARY LIMITS				$ 2,600,000
	SUBTOTAL - INDIRECT COSTS					$ 46,806,300
	TOTAL PROJECT DIRECT AND INDIRECT COSTS					$ 440,895,200
	SPARE PARTS:					$ 1,969,400
	SPARE PARTS - CAPITALIZED	0.90				$ 1,221,028
	SPARE PARTS - FIRST YEAR OF OPERATION	0.60				$ 748,372

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Reviewer: JMK
Approver: PEF

Account No.	Item Description	Scope Definition	Total Equipment Cost	Total Material Cost	Total Construction & Erection Cost	Total Projected Cost
	CONTINGENCY	14.1				$ 62,612,800
	ESCALATION					$ 56,776,800
	EQUIPMENT					$ 20,861,500
	MATERIAL					$ 6,025,000
	LABOR					$ 24,389,300
	INDIRECTS					$ 5,501,000
	TOTAL PROJECT COST					$ 562,254,200
	REFERENCE COSTS:					
A	ESP DEMOLITION					$ 832,300
B	REMOVE BOOSTER AIR FANS					$ 111,000
C	REMOVAL OF FUEL OIL TANK		$ 1,200,000	$ 80,000	$ 469,400	$ 1,749,400

ATTACHMENT 5-22
O&M Costs – Fixed and Variable (NID)

NID O&M Costs – Revision 0

GENERAL

The O&M costs are based on defined inputs from AEP and results of mass balance calculations. Unlike the capital costs that require estimation from previous project and scaling parameters, the O&M cost basis is well defined. Therefore, the O&M costs presented are expected to reflect the actual cost that will be incurred with little variance. The costs are affected by changes in labor rates, commodity pricing, and agreed to minimum staffing requirements. Although these inputs were confirmed by AEP, an uncertainty associated with this pricing is generally in the range of ±10%. Based on the typical pricing uncertainty, it is expected that the O&M costs are accurate to ±10%.

All O&M costs are presented in constant 2010 dollars.

VARIABLE O&M COSTS

The variable O&M costs include:

- Reagent and Disposal
- NID byproduct and dry fly ash removed from the ESP includes 30 wt% dust control water for weight of solids transported to the landfill
- Makeup water for the process only. The water consumption includes: hydrator water, temperature control water, and dust control water only.
- Activated carbon injection rate is based on 2 lb/MMacfm into the NID system. The 2 lb/MMacfm injection rate should achieve a 90% mercury removal, based on current industry experience.
- Bag replacement every 3 years
- Cage replacement every 9 years
- Auxiliary Power (displayed as MW consumed)
- The draft power accounts for the NID system loss, new ductwork, and all other losses associated with the balance draft conversion (furnace to stack). In the cases where the ESP is left in service, the additional ESP pressure loss is included in the draft power estimate. For the cases with a booster fan, the booster fan power is added to the new ID fan power to fully account for the system requirement. This will provide a consistent basis for comparison of the various technologies. The operating power is 20% less than the test block power used for cost estimating purposes.

NID O&M Costs – Revision 0

- A second value for the draft power is provided that shows the estimated requirement for the FGD system only (J-duct through baghouse). The FGD draft power is part of the overall draft power.
- No forced outages are anticipated due to equipment redundancy designed into the system.

FIXED O&M COSTS

The fixed O&M costs include:

- Operating Labor

  The FGD system will require additional staff to operate the equipment. An absolute minimum number of additional staff was used for comparison purposes between the various technologies. Actual staffing requirements would be based on site specific operating experience. The NID estimate was based on:

Operation	**Staff**
Absorber Island Operation	2 person per shift for 5 shifts (10 operators total)
Total	10 operations staff

  Depending on the workload of the balance of the plant operations staff, additional FGD operating labor may be required. Other areas to consider are:

Operation	**Staff**
Reagent Unloading	2 additional people if the coal handling staff cannot handle the additional duties.
Hydrator/Mixer Operations	5 additional operations staff
Byproduct Loadout	2 additional operators
System Engineer	1 additional position
Total	10 additional operations staff

  For FGD technology comparison purposes, the minimum operations staff required was used in the evaluation. Additional staff could be included; however, the difference in staff between the various technologies would be the same.

NID O&M Costs – Revision 0

- Maintenance Labor
  Including: maintenance mechanics, I&C technicians, maintenance planner, supervision, and overhead.
- Maintenance Materials
  Including: all preventative and corrective maintenance materials for the hydrators, mixers, module dampers, blowers/compressors, fans, etc…

ECONOMIC BASIS

Table 1 shows the data used to generate the costs associated with the retrofit options.

Table 1. Economic Parameters

Unit Capacity Factor (%) Note 1	85
Operating Labor Rate ($/hr) Note 2	50.00
Lime ($/ton) Not e 5	139 (Delivered by Rail Costs)
Activated Carbon ($/ton) Note 4	1440 (Delivered by Truck Costs)
By-Product Disposal ($/ton) Note 3	8
Makeup Water ($/1000 gallons)	1.00
Fabric Filter Bag Costs ($/bag)Note 4	80
Fabric Filter Cage Costs ($/cage)Note 4	30

Notes:

1) Per Order of Magnitude/Relative Capital Installed Cost Estimate Specification (BS2-FGDSCE-052010) Revision 2 dated September 24, 2010 provided by AEP.
2) The labor rate is a total pay and benefits rate.
3) Disposal cost for by-product (FGD and/or fly ash), trucking to landfill on private haul road.
4) Cost was provided by AEP in comments to Revision A.
5) Provided by AEP on the teleconference on 27-July-2010.

NID O&M Costs – Revision 0

Table 2. O&M Costs for NID Systems without the ESP (2010 dollars)

Fuel	1.7 w/o ESP	3.0 w/o ESP	4.5 w/o ESP	7.5 w/o ESP
Fixed O&M ($/year)				
Operating Labor	1,040,000	1,040,000	1,040,000	1,040,000
Maintenance Material	2,284,000	2,350,000	2,416,000	2,548,000
Maintenance Labor	1,522,000	1,566,000	1,610,000	1,698,000
Total Fixed O&M ($/year)	**4,846,000**	**4,956,000**	**5,066,000**	**5,286,000**
Variable O&M ($/year)				
Reagent Cost	10,189,000	20,462,000	30,160,000	44,782,000
Activated Carbon	2,344,000	2,319,000	2,315,000	2,293,000
FGD Byproduct Disposal Cost	4,393,000	5,860,000	7,246,000	9,806,000
Makeup Water Cost	523,000	533,000	550,000	572,000
Wastewater Treatment Chemicals	NA	NA	NA	NA
Bags and Cages Replacement	690,000	690,000	690,000	690,000
Total Variable O&M excluding Auxiliary Power ($/year)	**18,139,000**	**29,864,000**	**40,961,000**	**58,143,000**
Auxiliary Power at Full Load (MW)				
Overall Draft [in WC]	23 [52]	23 [52]	23 [52]	23 [52]
FGD Draft Only [in WC]	10 [18]	10 [18]	10 [18]	10 [18]
FGD Equipment Load	4	5	6	6
Existing Booster Fans	-10	-10	-10	-10
Existing ESP	-4	-4	-4	-4
WESP	NA	NA	NA	NA
Total Auxiliary Power at Full Load (MW)	**13**	**14**	**15**	**15**

Note: NA = Not Applicable for the technology

NID O&M Costs – Revision 0

Table 3. O&M Costs for NID Systems with the ESP (2010 dollars)

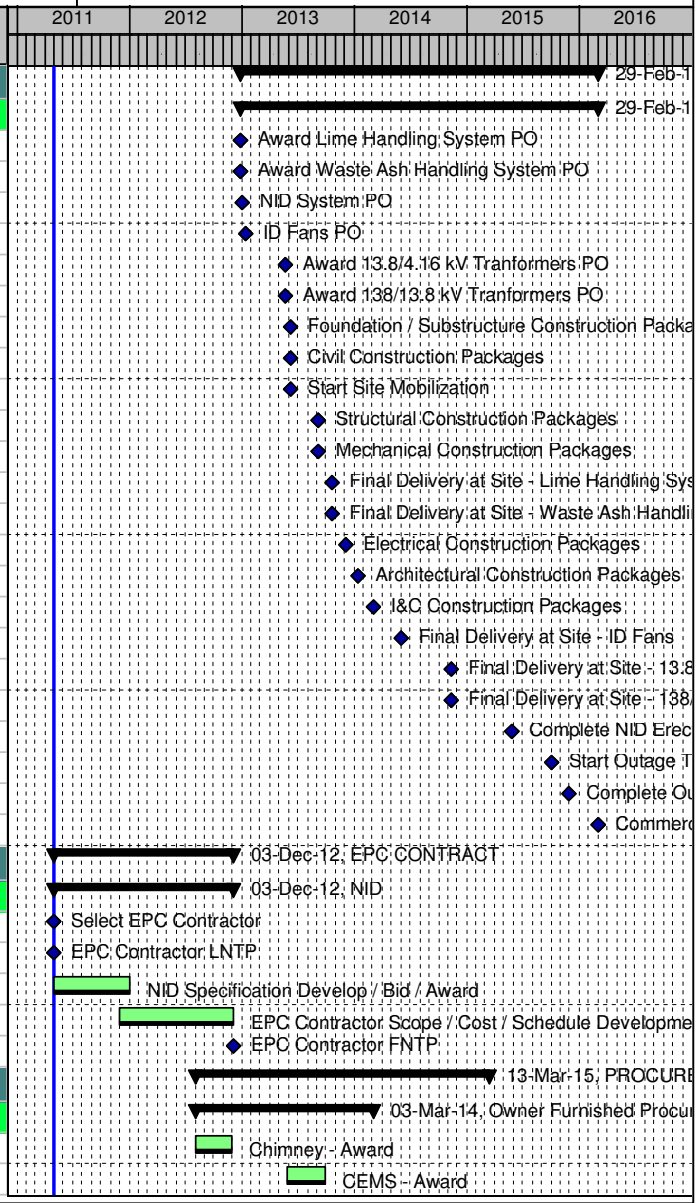
Fuel	1.7 w/ ESP	3.0 w/ ESP	4.5 w/ ESP	7.5 w/ ESP
Fixed O&M ($/year)				
Operating Labor	1,040,000	1,040,000	1,040,000	1,040,000
Maintenance Material	2,284,000	2,350,000	2,416,000	2,548,000
Maintenance Labor	1,522,000	1,566,000	1,610,000	1,698,000
Total Fixed O&M ($/year)	**4,846,000**	**4,956,000**	**5,066,000**	**5,286,000**
Variable O&M ($/year)				
Reagent Cost	10,189,000	20,462,000	30,160,000	44,782,000
Activated Carbon	2,267,000	2,243,000	2,239,000	2,218,000
FGD Byproduct Disposal Cost	1,902,000	3,668,000	5,290,000	7,806,000
Makeup Water Cost	517,000	530,000	547,000	570,000
Wastewater Treatment Chemicals	NA	NA	NA	NA
Bags and Cages Replacement	690,000	690,000	690,000	690,000
Total Variable O&M excluding Auxiliary Power ($/year)	**15,565,000**	**27,593,000**	**38,926,000**	**56,066,000**
Auxiliary Power at Full Load (MW)				
Overall Draft [in WC]	17 [40]	17 [40]	17 [40]	17 [40]
FGD Draft Only [in WC]	10 [18]	10 [18]	10 [18]	10 [18]
FGD Equipment Load	4	5	6	6
Existing Booster Fans	0	0	0	0
Existing ESP	0	0	0	0
WESP	NA	NA	NA	NA
Total Auxiliary Power at Full Load (MW)	**21**	**22**	**23**	**23**

Note: NA = Not Applicable for the technology

ATTACHMENT 5-23
Project Schedule (NID – ESP Out of Service)

Big Sandy - Level 2 Schedule Layout | **Big Sandy NID (ESP Out of Service)** | **Data Date: 02-May-11 12:00 AM**

Activity ID	Activity Name	Dur	Start	Finish
KEY PROJECT MILESTONES		817	27-Dec-12	29-Feb-16
Key Project Milestones		817	27-Dec-12	29-Feb-16
MS.SL.070	Award Lime Handling System PO	0		27-Dec-12
MS.SL.080	Award Waste Ash Handling System PO	0		27-Dec-12
MS.SL.200	NID System PO	0		03-Jan-13
MS.SL.210	ID Fans PO	0		10-Jan-13
MS.SL.090	Award 13.8/4.16 kV Tranformers PO	0		24-May-13
MS.SL.230	Award 138/13.8 kV Tranformers PO	0		24-May-13
MS.SL.240	Foundation / Substructure Construction Packages	0		07-Jun-13
MS.SL.140	Civil Construction Packages	0		07-Jun-13
MS.SL.190	Start Site Mobilization	0		10-Jun-13
MS.SL.150	Structural Construction Packages	0		06-Sep-13
MS.SL.160	Mechanical Construction Packages	0		06-Sep-13
MS.SL.110	Final Delivery at Site - Lime Handling System	0		23-Oct-13
MS.SL.120	Final Delivery at Site - Waste Ash Handling System	0		23-Oct-13
MS.SL.170	Electrical Construction Packages	0		04-Dec-13
MS.SL.250	Architectural Construction Packages	0		10-Jan-14
MS.SL.180	I&C Construction Packages	0		06-Mar-14
MS.SL.100	Final Delivery at Site - ID Fans	0		03-Jun-14
MS.SL.130	Final Delivery at Site - 13.8/4.16 kV Tranformers	0		14-Nov-14
MS.SL.220	Final Delivery at Site - 138/13.8 kV Tranformers	0		14-Nov-14
MS.TC.200	Complete NID Erection	0		25-May-15
MS.TC.210	Start Outage Tie-in	0		01-Oct-15
MS.TC.220	Complete Outage Tie-in	0		30-Nov-15
MS.TC.230	Commercial Operation	0		29-Feb-16
EPC CONTRACT		412	02-May-11	03-Dec-12
NID		412	02-May-11	03-Dec-12
EPC1000	Select EPC Contractor	0		02-May-11
EPC1010	EPC Contractor LNTP	0		02-May-11
EPC1020	NID Specification Develop / Bid / Award	174	02-May-11	03-Jan-12
EPC1030	EPC Contractor Scope / Cost / Schedule Development	260	01-Dec-11	03-Dec-12
EPC1040	EPC Contractor FNTP	0		03-Dec-12
PROCUREMENT		674	01-Aug-12	13-Mar-15
Owner Furnished Procurement		408	01-Aug-12	03-Mar-14
SL.P-6800.00	Chimney - Award	85	01-Aug-12*	27-Nov-12
SL.P-6892.00	CEMS - Award	85	29-May-13	26-Sep-13



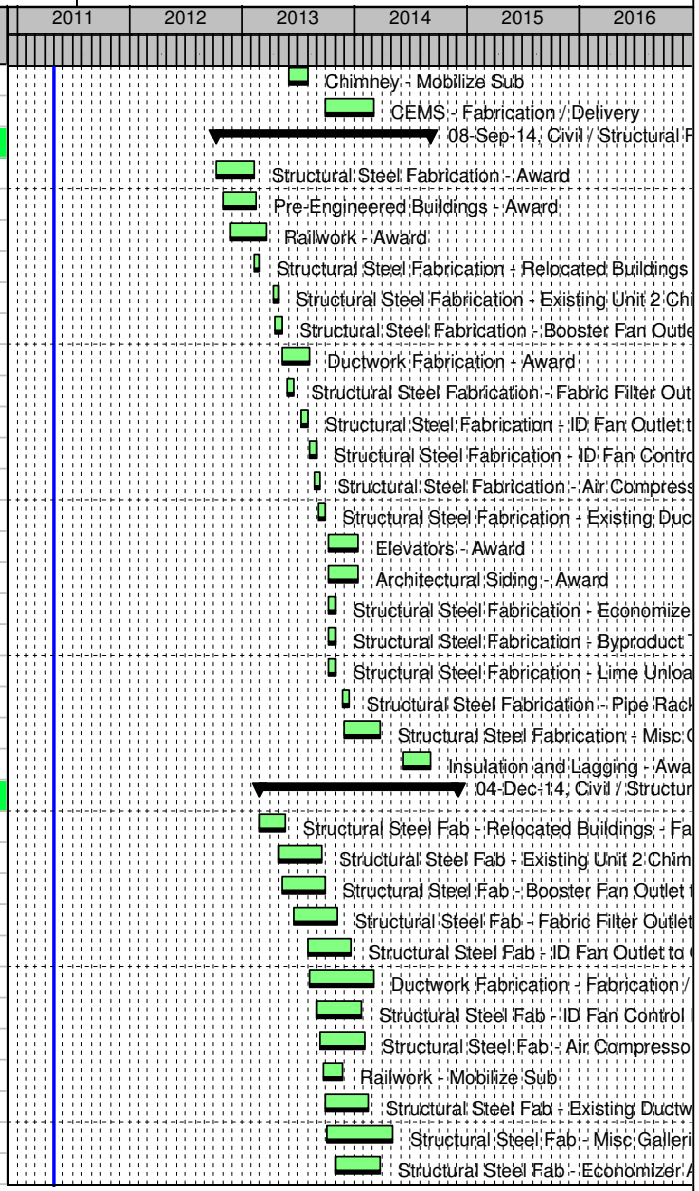
Remaining Level of Effort | Actual Level of Effort | Actual Work
WBS Summary | Primary Baseline | Remaining Work

TASK filter: All Activities

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Big Sandy - Level 2 Schedule Layout	Big Sandy NID (ESP Out of Service)	Data Date: 02-May-11 12:00 AM

Activity ID	Activity Name	Dur	Start	Finish
SL.P-6800.90	Chimney - Mobilize Sub	45	31-May-13	02-Aug-13
SL.P-6892.90	CEMS - Fabrication / Delivery	110	26-Sep-13	03-Mar-14
Civil / Structural Procurement - Award		492	10-Oct-12	08-Sep-14
SL.P-6804.00	Structural Steel Fabrication - Award	85	10-Oct-12	07-Feb-13
SL.P-6811.00	Pre-Engineered Buildings - Award	75	31-Oct-12	14-Feb-13
SL.P-6809.00	Railwork - Award	85	21-Nov-12	21-Mar-13
SL.P-6804.5P	Structural Steel Fabrication - Relocated Buildings Package	15	08-Feb-13	28-Feb-13
SL.P-6804.5N	Structural Steel Fabrication - Existing Unit 2 Chimney Demo Package	15	10-Apr-13	01-May-13
SL.P-6804.5B	Structural Steel Fabrication - Booster Fan Outlet to NID Inlet Package	15	17-Apr-13	08-May-13
SL.P-6805.00	Ductwork Fabrication - Award	63	08-May-13	06-Aug-13
SL.P-6804.5C	Structural Steel Fabrication - Fabric Filter Outlet to ID Fan Inlet Package	15	29-May-13	19-Jun-13
SL.P-6804.5D	Structural Steel Fabrication - ID Fan Outlet to Chimney Tie-in Point P...	15	11-Jul-13	01-Aug-13
SL.P-6804.5L	Structural Steel Fabrication - ID Fan Control Room Package	15	09-Aug-13	30-Aug-13
SL.P-6804.5K	Structural Steel Fabrication - Air Compressor Building Package	15	23-Aug-13	13-Sep-13
SL.P-6804.5Q	Structural Steel Fabrication - Existing Ductwork Reinforcements Pack...	15	05-Sep-13	26-Sep-13
SL.P-6807.00	Elevators - Award	63	11-Oct-13	13-Jan-14
SL.P-6808.00	Architectural Siding - Award	63	11-Oct-13	13-Jan-14
SL.P-6804.5G	Structural Steel Fabrication - Economizer Ash Blower Building Package	15	11-Oct-13	01-Nov-13
SL.P-6804.5H	Structural Steel Fabrication - Byproduct Transport Blower Building Pa...	15	11-Oct-13	01-Nov-13
SL.P-6804.5J	Structural Steel Fabrication - Lime Unloading / Electrical Building Pac...	15	11-Oct-13	01-Nov-13
SL.P-6804.5F	Structural Steel Fabrication - Pipe Rack Package	15	22-Nov-13	13-Dec-13
SL.P-6804.5X	Structural Steel Fabrication - Misc Gallieries, Platforms & Walkways ...	80	29-Nov-13	25-Mar-14
SL.P-6806.00	Insulation and Lagging - Award	63	10-Jun-14	08-Sep-14
Civil / Structural Procurement - Delivery / Mobilization		456	01-Mar-13	04-Dec-14
SL.P-6804.9P	Structural Steel Fab - Relocated Buildings - Fab / Delivery	60	01-Mar-13	23-May-13
SL.P-6804.9N	Structural Steel Fab - Existing Unit 2 Chimney Demo - Fab / Delivery	100	01-May-13	19-Sep-13
SL.P-6804.9B	Structural Steel Fab - Booster Fan Outlet to NID Inlet - Fab / Delivery	100	08-May-13	26-Sep-13
SL.P-6804.9C	Structural Steel Fab - Fabric Filter Outlet to ID Fan Inlet - Fab / Delivery	100	19-Jun-13	07-Nov-13
SL.P-6804.9D	Structural Steel Fab - ID Fan Outlet to Chimney Tie-in Point - Fab / D...	100	01-Aug-13	19-Dec-13
SL.P-6805.90	Ductwork Fabrication - Fabrication / Delivery	148	06-Aug-13	05-Mar-14
SL.P-6804.9L	Structural Steel Fab - ID Fan Control Room - Fab / Delivery	100	30-Aug-13	21-Jan-14
SL.P-6804.9K	Structural Steel Fab - Air Compressor Building - Fab / Delivery	100	13-Sep-13	04-Feb-14
SL.P-6809.90	Railwork - Mobilize Sub	45	23-Sep-13	22-Nov-13
SL.P-6804.9Q	Structural Steel Fab - Existing Ductwork Reinforcements - Fab / Deliv...	100	26-Sep-13	17-Feb-14
SL.P-6804.9X	Structural Steel Fab - Misc Galleries, Platforms & Walkways - Fab / D...	150	04-Oct-13	06-May-14
SL.P-6804.9G	Structural Steel Fab - Economizer Ash Blower Building - Fab / Delivery	100	01-Nov-13	25-Mar-14

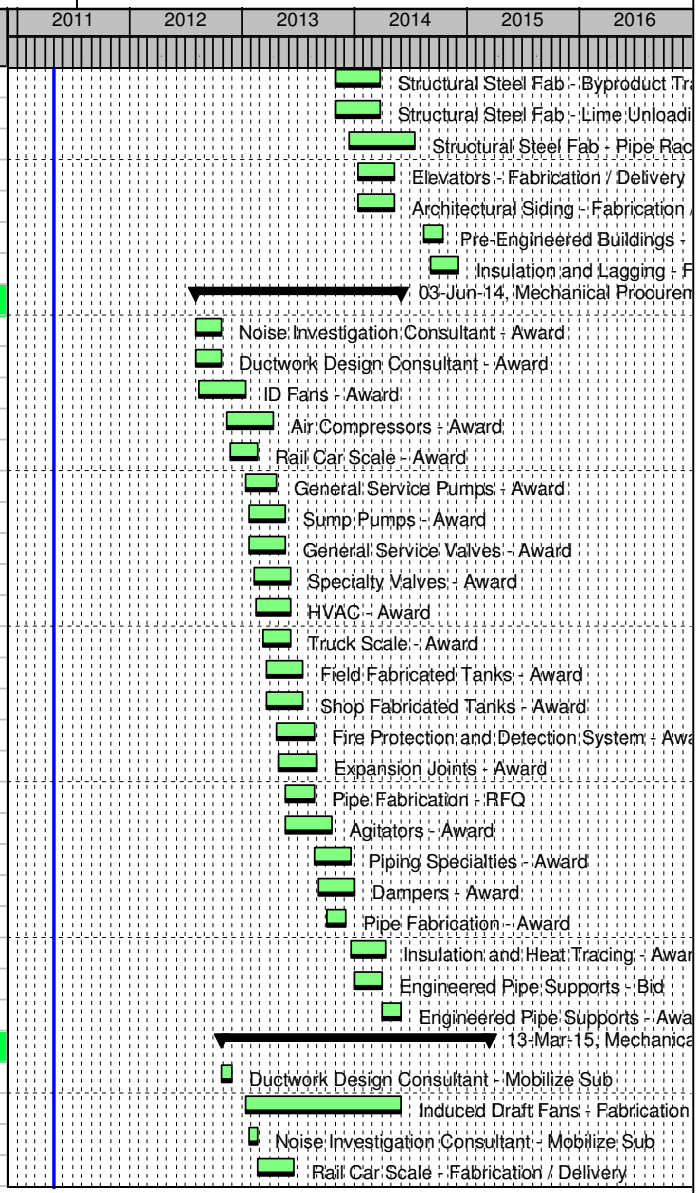


Remaining Level of Effort | Actual Level of Effort | Actual Work
WBS Summary | Primary Baseline | Remaining Work

TASK filter: All Activities

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Activity ID	Activity Name	Dur	Start	Finish
SL.P-6804.9H	Structural Steel Fab - Byproduct Transport Blower Building - Fab / De...	100	01-Nov-13	25-Mar-14
SL.P-6804.9J	Structural Steel Fab - Lime Unloading / Electrical Building - Fab / Deli...	100	01-Nov-13	25-Mar-14
SL.P-6804.9F	Structural Steel Fab - Pipe Rack - Fab / Delivery	150	13-Dec-13	16-Jul-14
SL.P-6807.90	Elevators - Fabrication / Delivery	85	13-Jan-14	09-May-14
SL.P-6808.90	Architectural Siding - Fabrication / Delivery	85	13-Jan-14	09-May-14
SL.P-6811.90	Pre-Engineered Buildings - Mobilize Sub	45	13-Aug-14	15-Oct-14
SL.P-6806.90	Insulation and Lagging - Fabrication / Delivery	63	08-Sep-14	04-Dec-14
Mechanical Procurement - Award		474	01-Aug-12	03-Jun-14
SL.P-6820.00	Noise Investigation Consultant - Award	63	01-Aug-12	29-Oct-12
SL.P-6821.00	Ductwork Design Consultant - Award	63	01-Aug-12	29-Oct-12
SL.P-6822.00	ID Fans - Award	106	13-Aug-12	10-Jan-13
SL.P-6823.00	Air Compressors - Award	106	12-Nov-12	11-Apr-13
SL.P-6853.00	Rail Car Scale - Award	63	21-Nov-12	20-Feb-13
SL.P-6826.00	General Service Pumps - Award	75	10-Jan-13	25-Apr-13
SL.P-6827.00	Sump Pumps - Award	85	24-Jan-13	23-May-13
SL.P-6830.00	General Service Valves - Award	85	24-Jan-13	23-May-13
SL.P-6831.00	Specialty Valves - Award	85	07-Feb-13	06-Jun-13
SL.P-6834.00	HVAC - Award	80	15-Feb-13	06-Jun-13
SL.P-6852.00	Truck Scale - Award	63	11-Mar-13	06-Jun-13
SL.P-6828.00	Field Fabricated Tanks - Award	85	21-Mar-13	19-Jul-13
SL.P-6829.00	Shop Fabricated Tanks - Award	85	21-Mar-13	19-Jul-13
SL.P-6838.00	Fire Protection and Detection System - Award	85	26-Apr-13	23-Aug-13
SL.P-6824.00	Expansion Joints - Award	85	01-May-13	29-Aug-13
SL.P-6835.00	Pipe Fabrication - RFQ	65	23-May-13	23-Aug-13
SL.P-6836.00	Agitators - Award	106	23-May-13	21-Oct-13
SL.P-6833.00	Piping Specialties - Award	85	23-Aug-13	19-Dec-13
SL.P-6825.00	Dampers - Award	85	03-Sep-13	02-Jan-14
SL.P-6835.10	Pipe Fabrication - Award	45	04-Oct-13	06-Dec-13
SL.P-6837.00	Insulation and Heat Tracing - Award	80	19-Dec-13	14-Apr-14
SL.P-6832.00	Engineered Pipe Supports - Bid	65	30-Dec-13	01-Apr-14
SL.P-6832.10	Engineered Pipe Supports - Award	45	01-Apr-14	03-Jun-14
Mechanical Procurement - Delivery / Mobilization		611	29-Oct-12	13-Mar-15
SL.P-6821.90	Ductwork Design Consultant - Mobilize Sub	21	29-Oct-12	27-Nov-12
SL.P-6822.90	Induced Draft Fans - Fabrication / Delivery	360	10-Jan-13	03-Jun-14
SL.P-6820.90	Noise Investigation Consultant - Mobilize Sub	21	24-Jan-13	22-Feb-13
SL.P-6853.90	Rail Car Scale - Fabrication / Delivery	85	20-Feb-13	19-Jun-13



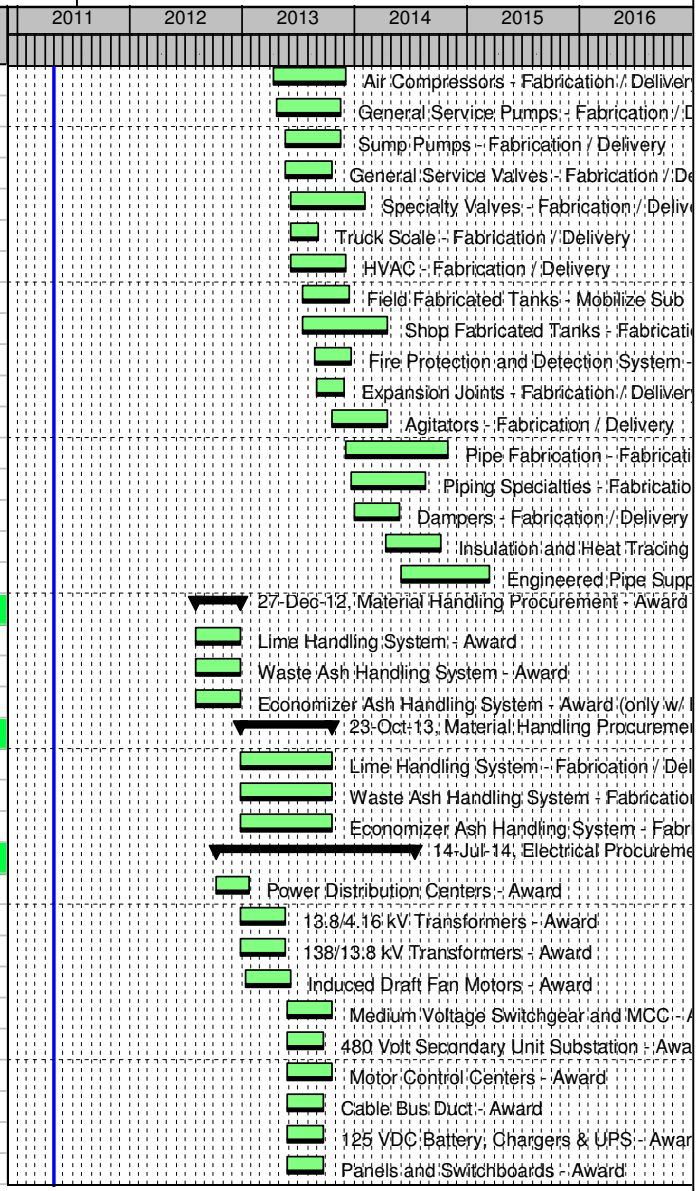
Remaining Level of Effort | Actual Level of Effort | Actual Work
WBS Summary | Primary Baseline | Remaining Work

TASK filter: All Activities

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Big Sandy - Level 2 Schedule Layout	Big Sandy NID (ESP Out of Service)	Data Date: 02-May-11 12:00 AM

Activity ID	Activity Name	Dur	Start	Finish
SL.P-6823.90	Air Compressors - Fabrication / Delivery	169	11-Apr-13	05-Dec-13
SL.P-6826.90	General Service Pumps - Fabrication / Delivery	148	25-Apr-13	20-Nov-13
SL.P-6827.90	Sump Pumps - Fabrication / Delivery	127	23-May-13	19-Nov-13
SL.P-6830.90	General Service Valves - Fabrication / Delivery	106	23-May-13	21-Oct-13
SL.P-6831.90	Specialty Valves - Fabrication / Delivery	169	06-Jun-13	03-Feb-14
SL.P-6852.90	Truck Scale - Fabrication / Delivery	63	06-Jun-13	04-Sep-13
SL.P-6834.90	HVAC - Fabrication / Delivery	127	07-Jun-13	03-Dec-13
SL.P-6828.90	Field Fabricated Tanks - Mobilize Sub	106	19-Jul-13	16-Dec-13
SL.P-6829.90	Shop Fabricated Tanks - Fabrication / Delivery	190	19-Jul-13	16-Apr-14
SL.P-6838.90	Fire Protection and Detection System - Fabrication / Delivery	85	26-Aug-13	20-Dec-13
SL.P-6824.90	Expansion Joints - Fabrication / Delivery	63	29-Aug-13	26-Nov-13
SL.P-6836.90	Agitators - Fabrication / Delivery	127	21-Oct-13	18-Apr-14
SL.P-6835.90	Pipe Fabrication - Fabrication / Delivery	233	06-Dec-13	03-Nov-14
SL.P-6833.90	Piping Specialties - Fabrication / Delivery	169	19-Dec-13	19-Aug-14
SL.P-6825.90	Dampers - Fabrication / Delivery	106	02-Jan-14	30-May-14
SL.P-6837.90	Insulation and Heat Tracing - Fabrication / Delivery	127	14-Apr-14	09-Oct-14
SL.P-6832.90	Engineered Pipe Supports - Fabrication / Delivery	200	03-Jun-14	13-Mar-15
Material Handling Procurement - Award		106	01-Aug-12	27-Dec-12
SL.P-6850.00	Lime Handling System - Award	106	01-Aug-12	27-Dec-12
SL.P-6851.00	Waste Ash Handling System - Award	106	01-Aug-12	27-Dec-12
SL.P-6875.00	Economizer Ash Handling System - Award (only w/ ESP Out of Service)	106	01-Aug-12	27-Dec-12
Material Handling Procurement - Delivery / Mobilization		212	28-Dec-12	23-Oct-13
SL.P-6850.90	Lime Handling System - Fabrication / Delivery	212	28-Dec-12	23-Oct-13
SL.P-6851.90	Waste Ash Handling System - Fabrication / Delivery	212	28-Dec-12	23-Oct-13
SL.P-6875.90	Economizer Ash Handling System - Fabrication / Delivery (only w/ ES...	212	28-Dec-12	23-Oct-13
Electrical Procurement - Award		452	10-Oct-12	14-Jul-14
SL.P-6810.00	Power Distribution Centers - Award	75	10-Oct-12	24-Jan-13
SL.P-6861.00	13.8/4.16 kV Transformers - Award	106	27-Dec-12	24-May-13
SL.P-6872.10	138/13.8 kV Transformers - Award	106	27-Dec-12	24-May-13
SL.P-6860.00	Induced Draft Fan Motors - Award	106	10-Jan-13	07-Jun-13
SL.P-6862.00	Medium Voltage Switchgear and MCC - Award	106	27-May-13	22-Oct-13
SL.P-6863.00	480 Volt Secondary Unit Substation - Award	85	27-May-13	23-Sep-13
SL.P-6864.00	Motor Control Centers - Award	106	27-May-13	22-Oct-13
SL.P-6865.00	Cable Bus Duct - Award	85	27-May-13	23-Sep-13
SL.P-6866.00	125 VDC Battery, Chargers & UPS - Award	85	27-May-13	23-Sep-13
SL.P-6867.00	Panels and Switchboards - Award	85	27-May-13	23-Sep-13



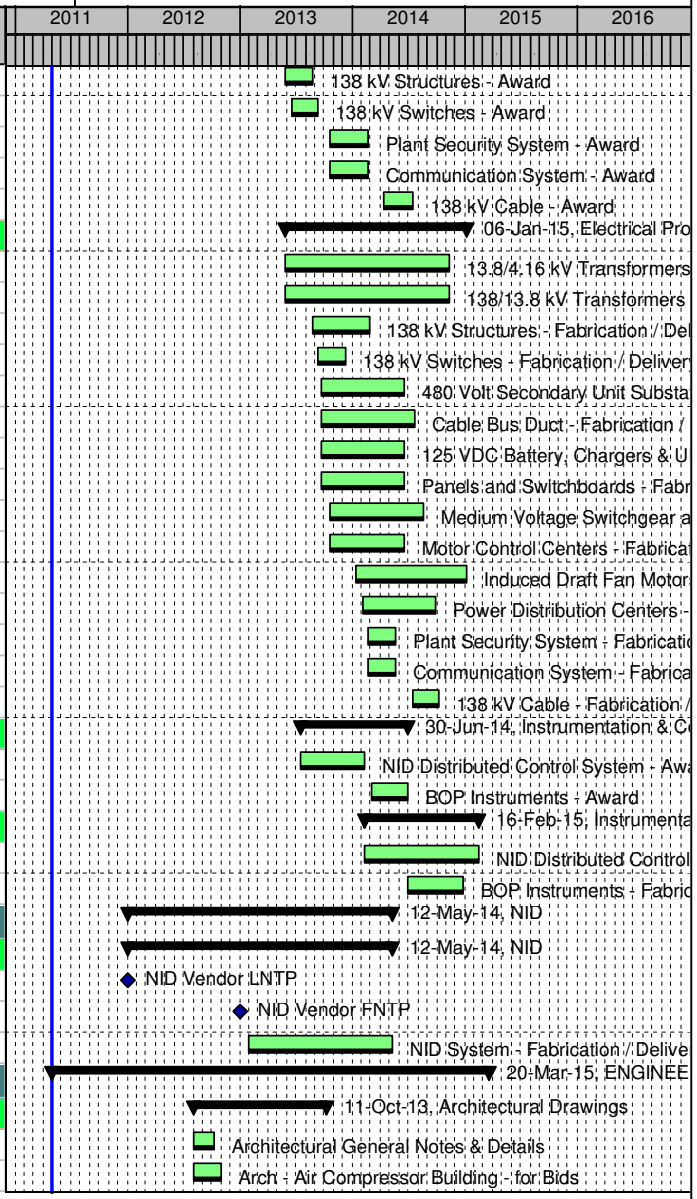
Remaining Level of Effort | Actual Level of Effort | Actual Work
WBS Summary | Primary Baseline | Remaining Work

TASK filter: All Activities

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Big Sandy - Level 2 Schedule Layout	Big Sandy NID (ESP Out of Service)	Data Date: 02-May-11 12:00 AM

Activity ID	Activity Name	Dur	Start	Finish
SL.P-6877.00	138 kV Structures - Award	63	27-May-13	23-Aug-13
SL.P-6876.00	138 kV Switches - Award	63	17-Jun-13	13-Sep-13
SL.P-6869.00	Plant Security System - Award	85	22-Oct-13	20-Feb-14
SL.P-6870.00	Communication System - Award	85	22-Oct-13	20-Feb-14
SL.P-6871.00	138 kV Cable - Award	63	14-Apr-14	14-Jul-14
Electrical Procurement - Delivery / Mobilization		415	27-May-13	06-Jan-15
SL.P-6861.90	13.8/4.16 kV Transformers - Fabrication / Delivery	381	27-May-13	14-Nov-14
SL.P-6872.90	138/13.8 kV Transformers - Fabrication / Delivery	381	27-May-13	14-Nov-14
SL.P-6877.90	138 kV Structures - Fabrication / Delivery	130	23-Aug-13	25-Feb-14
SL.P-6876.90	138 kV Switches - Fabrication / Delivery	63	13-Sep-13	11-Dec-13
SL.P-6863.90	480 Volt Secondary Unit Substation - Fabrication / Delivery	190	23-Sep-13	19-Jun-14
SL.P-6865.90	Cable Bus Duct - Fabrication / Delivery	212	23-Sep-13	21-Jul-14
SL.P-6866.90	125 VDC Battery, Chargers & UPS - Fabrication / Delivery	190	23-Sep-13	19-Jun-14
SL.P-6867.90	Panels and Switchboards - Fabrication / Delivery	190	23-Sep-13	19-Jun-14
SL.P-6862.90	Medium Voltage Switchgear and MCC - Fabrication / Delivery	212	22-Oct-13	19-Aug-14
SL.P-6864.90	Motor Control Centers - Fabrication / Delivery	169	22-Oct-13	19-Jun-14
SL.P-6860.90	Induced Draft Fan Motors - Fabrication / Delivery	254	10-Jan-14	06-Jan-15
SL.P-6810.90	Power Distribution Centers - Fabrication / Delivery	169	04-Feb-14	30-Sep-14
SL.P-6869.90	Plant Security System - Fabrication / Delivery	63	20-Feb-14	20-May-14
SL.P-6870.90	Communication System - Fabrication / Delivery	63	20-Feb-14	20-May-14
SL.P-6871.90	138 kV Cable - Fabrication / Delivery	63	14-Jul-14	09-Oct-14
Instrumentation & Controls Procurement - Award		247	16-Jul-13	30-Jun-14
SL.P-6890.00	NID Distributed Control System - Award	148	16-Jul-13	11-Feb-14
SL.P-6891.00	BOP Instruments - Award	85	04-Mar-14	30-Jun-14
Instrumentation & Controls Procurement - Delivery / Mobilization		261	11-Feb-14	16-Feb-15
SL.P-6890.90	NID Distributed Control System - Fabrication / Delivery	261	11-Feb-14	16-Feb-15
SL.P-6891.90	BOP Instruments - Fabrication / Delivery	127	30-Jun-14	26-Dec-14
NID		608	03-Jan-12	12-May-14
NID		608	03-Jan-12	12-May-14
SL.P-6815.10	NID Vendor LNTP	0		03-Jan-12
SL.P-6815.50	NID Vendor FNTP	0		03-Jan-13
SL.P-6815.90	NID System - Fabrication / Delivery	329	01-Feb-13	12-May-14
ENGINEERING / DESIGN		1002	02-May-11	20-Mar-15
Architectural Drawings		310	01-Aug-12	11-Oct-13
SL.CA6000.00	Architectural General Notes & Details	50	01-Aug-12	09-Oct-12
SL.CA1200.00	Arch - Air Compressor Building - for Bids	65	01-Aug-12	30-Oct-12

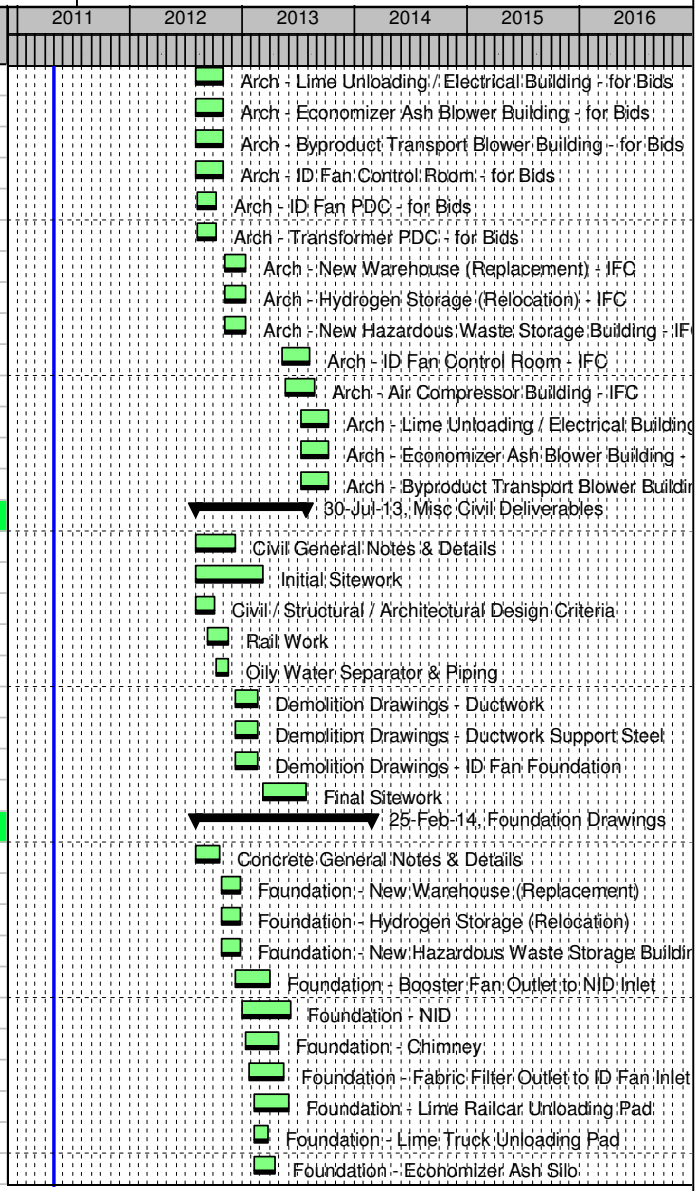


Remaining Level of Effort | Actual Level of Effort | Actual Work
WBS Summary | Primary Baseline | Remaining Work

TASK filter: All Activities

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Activity ID	Activity Name	Dur	Start	Finish
SL.CA1800.00	Arch - Lime Unloading / Electrical Building - for Bids	65	01-Aug-12	30-Oct-12
SL.CA3400.00	Arch - Economizer Ash Blower Building - for Bids	65	01-Aug-12	30-Oct-12
SL.CA1500.00	Arch - Byproduct Transport Blower Building - for Bids	65	01-Aug-12	30-Oct-12
SL.CA2100.00	Arch - ID Fan Control Room - for Bids	65	01-Aug-12	30-Oct-12
SL.CA2200.00	Arch - ID Fan PDC - for Bids	45	08-Aug-12	09-Oct-12
SL.CA2900.00	Arch - Transformer PDC - for Bids	45	08-Aug-12	09-Oct-12
SL.CA1900.00	Arch - New Warehouse (Replacement) - IFC	45	07-Nov-12	10-Jan-13
SL.CA2300.00	Arch - Hydrogen Storage (Relocation) - IFC	45	07-Nov-12	10-Jan-13
SL.CA2000.00	Arch - New Hazardous Waste Storage Building - IFC	45	07-Nov-12	10-Jan-13
SL.CA2100.50	Arch - ID Fan Control Room - IFC	65	09-May-13	09-Aug-13
SL.CA1200.50	Arch - Air Compressor Building - IFC	65	23-May-13	23-Aug-13
SL.CA1800.50	Arch - Lime Unloading / Electrical Building - IFC	65	12-Jul-13	11-Oct-13
SL.CA3400.50	Arch - Economizer Ash Blower Building - IFC	65	12-Jul-13	11-Oct-13
SL.CA1500.50	Arch - Byproduct Transport Blower Building - IFC	65	12-Jul-13	11-Oct-13
Misc Civil Deliverables		257	01-Aug-12	30-Jul-13
SL.CC1000.00	Civil General Notes & Details	94	01-Aug-12	10-Dec-12
SL.CC4000.00	Initial Sitework	156	01-Aug-12	08-Mar-13
SL.CC0800.00	Civil / Structural / Architectural Design Criteria	45	01-Aug-12	02-Oct-12
SL.CC7200.00	Rail Work	50	12-Sep-12	20-Nov-12
SL.CC5300.00	Oily Water Separator & Piping	30	10-Oct-12	20-Nov-12
SL.CC1500.00	Demolition Drawings - Ductwork	50	11-Dec-12	20-Feb-13
SL.CC1600.00	Demolition Drawings - Ductwork Support Steel	50	11-Dec-12	20-Feb-13
SL.CC1700.00	Demolition Drawings - ID Fan Foundation	50	11-Dec-12	20-Feb-13
SL.CC3000.00	Final Sitework	101	11-Mar-13	30-Jul-13
Foundation Drawings		405	01-Aug-12	25-Feb-14
SL.CK1200.00	Concrete General Notes & Details	60	01-Aug-12	23-Oct-12
SL.CK3700.00	Foundation - New Warehouse (Replacement)	45	24-Oct-12	26-Dec-12
SL.CK3100.00	Foundation - Hydrogen Storage (Relocation)	45	24-Oct-12	26-Dec-12
SL.CK3800.00	Foundation - New Hazardous Waste Storage Building	45	24-Oct-12	26-Dec-12
SL.CK7100.00	Foundation - Booster Fan Outlet to NID Inlet	80	10-Dec-12	03-Apr-13
SL.CK5600.00	Foundation - NID	110	04-Jan-13	06-Jun-13
SL.CK3500.00	Foundation - Chimney	80	11-Jan-13	02-May-13
SL.CK7300.00	Foundation - Fabric Filter Outlet to ID Fan Inlet	80	23-Jan-13	15-May-13
SL.CK4100.00	Foundation - Lime Railcar Unloading Pad	80	11-Feb-13	31-May-13
SL.CK4400.00	Foundation - Lime Truck Unloading Pad	35	11-Feb-13	29-Mar-13
SL.CK9000.00	Foundation - Economizer Ash Silo	50	11-Feb-13	19-Apr-13



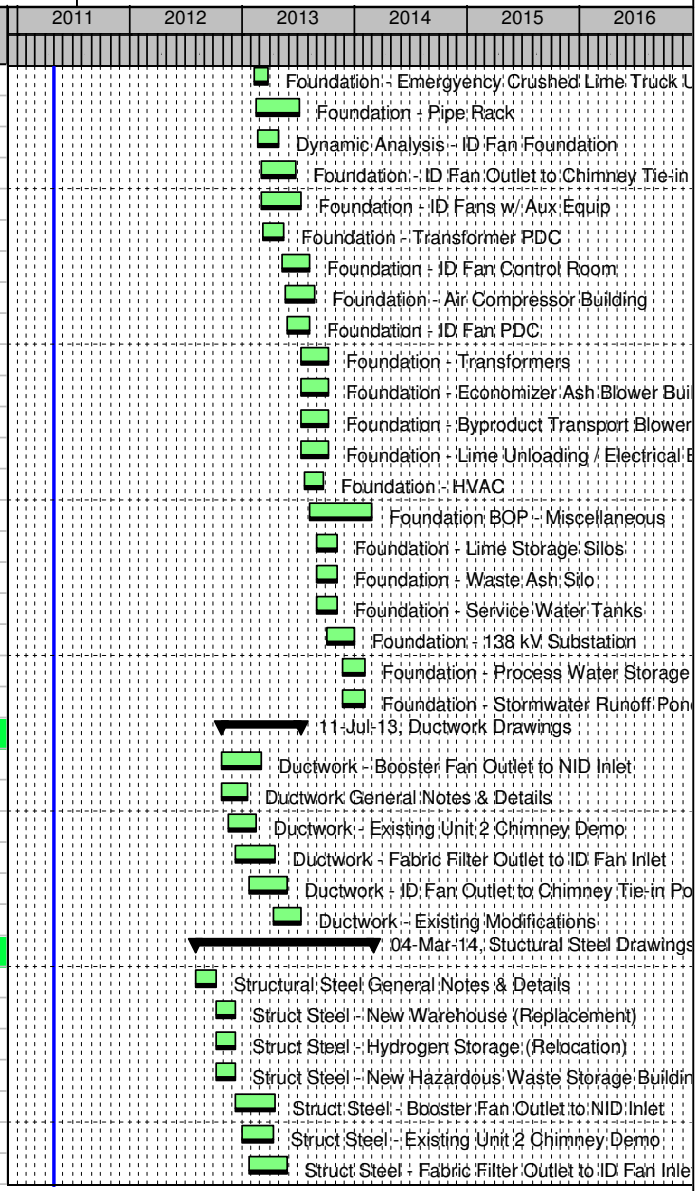
Remaining Level of Effort | Actual Level of Effort | Actual Work
WBS Summary | Primary Baseline | Remaining Work

TASK filter: All Activities

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Big Sandy - Level 2 Schedule Layout	Big Sandy NID (ESP Out of Service)	Data Date: 02-May-11 12:00 AM

Activity ID	Activity Name	Dur	Start	Finish
SL.CK4500.00	Foundation - Emergyency Crushed Lime Truck Unloading Pad	35	11-Feb-13	29-Mar-13
SL.CK4700.00	Foundation - Pipe Rack	100	14-Feb-13	05-Jul-13
SL.CK1500.00	Dynamic Analysis - ID Fan Foundation	50	21-Feb-13	02-May-13
SL.CK7400.00	Foundation - ID Fan Outlet to Chimney Tie-in Point	80	06-Mar-13	26-Jun-13
SL.CK3600.00	Foundation - ID Fans w/ Aux Equip	90	07-Mar-13	12-Jul-13
SL.CK4200.00	Foundation - Transformer PDC	50	08-Mar-13	16-May-13
SL.CK3620.00	Foundation - ID Fan Control Room	65	09-May-13	09-Aug-13
SL.CK2300.00	Foundation - Air Compressor Building	65	23-May-13	23-Aug-13
SL.CK3640.00	Foundation - ID Fan PDC	50	30-May-13	09-Aug-13
SL.CK6200.00	Foundation - Transformers	67	09-Jul-13	09-Oct-13
SL.CK5300.00	Foundation - Economizer Ash Blower Building	65	12-Jul-13	11-Oct-13
SL.CK2400.00	Foundation - Byproduct Transport Blower Building	65	12-Jul-13	11-Oct-13
SL.CK3200.00	Foundation - Lime Unloading / Electrical Building	65	12-Jul-13	11-Oct-13
SL.CK3400.00	Foundation - HVAC	46	22-Jul-13	23-Sep-13
SL.CK8000.00	Foundation BOP - Miscellaneous	140	09-Aug-13	25-Feb-14
SL.CK4300.00	Foundation - Lime Storage Silos	46	30-Aug-13	04-Nov-13
SL.CK7200.00	Foundation - Waste Ash Silo	46	30-Aug-13	04-Nov-13
SL.CK5800.00	Foundation - Service Water Tanks	46	30-Aug-13	04-Nov-13
SL.CK2500.00	Foundation - 138 kV Substation	60	04-Oct-13	30-Dec-13
SL.CK4800.00	Foundation - Process Water Storage Basin	50	22-Nov-13	04-Feb-14
SL.CK5100.00	Foundation - Stormwater Runoff Pond Pump Structure	50	22-Nov-13	04-Feb-14
Ductwork Drawings		180	29-Oct-12	11-Jul-13
SL.CS1200.00	Ductwork - Booster Fan Outlet to NID Inlet	90	29-Oct-12	06-Mar-13
SL.CS2500.00	Ductwork General Notes & Details	55	29-Oct-12	16-Jan-13
SL.CS1700.00	Ductwork - Existing Unit 2 Chimney Demo	60	19-Nov-12	13-Feb-13
SL.CS1400.00	Ductwork - Fabric Filter Outlet to ID Fan Inlet	90	10-Dec-12	17-Apr-13
SL.CS1600.00	Ductwork - ID Fan Outlet to Chimney Tie-in Point	90	23-Jan-13	29-May-13
SL.CS2000.00	Ductwork - Existing Modifications	65	10-Apr-13	11-Jul-13
Stuctural Steel Drawings		409	01-Aug-12	04-Mar-14
SL.CS7000.00	Structural Steel General Notes & Details	50	01-Aug-12	09-Oct-12
SL.CS1900.00	Struct Steel - New Warehouse (Replacement)	45	10-Oct-12	11-Dec-12
SL.CS2300.00	Struct Steel - Hydrogen Storage (Relocation)	45	10-Oct-12	11-Dec-12
SL.CS2200.00	Struct Steel - New Hazardous Waste Storage Building	45	10-Oct-12	11-Dec-12
SL.CS3300.00	Struct Steel - Booster Fan Outlet to NID Inlet	90	10-Dec-12	17-Apr-13
SL.CS5100.00	Struct Steel - Existing Unit 2 Chimney Demo	70	02-Jan-13	10-Apr-13
SL.CS4000.00	Struct Steel - Fabric Filter Outlet to ID Fan Inlet	90	23-Jan-13	29-May-13

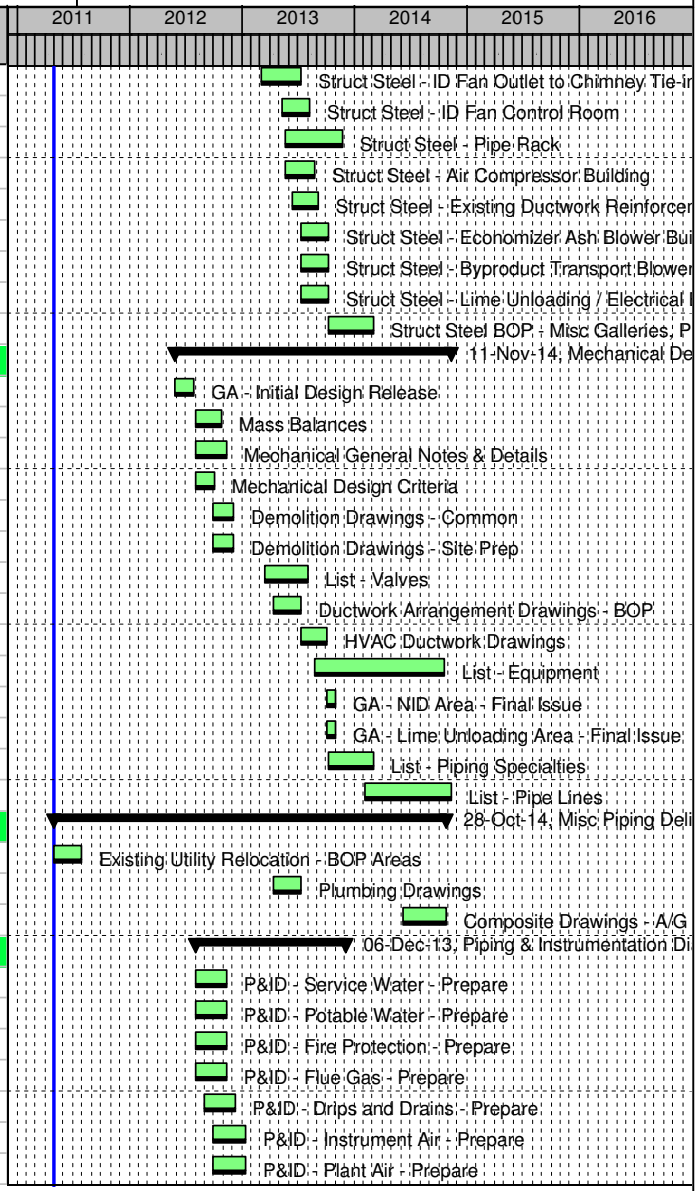


Remaining Level of Effort | Actual Level of Effort | Actual Work
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TASK filter: All Activities

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Activity ID	Activity Name	Dur	Start	Finish
SL.CS4500.00	Struct Steel - ID Fan Outlet to Chimney Tie-in Point	90	06-Mar-13	11-Jul-13
SL.CS5200.00	Struct Steel - ID Fan Control Room	65	09-May-13	09-Aug-13
SL.CS4900.00	Struct Steel - Pipe Rack	130	23-May-13	22-Nov-13
SL.CS5600.00	Struct Steel - Air Compressor Building	65	23-May-13	23-Aug-13
SL.CS5900.00	Struct Steel - Existing Ductwork Reinforcements	60	12-Jun-13	05-Sep-13
SL.CS5000.00	Struct Steel - Economizer Ash Blower Building	65	12-Jul-13	11-Oct-13
SL.CS2400.00	Struct Steel - Byproduct Transport Blower Building	65	12-Jul-13	11-Oct-13
SL.CS5300.00	Struct Steel - Lime Unloading / Electrical Building	65	12-Jul-13	11-Oct-13
SL.CS5800.00	Struct Steel BOP - Misc Galleries, Platforms & Walkways	100	11-Oct-13	04-Mar-14
Mechanical Deliverables		632	30-May-12	11-Nov-14
SL.MM3000.00	GA - Initial Design Release	44	30-May-12	31-Jul-12
SL.MM6000.00	Mass Balances	61	01-Aug-12	24-Oct-12
SL.MM7000.00	Mechanical General Notes & Details	75	01-Aug-12	13-Nov-12
SL.MM6500.00	Mechanical Design Criteria	45	01-Aug-12	02-Oct-12
SL.MM1200.00	Demolition Drawings - Common	50	26-Sep-12	04-Dec-12
SL.MM1300.00	Demolition Drawings - Site Prep	50	26-Sep-12	04-Dec-12
SL.MM5800.00	List - Valves	100	14-Mar-13	02-Aug-13
SL.MM2800.00	Ductwork Arrangement Drawings - BOP	65	10-Apr-13	11-Jul-13
SL.MM4000.00	HVAC Ductwork Drawings	60	11-Jul-13	03-Oct-13
SL.MM5200.00	List - Equipment	300	23-Aug-13	22-Oct-14
SL.MM3300.00	GA - NID Area - Final Issue	20	03-Oct-13	31-Oct-13
SL.MM3500.00	GA - Lime Unloading Area - Final Issue	20	03-Oct-13	31-Oct-13
SL.MM5600.00	List - Piping Specialties	100	10-Oct-13	03-Mar-14
SL.MM5500.00	List - Pipe Lines	200	03-Feb-14	11-Nov-14
Misc Piping Deliverables		901	02-May-11	28-Oct-14
SL.MP0700.00	Existing Utility Relocation - BOP Areas	65	02-May-11	01-Aug-11
SL.MP7800.00	Plumbing Drawings	65	12-Apr-13	12-Jul-13
SL.MP0400.00	Composite Drawings - A/G	99	10-Jun-14	28-Oct-14
Piping & Instrumentation Diagrams		349	01-Aug-12	06-Dec-13
SL.MP6003.00	P&ID - Service Water - Prepare	75	01-Aug-12	13-Nov-12
SL.MP6004.00	P&ID - Potable Water - Prepare	75	01-Aug-12	13-Nov-12
SL.MP6007.00	P&ID - Fire Protection - Prepare	75	01-Aug-12	13-Nov-12
SL.MP6002.00	P&ID - Flue Gas - Prepare	75	01-Aug-12	13-Nov-12
SL.MP6030.00	P&ID - Drips and Drains - Prepare	75	29-Aug-12	11-Dec-12
SL.MP6005.00	P&ID - Instrument Air - Prepare	75	26-Sep-12	10-Jan-13
SL.MP6006.00	P&ID - Plant Air - Prepare	75	26-Sep-12	10-Jan-13

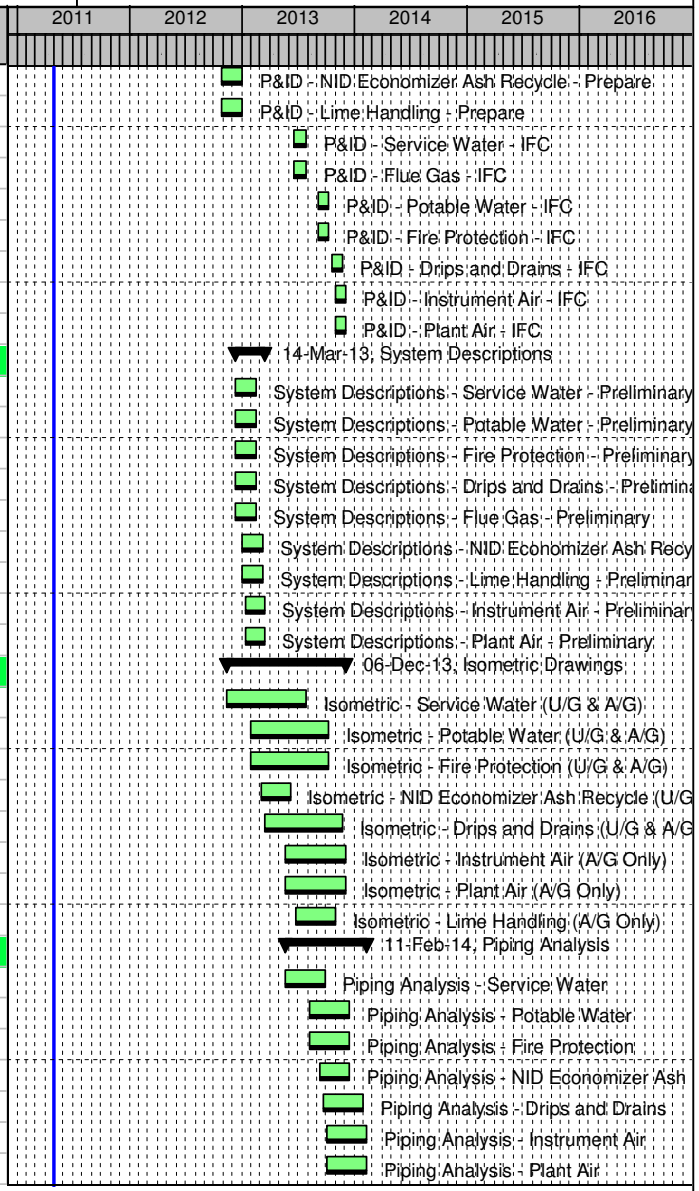


Remaining Level of Effort | Actual Level of Effort | Actual Work
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TASK filter: All Activities

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Activity ID	Activity Name	Dur	Start	Finish
SL.MP6020.00	P&ID - NID Economizer Ash Recycle - Prepare	50	24-Oct-12	03-Jan-13
SL.MP6021.00	P&ID - Lime Handling - Prepare	50	24-Oct-12	03-Jan-13
SL.MP6003.50	P&ID - Service Water - IFC	25	21-Jun-13	26-Jul-13
SL.MP6002.50	P&ID - Flue Gas - IFC	25	21-Jun-13	26-Jul-13
SL.MP6004.50	P&ID - Potable Water - IFC	25	06-Sep-13	11-Oct-13
SL.MP6007.50	P&ID - Fire Protection - IFC	25	06-Sep-13	11-Oct-13
SL.MP6030.50	P&ID - Drips and Drains - IFC	25	18-Oct-13	22-Nov-13
SL.MP6005.50	P&ID - Instrument Air - IFC	25	01-Nov-13	06-Dec-13
SL.MP6006.50	P&ID - Plant Air - IFC	25	01-Nov-13	06-Dec-13
System Descriptions		65	12-Dec-12	14-Mar-13
SL.MP9003.00	System Descriptions - Service Water - Preliminary	45	12-Dec-12	14-Feb-13
SL.MP9004.00	System Descriptions - Potable Water - Preliminary	45	12-Dec-12	14-Feb-13
SL.MP9007.00	System Descriptions - Fire Protection - Preliminary	45	12-Dec-12	14-Feb-13
SL.MP9030.00	System Descriptions - Drips and Drains - Preliminary	45	12-Dec-12	14-Feb-13
SL.MP9002.00	System Descriptions - Flue Gas - Preliminary	45	12-Dec-12	14-Feb-13
SL.MP9020.00	System Descriptions - NID Economizer Ash Recycle - Preliminary	45	04-Jan-13	07-Mar-13
SL.MP9021.00	System Descriptions - Lime Handling - Preliminary	45	04-Jan-13	07-Mar-13
SL.MP9005.00	System Descriptions - Instrument Air - Preliminary	45	11-Jan-13	14-Mar-13
SL.MP9006.00	System Descriptions - Plant Air - Preliminary	45	11-Jan-13	14-Mar-13
Isometric Drawings		274	14-Nov-12	06-Dec-13
SL.MP1003.00	Isometric - Service Water (U/G & A/G)	180	14-Nov-12	26-Jul-13
SL.MP1004.00	Isometric - Potable Water (U/G & A/G)	180	31-Jan-13	11-Oct-13
SL.MP1007.00	Isometric - Fire Protection (U/G & A/G)	180	31-Jan-13	11-Oct-13
SL.MP1020.00	Isometric - NID Economizer Ash Recycle (U/G & A/G)	65	07-Mar-13	06-Jun-13
SL.MP1030.00	Isometric - Drips and Drains (U/G & A/G)	180	14-Mar-13	22-Nov-13
SL.MP1005.00	Isometric - Instrument Air (A/G Only)	140	23-May-13	06-Dec-13
SL.MP1006.00	Isometric - Plant Air (A/G Only)	140	23-May-13	06-Dec-13
SL.MP1021.00	Isometric - Lime Handling (A/G Only)	90	27-Jun-13	01-Nov-13
Piping Analysis		184	24-May-13	11-Feb-14
SL.MP7003.00	Piping Analysis - Service Water	90	24-May-13	27-Sep-13
SL.MP7004.00	Piping Analysis - Potable Water	90	09-Aug-13	13-Dec-13
SL.MP7007.00	Piping Analysis - Fire Protection	90	09-Aug-13	13-Dec-13
SL.MP7020.00	Piping Analysis - NID Economizer Ash Recycle	65	13-Sep-13	13-Dec-13
SL.MP7030.00	Piping Analysis - Drips and Drains	90	20-Sep-13	28-Jan-14
SL.MP7005.00	Piping Analysis - Instrument Air	90	04-Oct-13	11-Feb-14
SL.MP7006.00	Piping Analysis - Plant Air	90	04-Oct-13	11-Feb-14

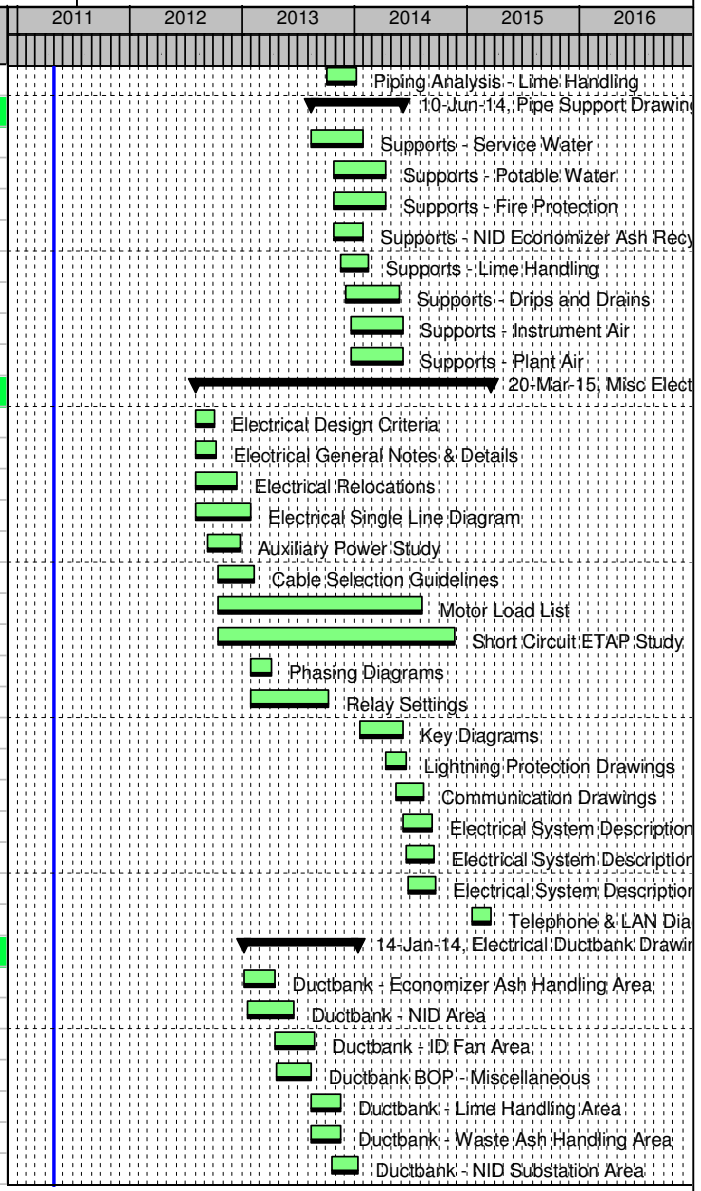


Remaining Level of Effort | Actual Level of Effort | Actual Work
WBS Summary | Primary Baseline | Remaining Work

TASK filter: All Activities

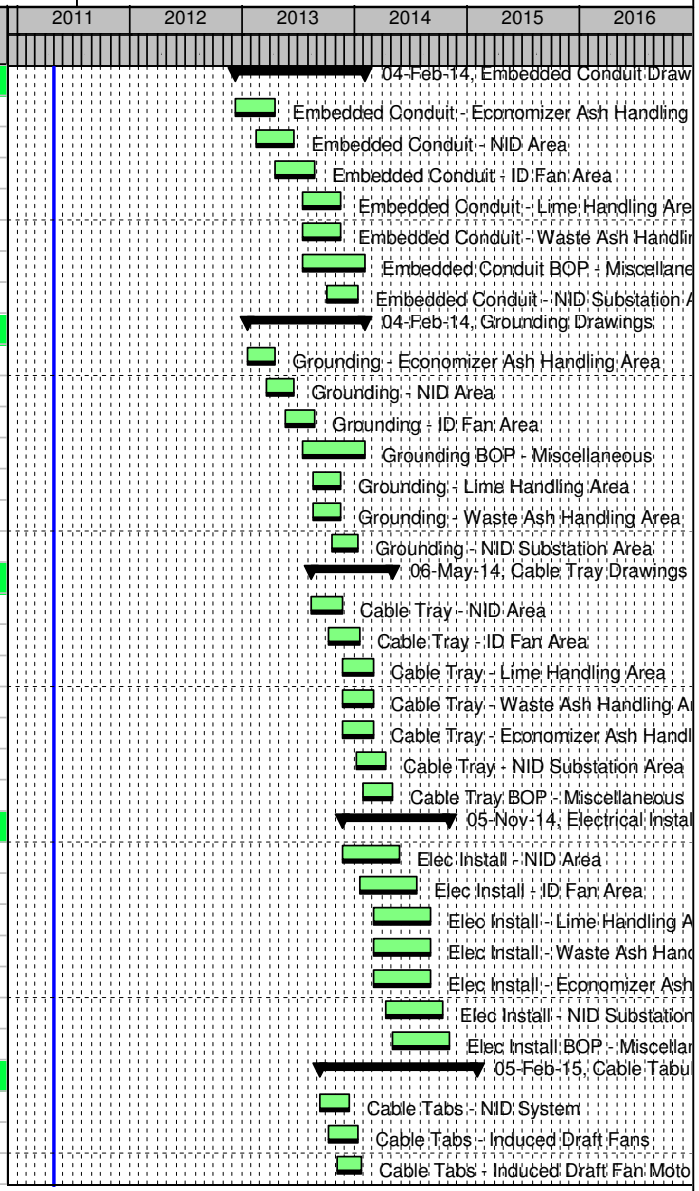
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Activity ID	Activity Name	Dur	Start	Finish
SL.MP7021.00	Piping Analysis - Lime Handling	65	04-Oct-13	07-Jan-14
Pipe Support Drawings		214	12-Aug-13	10-Jun-14
SL.MP8003.00	Supports - Service Water	120	12-Aug-13	28-Jan-14
SL.MP8004.00	Supports - Potable Water	120	25-Oct-13	15-Apr-14
SL.MP8007.00	Supports - Fire Protection	120	25-Oct-13	15-Apr-14
SL.MP8020.00	Supports - NID Economizer Ash Recycle	65	25-Oct-13	28-Jan-14
SL.MP8021.00	Supports - Lime Handling	65	15-Nov-13	18-Feb-14
SL.MP8030.00	Supports - Drips and Drains	120	06-Dec-13	27-May-14
SL.MP8005.00	Supports - Instrument Air	120	20-Dec-13	10-Jun-14
SL.MP8006.00	Supports - Plant Air	120	20-Dec-13	10-Jun-14
Misc Electrical Deliverables		679	01-Aug-12	20-Mar-15
SL.E3100.00	Electrical Design Criteria	45	01-Aug-12	02-Oct-12
SL.E3200.00	Electrical General Notes & Details	53	01-Aug-12	12-Oct-12
SL.E3600.00	Electrical Relocations	100	01-Aug-12	18-Dec-12
SL.E3700.00	Electrical Single Line Diagram	130	01-Aug-12	31-Jan-13
SL.E0200.00	Auxiliary Power Study	75	12-Sep-12	26-Dec-12
SL.E0400.00	Cable Selection Guidelines	82	15-Oct-12	07-Feb-13
SL.E7800.00	Motor Load List	468	15-Oct-12	07-Aug-14
SL.E8700.00	Short Circuit ETAP Study	545	15-Oct-12	24-Nov-14
SL.E8200.00	Phasing Diagrams	48	01-Feb-13	09-Apr-13
SL.E8600.00	Relay Settings	179	01-Feb-13	10-Oct-13
SL.E5600.00	Key Diagrams	100	16-Jan-14	05-Jun-14
SL.E6700.00	Lightning Protection Drawings	45	15-Apr-14	17-Jun-14
SL.E1300.00	Communication Drawings	65	15-May-14	15-Aug-14
SL.E3820.00	Electrical System Descriptions - Main Power - Preliminary	65	10-Jun-14	10-Sep-14
SL.E3840.00	Electrical System Descriptions - Aux Power - Preliminary	65	17-Jun-14	17-Sep-14
SL.E3860.00	Electrical System Descriptions - DC Power - Preliminary	65	24-Jun-14	24-Sep-14
SL.E8800.00	Telephone & LAN Diagrams	45	16-Jan-15	20-Mar-15
Electrical Ductbank Drawings		261	09-Jan-13	14-Jan-14
SL.E2070.00	Ductbank - Economizer Ash Handling Area	70	09-Jan-13	17-Apr-13
SL.E2050.00	Ductbank - NID Area	110	18-Jan-13	20-Jun-13
SL.E2030.00	Ductbank - ID Fan Area	90	18-Apr-13	23-Aug-13
SL.E2090.00	Ductbank BOP - Miscellaneous	80	26-Apr-13	16-Aug-13
SL.E2040.00	Ductbank - Lime Handling Area	70	12-Aug-13	18-Nov-13
SL.E2060.00	Ductbank - Waste Ash Handling Area	70	12-Aug-13	18-Nov-13
SL.E2010.00	Ductbank - NID Substation Area	60	18-Oct-13	14-Jan-14



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Activity ID	Activity Name	Dur	Start	Finish
Embedded Conduit Drawings		296	10-Dec-12	04-Feb-14
SL.E4070.00	Embedded Conduit - Economizer Ash Handling Area	90	10-Dec-12	17-Apr-13
SL.E4050.00	Embedded Conduit - NID Area	90	15-Feb-13	20-Jun-13
SL.E4030.00	Embedded Conduit - ID Fan Area	90	18-Apr-13	23-Aug-13
SL.E4040.00	Embedded Conduit - Lime Handling Area	90	15-Jul-13	18-Nov-13
SL.E4060.00	Embedded Conduit - Waste Ash Handling Area	90	15-Jul-13	18-Nov-13
SL.E4090.00	Embedded Conduit BOP - Miscellaneous	140	19-Jul-13	04-Feb-14
SL.E4010.00	Embedded Conduit - NID Substation Area	70	04-Oct-13	14-Jan-14
Grounding Drawings		271	16-Jan-13	04-Feb-14
SL.E5070.00	Grounding - Economizer Ash Handling Area	65	16-Jan-13	17-Apr-13
SL.E5050.00	Grounding - NID Area	65	22-Mar-13	20-Jun-13
SL.E5030.00	Grounding - ID Fan Area	65	23-May-13	23-Aug-13
SL.E5090.00	Grounding BOP - Miscellaneous	140	19-Jul-13	04-Feb-14
SL.E5040.00	Grounding - Lime Handling Area	65	19-Aug-13	18-Nov-13
SL.E5060.00	Grounding - Waste Ash Handling Area	65	19-Aug-13	18-Nov-13
SL.E5010.00	Grounding - NID Substation Area	60	18-Oct-13	14-Jan-14
Cable Tray Drawings		185	16-Aug-13	06-May-14
SL.E1050.00	Cable Tray - NID Area	70	16-Aug-13	22-Nov-13
SL.E1030.00	Cable Tray - ID Fan Area	70	11-Oct-13	21-Jan-14
SL.E1040.00	Cable Tray - Lime Handling Area	70	22-Nov-13	04-Mar-14
SL.E1060.00	Cable Tray - Waste Ash Handling Area	70	22-Nov-13	04-Mar-14
SL.E1070.00	Cable Tray - Economizer Ash Handling Area	70	22-Nov-13	04-Mar-14
SL.E1010.00	Cable Tray - NID Substation Area	70	07-Jan-14	15-Apr-14
SL.E1090.00	Cable Tray BOP - Miscellaneous	70	28-Jan-14	06-May-14
Electrical Installation Drawings		245	22-Nov-13	05-Nov-14
SL.E3050.00	Elec Install - NID Area	130	22-Nov-13	27-May-14
SL.E3030.00	Elec Install - ID Fan Area	130	21-Jan-14	23-Jul-14
SL.E3040.00	Elec Install - Lime Handling Area	130	04-Mar-14	03-Sep-14
SL.E3060.00	Elec Install - Waste Ash Handling Area	130	04-Mar-14	03-Sep-14
SL.E3070.00	Elec Install - Economizer Ash Handling Area	130	04-Mar-14	03-Sep-14
SL.E3010.00	Elec Install - NID Substation Area	130	15-Apr-14	15-Oct-14
SL.E3090.00	Elec Install BOP - Miscellaneous	130	06-May-14	05-Nov-14
Cable Tabulations & Drawings		364	09-Sep-13	05-Feb-15
SL.E0-6815.00	Cable Tabs - NID System	70	09-Sep-13	13-Dec-13
SL.E0-6822.00	Cable Tabs - Induced Draft Fans	70	07-Oct-13	14-Jan-14
SL.E0-6860.00	Cable Tabs - Induced Draft Fan Motors	55	04-Nov-13	21-Jan-14

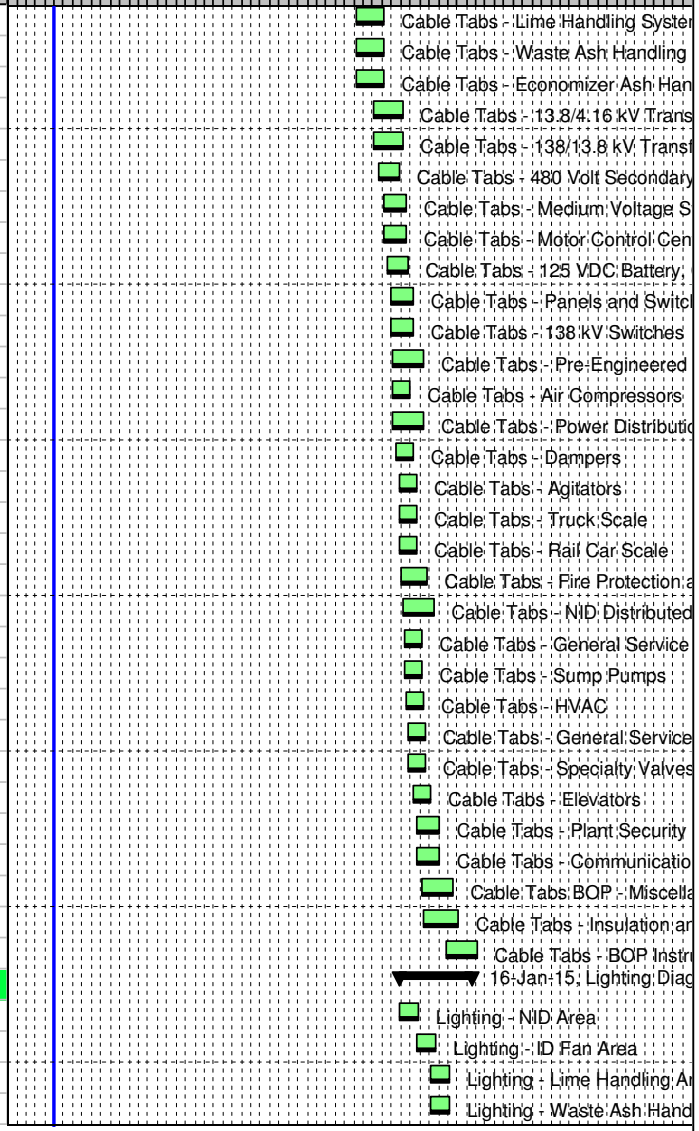


Remaining Level of Effort | Actual Level of Effort | Actual Work
WBS Summary | Primary Baseline | Remaining Work

TASK filter: All Activities

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Activity ID	Activity Name	Dur	Start	Finish
SL.E0-6850.00	Cable Tabs - Lime Handling System	65	08-Jan-14	08-Apr-14
SL.E0-6851.00	Cable Tabs - Waste Ash Handling System	65	08-Jan-14	08-Apr-14
SL.E0-6875.00	Cable Tabs - Economizer Ash Handling System	65	08-Jan-14	08-Apr-14
SL.E0-6861.00	Cable Tabs - 13.8/4.16 kV Transformers	70	05-Mar-14	10-Jun-14
SL.E0-6872.00	Cable Tabs - 138/13.8 kV Transformers	70	05-Mar-14	10-Jun-14
SL.E0-6863.00	Cable Tabs - 480 Volt Secondary Unit Substation	50	19-Mar-14	27-May-14
SL.E0-6862.00	Cable Tabs - Medium Voltage Switchgear and MCC	50	09-Apr-14	17-Jun-14
SL.E0-6864.00	Cable Tabs - Motor Control Centers	50	09-Apr-14	17-Jun-14
SL.E0-6866.00	Cable Tabs - 125 VDC Battery, Chargers & UPS	50	16-Apr-14	24-Jun-14
SL.E0-6867.00	Cable Tabs - Panels and Switchboards	50	30-Apr-14	09-Jul-14
SL.E0-6876.00	Cable Tabs - 138 kV Switches	50	30-Apr-14	09-Jul-14
SL.E0-6811.00	Cable Tabs - Pre-Engineered Buildings	70	07-May-14	13-Aug-14
SL.E0-6823.00	Cable Tabs - Air Compressors	40	07-May-14	01-Jul-14
SL.E0-6810.00	Cable Tabs - Power Distribution Centers	70	07-May-14	13-Aug-14
SL.E0-6825.00	Cable Tabs - Dampers	40	14-May-14	09-Jul-14
SL.E0-6836.00	Cable Tabs - Agitators	40	28-May-14	23-Jul-14
SL.E0-6852.00	Cable Tabs - Truck Scale	40	28-May-14	23-Jul-14
SL.E0-6853.00	Cable Tabs - Rail Car Scale	40	28-May-14	23-Jul-14
SL.E0-6838.00	Cable Tabs - Fire Protection and Detection System	60	04-Jun-14	27-Aug-14
SL.E0-6890.00	Cable Tabs - NID Distributed Control System	70	10-Jun-14	17-Sep-14
SL.E0-6826.00	Cable Tabs - General Service Pumps	40	11-Jun-14	06-Aug-14
SL.E0-6827.00	Cable Tabs - Sump Pumps	40	11-Jun-14	06-Aug-14
SL.E0-6834.00	Cable Tabs - HVAC	40	18-Jun-14	13-Aug-14
SL.E0-6830.00	Cable Tabs - General Service Valves	40	25-Jun-14	20-Aug-14
SL.E0-6831.00	Cable Tabs - Specialty Valves	40	25-Jun-14	20-Aug-14
SL.E0-6807.00	Cable Tabs - Elevators	40	10-Jul-14	03-Sep-14
SL.E0-6869.00	Cable Tabs - Plant Security System	50	24-Jul-14	01-Oct-14
SL.E0-6870.00	Cable Tabs - Communication System	50	24-Jul-14	01-Oct-14
SL.E0-6999.00	Cable Tabs BOP - Miscellaneous	75	07-Aug-14	19-Nov-14
SL.E0-6837.00	Cable Tabs - Insulation and Heat Tracing	80	12-Aug-14	02-Dec-14
SL.E0-6891.00	Cable Tabs - BOP Instruments	70	28-Oct-14	05-Feb-15
Lighting Diagrams		165	27-May-14	16-Jan-15
SL.E6050.00	Lighting - NID Area	45	27-May-14	30-Jul-14
SL.E6030.00	Lighting - ID Fan Area	45	23-Jul-14	24-Sep-14
SL.E6040.00	Lighting - Lime Handling Area	45	03-Sep-14	05-Nov-14
SL.E6060.00	Lighting - Waste Ash Handling Area	45	03-Sep-14	05-Nov-14



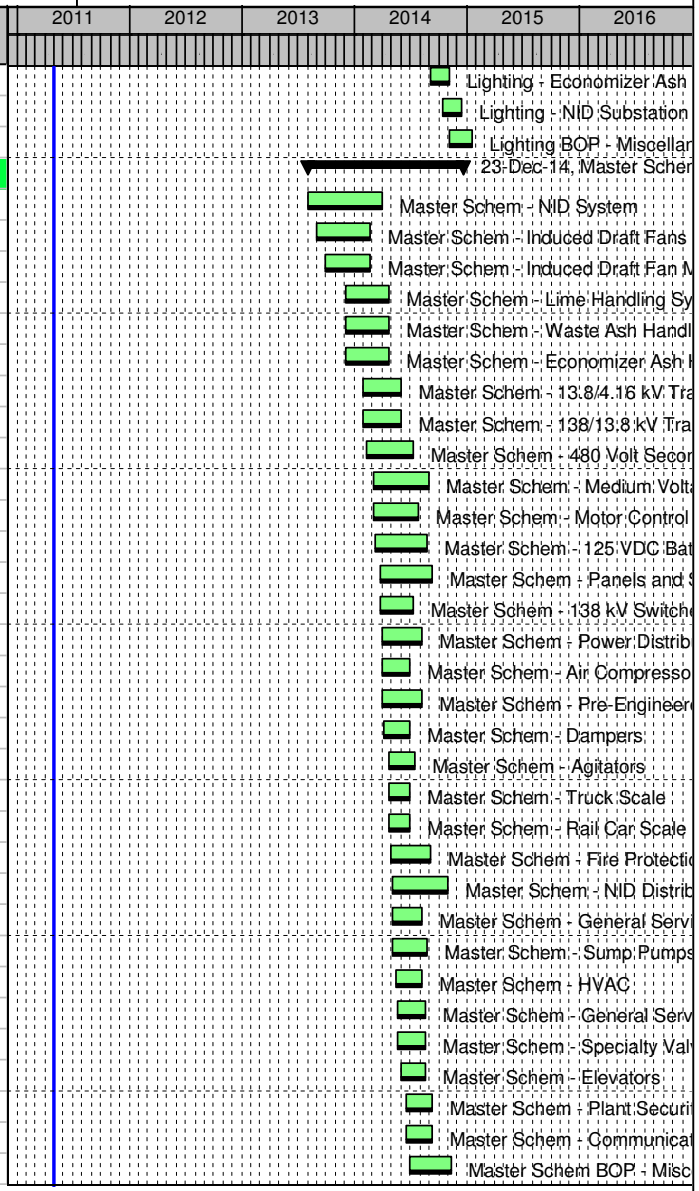
Remaining Level of Effort | Actual Level of Effort | Actual Work
WBS Summary | Primary Baseline | Remaining Work

TASK filter: All Activities

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Big Sandy - Level 2 Schedule Layout	Big Sandy NID (ESP Out of Service)	Data Date: 02-May-11 12:00 AM

Activity ID	Activity Name	Dur	Start	Finish
SL.E6070.00	Lighting - Economizer Ash Handling Area	45	03-Sep-14	05-Nov-14
SL.E6010.00	Lighting - NID Substation Area	45	15-Oct-14	17-Dec-14
SL.E6090.00	Lighting BOP - Miscellaneous	50	05-Nov-14	16-Jan-15
Master Schematic Diagrams		359	05-Aug-13	23-Dec-14
SL.E7-6815.00	Master Schem - NID System	170	05-Aug-13	01-Apr-14
SL.E7-6822.00	Master Schem - Induced Draft Fans	120	02-Sep-13	18-Feb-14
SL.E7-6860.00	Master Schem - Induced Draft Fan Motors	100	30-Sep-13	18-Feb-14
SL.E7-6850.00	Master Schem - Lime Handling System	100	02-Dec-13	22-Apr-14
SL.E7-6851.00	Master Schem - Waste Ash Handling System	100	02-Dec-13	22-Apr-14
SL.E7-6875.00	Master Schem - Economizer Ash Handling System	100	02-Dec-13	22-Apr-14
SL.E7-6861.00	Master Schem - 13.8/4.16 kV Transformers	90	29-Jan-14	03-Jun-14
SL.E7-6872.00	Master Schem - 138/13.8 kV Transformers	90	29-Jan-14	03-Jun-14
SL.E7-6863.00	Master Schem - 480 Volt Secondary Unit Substation	105	12-Feb-14	09-Jul-14
SL.E7-6862.00	Master Schem - Medium Voltage Switchgear and MCC	127	05-Mar-14	29-Aug-14
SL.E7-6864.00	Master Schem - Motor Control Centers	105	05-Mar-14	30-Jul-14
SL.E7-6866.00	Master Schem - 125 VDC Battery, Chargers & UPS	120	12-Mar-14	27-Aug-14
SL.E7-6867.00	Master Schem - Panels and Switchboards	120	26-Mar-14	10-Sep-14
SL.E7-6876.00	Master Schem - 138 kV Switches	75	26-Mar-14	09-Jul-14
SL.E7-6810.00	Master Schem - Power Distribution Centers	90	02-Apr-14	06-Aug-14
SL.E7-6823.00	Master Schem - Air Compressors	65	02-Apr-14	01-Jul-14
SL.E7-6811.00	Master Schem - Pre-Engineered Buildings	90	02-Apr-14	06-Aug-14
SL.E7-6825.00	Master Schem - Dampers	60	09-Apr-14	01-Jul-14
SL.E7-6836.00	Master Schem - Agitators	60	23-Apr-14	16-Jul-14
SL.E7-6852.00	Master Schem - Truck Scale	50	23-Apr-14	01-Jul-14
SL.E7-6853.00	Master Schem - Rail Car Scale	50	23-Apr-14	01-Jul-14
SL.E7-6838.00	Master Schem - Fire Protection and Detection System	90	30-Apr-14	03-Sep-14
SL.E7-6890.00	Master Schem - NID Distributed Control System	128	06-May-14	03-Nov-14
SL.E7-6826.00	Master Schem - General Service Pumps	65	07-May-14	06-Aug-14
SL.E7-6827.00	Master Schem - Sump Pumps	77	07-May-14	22-Aug-14
SL.E7-6834.00	Master Schem - HVAC	60	14-May-14	06-Aug-14
SL.E7-6830.00	Master Schem - General Service Valves	65	21-May-14	20-Aug-14
SL.E7-6831.00	Master Schem - Specialty Valves	65	21-May-14	20-Aug-14
SL.E7-6807.00	Master Schem - Elevators	55	04-Jun-14	20-Aug-14
SL.E7-6869.00	Master Schem - Plant Security System	60	18-Jun-14	10-Sep-14
SL.E7-6870.00	Master Schem - Communication System	60	18-Jun-14	10-Sep-14
SL.E7-6999.00	Master Schem BOP - Miscellaneous	95	02-Jul-14	12-Nov-14

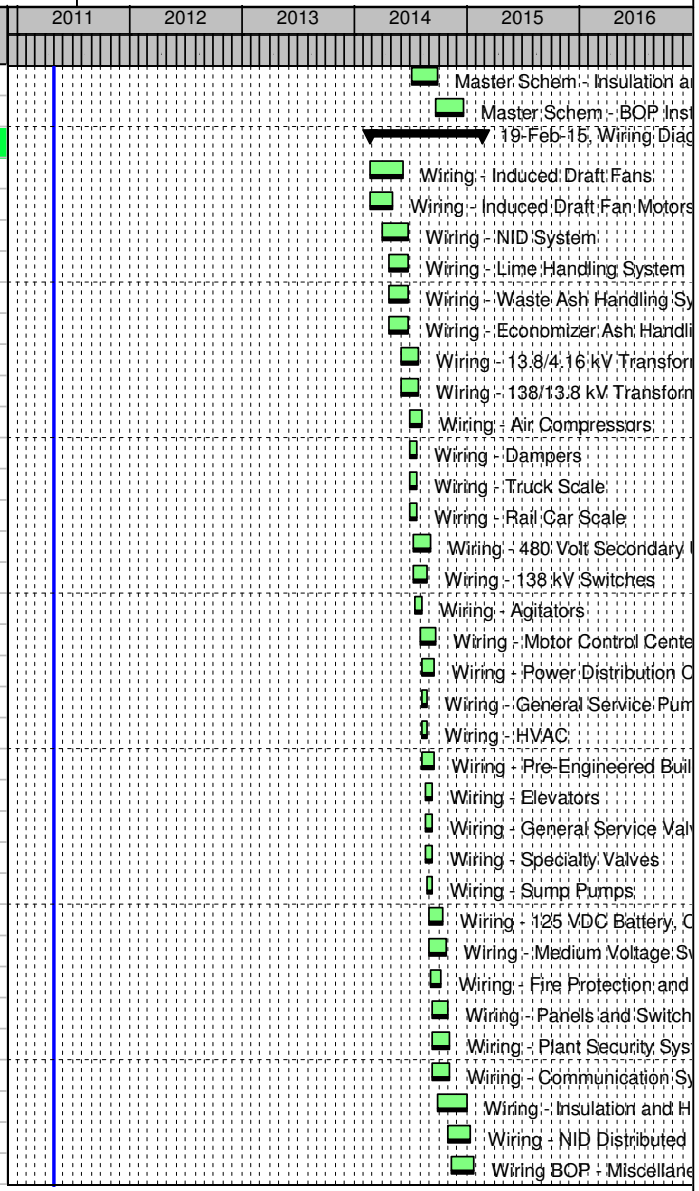


Remaining Level of Effort | Actual Level of Effort | Actual Work
WBS Summary | Primary Baseline | Remaining Work

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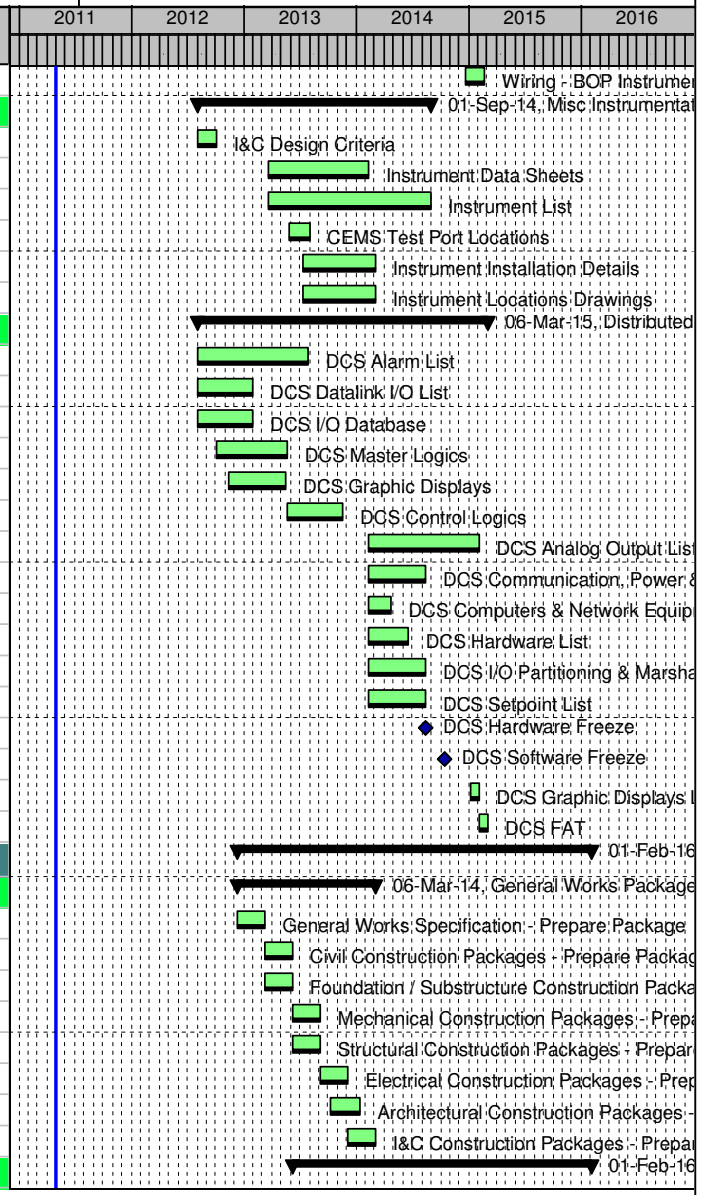
Activity ID	Activity Name	Dur	Start	Finish
SL.E7-6837.00	Master Schem - Insulation and Heat Tracing	60	08-Jul-14	30-Sep-14
SL.E7-6891.00	Master Schem - BOP Instruments	65	23-Sep-14	23-Dec-14
Wiring Diagrams		259	19-Feb-14	19-Feb-15
SL.E9-6822.00	Wiring - Induced Draft Fans	80	19-Feb-14	10-Jun-14
SL.E9-6860.00	Wiring - Induced Draft Fan Motors	55	19-Feb-14	06-May-14
SL.E9-6815.00	Wiring - NID System	60	02-Apr-14	24-Jun-14
SL.E9-6850.00	Wiring - Lime Handling System	45	23-Apr-14	24-Jun-14
SL.E9-6851.00	Wiring - Waste Ash Handling System	45	23-Apr-14	24-Jun-14
SL.E9-6875.00	Wiring - Economizer Ash Handling System	45	23-Apr-14	24-Jun-14
SL.E9-6861.00	Wiring - 13.8/4.16 kV Transformers	40	04-Jun-14	30-Jul-14
SL.E9-6872.00	Wiring - 138/13.8 kV Transformers	40	04-Jun-14	30-Jul-14
SL.E9-6823.00	Wiring - Air Compressors	25	02-Jul-14	06-Aug-14
SL.E9-6825.00	Wiring - Dampers	15	02-Jul-14	23-Jul-14
SL.E9-6852.00	Wiring - Truck Scale	15	02-Jul-14	23-Jul-14
SL.E9-6853.00	Wiring - Rail Car Scale	15	02-Jul-14	23-Jul-14
SL.E9-6863.00	Wiring - 480 Volt Secondary Unit Substation	40	10-Jul-14	03-Sep-14
SL.E9-6876.00	Wiring - 138 kV Switches	35	10-Jul-14	27-Aug-14
SL.E9-6836.00	Wiring - Agitators	15	17-Jul-14	06-Aug-14
SL.E9-6864.00	Wiring - Motor Control Centers	40	31-Jul-14	24-Sep-14
SL.E9-6810.00	Wiring - Power Distribution Centers	30	07-Aug-14	17-Sep-14
SL.E9-6826.00	Wiring - General Service Pumps	15	07-Aug-14	27-Aug-14
SL.E9-6834.00	Wiring - HVAC	15	07-Aug-14	27-Aug-14
SL.E9-6811.00	Wiring - Pre-Engineered Buildings	30	07-Aug-14	17-Sep-14
SL.E9-6807.00	Wiring - Elevators	15	21-Aug-14	10-Sep-14
SL.E9-6830.00	Wiring - General Service Valves	15	21-Aug-14	10-Sep-14
SL.E9-6831.00	Wiring - Specialty Valves	15	21-Aug-14	10-Sep-14
SL.E9-6827.00	Wiring - Sump Pumps	15	25-Aug-14	12-Sep-14
SL.E9-6866.00	Wiring - 125 VDC Battery, Chargers & UPS	35	28-Aug-14	15-Oct-14
SL.E9-6862.00	Wiring - Medium Voltage Switchgear and MCC	40	01-Sep-14	24-Oct-14
SL.E9-6838.00	Wiring - Fire Protection and Detection System	25	04-Sep-14	08-Oct-14
SL.E9-6867.00	Wiring - Panels and Switchboards	35	11-Sep-14	29-Oct-14
SL.E9-6869.00	Wiring - Plant Security System	40	11-Sep-14	05-Nov-14
SL.E9-6870.00	Wiring - Communication System	40	11-Sep-14	05-Nov-14
SL.E9-6837.00	Wiring - Insulation and Heat Tracing	65	30-Sep-14	31-Dec-14
SL.E9-6890.00	Wiring - NID Distributed Control System	50	03-Nov-14	14-Jan-15
SL.E9-6999.00	Wiring BOP - Miscellaneous	50	13-Nov-14	23-Jan-15



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Big Sandy - Level 2 Schedule Layout | **Big Sandy NID (ESP Out of Service)** | **Data Date: 02-May-11 12:00 AM**

Activity ID	Activity Name	Dur	Start	Finish
SL.E9-6891.00	Wiring - BOP Instruments	40	23-Dec-14	19-Feb-15
Misc Instrumentation & Control Deliverables		538	01-Aug-12	01-Sep-14
SL.J5000.00	I&C Design Criteria	45	01-Aug-12	02-Oct-12
SL.J6100.00	Instrument Data Sheets	230	21-Mar-13	11-Feb-14
SL.J6300.00	Instrument List	373	21-Mar-13	01-Sep-14
SL.J1000.00	CEMS Test Port Locations	45	29-May-13	01-Aug-13
SL.J6200.00	Instrument Installation Details	165	12-Jul-13	04-Mar-14
SL.J6400.00	Instrument Locations Drawings	165	12-Jul-13	04-Mar-14
Distributed Control System Deliverables		670	01-Aug-12	06-Mar-15
SL.J2000.00	DCS Alarm List	255	01-Aug-12	26-Jul-13
SL.J2500.00	DCS Datalink I/O List	130	01-Aug-12	31-Jan-13
SL.J3700.00	DCS I/O Database	130	01-Aug-12	31-Jan-13
SL.J4000.00	DCS Master Logics	163	03-Oct-12	21-May-13
SL.J3100.00	DCS Graphic Displays	130	14-Nov-12	16-May-13
SL.J2400.00	DCS Control Logics	130	22-May-13	20-Nov-13
SL.J2100.00	DCS Analog Output List	255	11-Feb-14	06-Feb-15
SL.J2200.00	DCS Communication, Power & Grounding Schematics	130	11-Feb-14	13-Aug-14
SL.J2300.00	DCS Computers & Network Equipment Lists	50	11-Feb-14	22-Apr-14
SL.J3500.00	DCS Hardware List	90	11-Feb-14	17-Jun-14
SL.J3800.00	DCS I/O Partitioning & Marshalling Cabinet Design	130	11-Feb-14	13-Aug-14
SL.J4800.00	DCS Setpoint List	130	11-Feb-14	13-Aug-14
SL.J3000.00	DCS Hardware Freeze	0		13-Aug-14
SL.J3000.10	DCS Software Freeze	0		15-Oct-14
SL.J3200.00	DCS Graphic Displays List	20	09-Jan-15	06-Feb-15
SL.J3000.20	DCS FAT	20	06-Feb-15	06-Mar-15
CONSTRUCTION		809	11-Dec-12	01-Feb-16
General Works Packages		317	11-Dec-12	06-Mar-14
SL.P-6896.00	General Works Specification - Prepare Package	63	11-Dec-12	12-Mar-13
SL.P-6896C.00	Civil Construction Packages - Prepare Package	63	12-Mar-13	07-Jun-13
SL.P-6896U.00	Foundation / Substructure Construction Packages - Prepare Package	63	12-Mar-13	07-Jun-13
SL.P-6896M.00	Mechanical Construction Packages - Prepare Package	63	07-Jun-13	06-Sep-13
SL.P-6896S.00	Structural Construction Packages - Prepare Package	63	07-Jun-13	06-Sep-13
SL.P-6896E.00	Electrical Construction Packages - Prepare Package	63	06-Sep-13	04-Dec-13
SL.P-6896A.00	Architectural Construction Packages - Prepare Package	63	11-Oct-13	10-Jan-14
SL.P-6896J.00	I&C Construction Packages - Prepare Package	63	04-Dec-13	06-Mar-14
Construction		682	10-Jun-13	01-Feb-16



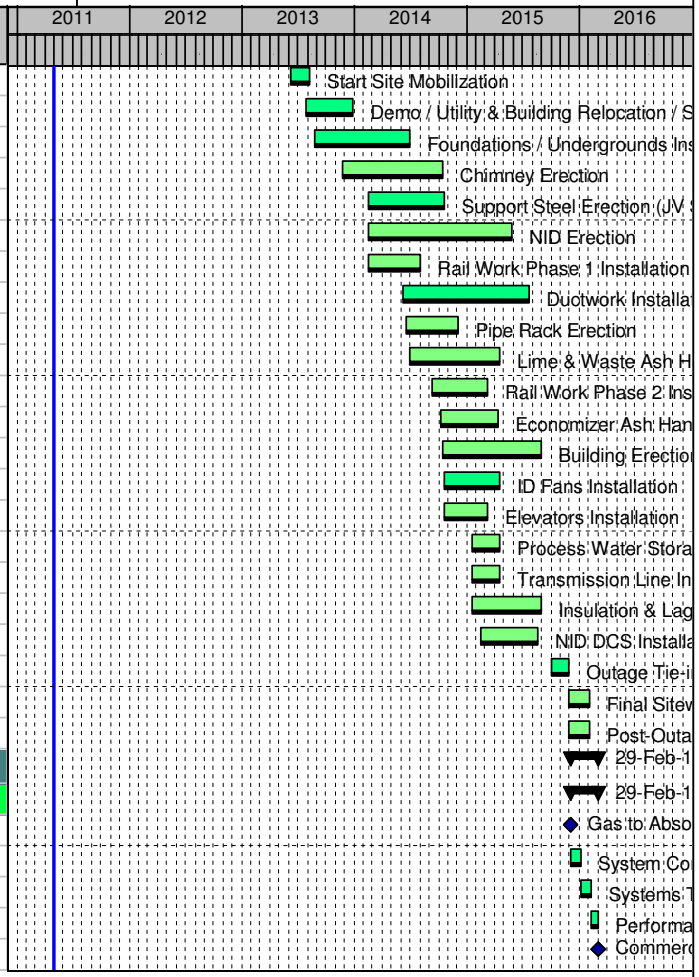
Remaining Level of Effort | Actual Level of Effort | Actual Work
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TASK filter: All Activities

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Big Sandy - Level 2 Schedule Layout	Big Sandy NID (ESP Out of Service)	Data Date: 02-May-11 12:00 AM

Activity ID	Activity Name	Dur	Start	Finish
P1EPC7000	Start Site Mobilization	45	10-Jun-13*	09-Aug-13
P1EPC7010	Demo / Utility & Building Relocation / Site Development	110	29-Jul-13	27-Dec-13
P1EPC7030	Foundations / Undergrounds Installation	220	27-Aug-13	30-Jun-14
P1EPC7050	Chimney Erection	230	26-Nov-13	13-Oct-14
P1EPC7040	Support Steel Erection (JV Supplied, excl pipe rack)	175	18-Feb-14	20-Oct-14
P1EPC7056	NID Erection	330	18-Feb-14	25-May-15
P1EPC7120	Rail Work Phase 1 Installation	120	18-Feb-14	04-Aug-14
P1EPC7080	Ductwork Installation	290	10-Jun-14	20-Jul-15
P1EPC7180	Pipe Rack Erection	120	17-Jun-14	02-Dec-14
P1EPC7060	Lime & Waste Ash Handling Installation	210	01-Jul-14	20-Apr-15
P1EPC7100	Rail Work Phase 2 Installation	130	09-Sep-14	09-Mar-15
P1EPC7200	Economizer Ash Handling Installation	130	10-Oct-14	10-Apr-15
P1EPC7140	Building Erection	230	15-Oct-14	02-Sep-15
P1EPC7070	ID Fans Installation	130	21-Oct-14	20-Apr-15
P1EPC7066	Elevators Installation	100	21-Oct-14	09-Mar-15
P1EPC7110	Process Water Storage Basin Installation	65	20-Jan-15	20-Apr-15
P1EPC7150	Transmission Line Installation	65	20-Jan-15	20-Apr-15
P1EPC7170	Insulation & Lagging Installation	160	20-Jan-15	31-Aug-15
P1EPC7190	NID DCS Installation	130	16-Feb-15	17-Aug-15
P1EPC7090	Outage Tie-in	61	01-Oct-15	30-Nov-15
P1EPC7130	Final Sitework	45	01-Dec-15	01-Feb-16
P1EPC7160	Post-Outage Work	45	01-Dec-15	01-Feb-16
START-UP		62	01-Dec-15	29-Feb-16
Start-up		62	01-Dec-15	29-Feb-16
P1EPC8000	Gas to Absorber	0		01-Dec-15
P1EPC8010	System Commissioning	35	02-Dec-15	05-Jan-16
P1EPC8030	Systems Tuning	35	06-Jan-16	09-Feb-16
P1EPC8020	Performance and Emissions Testing	20	10-Feb-16	29-Feb-16
P1EPC8040	Commercial Operation	0		29-Feb-16*



Remaining Level of Effort | Actual Level of Effort | Actual Work
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TASK filter: All Activities

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