



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 10, 2010

Draft Report for WFGD, DFGD, IAQCS
and NID Technologies

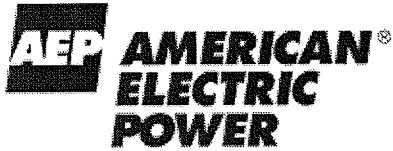
Volume 3 – DFGD Technology



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Issue Summary Page

Revision Number	Date	Purpose	Prepared By	Reviewed By	Approved By	Pages Affected
A	7/29/10	Review (Wet & Dry)	D. Anderson J. Hughes K. Nomanbhoy M. Ozan C. Woods	D. F. Franczak W. J. Staehlin P. Fisher	S. R. Bertheau	All
B	8/11/10	Review (IAQCS & NID)	D. Anderson J. Hughes K. Nomanbhoy M. Ozan C. Woods	D. F. Franczak W. J. Staehlin P. Fisher	S. R. Bertheau	All



Issue Summary Page Cont.

C	9/10/10	Review DFGD - Volume 3	D. Anderson J. Hughes <i>J. F. Hughes</i> K. Nomanbhoy <i>K. Nomanbhoy</i> M. Ozan <i>M. Ozan</i> C. Woods <i>C. Woods</i>	D. F. Franczak W. J. Staehlin <i>W. J. Staehlin</i> P. Fisher <i>P. Fisher</i>	S. R. Bertheau	All
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* - Estimates 2A and 2B contain only accounts whose costs are different from the corresponding base estimates 1A and 1B.

1.0 INTRODUCTION

The purpose of this document is to establish the Basis of the Order-of-Magnitude Dry FGD (DFGD) Cost Estimate to assist American Electric Power (AEP) with the selection of an FGD technology for Big Sandy Plant Unit 2. It is also intended to organize and present the deliverables for the DFGD technology that were used to develop the Order-of-Magnitude FGD Cost Estimates. This document will define the project scope of work for the DFGD 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:

<u>Volume</u>	<u>Description</u>
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 DFGD technology, cost estimates were prepared considering fuel specifications with sulfur content of 1.7 and 3.0 lb SO₂/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. The cost estimates also consider both the existing ESP in and removed from service.

The 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. 1) 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 four (4) cost estimates that were prepared for the DFGD.

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
Dry (ESP)	Dry Est-2A	Dry Base Est-1A	N/A	N/A
Dry (N/ESP)	Dry Est-2B	Dry Base Est-1B	N/A	N/A

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 3-1
DFGD Project Deliverable Index

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VOLUME 3 - EXHIBIT 3-1
Project Deliverable Index
Dry FGD Technology

Document No.	Description	Attachment No.
MSK-DFGD-PFD-001_C	Dry FGD Process Flow Diagram – Sheet 1	3-1
MSK-DFGD-PFD-002_C	Dry FGD Process Flow Diagram – Sheet 2	3-1
MSK-DFGD-GA-001_C	Dry FGD Site Plan	3-2
MSK-DFGD-GA-002_B	Dry FGD General Arrangement - Plan	3-2
MSK-DFGD-GA-003_B	Dry FGD General Arrangement – Ductwork Elevations	3-2
MSK-DFGD-MB-001_C	Dry FGD Mass Balance Diagram – (1.75 lb/MMBtu Coal w/o ESP)	3-3
MSK-DFGD-MB-002_C	Dry FGD Mass Balance Diagram – (3.0 lb/MMBtu Coal w/o ESP)	3-3
MSK-DFGD-MB-003_C	Dry FGD Mass Balance Diagram – (1.75 lb/MMBtu Coal w/ESP)	3-3
MSK-DFGD-MB-004_C	Dry FGD Mass Balance Diagram – (3.0 lb/MMBtu Coal w/ESP)	3-3
MSK-DFGD-WB-NOTES-001_C	DFGD Water Balance Assumptions with ESP	3-4
MSK-DFGD-WB-001_C	Dry FGD Water Balance Diagram – (1.75 lb/MMBtu Coal w/ESP)	3-4
MSK-DFGD-WB-002_C	Dry FGD Water Balance Diagram – (3.0 lb/MMBtu Coal w/ESP)	3-4
MSK-DFGD-WB-NOTES-002_C	DFGD Water Balance Assumptions without ESP	3-4
MSK-DFGD-WB-003_C	Dry FGD Water Balance Diagram – (1.75 lb/MMBtu Coal w/o ESP)	3-4
MSK-DFGD-WB-004_C	Dry FGD Water Balance Diagram – (3.0 lb/MMBtu Coal w/o ESP)	3-4
ESK-DFGD-SL-Notes-001_B	Dry FGD Single Line Diagram Basic Description	3-4
ESK-DFGD-SL-001_B	Dry FGD Single Line Diagram – ESP Out	3-5
ESK-DFGD-SL-002_B	Dry FGD Single Line Diagram – ESP In	3-5
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Big Sandy Unit 2
Kentucky Power Company
American Electric Power Service Corporation
Order-of-Magnitude FGD Cost Estimate
WFGD, DFGD, IAQCS & NID Technologies
September 10, 2010

EXHIBIT 3-2
DFGD Capital Cost Estimate Outline

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EXHIBIT 3-2
DFGD 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	FABRIC FILTERS	S&L	S&L	Previous OEM proposals and S&L Estimates	
3.0	NEW STACK	AEP	AEP		
4.0	LIME HANDLING SYSTEM	S&L	S&L	Previous OEM proposals and S&L Estimates	
5.0	LIME SLAKER BUILDING	S&L	S&L	Previous OEM proposals and S&L Estimates	
6.0	BYPRODUCT WASTE & FLY ASH HANDLING SYSTEMS	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	S&L	S&L	AEP	
9.0	COMPRESSED AIR SYSTEM	S&L	S&L	Past & Current S&L Projects	

EXHIBIT 3-2 DFGD 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		
15.0	RAIL INFRASTRUCTURE	S&L	S&L		
16.0	SITE IMPROVEMENTS - CIVIL WORK	S&L	S&L		
17.0	BOP ITEMS	S&L	S&L		
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		

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 3-2

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Big Sandy Unit 2
Kentucky Power Company
American Electric Power Service Corporation
Order-of-Magnitude FGD Cost Estimate
WFGD, DFGD, IAQCS & NID Technologies
September 10, 2010

EXHIBIT 3-3
DFGD Contingency Analysis

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Big Sandy Unit 2
Kentucky Power Company
American Electric Power Service Corporation
Order-of-Magnitude FGD Cost Estimate
WFGD, DFGD, IAQCS & NID Technologies
September 10, 2010

EXHIBIT 3-4
Capital Cost Estimate Comparison Summary - Wet FGD Options

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Exhibit 3-4. DFGD OEM Cost Summary

	1.7 w/o ESP	3 w/o ESP	1.7 w/ESP	3 w/ESP	Comments
Reagent Prep	\$ 5,560,000	\$ 7,985,000	\$ 5,914,000	\$ 8,616,000	Vendor scope: - Rotary feeders, chain conveyors, and slakers through the lime slurry pumps and lime slurry storage tanks - Structural steel integral to the support of the vendor's equipment - Piping inside buildings to terminal point - All pumps and 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 conveying, storage silo, etc... - All required DCS upgrades
Absorber Island	\$ 39,438,000	\$ 39,438,000	\$ 39,438,000	\$ 39,438,000	Vendor scope: - Absorber modules and atomizers with lube oil system - Duct work from the absorber inlets to the fabric filter outlet - Recycle storage silo, recycle slurry mix tanks, slurry storage tanks, and all ancillary systems with piping inside FGD buildings - Structural steel integral to the support of the vendor's equipment - Piping inside buildings to terminal point - All pumps and all motors required by vendor scope of supply - Process instruments and control logic - Trolleys and Hoists By others: - Conduit, cables, etc... to vendor's motors - Site grading, roads, foundations, etc... - All required DCS upgrades
Fabric Filter	\$ 19,980,000	\$ 19,761,000	\$ 19,409,000	\$ 19,276,000	Vendor scope: - A single fabric filter unit for all of the flue gas - All internal fabric filter elements such as bags, cages, ash hoppers, 2 broken bag detectors per compartment - Ash conveying system from the fabric filter to the recycle silo - Structural steel integral to the support of the vendor's equipment - Piping inside buildings to terminal point - All motors required by vendor scope of supply - Process instruments and control logic - Trolleys and Hoists By others: - Air compressors for the pulse-jet cleaning system - New ID fans - Duct from fabric filter to new ID fans - Piping from terminal points out to the plant - Conduit, cables, etc... to vendor's motors - Site grading, roads, foundations, etc... - Byproduct conveying, storage, etc... - All required DCS upgrades
Total	\$ 64,978,000	\$ 67,184,000	\$ 64,761,000	\$ 67,330,000	

Costs for the reagent preparation, absorber island, and fabric filter equipment 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. It should be noted that the previous Alstom quote was slightly higher than the other two budgetary quotes received for the same scope of supply.

EXHIBIT 3-4
Capital Cost Estimate Comparison Summary
Dry FGD Options

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

- The sulfur content of the coal impacts the following equipment and processes:
 - 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 for the 3.0 lb/MMBtu fuel correlates to increases in lime handling equipment costs.
 - 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

- Added cost for flyash transport, storage and blending system to stabilize the FGD byproduct.

ESP Out

- Added cost for ESP and booster fan demolition.
- Added cost for the economizer ash handling system.
- Slightly larger fabric filter costs.
- Improved lime utilization resulting in lower silo and silo foundation costs and lower slaking equipment costs.
- Slightly higher electrical capital costs due to higher ID fan motor HP.

Sargent & Lundy, LLC AEP BIG SANDY UNIT 2 FGD PROJECT - DRY FGD EST BASE (N/ESP)-1B - 3.0 LB/MM COST ESTIMATE SUMMARY Estimate No.: 30713B Project No.: 12721-000 Date: 9/10/2010 Preparer: MNO Reviewer: JMK Approver: PEF EST 1B N/ESP 3.0 LB SO2/MMBTU EST 2A ESP 1.7 LB SO2/MMBTU EST 1A ESP 3.0 LB SO2/MMBTU EST 2B N/ESP 1.7 LB SO2/MMBTU EST 2A (1.7 LB SO2/MMBTU) - BASE EST 1B EST 1A 3.0 LB SO2/MMBTU - BASE EST 1B EST 2B 1.7 LB SO2/MMBTU - BASE EST 1B													
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				Remarks
1.0	ID FANS												The ID Fans without the ESP are larger (i.e. cost more) because they replace the existing Booster Fans.
90.00	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS		\$ 7,995,600	\$ 7,680,500	\$ 16,158,800	\$ 31,834,900	\$ 31,344,000	\$ 31,344,000	\$ 31,834,900	\$ (490,900)	\$ (490,900)	\$ -	
	SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS		\$ 399,800	\$ 1,958,500	\$ 5,800,000	\$ 8,158,300	\$ 8,120,900	\$ 8,120,900	\$ 8,158,300	\$ (37,400)	\$ (37,400)	\$ -	
	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	ID FANS	\$ 8,395,400	\$ 9,639,000	\$ 21,958,800	\$ 39,993,200	\$ 39,464,900	\$ 39,464,900	\$ 39,993,200	\$ (528,300)	\$ (528,300)	\$ -	
2.0	FABRIC FILTERS												The Fabric Filter equipment costs are slightly larger at the lower coal sulfur levels because there is more actual flow rate i.e. there is more bag area in the same footprint.
90.00	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS		\$ 22,359,400	\$ 3,019,600	\$ 17,368,900	\$ 42,747,900	\$ 42,263,000	\$ 42,078,900	\$ 43,048,600	\$ (484,900)	\$ (669,000)	\$ 300,700	
	SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS		\$ 1,118,000	\$ 770,000	\$ 6,453,300	\$ 8,341,300	\$ 8,274,000	\$ 8,248,500	\$ 8,382,000	\$ (67,300)	\$ (92,800)	\$ 40,700	
	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	FABRIC FILTERS	\$ 23,477,400	\$ 3,789,600	\$ 23,822,200	\$ 51,089,200	\$ 50,537,000	\$ 50,327,400	\$ 51,430,600	\$ (552,200)	\$ (761,800)	\$ 341,400	
3.0	NEW STACK							\$ -					
3.1	CONCRETE STACK (DRY)	PROVIDED BY AEP	\$ -	\$ -	\$ -	\$ 17,600,000	\$ 17,600,000	\$ 17,600,000	\$ 17,600,000	\$ -	\$ -	\$ -	The lime consumption rate is almost double for 3.0 vs. 1.7 with ESP. There is also a difference in lime consumptions between ESP and No ESP. Without the ESP the approach to saturation temperature is reduced which improves the lime utilization thereby leading to slightly less lime consumption. The lime equipment (blowers etc.) is the same regardless. The main delta is the storage equipment (i.e. Storage silo)
4.0	LIME HANDLING SYSTEM												The lime consumption rate is almost double for 3.0 vs. 1.7 with ESP. There is also a difference in lime consumptions between ESP and No ESP. Without the ESP the approach to saturation temperature is reduced which improves the lime utilization thereby leading to slightly less lime consumption. The lime equipment (blowers etc.) is the same regardless. The main delta is the storage equipment (i.e. Storage silo)
4.27	FOUNDATIONS FOR TRANSFORMERS	FOR XFMR 33F, 33G,	\$ -	\$ 3,500	\$ 10,300	\$ 13,800	\$ 13,800	\$ 13,800	\$ 13,800	\$ -	\$ -	\$ -	
90.00	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS		\$ 7,259,600	\$ 2,958,200	\$ 5,934,300	\$ 16,152,100	\$ 12,270,900	\$ 17,409,400	\$ 11,869,200	\$ (3,881,200)	\$ 1,257,300	\$ (4,282,900)	
	SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS		\$ 363,000	\$ 754,300	\$ 2,163,600	\$ 3,280,900	\$ 2,827,300	\$ 3,415,900	\$ 2,799,800	\$ (453,600)	\$ 135,000	\$ (481,100)	

Sargent & Lundy, LLC AEP BIG SANDY UNIT 2 FGD PROJECT - DRY FGD EST BASE (N/ESP)-1B - 3.0 LB/MM COST ESTIMATE SUMMARY							Estimate No.: 30713B										
							Project No.: 12721-000										
							Date: 9/10/2010										
							Preparer: MNO										
							Reviewer: JMK										
							Approver: PEF										
							EST 1B N/ESP 3.0 LB SO2/MMBTU	EST 2A ESP 1.7 LB SO2/MMBTU	EST 1A ESP 3.0 LB SO2/MMBTU	EST 2B N/ESP 1.7 LB SO2/MMBTU	EST 2A (1.7 LB SO2/MMBTU) - BASE EST 1B	EST 1A 3.0 LB SO2/MMBTU - BASE EST 1B	EST 2B 1.7 LB SO2/MMBTU - BASE EST 1B				
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				Remarks				
	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	LIME HANDLING SYSTEM	\$ 7,622,600	\$ 3,712,500	\$ 8,097,900	\$ 19,433,000	\$ 15,098,200	\$ 20,825,300	\$ 14,669,000	\$ (4,334,800)	\$ 1,392,300	\$ (4,764,000)					
5.0	LIME SLAKER BUILDING																
90.00	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS		\$ 8,183,300	\$ 1,200,300	\$ 6,553,500	\$ 15,937,100	\$ 13,007,400	\$ 16,796,500	\$ 12,546,100	\$ (2,929,700)	\$ 859,400	\$ (3,391,000)					
	SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS		\$ 409,200	\$ 306,100	\$ 2,444,800	\$ 3,160,100	\$ 2,741,000	\$ 3,277,000	\$ 2,678,900	\$ (419,100)	\$ 116,900	\$ (481,200)					
	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	LIME SLAKER BUILDING	\$ 8,592,500	\$ 1,506,400	\$ 8,998,300	\$ 19,097,200	\$ 15,748,400	\$ 20,073,500	\$ 15,225,000	\$ (3,348,800)	\$ 976,300	\$ (3,872,200)					
6.0	BYPRODUCT WASTE & FLY ASH HANDLING SYSTEMS												With the ESP in service additional Fly Ash equipment is required including a silo for blending the fly ash with the byproduct. The silo sizes with the ESP in service are significantly smaller than without the ESP. This results from the fly ash being removed prior the waste being sent to the silo.				
90.0	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS		\$ 5,642,300	\$ 2,361,400	\$ 5,249,100	\$ 13,252,800	\$ 15,261,000	\$ 15,926,800	\$ 12,200,400	\$ 2,008,200	\$ 2,674,000	\$ (1,052,400)					
	SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS		\$ 282,100	\$ 602,200	\$ 1,953,700	\$ 2,838,000	\$ 3,343,200	\$ 3,415,000	\$ 2,724,700	\$ 505,200	\$ 577,000	\$ (113,300)					
	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	BYPRODUCT WASTE & FLY ASH HANDLING SYSTEMS	\$ 5,924,400	\$ 2,963,600	\$ 7,202,800	\$ 16,090,800	\$ 18,604,200	\$ 19,341,800	\$ 14,925,100	\$ 2,513,400	\$ 3,251,000	\$ (1,165,700)					
7.0	ABSORBER ISLAND												The absorber itself is sized on the actual flue gas flow rates which are roughly equivalent.				
90.0	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS		\$ 45,252,500	\$ 18,689,200	\$ 65,947,400	\$ 129,889,100	\$ 129,889,100	\$ 129,889,100	\$ 129,889,100	\$ -	\$ -	\$ -					
	SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS		\$ 3,072,600	\$ 4,765,700	\$ 25,547,200	\$ 33,385,600	\$ 33,385,600	\$ 33,369,500	\$ 33,385,600	\$ -	\$ (16,100)	\$ -					
	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	ABSORBER ISLAND	\$ 48,325,100	\$ 23,454,900	\$ 91,494,600	\$ 163,274,700	\$ 163,274,700	\$ 163,258,600	\$ 163,274,700	\$ -	\$ (16,100)	\$ -					
8.0	ACTIVATED CARBON INJECTION SYSTEM																
90.0	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS		\$ 2,929,000	\$ 321,300	\$ 1,726,800	\$ 4,977,100	\$ 4,977,100	\$ 4,977,100	\$ 4,977,100	\$ -	\$ -	\$ -					
	SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS		\$ 146,500	\$ 81,900	\$ 634,600	\$ 863,000	\$ 863,000	\$ 863,000	\$ 863,000	\$ -	\$ -	\$ -					
	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	ACTIVATED CARBON INJECTION SYSTEM	\$ 3,075,500	\$ 403,200	\$ 2,361,400	\$ 5,840,100	\$ 5,840,100	\$ 5,840,100	\$ 5,840,100	\$ -	\$ -	\$ -					
9.0	COMPRESSED AIR SYSTEM																
90.00	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS		\$ 1,000,100	\$ 1,015,800	\$ 1,447,700	\$ 3,463,600	\$ 3,463,600	\$ 3,463,600	\$ 3,463,600	\$ -	\$ -	\$ -					
	SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS		\$ 50,000	\$ 259,000	\$ 531,000	\$ 840,000	\$ 840,000	\$ 840,000	\$ 840,000	\$ -	\$ -	\$ -					
	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	COMPRESSED AIR SYSTEM	\$ 1,050,100	\$ 1,274,800	\$ 1,978,700	\$ 4,303,600	\$ 4,303,600	\$ 4,303,600	\$ 4,303,600	\$ -	\$ -	\$ -					
10.0	SERVICE WATER SYSTEM																
90.0	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS		\$ 580,600	\$ 1,182,700	\$ 1,938,800	\$ 3,702,100	\$ 3,702,100	\$ 3,702,100	\$ 3,702,100	\$ -	\$ -	\$ -					

Sargent & Lundy, LLC AEP BIG SANDY UNIT 2 FGD PROJECT - DRY FGD EST BASE (N/ESP)-1B - 3.0 LB/MM COST ESTIMATE SUMMARY						Estimate No.: 30713B					EST 2A (1.7 LB SO2/MMBTU) - BASE EST 1B	EST 1A 3.0 LB SO2/MMBTU - BASE EST 1B	EST 2B 1.7 LB SO2/MMBTU - BASE EST 1B	
						Project No.: 12721-000								
						Date: 9/10/2010								
						Preparer: MNO								
						Reviewer: JMK								
						Approver: PEF								
						EST 1B N/ESP 3.0 LB SO2/MMBTU	EST 2A ESP 1.7 LB SO2/MMBTU	EST 1A ESP 3.0 LB SO2/MMBTU	EST 2B N/ESP 1.7 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					Remarks
	SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS		\$ 29,000	\$ 301,600	\$ 707,200	\$ 1,037,900	\$ 1,037,900	\$ 1,037,900	\$ 1,037,900	\$ -	\$ -	\$ -		
	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	SERVICE WATER SYSTEM	\$ 609,600	\$ 1,484,300	\$ 2,646,000	\$ 4,740,000	\$ 4,740,000	\$ 4,740,000	\$ 4,740,000	\$ -	\$ -	\$ -		
11.0	POTABLE WATER SYSTEM													
90.0	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS		\$ 129,500	\$ 214,100	\$ 557,900	\$ 901,500	\$ 901,500	\$ 901,500	\$ 901,500	\$ -	\$ -	\$ -		
	SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS		\$ 6,500	\$ 54,600	\$ 202,900	\$ 264,000	\$ 264,000	\$ 264,000	\$ 264,000	\$ -	\$ -	\$ -		
	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	POTABLE WATER SYSTEM	\$ 135,975	\$ 268,696	\$ 760,786	\$ 1,165,456	\$ 1,165,456	\$ 1,165,456	\$ 1,165,456	\$ -	\$ -	\$ -		
12.0	FGD SUBSTATION													
90.0	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS		\$ 3,498,200	\$ 727,500	\$ 3,559,000	\$ 7,784,700	\$ 7,784,700	\$ 7,784,700	\$ 7,784,700	\$ -	\$ -	\$ -		
	SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS		\$ 174,900	\$ 185,500	\$ 1,287,493	\$ 1,647,900	\$ 1,647,900	\$ 1,647,900	\$ 1,647,900	\$ -	\$ -	\$ -		
	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	FGD SUBSTATION	\$ 3,673,100	\$ 913,000	\$ 4,846,500	\$ 9,432,600	\$ 9,432,600	\$ 9,432,600	\$ 9,432,600	\$ -	\$ -	\$ -		
13.0	FGD DCS SYSTEM													
90.0	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS		\$ 2,700,000	\$ 709,500	\$ 1,744,100	\$ 5,153,600	\$ 5,153,600	\$ 5,153,600	\$ 5,153,600	\$ -	\$ -	\$ -		
	SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS		\$ 135,000	\$ 180,900	\$ 650,900	\$ 966,800	\$ 966,800	\$ 966,800	\$ 966,800	\$ -	\$ -	\$ -		
	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	FGD DCS SYSTEM	\$ 2,835,000	\$ 890,400	\$ 2,395,000	\$ 6,120,400	\$ 6,120,400	\$ 6,120,400	\$ 6,120,400	\$ -	\$ -	\$ -		
14.0	CEM SYSTEM													
14.1	CEM	PROVIDED BY AEP	\$ 1,260,000	\$ 540,000	\$ 310,000	\$ 2,110,000	\$ 2,110,000	\$ 2,110,000	\$ 2,110,000	\$ -	\$ -	\$ -		
15.0	TRUCK & RAIL INFRASTRUCTURE													
90.0	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS		\$ 212,500	\$ 2,044,200	\$ 2,080,400	\$ 4,337,100	\$ 4,337,100	\$ 4,337,100	\$ 4,337,100	\$ -	\$ -	\$ -		
	SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS		\$ 10,600	\$ 521,300	\$ 777,500	\$ 1,309,400	\$ 1,309,400	\$ 1,309,400	\$ 1,309,400	\$ -	\$ -	\$ -		
	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	TRUCK & RAIL INFRASTRUCTURE	\$ 223,100	\$ 2,565,500	\$ 2,857,900	\$ 5,646,500	\$ 5,646,500	\$ 5,646,500	\$ 5,646,500	\$ -	\$ -	\$ -		
16.0	SITE IMPROVEMENTS - CIVIL WORK													
90.0	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS		\$ 574,500	\$ 2,965,900	\$ 5,358,400	\$ 8,898,800	\$ 8,899,300	\$ 8,899,300	\$ 8,899,300	\$ 500	\$ 500	\$ 500		
	SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS		\$ 28,700	\$ 756,300	\$ 1,930,500	\$ 2,715,600	\$ 2,715,700	\$ 2,715,700	\$ 2,715,700	\$ 100	\$ 100	\$ 100		
	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	SITE IMPROVEMENTS - CIVIL WORK	\$ 603,200	\$ 3,722,200	\$ 7,288,900	\$ 11,614,400	\$ 11,615,000	\$ 11,615,000	\$ 11,615,000	\$ 600	\$ 600	\$ 600		
17.0	BOP ITEMS													
90.0	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS		\$ 210,000	\$ 1,051,800	\$ 1,969,900	\$ 3,231,700	\$ 3,231,700	\$ 3,231,700	\$ 3,231,700	\$ -	\$ -	\$ -		
	SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS		\$ 10,500	\$ 268,209	\$ 750,035	\$ 1,028,744	\$ 1,028,744	\$ 1,028,744	\$ 1,028,744	\$ -	\$ -	\$ -		
	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	BOP ITEMS	\$ 220,500	\$ 1,320,000	\$ 2,719,900	\$ 4,260,400	\$ 4,260,400	\$ 4,260,400	\$ 4,260,400	\$ -	\$ -	\$ -		
18.0	CAPITAL REPLACEMENTS - REMOVAL AND RELOCATION OF EXISTING EQUIPMENT AND INFRASTRUCTURE													
90.0	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS		\$ -	\$ 479,000	\$ 1,146,600	\$ 1,625,600	\$ 1,625,600	\$ 1,625,600	\$ 1,625,600	\$ -	\$ -	\$ -		
	SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS		\$ -	\$ 122,100	\$ 401,400	\$ 523,600	\$ 523,600	\$ 523,600	\$ 484,600	\$ -	\$ -	\$ (39,000)		

Sargent & Lundy, LLC						AEP BIG SANDY UNIT 2 FGD PROJECT - DRY FGD EST BASE (N/ESP)-1B - 3.0 LB/MM COST ESTIMATE SUMMARY		Estimate No.: 30713B Project No.: 12721-000 Date: 9/10/2010 Preparer: MNO Reviewer: JMK Approver: PEF					EST 2A (1.7 LB SO2/MMBTU) - BASE EST 1B	EST 1A 3.0 LB SO2/MMBTU - BASE EST 1B	EST 2B 1.7 LB SO2/MMBTU - BASE EST 1B	
						EST 1B N/ESP 3.0 LB SO2/MMBTU	EST 2A ESP 1.7 LB SO2/MMBTU	EST 1A ESP 3.0 LB SO2/MMBTU	EST 2B N/ESP 1.7 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						Remarks	
	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	CAPITAL REPLACEMENTS - REMOVAL AND RELOCATION OF EXISTING EQUIPMENT AND INFRASTRUCTURE	\$ -	\$ 601,100	\$ 1,548,000	\$ 2,149,200	\$ 2,149,200	\$ 2,149,200	\$ 2,110,200	\$ -	\$ -	\$ (39,000)				
19.0	ARSENIC, ASBESTOS , LEAD ABATEMENT															
19.1	ARSENIC, ASBESTOS , LEAD ABATEMENT	ALLOWANCE PROVIDED BY AEP	\$ -	\$ -	\$ -	\$ 750,000	\$ 750,000	\$ 750,000	\$ 750,000	\$ -	\$ -	\$ -				
99.0	OVERALL - EQUIPMENT, MATERIAL AND LABOR COSTS		\$ 109,787,100	\$ 47,161,000	\$ 139,051,600	\$ 314,349,700	\$ 308,571,700	\$ 317,981,000	\$ 305,924,600	\$ (5,778,000)	\$ 3,631,300	\$ (8,425,100)				
	OVERALL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS		\$ 6,236,400	\$ 11,888,400	\$ 52,236,300	\$ 70,361,000	\$ 69,889,100	\$ 71,043,900	\$ 69,287,300	\$ (471,900)	\$ 682,900	\$ (1,073,700)				
	OVERALL TOTAL DIRECT & CONSTRUCTION INDIRECT COST		\$ 116,023,500	\$ 59,049,400	\$ 191,287,900	\$ 384,710,700	\$ 378,460,800	\$ 389,774,900	\$ 375,211,900	\$ (6,249,900)	\$ 5,064,200	\$ (9,498,800)				
	OVERALL PROJECT INDIRECT COSTS															
	ENGINEERING, PROCUREMENT, & PROJECT SERVICES					\$ 25,000,000	\$ 25,000,000	\$ 25,000,000	\$ 25,000,000	\$ -	\$ -	\$ -				
	CONSTRUCTION MANAGEMENT					\$ 11,541,300	\$ 11,353,800	\$ 11,648,200	\$ 11,256,400	\$ (187,500)	\$ 106,900	\$ (284,900)				
	S-U / COMMISSIONING					\$ 3,847,100	\$ 3,784,600	\$ 3,882,700	\$ 3,752,100	\$ (62,500)	\$ 35,600	\$ (95,000)				
	CRAFT START-UP SUPPORT					\$ 1,638,400	\$ 1,633,100	\$ 1,654,800	\$ 1,619,400	\$ (5,300)	\$ 16,400	\$ (19,000)				
	INITIAL FILLS					\$ 1,154,100	\$ 1,135,400	\$ 1,164,800	\$ 1,125,600	\$ (18,700)	\$ 10,700	\$ (28,500)				
	OPERATOR & TRAINING MANUALS					\$ 300,000	\$ 300,000	\$ 300,000	\$ 300,000	\$ -	\$ -	\$ -				
	SUBCONTRACTORS (NOISE & DUCTWORK CONSULTANT, GEOTECHNICAL INVESTIGATION)					\$ 400,000	\$ 400,000	\$ 400,000	\$ 400,000	\$ -	\$ -	\$ -				
	OWNERS COST	BY AEP				\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -				
	TOTAL PROJECT DIRECT AND INDIRECT COSTS					\$ 428,591,600	\$ 422,067,700	\$ 432,325,400	\$ 418,665,400	\$ (6,523,900)	\$ 3,733,800	\$ (9,926,200)				
	SPARE PARTS FOR THE OEM & THE BOP EQUIPMENT					\$ 1,508,300	\$ 1,437,500	\$ 1,534,500	\$ 1,420,800	\$ (70,800)	\$ 26,200	\$ (87,500)				
	SPARE PARTS FOR THE OEM EQUIPMENT	0.80				\$ 935,146	\$ 891,250	\$ 951,390	\$ 880,896	\$ (43,896)	\$ 16,244	\$ (54,250)				
	SPARE PARTS FOR THE BOP EQUIPMENT	0.50				\$ 573,154	\$ 546,250	\$ 583,110	\$ 539,904	\$ (26,904)	\$ 9,956	\$ (33,250)				
	CONTINGENCY	15.1				\$ 64,916,400	\$ 64,314,800	\$ 65,904,800	\$ 64,026,600	\$ (601,600)	\$ 988,400	\$ (889,800)				
	ESCALATION					\$ 30,079,800	\$ 29,444,900	\$ 30,441,900	\$ 29,180,500	\$ (634,900)	\$ 362,100	\$ (899,300)				
	EQUIPMENT					\$ 12,108,100	\$ 11,539,600	\$ 12,318,200	\$ 11,405,900	\$ (568,500)	\$ 210,100	\$ (702,200)				
	MATERIAL					\$ 2,996,900	\$ 2,988,500	\$ 3,017,900	\$ 2,971,300	\$ (8,400)	\$ 21,000	\$ (25,600)				
	LABOR					\$ 12,180,600	\$ 12,140,100	\$ 12,300,800	\$ 12,036,300	\$ (40,500)	\$ 120,200	\$ (144,300)				
	INDIRECTS					\$ 2,794,200	\$ 2,776,700	\$ 2,805,000	\$ 2,767,000	\$ (17,500)	\$ 10,800	\$ (27,200)				
	INTEREST DURING CONSTRUCTION (AFUDC)	BY AEP														
	TOTAL PROJECT COST					\$ 525,096,100	\$ 517,264,900	\$ 530,206,600	\$ 513,293,300	\$ (7,831,200)	\$ 5,110,500	\$ (11,802,800)				



Big Sandy Unit 2
Kentucky Power Company
American Electric Power Service Corporation
Order-of-Magnitude FGD Cost Estimate
WFGD, DFGD, IAQCS & NID Technologies
September 10, 2010

EXHIBIT 3-5
DFGD O&M Cost Estimate Summary

DRAFT COPY

AEP

Order-of-Magnitude EPC Cost Estimate

Big Sandy Station – Unit 2

Project No. 12721-000

September 10, 2010

Revision B

Exhibit 3-5. DFGD O&M Cost Estimate Summary

Fuel	DFGD			
	1.7 w/o ESP	3.0 w/o ESP	1.7 w/ ESP	3.0 w/ ESP
Fixed O&M (\$/year)				
Operating Labor	832,000	832,000	832,000	832,000
Maintenance Material	2,076,000	2,136,000	2,076,000	2,136,000
Maintenance Labor	1,384,000	1,424,000	1,384,000	1,424,000
Total Fixed O&M (\$/year)	4,292,000	4,392,000	4,292,000	4,392,000
Variable O&M (\$/year)				
Reagent Cost	8,601,000	19,605,000	9,924,000	23,281,000
Activated Carbon	2,344,000	2,319,000	2,267,000	2,243,000
FGD Byproduct Disposal Cost	4,148,000	5,612,000	1,793,000	3,817,000
Makeup Water Cost	509,000	521,000	464,000	482,000
Wastewater Treatment Chemicals	NA	NA	NA	NA
Bags and Cages Replacement	651,000	651,000	651,000	651,000
Total Variable O&M excluding Auxiliary Power (\$/year)	16,253,000	28,708,000	15,099,000	30,474,000
Auxiliary Power at Full Load (MW)				
Overall Draft (Furnace to Stack)	23	23	27	27
FGD Draft Only	8	8	8	8
FGD Equipment Load	4	5	4	5
Existing ESP	0	0	4	4
WESP	NA	NA	NA	NA
Total Auxiliary Power at Full Load (MW)	27	28	35	36

Note: NA = Not Applicable



Big Sandy Unit 2
Kentucky Power Company
American Electric Power Service Corporation
Order-of-Magnitude FGD Cost Estimate
WFGD, DFGD, IAQCS & NID Technologies
September 10, 2010

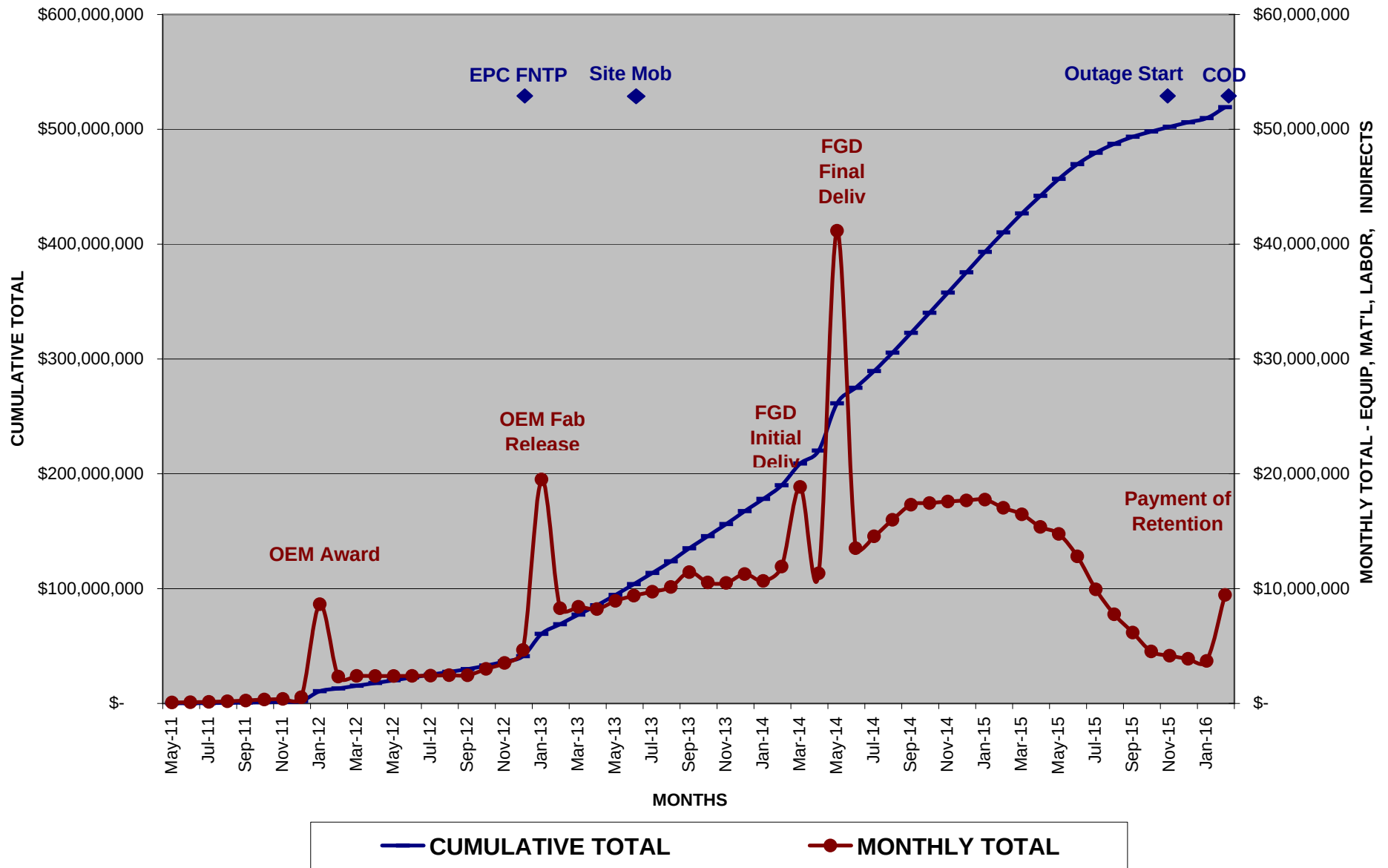
EXHIBIT 3-6
DFGD Project Cash Flow

DRAFT COPY

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

Sargent & Lundy
Date: 7/30/10
Rev: A

CASH FLOW - BIG SANDY UNIT 2 DFGD



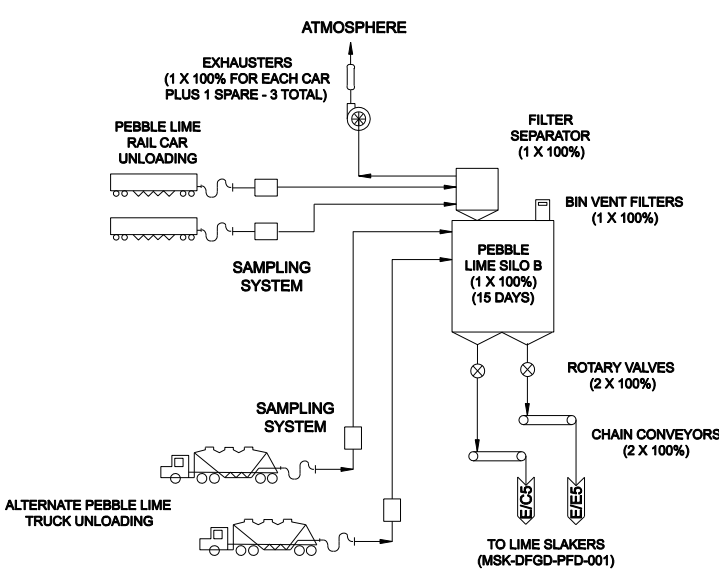
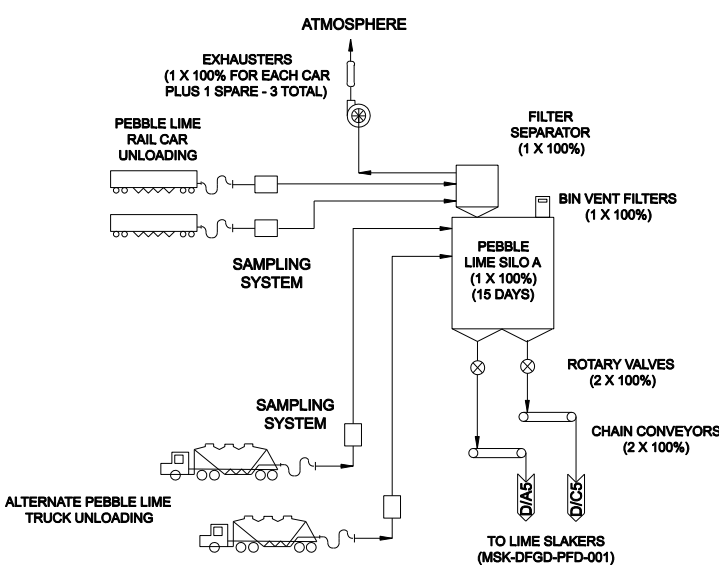


Big Sandy Unit 2
Kentucky Power Company
American Electric Power Service Corporation
Order-of-Magnitude FGD Cost Estimate
WFGD, DFGD, IAQCS & NID Technologies
September 10, 2010

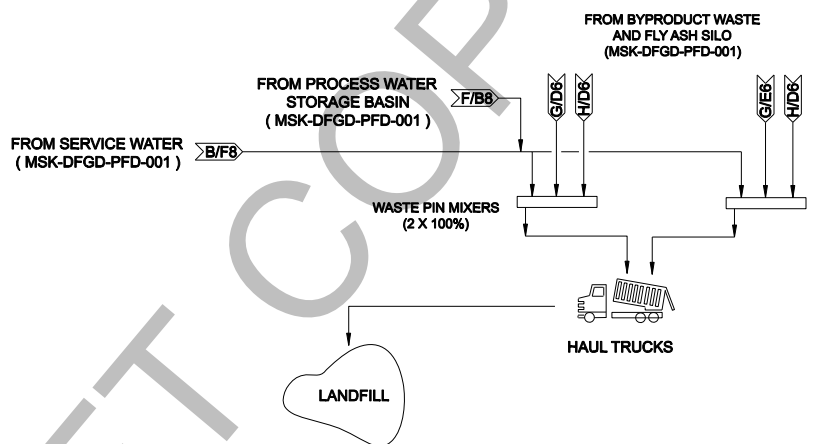
ATTACHMENT 3-1
DFGD Process Flow Diagrams

DRAFT COPY

1050694 A B C D E F G H J K L M N O
1
2
3
4
5
6
7
8
9
1050694 A B C D E F G H J K L M N O



LIME UNLOADING & STORAGE



BYPRODUCT HANDLING

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

C	09/10/2010	ISSUED FOR USE
B	07/29/2010	ISSUED FOR USE
A	06/25/2010	ISSUED FOR REVIEW
REV	DATE RELEASED	PURPOSE

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

PROFESSIONAL ENGINEER'S STAMP

NOTES

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
DRY FGD (DFGD)

DWG. NO. MSK-DFGD-PFD-002.C

SCALE: NONE

DR: [Signature]

APPROVED BY: [Signature]

DATE: [Blank]

PREPARED: [Signature]
REVIEWED: [Signature]
APPROVED: [Signature]

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

AEP SERVICE CORP.
1 RIVERSIDE PLAZA
COLUMBUS, OH 43215

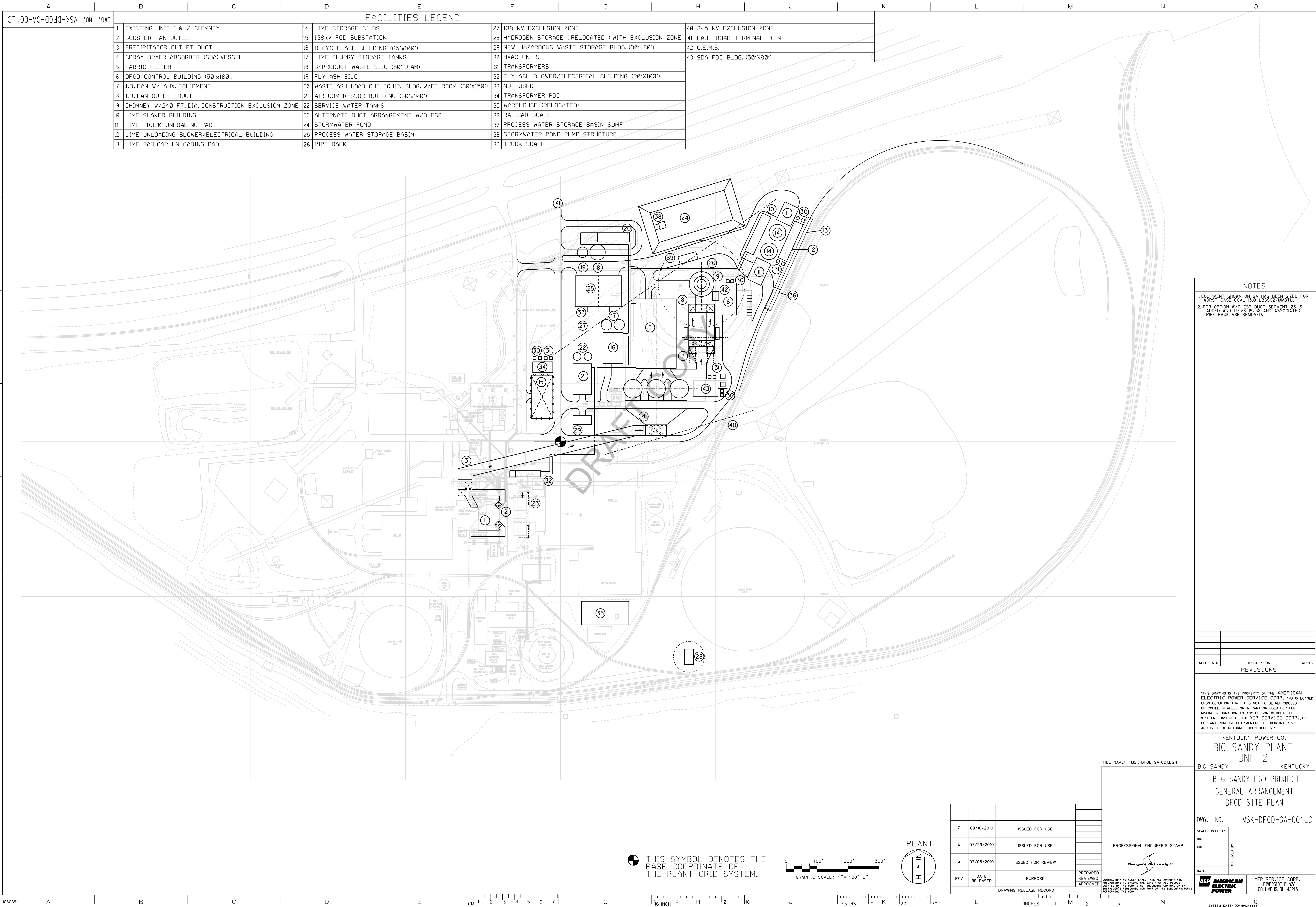
SYSTEM DATE: DD-MMM-YYYY
SYSTEM TIME: HOUR-MINUTE



Big Sandy Unit 2
Kentucky Power Company
American Electric Power Service Corporation
Order-of-Magnitude FGD Cost Estimate
WFGD, DFGD, IAQCS & NID Technologies
September 10, 2010

ATTACHMENT 3-2
DFGD Site Plan and General Arrangement Drawings

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FACILITIES LEGEND			
1	EXISTING UNIT 1 & 2 CHIMNEY	14	LIME STORAGE SILOS
2	BOOSTER FAN OUTLET	15	138kV FGD SUBSTATION
3	PRECIPITATOR OUTLET DUCT	16	RECYCLE ASH BUILDING (65'x100')
4	SPRAY DRYER ABSORBER (SDA) VESSEL	17	LIME SLURRY STORAGE TANKS
5	FABRIC FILTER	18	BYPRODUCT WASTE SILO (50' DIAM)
6	DFGD CONTROL BUILDING (50'x100')	19	FLY ASH SILO
7	I.D. FAN W/ AUX. EQUIPMENT	20	WASTE ASH LOAD OUT EQUIP. BLDG. W/EE ROOM (30'x150')
8	I.D. FAN OUTLET DUCT	21	AIR COMPRESSOR BUILDING (60'x100')
9	CHIMNEY W/240 FT. DIA. CONSTRUCTION EXCLUSION ZONE	22	SERVICE WATER TANKS
10	LIME SLAKER BUILDING	23	ALTERNATE DUCT ARRANGEMENT W/O ESP
11	LIME TRUCK UNLOADING PAD	24	STORMWATER POND
12	LIME UNLOADING BLOWER/ELECTRICAL BUILDING	25	PROCESS WATER STORAGE BASIN
13	LIME RAILCAR UNLOADING PAD	26	PIPE RACK
27	138 kV EXCLUSION ZONE	31	TRANSFORMERS
28	HYDROGEN STORAGE (RELOCATED) WITH EXCLUSION ZONE	32	FLY ASH BLOWER/ELECTRICAL BUILDING (20'x100')
29	NEW HAZARDOUS WASTE STORAGE BLDG. (30'x60')	33	NOT USED
30	HVAC UNITS	34	TRANSFORMER PDC
31	TRANSFORMERS	35	WAREHOUSE (RELOCATED)
32	FLY ASH BLOWER/ELECTRICAL BUILDING (20'x100')	36	RAILCAR SCALE
33	NOT USED	37	PROCESS WATER STORAGE BASIN SUMP
34	TRANSFORMER PDC	38	STORMWATER POND PUMP STRUCTURE
35	WAREHOUSE (RELOCATED)	39	TRUCK SCALE
40	345 kV EXCLUSION ZONE		
41	HAUL ROAD TERMINAL POINT		
42	C.E.M.S.		
43	SDA PDC BLDG. (50'x80')		

NOTES

1. EQUIPMENT SHOWN ON GA HAS BEEN SIZED FOR WORST CASE COAL (30.0 LBSS02/MMBTU).

2. FOR OPTION W/O ESP OUTLET SEGMENT 23 IS ADDED AND ITEMS 19, 32 AND ASSOCIATED PIPE RACK ARE REMOVED.

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KENTUCKY POWER CO.
BIG SANDY PLANT
UNIT 2
BIG SANDY KENTUCKY
BIG SANDY FGD PROJECT
GENERAL ARRANGEMENT
DFGD SITE PLAN

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

SCALES: F=100'-0"
DR: _____
CH: _____
APPROVED BY: _____
DATE: _____

PROFESSIONAL ENGINEER'S STAMP
Bergin & Lundy, Inc.
AEP AMERICAN ELECTRIC POWER
AEP SERVICE CORP.
1 RIVERSIDE PLAZA
COLUMBUS, OH 43215

REV	DATE RELEASED	PURPOSE	PREPARED	REVIEWED	APPROVED
C	09/10/2010	ISSUED FOR USE			
B	07/29/2010	ISSUED FOR USE			
A	07/06/2010	ISSUED FOR REVIEW			
REV	DATE RELEASED	PURPOSE	PREPARED	REVIEWED	APPROVED

DRAWING RELEASE RECORD

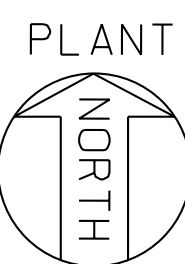
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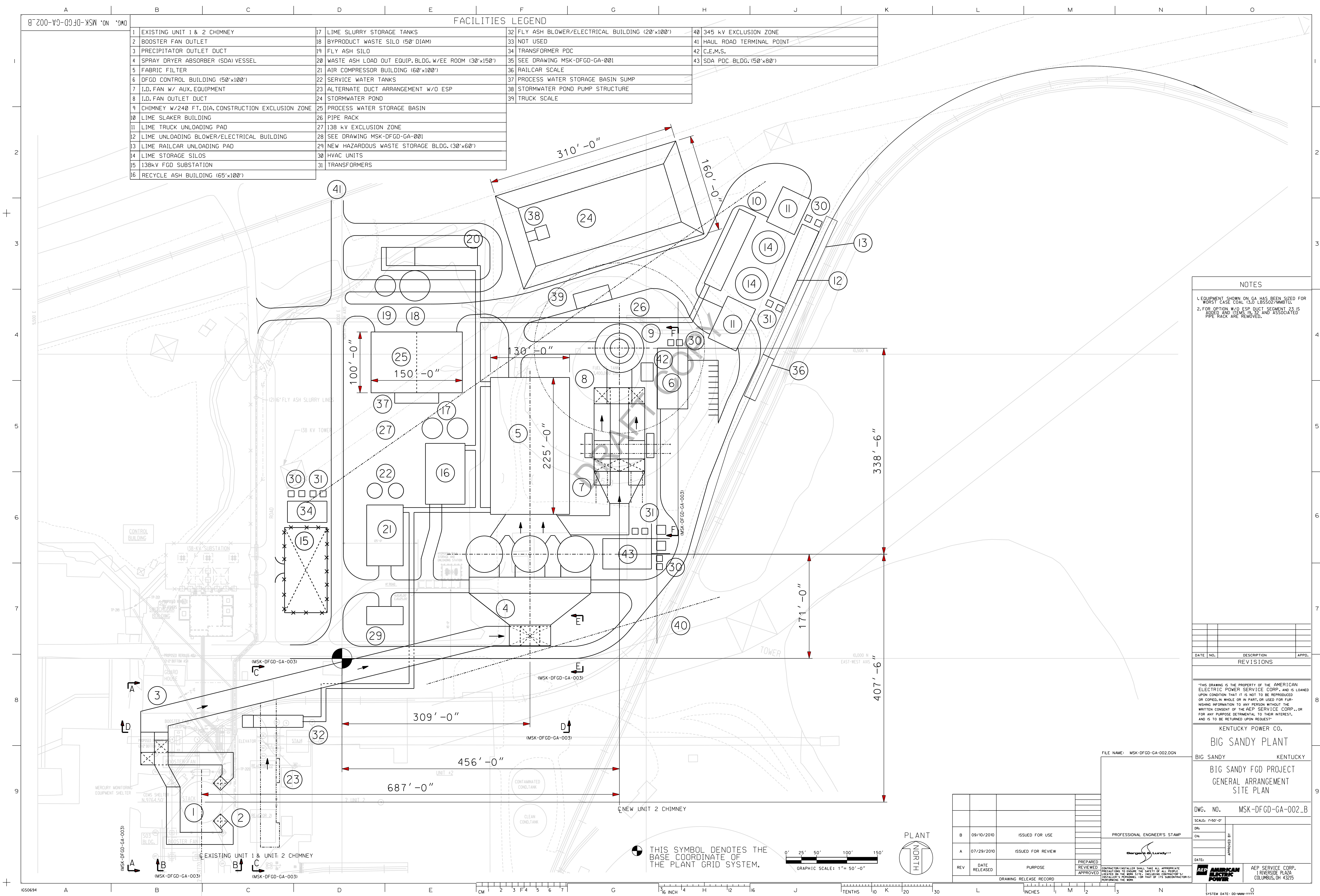
PROFESSIONAL ENGINEER'S STAMP

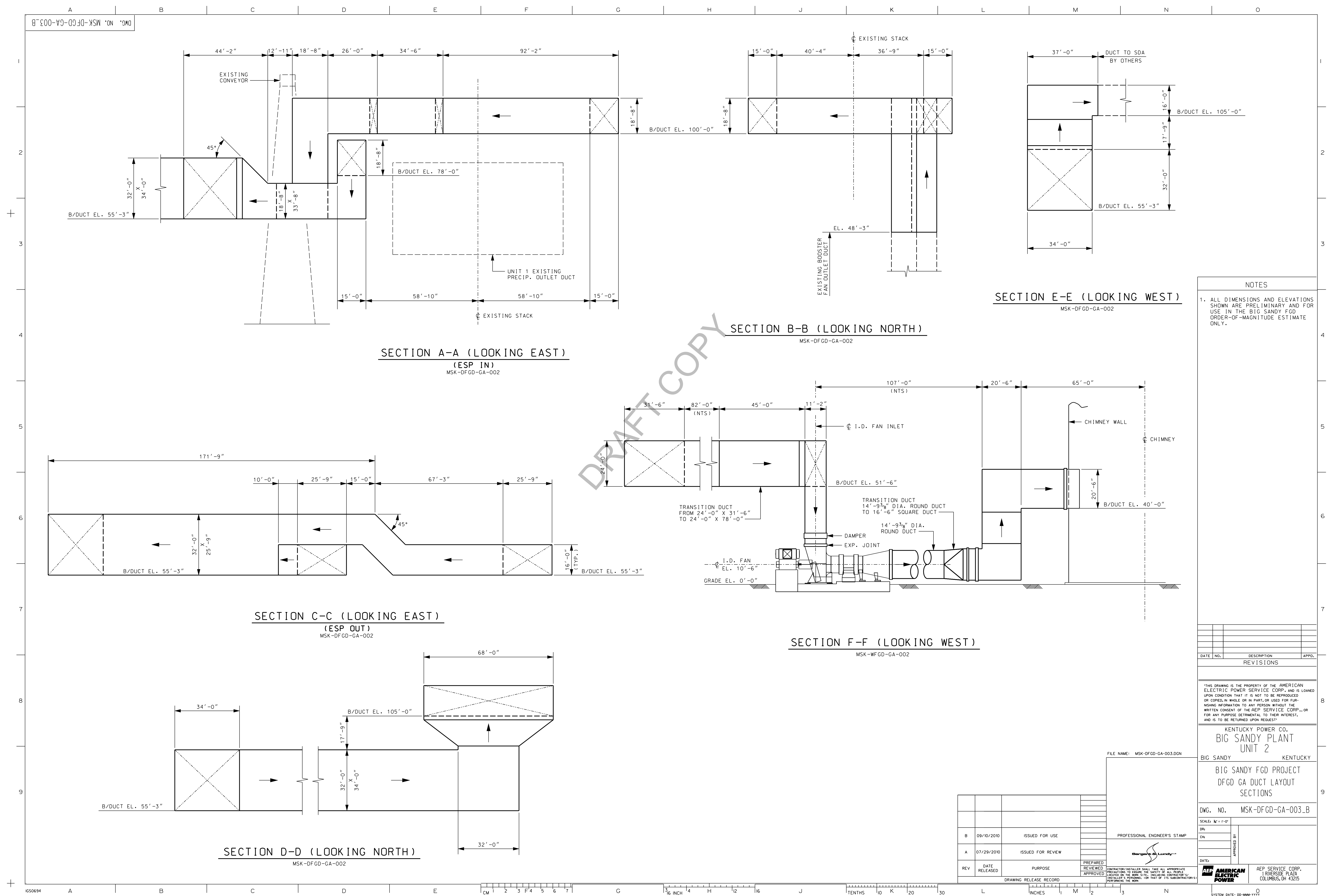
CONTRACTOR/INSTALLER SHALL TAKE ALL APPROPRIATE PRECAUTIONS TO ENSURE THE SAFETY OF ALL PEOPLE LOCATED ON THE WORK SITE, INCLUDING CONTRACTOR'S, INSTALLER'S PERSONNEL AND THAT OF ITS SUBCONTRACTORS' PERSONNEL, THE WORK.

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

0' 100' 200' 300'
GRAPHIC SCALE: 1"= 100'-0"







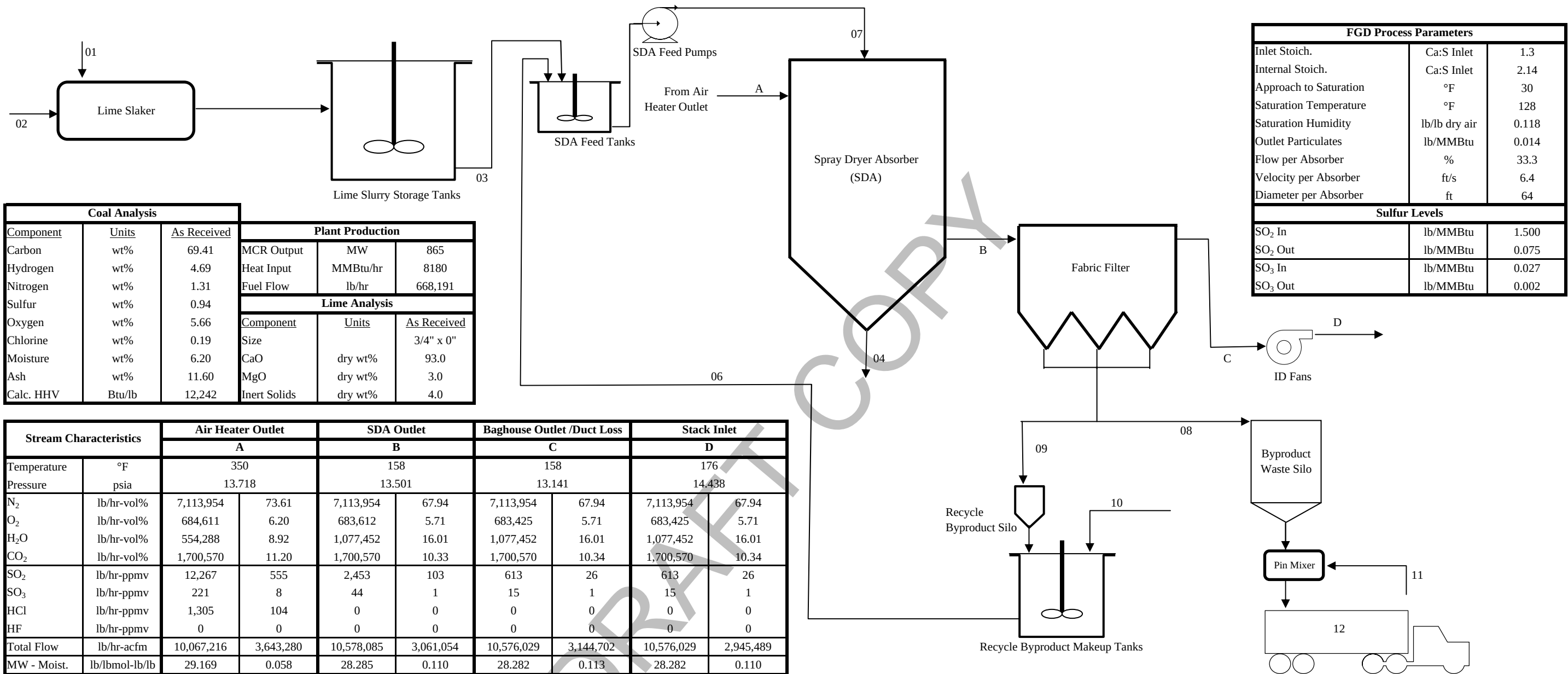


Big Sandy Unit 2
Kentucky Power Company
American Electric Power Service Corporation
Order-of-Magnitude FGD Cost Estimate
WFGD, DFGD, IAQCS & NID Technologies
September 10, 2010

ATTACHMENT 3-3
DFGD Mass Balances

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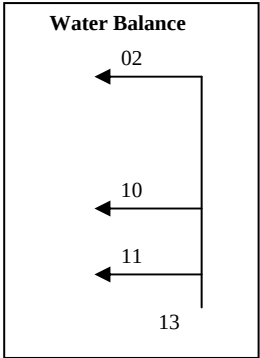
Mass Balance Dry FGD (DFGD) Technology - 1.7 lb SO₂/MMBtu Coal



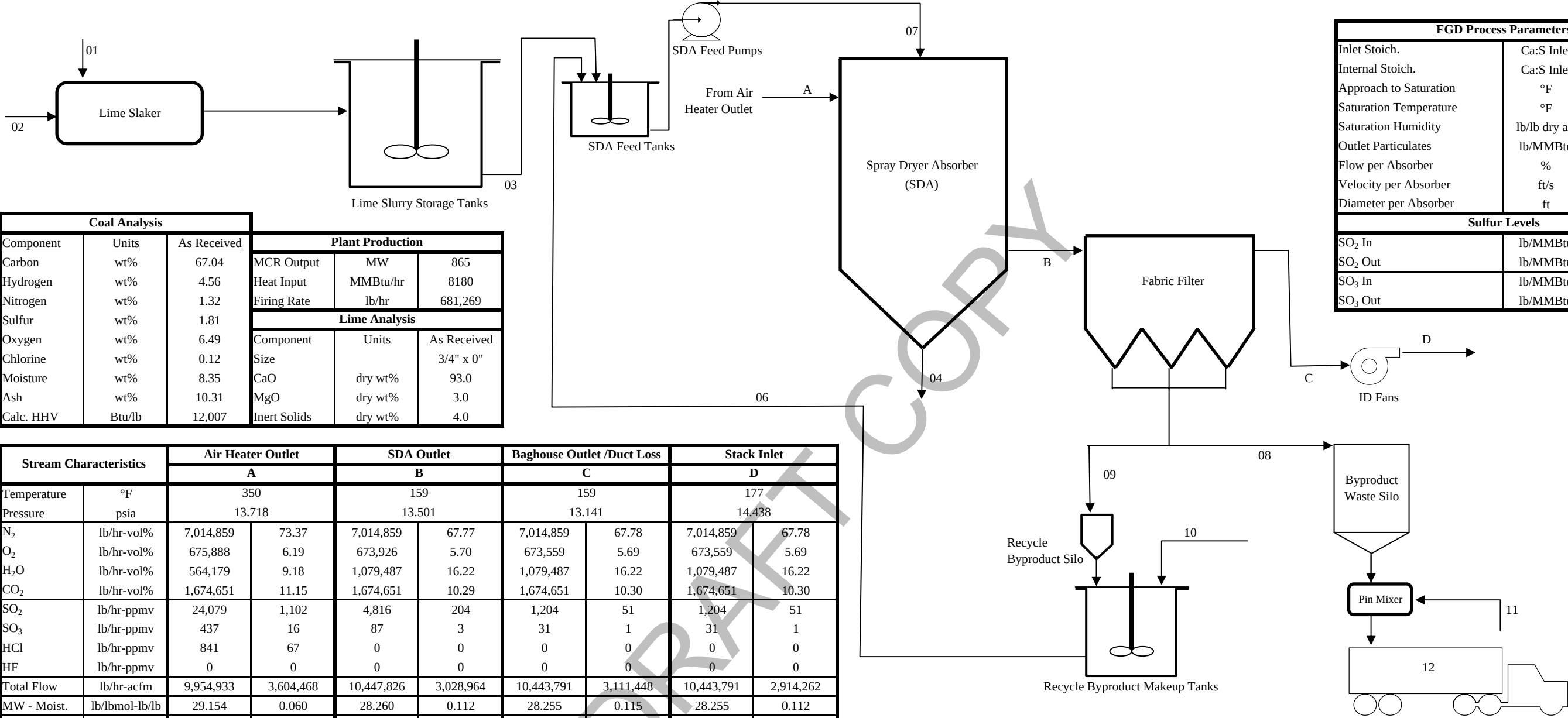
Stream Characteristics		Air Heater Outlet		SDA Outlet		Baghouse Outlet /Duct Loss		Stack Inlet	
		A		B		C		D	
Temperature	°F	350		158		158		176	
Pressure	psia	13.718		13.501		13.141		14.438	
N ₂	lb/hr-vol%	7,113,954	73.61	7,113,954	67.94	7,113,954	67.94	7,113,954	67.94
O ₂	lb/hr-vol%	684,611	6.20	683,612	5.71	683,425	5.71	683,425	5.71
H ₂ O	lb/hr-vol%	554,288	8.92	1,077,452	16.01	1,077,452	16.01	1,077,452	16.01
CO ₂	lb/hr-vol%	1,700,570	11.20	1,700,570	10.33	1,700,570	10.34	1,700,570	10.34
SO ₂	lb/hr-ppmv	12,267	555	2,453	103	613	26	613	26
SO ₃	lb/hr-ppmv	221	8	44	1	15	1	15	1
HCl	lb/hr-ppmv	1,305	104	0	0	0	0	0	0
HF	lb/hr-ppmv	0	0	0	0	0	0	0	0
Total Flow	lb/hr-acfm	10,067,216	3,643,280	10,578,085	3,061,054	10,576,029	3,144,702	10,576,029	2,945,489
MW - Moist.	lb/lbmol-lb/lb	29.169	0.058	28.285	0.110	28.282	0.113	28.282	0.110
Ash	lb/hr-gr/acf	62,008	1.986	227,100	8.656	114	0.004	114	0.004

Stream Characteristics		Fresh Lime	Slaker H2O	Lime Slurry	Abs. Solids
		01	02	03	04
Inert Solids	lb/hr	665	0	665	
CaO	lb/hr	15,457	0	0	
Ca(OH) ₂	lb/hr	0	0	20,425	
MgO	lb/hr	499	0	499	
CaSO ₃ *0.5H ₂ O	lb/hr	0	0	0	
CaSO ₄ *2H ₂ O	lb/hr	0	0	0	
CaCl ₂ + CaF ₂	lb/hr	0	0	0	
Total Solids	lb/hr	16,620	0	21,589	
Water	lb/hr	0	91,323	86,355	
Total Flow	lb/hr	16,620	91,323	107,944	TBD
Total Flow	gpm	---	182	189	
Solids	wt%	100	0	20	

Recycle	SDA Inlet	Waste Solids	Recycle Solids	Recycle H2O	Dust Control	Landfill	Total Water
06	07	08	09	10	11	12	13
164,541	165,206	62,559	164,541	0	0	62,559	0
0	0	0	0	0	0	0	0
14,300	34,726	5,437	14,300	0	0	5,437	0
1,311	1,810	499	1,311	0	0	499	0
37,593	37,593	14,293	37,593	0	0	14,293	0
33,416	33,416	12,705	33,416	0	0	12,705	0
5,220	5,220	1,985	5,220	0	0	1,985	0
256,381	277,970	97,478	256,381	0	0	97,478	0
476,137	562,492	10,831	28,487	447,650	30,945	41,776	569,919
732,518	840,462	108,309	284,868	447,650	30,945	139,254	569,919
1,174	1,365	---	---	894	62	---	1,139
35	33	90	90	0	0	70	0



Mass Balance Dry FGD (DFGD) Technology -
3.0 lb SO₂/MMBtu Coal (Base Case w/o ESP)

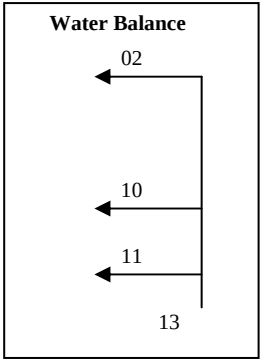


FGD Process Parameters		
Inlet Stoich.	Ca:S Inlet	1.6
Internal Stoich.	Ca:S Inlet	2.32
Approach to Saturation	°F	30
Saturation Temperature	°F	129
Saturation Humidity	lb/lb dry air	0.120
Outlet Particulates	lb/MMBtu	0.014
Flow per Absorber	%	33.3
Velocity per Absorber	ft/s	6.3
Diameter per Absorber	ft	63
Sulfur Levels		
SO ₂ In	lb/MMBtu	2.944
SO ₂ Out	lb/MMBtu	0.147
SO ₃ In	lb/MMBtu	0.053
SO ₃ Out	lb/MMBtu	0.004

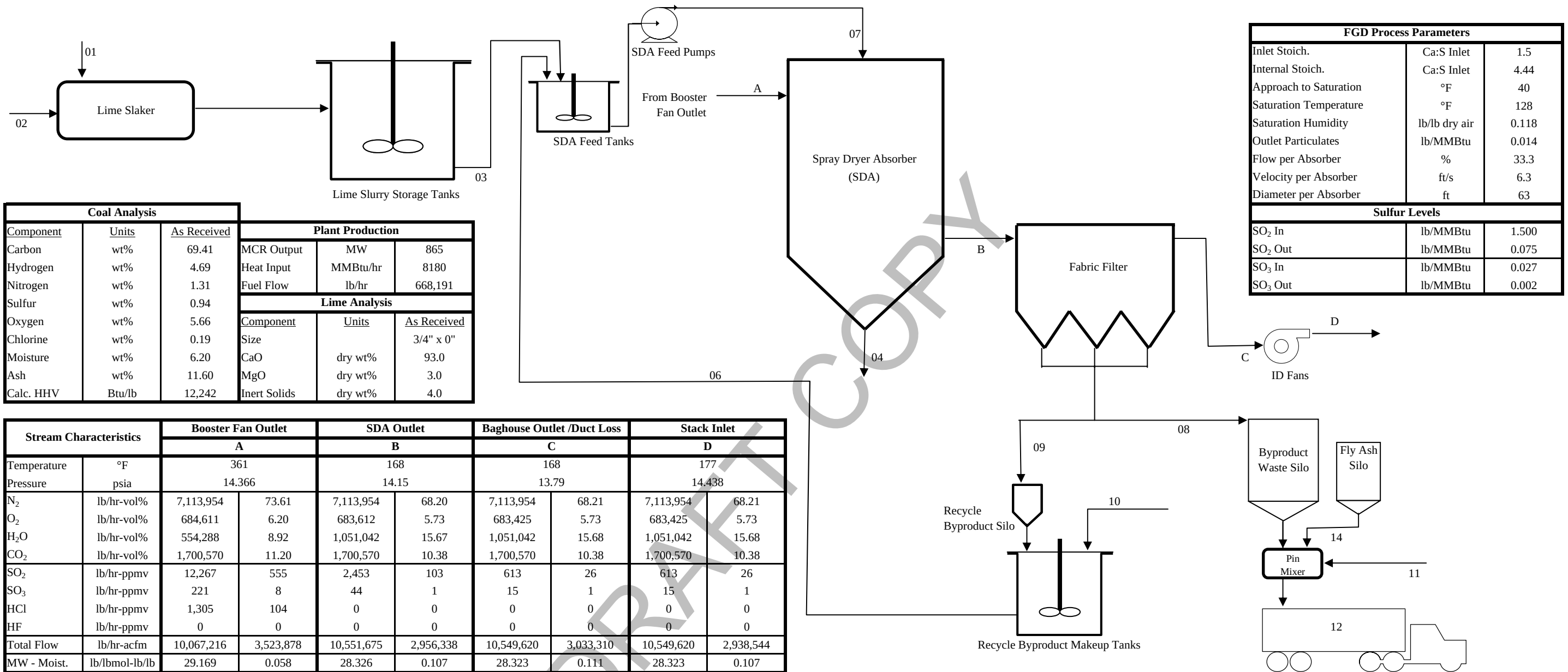
Stream Characteristics		Air Heater Outlet		SDA Outlet		Baghouse Outlet /Duct Loss		Stack Inlet	
		A		B		C		D	
Temperature	°F	350		159		159		177	
Pressure	psia	13.718		13.501		13.141		14.438	
N ₂	lb/hr-vol%	7,014,859	73.37	7,014,859	67.77	7,014,859	67.78	7,014,859	67.78
O ₂	lb/hr-vol%	675,888	6.19	673,926	5.70	673,559	5.69	673,559	5.69
H ₂ O	lb/hr-vol%	564,179	9.18	1,079,487	16.22	1,079,487	16.22	1,079,487	16.22
CO ₂	lb/hr-vol%	1,674,651	11.15	1,674,651	10.29	1,674,651	10.30	1,674,651	10.30
SO ₂	lb/hr-ppmv	24,079	1,102	4,816	204	1,204	51	1,204	51
SO ₃	lb/hr-ppmv	437	16	87	3	31	1	31	1
HCl	lb/hr-ppmv	841	67	0	0	0	0	0	0
HF	lb/hr-ppmv	0	0	0	0	0	0	0	0
Total Flow	lb/hr-acfm	9,954,933	3,604,468	10,447,826	3,028,964	10,443,791	3,111,448	10,443,791	2,914,262
MW - Moist.	lb/lbmol-lb/lb	29.154	0.060	28.260	0.112	28.255	0.115	28.255	0.112
Ash	lb/hr-gr/acf	56,191	1.819	141,022	5.432	113	0.004	113	0.005

Stream Characteristics		Fresh Lime	Slaker H2O	Lime Slurry	Abs. Solids
		01	02	03	04
Inert Solids	lb/hr	1,515	0	1,515	
CaO	lb/hr	35,232	0	0	
Ca(OH) ₂	lb/hr	0	0	46,557	
MgO	lb/hr	1,137	0	1,137	
CaSO ₃ *0.5H ₂ O	lb/hr	0	0	0	
CaSO ₄ *2H ₂ O	lb/hr	0	0	0	
CaCl ₂ + CaF ₂	lb/hr	0	0	0	
Total Solids	lb/hr	37,884	0	49,209	
Water	lb/hr	0	208,159	196,834	
Total Flow	lb/hr	37,884	208,159	246,043	TBD
Total Flow	gpm	---	416	430	
Solids	wt%	100	0	20	

Stream Characteristics	Recycle	SDA Inlet	Waste Solids	Recycle Solids	Recycle H2O	Dust Control	Landfill	Total Water
	06	07	08	09	10	11	12	13
Inert Solids	83,429	84,944	57,594	83,429	0	0	57,594	0
CaO	0	0	0	0	0	0	0	0
Ca(OH) ₂	27,348	73,904	18,879	27,348	0	0	18,879	0
MgO	1,646	2,783	1,137	1,646	0	0	1,137	0
CaSO ₃ *0.5H ₂ O	40,644	40,644	28,058	40,644	0	0	28,058	0
CaSO ₄ *2H ₂ O	36,128	36,128	24,940	36,128	0	0	24,940	0
CaCl ₂ + CaF ₂	1,851	1,851	1,278	1,851	0	0	1,278	0
Total Solids	191,046	240,255	131,886	191,046	0	0	131,886	0
Water	354,801	551,635	14,654	21,227	333,573	41,869	56,522	583,600
Total Flow	545,847	791,890	146,540	212,274	333,573	41,869	188,408	583,600
Total Flow	875	1,311	---	---	667	84	---	1,166
Solids	35	30	90	90	0	0	70	0



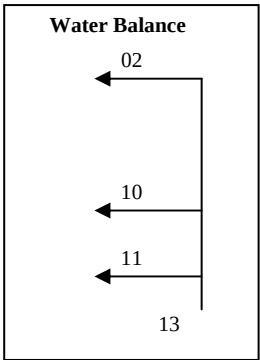
Mass Balance Dry FGD (DFGD) Technology - 1.7 lb SO₂/MMBtu Coal



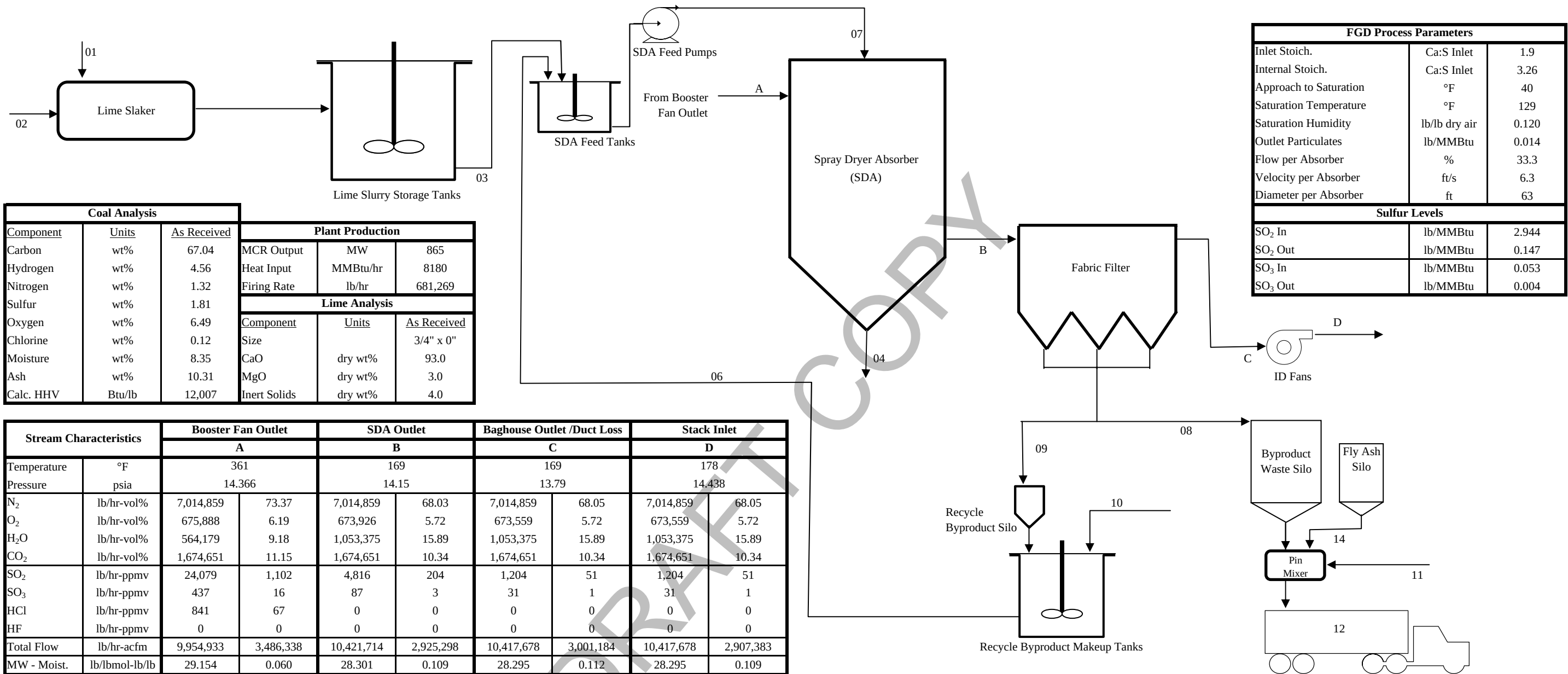
Stream Characteristics		Booster Fan Outlet		SDA Outlet		Baghouse Outlet /Duct Loss		Stack Inlet	
		A		B		C		D	
Temperature	°F	361		168		168		177	
Pressure	psia	14.366		14.15		13.79		14.438	
N ₂	lb/hr-vol%	7,113,954	73.61	7,113,954	68.20	7,113,954	68.21	7,113,954	68.21
O ₂	lb/hr-vol%	684,611	6.20	683,612	5.73	683,425	5.73	683,425	5.73
H ₂ O	lb/hr-vol%	554,288	8.92	1,051,042	15.67	1,051,042	15.68	1,051,042	15.68
CO ₂	lb/hr-vol%	1,700,570	11.20	1,700,570	10.38	1,700,570	10.38	1,700,570	10.38
SO ₂	lb/hr-ppmv	12,267	555	2,453	103	613	26	613	26
SO ₃	lb/hr-ppmv	221	8	44	1	15	1	15	1
HCl	lb/hr-ppmv	1,305	104	0	0	0	0	0	0
HF	lb/hr-ppmv	0	0	0	0	0	0	0	0
Total Flow	lb/hr-acfm	10,067,216	3,523,878	10,551,675	2,956,338	10,549,620	3,033,310	10,549,620	2,938,544
MW - Moist.	lb/lbmol-lb/lb	29.169	0.058	28.326	0.107	28.323	0.111	28.323	0.107
Ash	lb/hr-gr/acf	1,930	0.064	17,193	0.678	112	0.004	112	0.004

Stream Characteristics		Fresh Lime	Slaker H2O	Lime Slurry	Abs. Solids
		01	02	03	04
Inert Solids	lb/hr	767	0	767	
CaO	lb/hr	17,835	0	0	
Ca(OH) ₂	lb/hr	0	0	23,568	
MgO	lb/hr	575	0	575	
CaSO ₃ *0.5H ₂ O	lb/hr	0	0	0	
CaSO ₄ *2H ₂ O	lb/hr	0	0	0	
CaCl ₂ + CaF ₂	lb/hr	0	0	0	
Total Solids	lb/hr	19,177	0	24,910	
Water	lb/hr	0	105,373	99,641	
Total Flow	lb/hr	19,177	105,373	124,551	TBD
Total Flow	gpm	---	211	218	
Solids	wt%	100	0	20	

Recycle	SDA Inlet	Waste Solids	Recycle Solids	Recycle H2O	Pin Mixer H2O	Landfill	Total Water	Stabilization
06	07	08	09	10	11	12	13	14
14,607	15,374	2,586	14,607	0	0	4,622	0	2,036
0	0	0	0	0	0	0	0	0
48,463	72,031	8,579	48,463	0	0	8,579	0	0
3,250	3,825	575	3,250	0	0	575	0	0
80,737	80,737	14,293	80,737	0	0	14,293	0	0
71,767	71,767	12,705	71,767	0	0	12,705	0	0
11,212	11,212	1,985	11,212	0	0	1,985	0	0
230,035	254,945	40,723	230,035	0	0	42,759	0	2,036
427,208	526,849	4,525	25,559	401,649	12,928	17,453	519,950	0
657,244	781,794	45,248	255,595	401,649	12,928	60,212	519,950	2,036
1,053	1,274	---	---	803	26	---	1,039	---
35	33	90	90	0	0	71	0	100



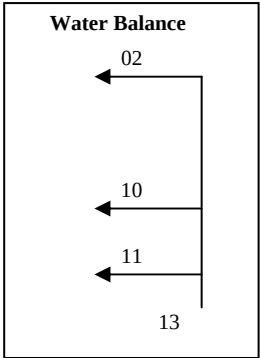
Mass Balance Dry FGD (DFGD) Technology - 3.0 lb SO₂/MMBtu Coal (Base Case w/ESP)



Stream Characteristics		Booster Fan Outlet		SDA Outlet		Baghouse Outlet /Duct Loss		Stack Inlet	
		A		B		C		D	
Temperature	°F	361		169		169		178	
Pressure	psia	14.366		14.15		13.79		14.438	
N ₂	lb/hr-vol%	7,014,859	73.37	7,014,859	68.03	7,014,859	68.05	7,014,859	68.05
O ₂	lb/hr-vol%	675,888	6.19	673,926	5.72	673,559	5.72	673,559	5.72
H ₂ O	lb/hr-vol%	564,179	9.18	1,053,375	15.89	1,053,375	15.89	1,053,375	15.89
CO ₂	lb/hr-vol%	1,674,651	11.15	1,674,651	10.34	1,674,651	10.34	1,674,651	10.34
SO ₂	lb/hr-ppmv	24,079	1,102	4,816	204	1,204	51	1,204	51
SO ₃	lb/hr-ppmv	437	16	87	3	31	1	31	1
HCl	lb/hr-ppmv	841	67	0	0	0	0	0	0
HF	lb/hr-ppmv	0	0	0	0	0	0	0	0
Total Flow	lb/hr-acfm	9,954,933	3,486,338	10,421,714	2,925,298	10,417,678	3,001,184	10,417,678	2,907,383
MW - Moist.	lb/lbmol-lb/lb	29.154	0.060	28.301	0.109	28.295	0.112	28.295	0.109
Ash	lb/hr-gr/acf	1,749	0.059	9,463	0.377	114	0.004	114	0.005

Stream Characteristics		Fresh Lime	Slaker H2O	Lime Slurry	Abs. Solids
		01	02	03	04
Inert Solids	lb/hr	1,799	0	1,799	
CaO	lb/hr	41,838	0	0	
Ca(OH) ₂	lb/hr	0	0	55,286	
MgO	lb/hr	1,350	0	1,350	
CaSO ₃ *0.5H ₂ O	lb/hr	0	0	0	
CaSO ₄ *2H ₂ O	lb/hr	0	0	0	
CaCl ₂ + CaF ₂	lb/hr	0	0	0	
Total Solids	lb/hr	44,987	0	58,435	
Water	lb/hr	0	247,189	233,741	
Total Flow	lb/hr	44,987	247,189	292,176	TBD
Total Flow	gpm	---	494	510	
Solids	wt%	100	0	20	

Recycle	SDA Inlet	Waste Solids	Recycle Solids	Recycle H2O	Pin Mixer H2O	Landfill	Total Water	Stabilization
06	07	08	09	10	11	12	13	14
6,028	7,827	3,435	6,028	0	0	7,769	0	4,333
0	0	0	0	0	0	0	0	0
48,444	103,730	27,609	48,444	0	0	27,609	0	0
2,368	3,718	1,350	2,368	0	0	1,350	0	0
49,232	49,232	28,058	49,232	0	0	28,058	0	0
43,762	43,762	24,940	43,762	0	0	24,940	0	0
2,243	2,243	1,278	2,243	0	0	1,278	0	0
152,077	210,512	86,670	152,077	0	0	91,003	0	4,333
282,428	516,168	9,630	16,897	265,530	27,514	37,144	540,233	0
434,504	726,680	96,300	168,974	265,530	27,514	128,148	540,233	4,333
696	1,214	---	---	531	55	---	1,079	---
35	29	90	90	0	0	71	0	100





Big Sandy Unit 2
Kentucky Power Company
American Electric Power Service Corporation
Order-of-Magnitude FGD Cost Estimate
WFGD, DFGD, IAQCS & NID Technologies
September 10, 2010

**ATTACHMENT 3-4
DFGD Water Balances**

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MSK-DFGD-WB-NOTES-001_C

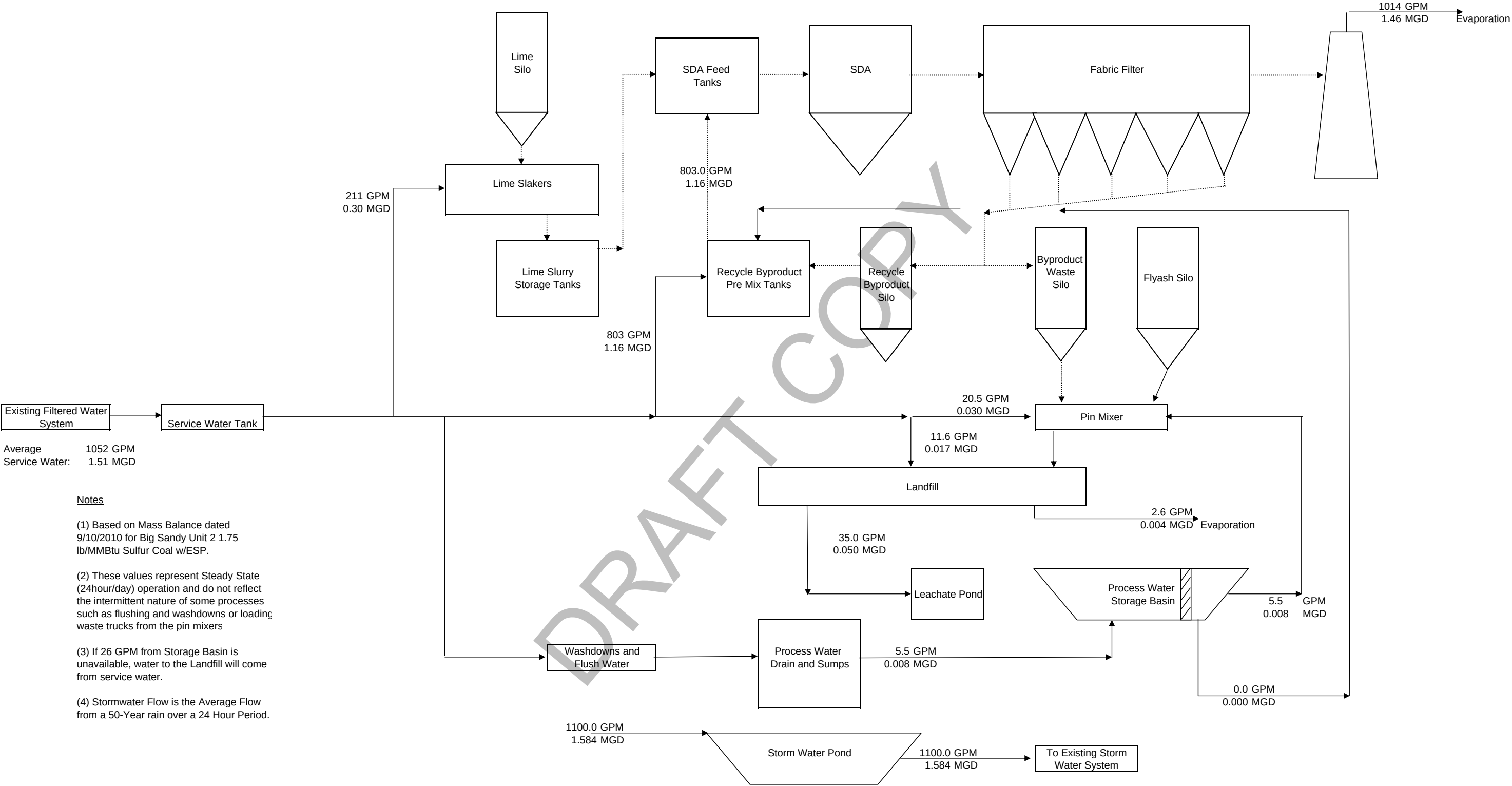
Water Balance Assumptions (with ESP)

- (1) Service Water within the Dry FGD Island (to Lime Slaker, to Recycle Ash Pre Mix tank, and from the Waste Silo) are from Mass Balances Dated 9/10/10
- (2) Water for washdowns and flushes are based on assumed instantaneous flowrates and usages of 1230 GPM three 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 pin mixer and DFGD Recycle System. A filtering system will be in place in the basin to limit particle size to 1/32".
- (4) Leachate would be pumped from the landfill to the Leachate Collection Pond for Disposal.
- (5) 10% of the water sprayed for dust suppression is lost to evaporation.
- (6) Storm Water Pond Flow is a 24 hour average of the 50-Year Rain.

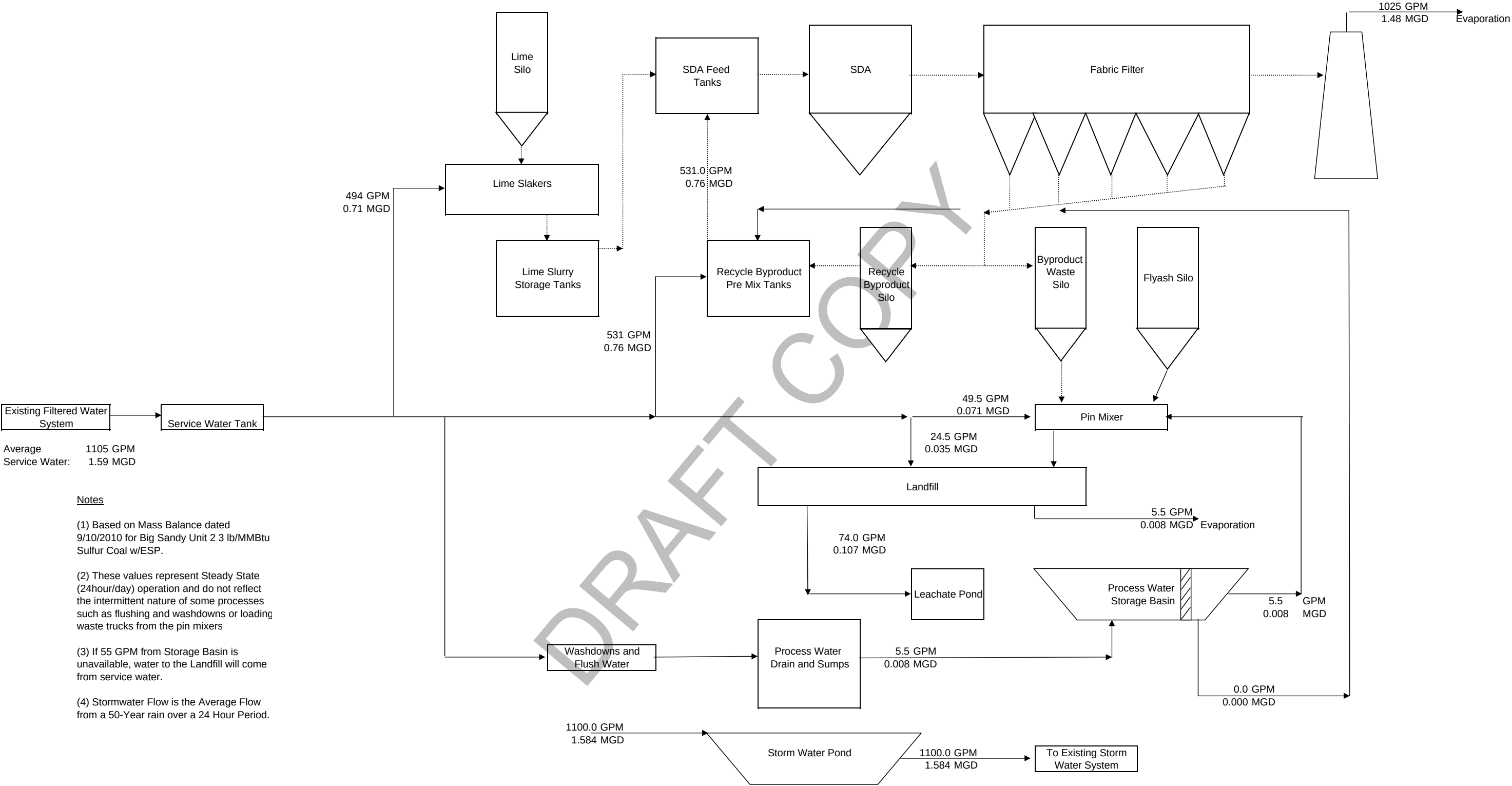
Steady State vs. Instantaneous Service Water Requirements

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 (i.e., the lime slaker requires a maximum of flow of service water on an instantaneous basis but only an average basis is depicted on the water balance).

Big Sandy DFGD Water Balance
1.75 lb/mmbtu Sulfur Coal w/ESP



Big Sandy DFGD Water Balance
3 lb/mmmbtu Sulfur Coal w/ESP



MSK-DFGD-WB-NOTES-002_C

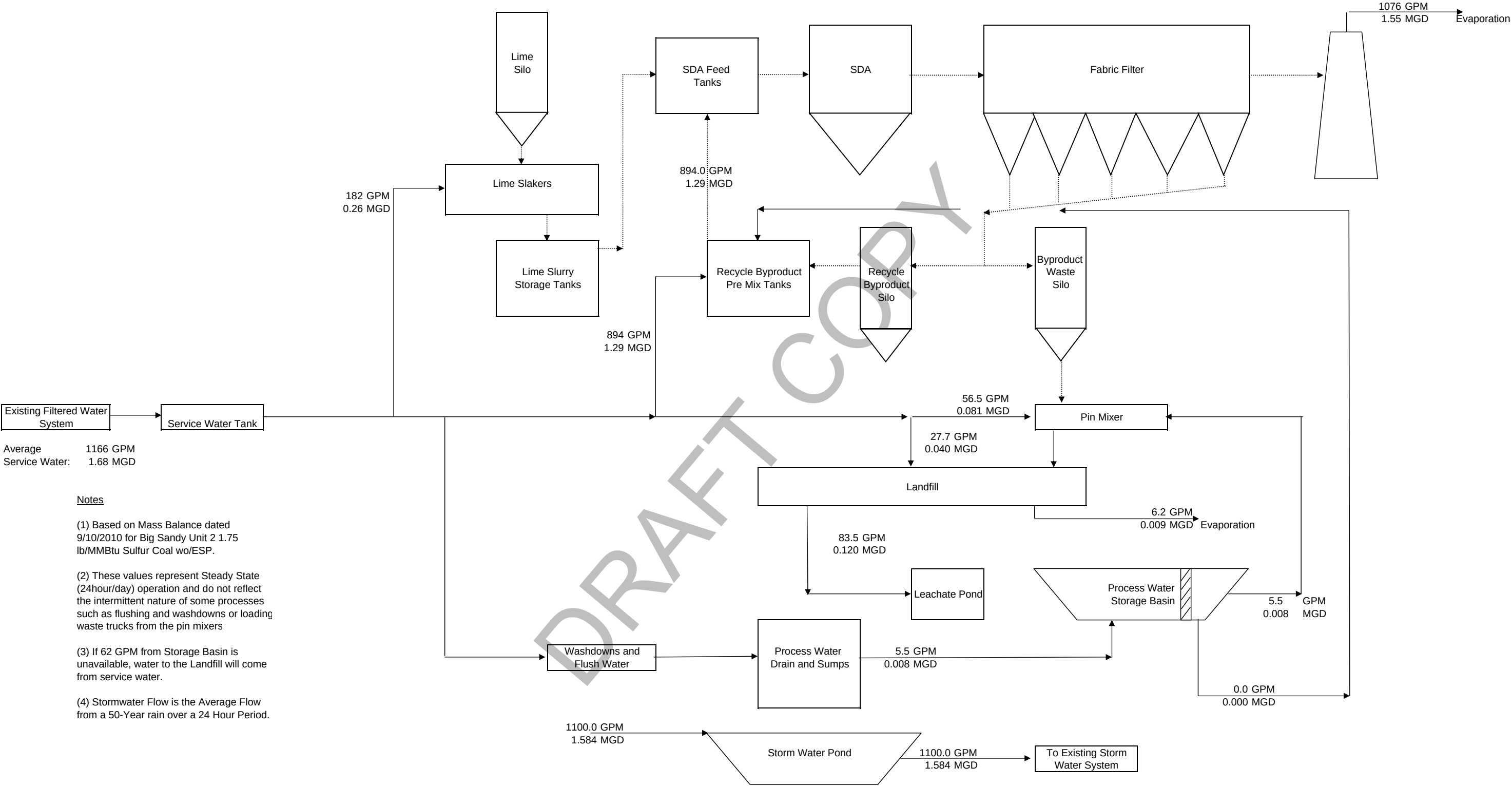
Water Balance Assumptions (without ESP)

- (1) Service Water within the Dry FGD Island (to Lime Slaker, to Recycle Ash Pre Mix tank, and from the Waste Silo) are from Mass Balances Dated 9/10/2010
- (2) Water for washdowns and flushes are based on assumed instantaneous flowrates and usages of 1230 GPM three 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 DFGD Recycle System. A filtering system will be in place in the basin to limit particle size to 1/32".
- (4) Leachate would be pumped from the landfill to the Leachate Collection Pond for Disposal.
- (5) 10% of the water sprayed for dust suppression is lost to evaporation.
- (6) Storm Water Pond Flow is a 24 hour average of the 50-Year Rain.

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 (i.e., the lime slaker requires a maximum of flow of service water on an instantaneous basis but only an average basis is depicted on the water balance).

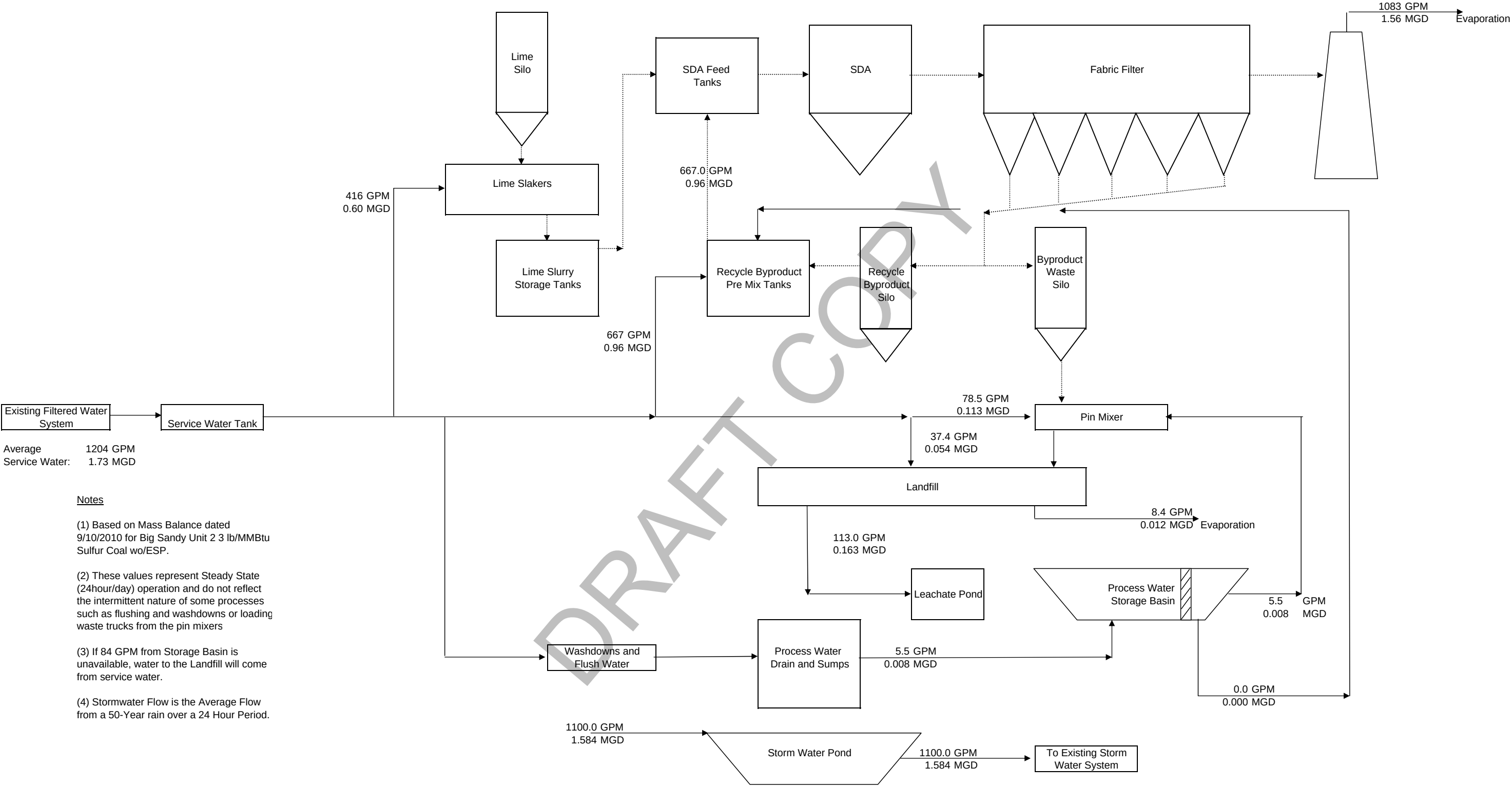
Big Sandy DFGD Water Balance
1.75 lb/MMBtu Sulfur Coal wo/ESP



Notes

- (1) Based on Mass Balance dated 9/10/2010 for Big Sandy Unit 2 1.75 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 62 GPM from Storage Basin is unavailable, water to the Landfill will come from service water.
- (4) Stormwater Flow is the Average Flow from a 50-Year rain over a 24 Hour Period.

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



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 84 GPM from Storage Basin is unavailable, water to the Landfill will come from service water.
- (4) Stormwater Flow is the Average Flow from a 50-Year rain over a 24 Hour Period.



Big Sandy Unit 2
Kentucky Power Company
American Electric Power Service Corporation
Order-of-Magnitude FGD Cost Estimate
WFGD, DFGD, IAQCS & NID Technologies
September 10, 2010

ATTACHMENT 3-5
DFGD Electrical One-Lines

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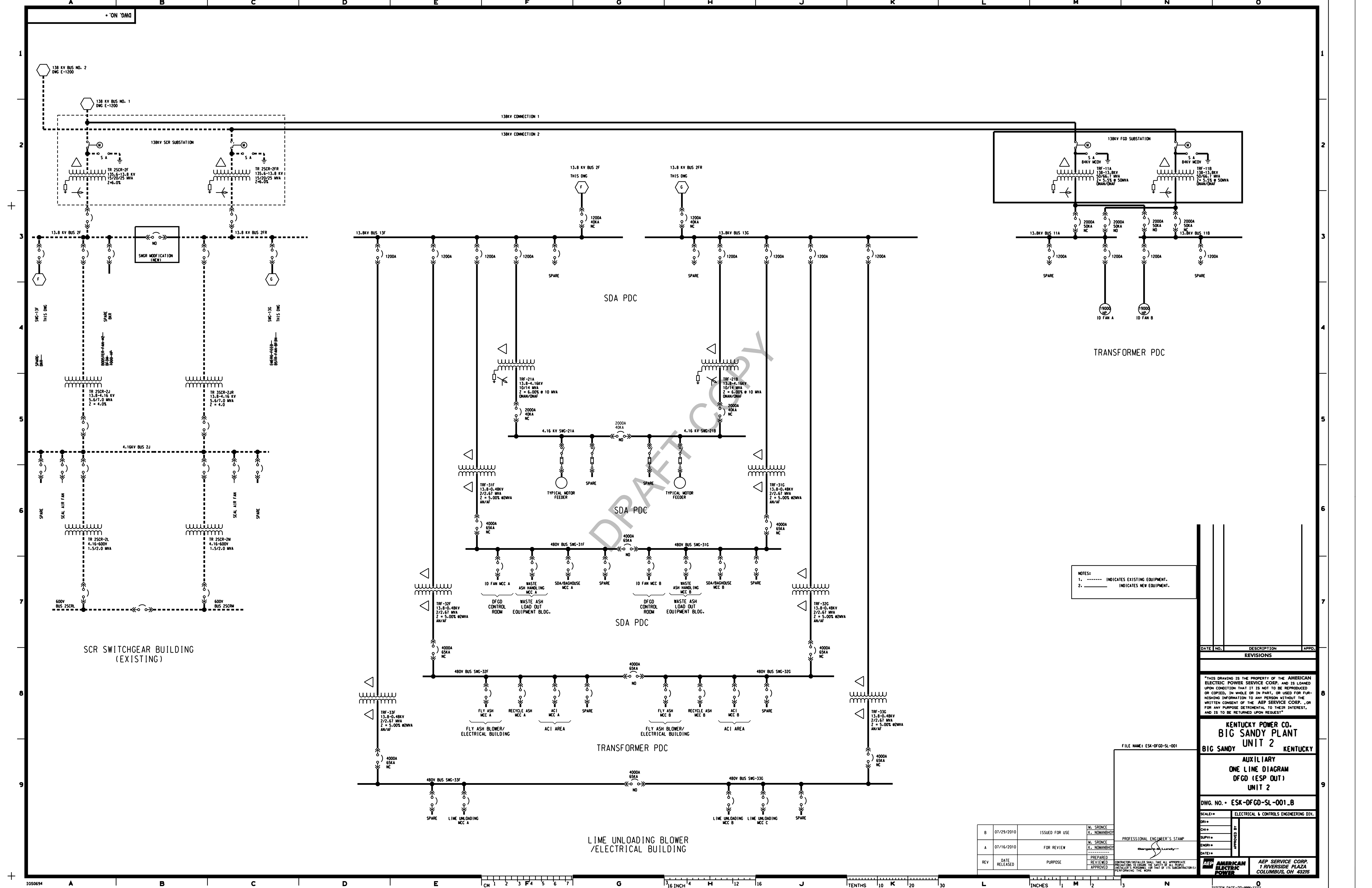
BASIC DESCRIPTION OF ONE LINES - DFGD

A. DRY FGD SYSTEM (ESP OUT)

1. The preliminary ID fan size on which the one line has been developed is 19,200 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.
5. The existing ID booster fans will be de-commissioned and their associated circuit breakers will be used to service the FGD loads as indicated on the one lines.

B. DRY FGD SYSTEM (ESP IN)

1. The preliminary ID fan size on which the one line has been developed is 14,300 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.



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

DATE	NO.	DESCRIPTION	APPROV.
REVISIONS			

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

AUXILIARY
ONE LINE DIAGRAM
DFGD (ESP OUT)
UNIT 2

DWG. NO. - ESK-DFGD-SL-001_B

SCALE: ELECTRICAL & CONTROLS ENGINEERING DIV.

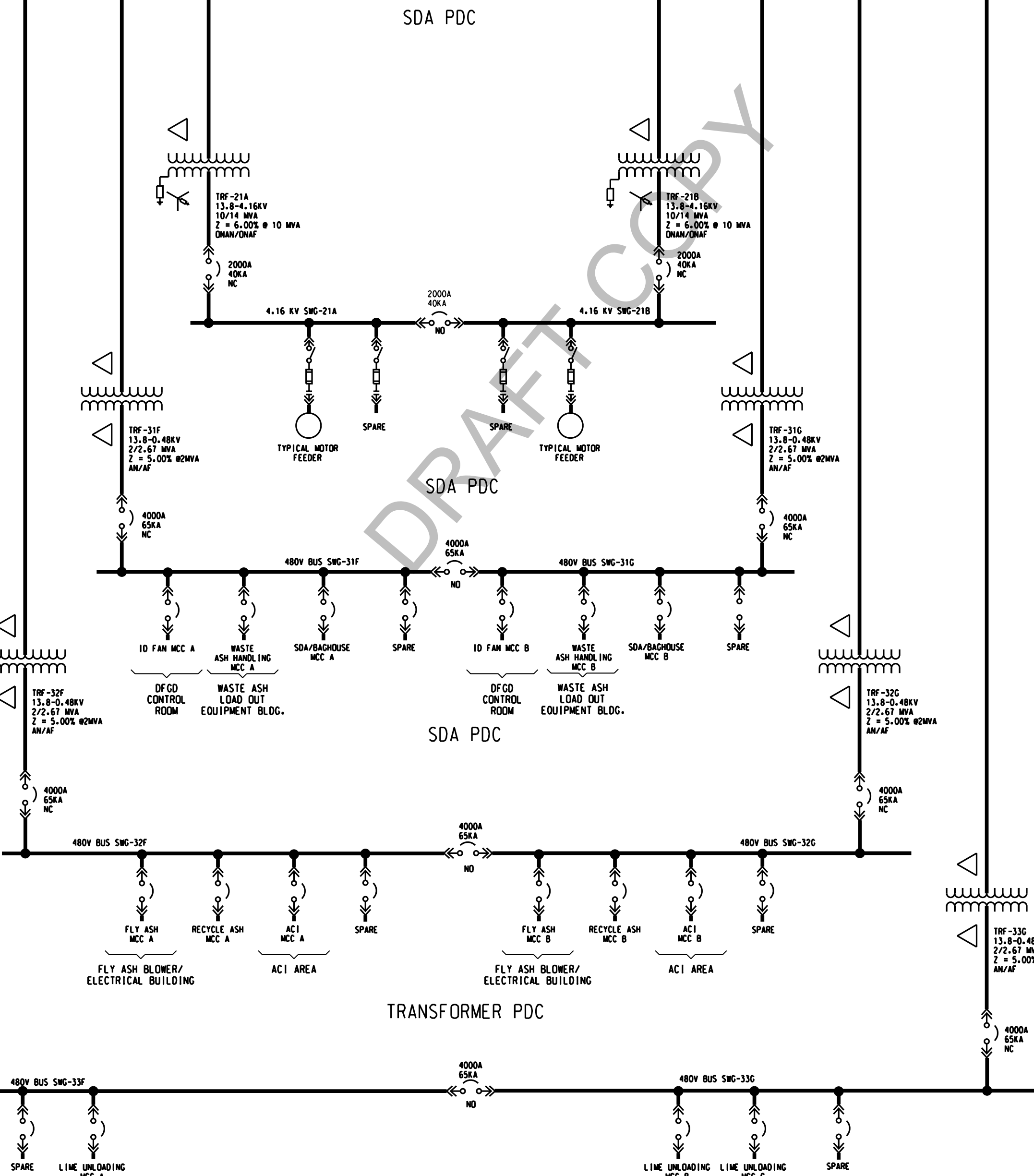
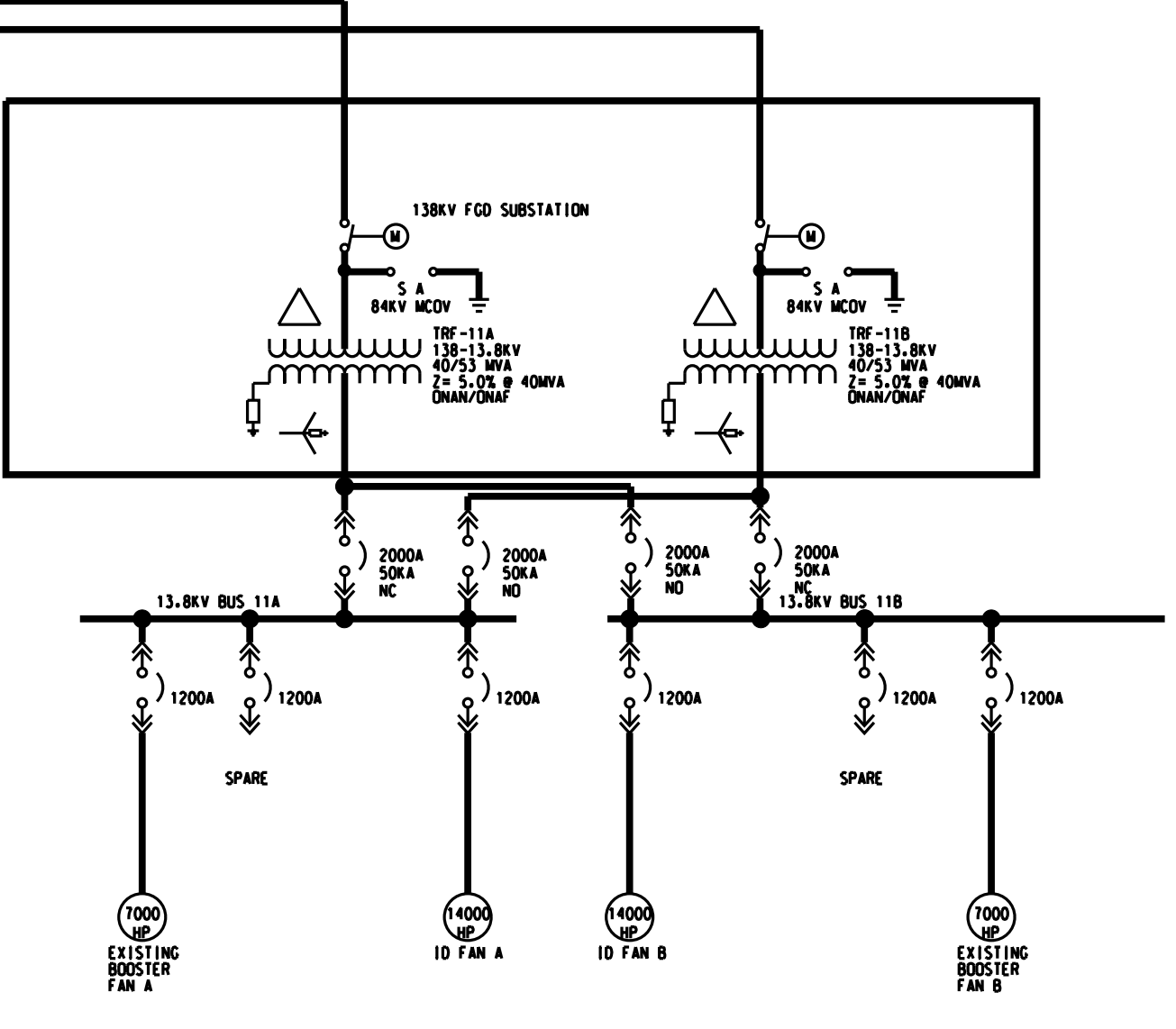
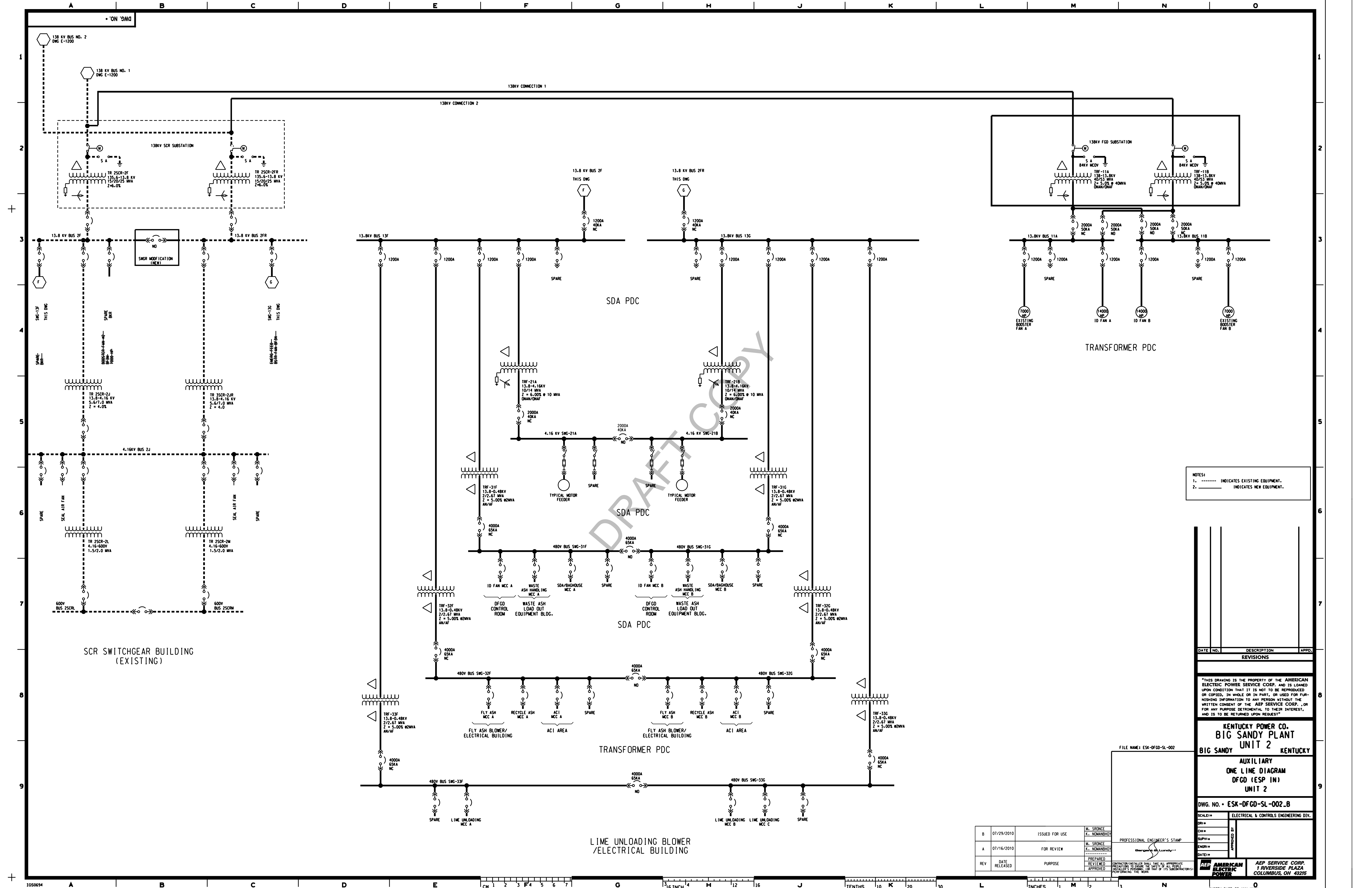
DATE: APPROVED BY:

PROFESSIONAL ENGINEER'S STAMP
M. SRONCE
K. NDMANSHOHY
PREPARED BY:

CONTRACTOR/INSTALLER SHALL TAKE ALL APPROPRIATE PRECAUTIONS TO PROTECT THE SAFETY OF ALL PEOPLE INSTALLING OR MAINTAINING THE EQUIPMENT.
AEP SERVICE CORP.
1 RIVERSIDE PLAZA
COLUMBUS, OH 43215

B	07/29/2010	ISSUED FOR USE	M. SRONCE K. NDMANSHOHY
A	07/16/2010	FOR REVIEW	M. SRONCE K. NDMANSHOHY
REV	DATE	PURPOSE	REVIEWED APPROVED

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



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

DATE	NO.	DESCRIPTION	APPD.
REVISIONS			
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KENTUCKY POWER CO. BIG SANDY PLANT UNIT 2 AUXILIARY ONE LINE DIAGRAM DFGD (ESP IN) UNIT 2			
DWG. NO. - ESK-DFGD-SL-002_B			
SCALE: 1" = 100'			
ELECTRICAL & CONTROLS ENGINEERING DIV.			
APPROVED BY: [Signature]			
PREPARED BY: [Signature]			
REVIEWED BY: [Signature]			
DATE: 07/29/2010			
FILE NAME: ESK-DFGD-SL-002			
KENTUCKY POWER CO. 1 RIVERSIDE PLAZA COLUMBUS, OH 43215			

B	07/29/2010	ISSUED FOR USE	M. SRONCE K. NOMANHOY
A	07/16/2010	FOR REVIEW	M. SRONCE K. NOMANHOY
REV	DATE	PURPOSE	PREPARED REVIEWED APPROVED

CONTRACTOR/INSTALLER SHALL TAKE ALL APPROPRIATE PRECAUTIONS TO ENSURE THE SAFETY OF ALL PEOPLE EMPLOYED BY THE CONTRACTOR/INSTALLER WHILE PREPARING THE WORK.



Big Sandy Unit 2
Kentucky Power Company
American Electric Power Service Corporation
Order-of-Magnitude FGD Cost Estimate
WFGD, DFGD, IAQCS & NID Technologies
September 10, 2010

ATTACHMENT 3-6
DFGD Detailed Capital Cost Estimate No. 30713 Base Est-1B ESP not in Service
(3.0 lb SO₂/MMbtu)

DRAFT COPY

				AEP										Estimate No.:	30713B
				BIG SANDY UNIT 2										Project No.:	12721-000
				FGD PROJECT - DRY FGD EST BASE (N/ESP)-1B - 3.0 LB/MM BTU										Date:	9/10/2010
				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
1.11	ID FAN DFGD CONTROL ROOM - FOUNDATIONS							0	122,100					196,100	318,200
	EXCAVATION / BACKFILL		EST	467	CY			0	0	0.15	81	EXFD	90.00	7,300	7,300
	REINFORCING		EST	47	TN		1,150.00	0	54,100	20.00	1,081	REIN	78.27	84,600	138,700
	FORMWORK		EST	870	SF		2.50	0	2,200	0.14	140	FORM	99.43	13,900	16,100
	CONCRETE		EST	500	CY		105.00	0	52,500	1.50	863	CONP	79.64	68,700	121,200
	MUD MAT		EST	67	CY		105.00	0	7,000	1.50	116	CONP	79.64	9,200	16,200
	EMBEDDED STEEL		EST	2,500	LB		2.50	0	6,300	0.06	173	CARP	71.88	12,400	18,700
1.12	ID FAN DFGD CONTROL ROOM	SUBCONTRACT PRICE INCLUDES LABOR. COMPLETE WITH HVAC, FINISHES AND SANITARY FACILITIES	EST	2,500	SF		500.00	0	1,250,000	0.00	0	STST	105.71	0	1,250,000
1.13	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
1.14	HIGH VOLTAGE POWER CABLE & TERMINATION	1/C # 500KCMIL-15KV - 6600' ID FAN	EST	6,600	LF		9.27	0	61,200	0.23	1,746	WIRE	98.84	172,500	233,700
1.15	CONTROL & INSTRUMENT CABLE	#14, #16 & PR # 20 & SHLD WIRE	EST	37,800	LF		3.20	0	121,000	0.23	9,998	WIRE	98.84	988,200	1,109,200
1.16	EMERGENCY POWER SYSTEM							285,500	0					38,900	324,400
	DC PANEL BOARDS		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
1.17	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
1.18	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
1.19	RACEWAY, CABLE TRAY, & CONDUIT							0	326,300					1,792,700	2,119,000
	12" X 6" AL CABLE TRAY	INCLUDING SUPPORT & FITTINGS	EST	1,000	LF		18.25	0	18,300	1.10	1,265	WIRE	98.84	125,000	143,300
	24" X 6" AL CABLE TRAY	INCLUDING SUPPORT & FITTINGS	EST	2,000	LF		27.10	0	54,200	1.75	4,025	WIRE	98.84	397,800	452,000
	36" X 6" AL CABLE TRAY	INCLUDING SUPPORT & FITTINGS	EST	1,500	LF		30.30	0	45,500	1.95	3,364	WIRE	98.84	332,500	378,000
	4" RGS CONDUIT	INCLUDING SUPPORT & FITTINGS	EST	1,500	LF		31.00	0	46,500	0.81	1,392	WIRE	98.84	137,600	184,100
	3" RGS CONDUIT	INCLUDING SUPPORT & FITTINGS	EST	1,000	LF		21.50	0	21,500	0.65	742	WIRE	98.84	73,300	94,800

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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
		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
	SIDING FOR PENTHOUSE		EST	14,200	SF		12.00	0	170,400	0.11	1,796	SDNG	93.41	167,800	338,200
	CONCRETE FLOOR FOR PENTHOUSE		EST	250	CY		230.00	0	57,500	7.50	2,156	SDNG	93.41	201,400	258,900
	ROOFING FOR PENTHOUSE		EST	29,500	SF		18.00	0	531,000	0.22	7,464	ROOF	69.12	515,900	1,046,900
	H&V		EST	1	LT	70200	28080	70,200	28,100	1310.67	1,507	HVAC	81.24	122,500	220,800
2.4	BOTTOM ENCLOSURE FOR BAGHOUSE							60,000	1,204,000					1,359,800	2,623,800
	SUPPORT STEEL, GIRTS AND SIDING		EST	29,500	SF		40.00	0	1,180,000	0.35	11,874	STST	105.71	1,255,200	2,435,200
	H&V		EST	1	LT	60000	24000	60,000	24,000	1120.00	1,288	HVAC	81.24	104,600	188,600
2.5	PIPING & SUPPORTS - MECHANICAL							30,900	101,400					209,500	341,800
	LARGE BORE PIPING	6" SS, SCH 40 WELDED	EST	100	LF		111.00	0	11,100	2.02	232	SPNG	94.41	21,900	33,000
	LARGE BORE PIPING	12" CS, SCH 40 WELDED	EST	400	LF		188.70	0	75,500	2.80	1,288	SPNG	94.41	121,600	197,100
	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	12" GATE, 150 #, CS, WELDED	EST	2	EA	8,200		16,400	0	19.20	44	SPNG	94.41	4,200	20,600
	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	105	EA		75.00	0	7,900	2.50	302	MECH	88.89	26,800	34,700
2.6	FABRIC FILTER - FOUNDATIONS							0	550,700					973,600	1,524,300
	EXCAVATION / BACKFILL		EST	4,945	CY			0	0	0.15	853	EXFD	90.00	76,800	76,800
	REINFORCING		EST	192	TN		1,150.00	0	220,800	20.00	4,416	REIN	78.27	345,600	566,400
	FORMWORK		EST	7,800	SF		2.50	0	19,500	0.14	1,256	FORM	99.43	124,900	144,400
	CONCRETE		EST	2,400	CY		105.00	0	252,000	1.50	4,140	CONP	79.64	329,700	581,700
	MUD MAT		EST	270	CY		105.00	0	28,400	1.50	466	CONP	79.64	37,100	65,500
	EMBEDDED STEEL		EST	12,000	LB		2.50	0	30,000	0.06	828	CARP	71.88	59,500	89,500
2.7	FABRIC FILTER - SUPPORT STEEL AND ACCESS GALLERY							0	360,000					1,186,700	1,546,700
	SUPPORT STEEL	MATERIAL INCLUDED WITH OEM EQUIPMENT	EST	300	TN			0	0	24.00	8,280	STST	105.71	875,300	875,300
	ACCESS GALLERY		EST	8,000	SF		45.00	0	360,000	0.40	3,680	GALL	84.61	311,400	671,400
2.8	RACEWAY, CABLE TRAY, & CONDUIT	INCLUDED IN ABSORBER ISLAND 7.0													
2.9	LIGHT FIXTURE		EST	22	EA		750.00	0	16,500	4.00	101	WIRE	98.84	10,000	26,500
2.10	GROUNDING							7,300	0					17,500	24,800
	GROUND ROD	3/4" - 20' LONG	EST	4	EA	150		600	0	4.00	18	WIRE	98.84	1,800	2,400
	500 MCM	BARE COPPER WIRE	EST	850	FT	7.65		6,500	0	0.12	117	WIRE	98.84	11,600	18,100
	CADWELD		EST	16	EA	15		200	0	2.00	37	WIRE	98.84	3,600	3,800
	GROUNDING TEST	TEST, CALIBRATION & DOCUMENTATION	EST	1	EA			0	0	4.00	5	WIRE	98.84	500	500
90.00	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS							22,359,400	3,019,600		194,315			17,368,900	42,747,900
	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										
	COST DUE TO OVERTIME INEFFICIENCY - SPECIFY % INEFFICIENCY			8.00	%						16,897		83.48	1,411,000	1,411,000

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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
	COST DUE TO OVERTIME PAY @1.5 TIMES OVERTIME PAY RATE - SPECIFY % ADDITIONAL HOURS PAID ON ACTUAL HOURS WORKED			10.00	%						21,121			1,481,680	1,481,680
	PER DIEM	NONE		0.00	HR						232,333			0	0
	CONSUMABLES - % of ACCT NO. 90			0.5	%				15,098					86,845	101,943
	FREIGHT ON MATERIAL - % of ACCT NO. 90			5.0	%				150,980						150,980
	FREIGHT ON EQUIPMENT - % of ACCT NO. 90			5.0	%			1,117,970							1,117,970
	SALES TAX - NOT INCLUDED													0	0
	SCAFFOLDING - % OF ACCT NO. 90			5.0	%				150,980					868,445	1,019,425
	CONTRACTOR'S GENERAL AND ADMINISTRATION EXPENSE & PROFIT- % of ACCT NO. 90			15	%				452,940					2,605,335	3,058,275
	SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS							1,118,000	770,000					6,453,300	8,341,300
	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	FABRIC FILTERS						23,477,400	3,789,600					23,822,200	51,089,200
3.0	NEW STACK														
3.1	CONCRETE STACK (DRY)	PROVIDED BY AEP													17,600,000
4.0	LIME HANDLING SYSTEM														
4.1	LIME STORAGE SILO							5,762,000	0					0	5,762,000
	SILO	CONCRETE SILO 75' DIA X 100' H - 6840 TONS -SUBCONTRACT COST INCLUDES LABOR	EST	2	EA	2,736,000.00		5,472,000	0	0.00	0	CONP	79.64	0	5,472,000
	ELEVATOR	MAINTENANCE ELEVATOR - 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	INCLUDES PNEUMATIC HANDLING SYSTEM, THREE VACUUM EXHAUSTER, TWO FILTER SEPARATORS	EST	1	LT	640,000		640,000	0	4000.00	4,600	MECH	88.89	408,900	1,048,900
4.3	PIPING - MECHANICAL							29,000	15,600					77,900	122,500
	SMALL BORE PIPING	2" CS, SCH 80 WELDED	EST	100	LF		22.20	0	2,200	1.26	145	SPNG	94.41	13,700	15,900
	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	200	LF		33.70	0	6,700	1.32	304	SPNG	94.41	28,700	35,400
	VALVE	2" GLOBE, 150# SS, WELDED	EST	20	EA	1,450		29,000	0	5.64	130	SPNG	94.41	12,200	41,200
	PIPE SUPPORTS		EST	50	EA		35.00	0	1,800	1.50	86	MECH	88.89	7,700	9,500
4.4	LIME STORAGE SILO ACCESS STAIR TOWER	THREE COAT SHOP PAINT	EST	50	TN		2,900.00	0	145,000	24.00	1,380	STST	105.71	145,900	290,900
4.5	PIPE RACK FOR LIME HANDLING, WASTE ASH HANDLING AND MISC MECHANICAL PIPING	THREE COAT SHOP PAINT	EST	270	TN		2,900.00	0	783,000	24.00	7,452	STST	105.71	787,800	1,570,800
4.6	RAIL CAR UNLOADING AREA - FOUNDATIONS	20 X 250 - NO SIDING						0	85,300					158,400	243,700
	EXCAVATION / BACKFILL		EST	1,000	CY			0	0	0.15	173	EXFD	90.00	15,500	15,500
	REINFORCING		EST	30	TN		1,150.00	0	34,500	20.00	690	REIN	78.27	54,000	88,500
	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	0	CY		105.00	0	0	1.50	0	CONP	79.64	0	0
	EMBEDDED STEEL		EST	2,000	LB		2.50	0	5,000	0.06	138	CARP	71.88	9,900	14,900
4.7	LIME UNLOADING BLOWER / ELECTRICAL BUILDING - FOUNDATIONS							0	160,700					281,500	442,200
	EXCAVATION / BACKFILL		EST	1,900	CY			0	0	0.15	328	EXFD	90.00	29,500	29,500
	REINFORCING		EST	100	TN		1,150.00	0	115,000	20.00	2,300	REIN	78.27	180,000	295,000

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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	
	FORMWORK		EST	640	SF		2.50	0	1,600	0.14	103	FORM	99.43	10,200	11,800	
	CONCRETE		EST	300	CY		105.00	0	31,500	1.50	518	CONP	79.64	41,200	72,700	
	MUD MAT		EST	60	CY		105.00	0	6,300	1.50	104	CONP	79.64	8,200	14,500	
	EMBEDDED STEEL		EST	2,500	LB		2.50	0	6,300	0.06	173	CARP	71.88	12,400	18,700	
4.8	LIME UNLOADING BLOWER / ELECTRICAL BUILDING	130' L X 30' W X 30' H						75,000	351,500					24,400	450,900	
	PREENGINEERED BUILDING INCLUDING H&V AND LIGHTING	SUBCONTRACT PRICE, INCLUDES LABOR	EST	3,900	SF		85	0	331,500	0.00	0	STST	105.71	0	331,500	
	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	
4.9	CONCRETE PIT FOR THE ELEVATOR		EST	10	CY		230.00	0	2,300	7.50	86	CONP	79.64	6,900	9,200	
4.10	LIME STORAGE SILO - FOUNDATIONS							0	469,600					774,300	1,243,900	
	EXCAVATION / BACKFILL		EST	3,600	CY			0	0	0.15	621	EXFD	90.00	55,900	55,900	
	REINFORCING		EST	200.0	TN		1,150.00	0	230,000	20.00	4,600	REIN	78.27	360,000	590,000	
	FORMWORK		EST	3,000	SF		2.50	0	7,500	0.14	483	FORM	99.43	48,000	55,500	
	CONCRETE		EST	2,000	CY		105.00	0	210,000	1.50	3,450	CONP	79.64	274,800	484,800	
	MUD MAT		EST	115	CY		105.00	0	12,100	1.50	198	CONP	79.64	15,800	27,900	
	EMBEDDED STEEL		EST	4,000	LB		2.50	0	10,000	0.06	276	CARP	71.88	19,800	29,800	
4.11	LIME STORAGE SILO ACCESS STAIR TOWER - FOUNDATIONS							0	14,200					26,200	40,400	
	EXCAVATION / BACKFILL		EST	110	CY			0	0	0.15	19	EXFD	90.00	1,700	1,700	
	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	1,900	1,900	
	EMBEDDED STEEL		EST	300	LB		2.50	0	800	0.06	21	CARP	71.88	1,500	2,300	
4.12	PIPE RACK - FOUNDATIONS							0	94,200					208,200	302,400	
	EXCAVATION / BACKFILL		EST	1,360	CY			0	0	0.15	235	EXFD	90.00	21,100	21,100	
	REINFORCING		EST	32.2	TN		1,150.00	0	37,000	20.00	740	REIN	78.27	57,900	94,900	
	FORMWORK		EST	4,000	SF		2.50	0	10,000	0.14	644	FORM	99.43	64,000	74,000	
	CONCRETE		EST	402	CY		105.00	0	42,200	1.50	693	CONP	79.64	55,200	97,400	
	MUD MAT		EST	0	CY		105.00	0	0	1.50	0	CONP	79.64	0	0	
	EMBEDDED STEEL		EST	2,010	LB		2.50	0	5,000	0.06	139	CARP	71.88	10,000	15,000	
4.13	TRANSFORMERS	SUS TRANSFORMERS: 33F, 33G, 13.8KV-480V	EST	2	EA	85000		170,000	0	300.00	690	EHEA	79.16	54,600	224,600	
4.14	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	
4.15	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	
4.16	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	

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4.17	MIMIC PANELS		EST	1	EA	17500		17,500	0	12.00	14	WIRE	98.84	1,400	18,900
4.18	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	8HR-400A, 480V	EST	1	LT	36050		36,100	0	120.00	138	WIRE	98.84	13,600	49,700
4.19	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
4.20	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
4.21	RACEWAY, CABLE TRAY, & CONDUIT							0	296,400					1,429,900	1,726,300
	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		1.46	0	12,000	0.08	745	WIRE	98.84	73,600	85,600
4.22	HIGH VOLTAGE POWER CABLE & TERMINATION	1/C # 500KCMIL-15KV, 12000' UNIT 2 + 3600' LIME UNLOAD	EST	15,600	LF		9.27	0	144,600	0.23	4,126	WIRE	98.84	407,800	552,400
4.23	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
4.24	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/O - #12 AWG-600V		EST	10,700	LF		7.22	0	77,300	0.08	972	WIRE	98.84	96,100	173,400
4.25	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

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	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	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	AVERAGE COST FOR MISC PIPE SIZES	EST	110	EA		90.00	0	9,900	2.50	316	MECH	88.89	28,100	38,000
5.5	LIME SLURRY TANKS - FOUNDATIONS							0	166,400					278,300	444,700
	EXCAVATION / BACKFILL		EST	969	CY			0	0	0.15	167	EXFD	90.00	15,000	15,000
	REINFORCING		EST	90	TN		1,150.00	0	103,500	20.00	2,070	REIN	78.27	162,000	265,500
	FORMWORK		EST	1,166	SF		2.50	0	2,900	0.14	188	FORM	99.43	18,700	21,600
	CONCRETE		EST	475	CY		105.00	0	49,900	1.50	819	CONP	79.64	65,300	115,200
	MUD MAT		EST	40	CY		105.00	0	4,200	1.50	69	CONP	79.64	5,500	9,700
	EMBEDDED STEEL		EST	2,375	LB		2.50	0	5,900	0.06	164	CARP	71.88	11,800	17,700
5.6	LIME SLAKER BUILDING - FOUNDATIONS							0	119,200					194,200	313,400
	EXCAVATION / BACKFILL		EST	450	CY			0	0	0.15	78	EXFD	90.00	7,000	7,000
	REINFORCING		EST	50	TN		1,150.00	0	57,500	20.00	1,150	REIN	78.27	90,000	147,500
	FORMWORK		EST	1,000	SF		2.50	0	2,500	0.14	161	FORM	99.43	16,000	18,500
	CONCRETE		EST	450	CY		105.00	0	47,300	1.50	776	CONP	79.64	61,800	109,100
	MUD MAT		EST	60	CY		105.00	0	6,300	1.50	104	CONP	79.64	8,200	14,500
	EMBEDDED STEEL		EST	2,250	LB		2.50	0	5,600	0.06	155	CARP	71.88	11,200	16,800
5.7	LIME SLAKER BUILDING	135' L X 30' W X 50' H						40,500	803,300					740,500	1,584,300
	STRUCTURAL STEEL		EST	110	TN		2650	0	291,500	16.00	2,024	STST	105.71	214,000	505,500
	INSULATED METAL SIDING		EST	16,500	SF		12	0	198,000	0.11	2,087	SDNG	93.41	195,000	393,000
	ROLLING OVERHEAD DOOR		EST	320	SF		27	0	8,600	0.25	92	CARP	71.88	6,600	15,200
	METAL ROOF DECKING		EST	4,050	SF		2.7	0	10,900	0.06	279	STST	105.71	29,500	40,400
	RIGID ROOF INSULATION		EST	4,050	SF		2.4	0	9,700	0.02	70	ROOF	69.12	4,800	14,500
	ROOFING (4-PLY TAR & GRAVEL)		EST	4,050	SF		1.55	0	6,300	0.04	186	ROOF	69.12	12,900	19,200
	LIGHTWEIGHT CONCRETE FILL 1"		EST	50	CY		100	0	5,000	1.30	75	ROOF	69.12	5,200	10,200
	ROOF FLASHING		EST	350	LF		14.45	0	5,100	0.12	48	ROOF	69.12	3,300	8,400
	ROOF DRAINS		EST	1	LT		25000	0	25,000	240.00	276	PLMB	79.42	21,900	46,900
	FLOOR DRAINS		EST	1	LT		30000	0	30,000	280.00	322	PLMB	79.42	25,600	55,600
	FLOOR SLABS	INCLUDES METAL DECKING AND FORMWORK	EST	50	CY		210	0	10,500	7.50	431	CONP	79.64	34,300	44,800
	FLOOR FINISHES		EST	3,102	SF		2.5	0	7,800	0.05	178	CONP	79.64	14,200	22,000
	LOUVERS/WINDOWS/DOORS		EST	1,601	SF		40	0	64,000	0.35	644	CARP	71.88	46,300	110,300
	ROOF VENTILATORS		EST	4	EA		15000	0	60,000	24.00	110	HVAC	81.24	9,000	69,000
	GALLERIES & LANDINGS	SUPPORT STEEL WITH BUILDING STEEL	EST	1,215	SF		45	0	54,700	0.40	559	GALL	84.61	47,300	102,000
	H&V		EST	1	LT	40500	16200	40,500	16,200	756.00	869	HVAC	81.24	70,600	127,300
5.8	ELECTRICAL	INCLUDED WITH LIME HANDLING SYSTEM, ACCOUNT 4.0													
90.00	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS							8,183,300	1,200,300		74,013			6,553,500	15,937,100
	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										
	COST DUE TO OVERTIME INEFFICIENCY - SPECIFY % INEFFICIENCY			8.00	%						6,436		83.48	537,000	537,000

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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	SDA RECYCLE SILO	INCLUDED WITH OEM EQUIPMENT														
6.8	SDA FLY ASH SILO	NOT REQUIRED - ECONOMIZER FLY ASH SLUICED TO BOTTOM ASH POND						0	0					0	0	
	SILO BIN	PIN MIXERS INCLUDED WITH FLY ASH HANDLING MECHANICAL EQUIPMENT	EST	0	EA	45,000		0	0	400.00	0	TANK	89.16	0	0	
	SUPPORT STEEL FOR SILO	THREE-COAT SHOP PAINT	EST	0	TN		2,900.00	0	0	24.00	0	STST	105.71	0	0	
6.9	WASTE ASH STORAGE SILO - FOUNDATIONS							0	186,400					311,300	497,700	
	EXCAVATION / BACKFILL		EST	1,500	CY			0	0	0.15	259	EXFD	90.00	23,300	23,300	
	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	800	CY		105.00	0	84,000	1.50	1,380	CONP	79.64	109,900	193,900	
	MUD MAT		EST	45	CY		105.00	0	4,700	1.50	78	CONP	79.64	6,200	10,900	
	EMBEDDED STEEL		EST	3,250	LB		2.50	0	8,100	0.06	224	CARP	71.88	16,100	24,200	
6.10	FLY ASH SILO - FOUNDATIONS	NOT REQUIRED						0	0					0	0	
	EXCAVATION / BACKFILL		EST	0	CY			0	0	0.15	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	FLY ASH BLOWER AND ELECTRICAL BUILDING - FOUNDATIONS	NOT REQUIRED						0	0					0	0	
	EXCAVATION / BACKFILL		EST	0	CY			0	0	0.15	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	
6.12	FLY ASH BLOWER AND ELECTRICAL BUILDING	NOT REQUIRED						0	0					0	0	
	PREENGINEERED BUILDING INCLUDING H&V AND LIGHTING		EST	0	SF		85	0	0	0.00	0	STST	105.71	0	0	
	ADDITIONAL HVAC UNIT FOR ELECTRICAL ROOM & CONTROLS		EST	0	LT	28000	15000	0	0	0.00	0	HVAC	81.24	0	0	
6.13	RECYCLE ASH BUILDING - FOUNDATIONS							0	234,300					373,100	607,400	
	EXCAVATION / BACKFILL		EST	950	CY			0	0	0.15	164	EXFD	90.00	14,700	14,700	
	REINFORCING		EST	90	TN		1,150.00	0	103,500	20.00	2,070	REIN	78.27	162,000	265,500	
	FORMWORK		EST	1,320	SF		2.50	0	3,300	0.14	213	FORM	99.43	21,100	24,400	
	CONCRETE		EST	1,000	CY		105.00	0	105,000	1.50	1,725	CONP	79.64	137,400	242,400	
	MUD MAT		EST	95	CY		105.00	0	10,000	1.50	164	CONP	79.64	13,100	23,100	
	EMBEDDED STEEL		EST	5,000	LB		2.50	0	12,500	0.06	345	CARP	71.88	24,800	37,300	
6.14	RECYCLE ASH BUILDING	100' L X 65' W X 50' H						58,500	1,306,700					1,194,500	2,559,700	
	STRUCTURAL STEEL		EST	180	TN		2650	0	477,000	16.00	3,312	STST	105.71	350,100	827,100	

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	INSULATED METAL SIDING		EST	16,500	SF		12	0	198,000	0.11	2,087	SDNG	93.41	195,000	393,000
	ROLLING OVERHEAD DOOR		EST	640	SF		27	0	17,300	0.25	184	CARP	71.88	13,200	30,500
	METAL ROOF DECKING		EST	6,500	SF		2.7	0	17,600	0.06	449	STST	105.71	47,400	65,000
	RIGID ROOF INSULATION		EST	6,500	SF		2.4	0	15,600	0.02	112	ROOF	69.12	7,800	23,400
	ROOFING (4-PLY TAR & GRAVEL)		EST	6,500	SF		1.55	0	10,100	0.04	299	ROOF	69.12	20,700	30,800
	LIGHTWEIGHT CONCRETE FILL 1"		EST	60	CY		100	0	6,000	1.30	90	ROOF	69.12	6,200	12,200
	ROOF FLASHING		EST	350	LF		14.45	0	5,100	0.12	48	ROOF	69.12	3,300	8,400
	ROOF DRAINS		EST	1	LT		25000	0	25,000	240.00	276	PLMB	79.42	21,900	46,900
	FLOOR DRAINS		EST	1	LT		30000	0	30,000	280.00	322	PLMB	79.42	25,600	55,600
	FLOOR SLABS	INCLUDES METAL DECKING AND FORMWORK	EST	60	CY		210	0	12,600	7.50	518	CONP	79.64	41,200	53,800
	FLOOR FINISHES		EST	5,000	SF		2.5	0	12,500	0.05	288	CONP	79.64	22,900	35,400
	LOUVERS/WINDOWS/DOORS		EST	2,600	SF		40	0	104,000	0.35	1,047	CARP	71.88	75,200	179,200
	ROOF VENTILATORS		EST	4	EA		15000	0	60,000	24.00	110	HVAC	81.24	9,000	69,000
	GALLERIES & LANDINGS	SUPPORT STEEL WITH BUILDING STEEL	EST	6,500	SF		45	0	292,500	0.40	2,990	GALL	84.61	253,000	545,500
	H&V		EST	1	LT	58500	23400	58,500	23,400	1092.00	1,256	HVAC	81.24	102,000	183,900
6.15	MCC	480V MCC PER LINE UP	EST	4	EA	30000		120,000	0	16.00	74	WIRE	98.84	7,300	127,300
6.16	EMERGENCY 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
6.17	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
6.18	RACEWAY, CABLE TRAY, & CONDUIT							0	32,800					177,400	210,200
	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		1.46	0	6,600	0.08	409	WIRE	98.84	40400	47,000
6.19	LOW VOLTAGE POWER CABLE & TERMINATION	#4/0 - #12 AWG-600V	EST	11,200	LF		7.22	0	80,900	0.08	1,018	WIRE	98.84	100600	181,500
6.20	CONTROL & INSTRUMENT CABLE	#14, #16 & PR # 20 & SHLD WIRE	EST	12,000	LF		3.20	0	38,400	0.23	3,174	WIRE	98.84	313,700	352,100
6.21	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
6.22	DUCT BANK	DUCT BANK WITH 12-5" & 6-3" CONDUITS, 5.2' H X 2.08" W	EST	300	LF		371.60	0	111,500	7.02	2,422	ECND	75.97	184000	295,500
90.00	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS							5,642,300	2,361,400		58,965			5,249,100	13,252,800
	OTHER DIRECT & CONSTRUCTION INDIRECT COSTS														
	ADDITIONAL CRANE ALLOWANCE							0						0	0
	MOBILIZATION / DEMOBILIZATION - INCLUDED IN WAGE RATES ABOVE														0

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		Cost Type:												Reviewer:	JMK
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		Q=Vendor Quote								Labor Productivity =		1.15			
<u>Account No.</u>	<u>Item Description</u>	<u>Scope Definition</u>	<u>Cost Type</u>	<u>Quantity</u>	<u>Unit of Measure</u>	<u>Unit Equip. Cost</u>	<u>Unit Material Cost</u>	<u>Total Equipment Cost</u>	<u>Total Material Cost</u>	<u>Unit Man-hours (Base)</u>	<u>Total Man-hours (w/ productivity)</u>	<u>Crew Code</u>	<u>Crew Wage Rate</u>	<u>Total Construction & Erection Cost</u>	<u>Total Projected Cost</u>
	COST DUE TO OVERTIME WORKING 5 X10 HOUR DAYS			1	LS										
	COST DUE TO OVERTIME INEFFICIENCY - SPECIFY % INEFFICIENCY			8.00	%						5,127		83.48	428,000	428,000
	COST DUE TO OVERTIME PAY @1.5 TIMES OVERTIME PAY RATE - SPECIFY % ADDITIONAL HOURS PAID ON ACTUAL HOURS WORKED			10.00	%						6,409			449,615	449,615
	PER DIEM	NONE		0.00	HR						70,501			0	0
	CONSUMABLES - % of ACCT NO. 90			0.5	%				11,807					26,246	38,053
	FREIGHT ON MATERIAL - % of ACCT NO. 90			5.0	%				118,070						118,070
	FREIGHT ON EQUIPMENT - % of ACCT NO. 90			5.0	%			282,115							282,115
	SALES TAX - NOT INCLUDED														0
	SCAFFOLDING - % OF ACCT NO. 90			5.0	%				118,070					262,455	380,525
	CONTRACTOR'S GENERAL AND ADMINISTRATION EXPENSE & PROFIT- % of ACCT NO. 90			15	%				354,210					787,365	1,141,575
	SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS							282,100	602,200					1,953,700	2,838,000
	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	BYPRODUCT WASTE & FLY ASH HANDLING SYSTEMS						5,924,400	2,963,600					7,202,800	16,090,800
7.0	ABSORBER ISLAND														0
7.1	MECHANICAL EQUIPMENT	INCLUDES: ABSORBER MODULES AND ATOMIZERS WITH LUBE OIL, DUCT WORK FROM THE ABSORBERS TO THE FABRIC FILTER, AND COMPLETE RECYCLE SYSTEM WITH PIPING INSIDE FGD BUILDINGS.	EST	1	LT	39438000		39,438,000	0	236600	272,090	MECH	88.89	24,186,100	63,624,100
7.2	ELEVATOR	MAINTENANCE ELEVATOR - SUBCONTRACT COST INCLUDES LABOR	EST	1	EA	325,000.00		325,000	0	0.00	0	MECH	88.89	0	325,000
7.3	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
7.4	AGITATOR FOR SUMP PUMPS	5 HP		1	EA	12,000		12,000	0	45.00	52	MECH	88.89	4,600	16,600
7.5	PIPING - MECHANICAL							142,800	36,900					227,900	407,600
	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" 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	800	LF		14.1	0	11,300	0.83	764	SPNG	94.41	72,100	83,400
	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	667	CY			0	0	0.20	153	EXFD	90.00	13,800	13,800

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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	
	BEDDING	FOR UNDERGROUND PIPING	EST	89	CY		35.0	0	3,100	0.25	26	EXFD	90.00	2,300	5,400	
	PIPE SUPPORTS	AVERAGE COST FOR MISC PIPE SIZES	EST	60	EA		75.00	0	4,500	2.50	173	MECH	88.89	15,300	19,800	
7.6	SDA SUPERSTRUCTURE							75,000	764,900					1,227,300	2,067,200	
	PENTHOUSE FOR SDA'S	TOTAL SUPPORT STEEL AND PURLINS	EST	138	TN		2650.0	0	364,400	30.00	4,744	STST	105.71	501,500	865,900	
	ROOFING FOR SDA PENTHOUSE	STANDING SEAM TYPE	EST	10,000	SF		18.00	0	180,000	0.22	2,530	ROOF	69.12	174,900	354,900	
	SIDING		EST	13,000	SF		12.00	0	156,000	0.11	1,645	SDNG	93.41	153,600	309,600	
	CONCRETE FLOOR FOR PENTHOUSE	INCLUDES DECKING AND FORMWORK	EST	150	CY		230.00	0	34,500	7.50	1,294	CONP	79.64	103,000	137,500	
	H&V		EST	3	LT	25000	10000	75,000	30,000	1050.00	3,623	HVAC	81.24	294,300	399,300	
7.7	SDA BOTTOM ENCLOSURE - SUPPORT STEEL, GIRTS AND SIDING	TOTAL FOR THREE ABSORBERS	EST	9,053	SF		40.00	0	362,100	0.35	3,644	STST	105.71	385,200	747,300	
7.8	SDA SHELL / ROOF INSULATION	61,000 SF. SUBCONTRACT COST INCLUDES LABOR	EST	61,000	SF	30		1,830,000	0		0	DINS	81.75	0	1,830,000	
7.9	SDA - SUPPORT STEEL & ACCESS GALLERY							0	711,000					1,884,100	2,595,100	
	SUPPORT STEEL	MATERIAL INCLUDED WITH OEM EQUIPMENT	EST	435	TN			0	0	24.00	12,006	STST	105.71	1,269,200	1,269,200	
	ACCESS GALLERY		EST	15,800	SF		45.00	0	711,000	0.40	7,268	GALL	84.61	614,900	1,325,900	
7.10	EXPANSION JOINTS		EST	850	LF		230.00	0	195,500	2.00	1,955	MECH	88.89	173,800	369,300	
7.11	DUCTWORK							0	6,175,000					15,736,600	21,911,600	
	SPRAY DRYER INLET	INCLUDES INTERNAL BRACING AND TURNING VANES	EST	1,900	TN		3,250.00	0	6,175,000	60.00	131,100	FLDU	107.96	14,153,600	20,328,600	
	SPRAY DRYER OUTLET TO FABRIC FILTER INLET	INSTALLATION ONLY - MATERIAL INCLUDED WITH OEM EQUIPMENT	EST	213	TN			0	0	60.00	14,663	FLDU	107.96	1,583,000	1,583,000	
7.12	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	
7.13	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	
7.14	CONCRETE PIT FOR ELEVATOR		EST	12	CY		230.00	0	2,800	7.50	104	CONP	79.64	8,200	11,000	
7.15	SPRAY DRYER ABSORBER - FOUNDATIONS	TOTAL FOR THREE TOWERS						0	1,678,600					2,975,600	4,654,200	
	EXCAVATION / BACKFILL		EST	16,000	CY			0	0	0.15	2,760	EXFD	90.00	248,400	248,400	
	REINFORCING		EST	600	TN		1,150.00	0	690,000	20.00	13,800	REIN	78.27	1,080,100	1,770,100	
	FORMWORK		EST	23,000	SF		2.50	0	57,500	0.14	3,703	FORM	99.43	368,200	425,700	
	CONCRETE		EST	7,500	CY		105.00	0	787,500	1.50	12,938	CONP	79.64	1,030,300	1,817,800	
	MUD MAT		EST	510	CY		105.00	0	53,600	1.50	880	CONP	79.64	70,100	123,700	
	EMBEDDED STEEL		EST	36,000	LB		2.50	0	90,000	0.06	2,484	CARP	71.88	178,500	268,500	
7.16	SDA PDC - FOUNDATION							0	85,600					152,700	238,300	
	EXCAVATION / BACKFILL		EST	750	CY			0	0	0.15	129	EXFD	90.00	11,600	11,600	
	REINFORCING		EST	31	TN		1,150.00	0	35,200	20.00	704	REIN	78.27	55,100	90,300	
	FORMWORK		EST	1,250	SF		2.50	0	3,100	0.14	201	FORM	99.43	20,000	23,100	
	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	2,500	LB		2.50	0	6,300	0.06	173	CARP	71.88	12,400	18,700	
7.17	SDA PDC BUILDING	60' L X 40' W X 13' H. SUBCONTRACT PRICE INCLUDES LABOR	EST	2,400	SF		500.00	0	1,200,000	0.00	0	STST	105.71	0	1,200,000	
7.18	FOUNDATIONS FOR SUPPORT STEEL							0	69,000					126,000	195,000	
	EXCAVATION / BACKFILL		EST	784	CY			0	0	0.15	135	EXFD	90.00	12,200	12,200	
	REINFORCING		EST	23	TN		1,150.00	0	26,100	20.00	522	REIN	78.27	40,900	67,000	
	FORMWORK		EST	1,125	SF		2.50	0	2,800	0.14	181	FORM	99.43	18,000	20,800	

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	CONCRETE		EST	303	CY		105.00	0	31,800	1.50	522	CONP	79.64	41,600	73,400
	MUD MAT		EST	43	CY		105.00	0	4,500	1.50	73	CONP	79.64	5,800	10,300
	EMBEDDED STEEL		EST	1,513	LB		2.50	0	3,800	0.06	104	CARP	71.88	7,500	11,300
7.19	TRANSFORMERS							770,000	0					145,600	915,600
	SST TRANSFORMERS: 21A & 21B	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
7.20	SWITCHGEAR							1,082,000	0		0			569,000	1,651,000
	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
	4.16 KV MEDIUM VOLTAGE (21A/B)	PRICE PER SECTION	EST	10	EA	39200		392,000	0	280.00	3,220	EHEA	79.16	254,900	646,900
	13KV MEDIUM VOLTAGE	PRICE PER SECTION	EST	10	EA	50000		500,000	0	230.00	2,645	EHEA	79.16	209,400	709,400
7.21	CABLE BUS & TERMINATIONS							1,082,500	35,800		0			1,853,300	2,971,600
	15KV CABLE BUS TO 13F/G)	CABLE BUS	EST	2,000	FT	466		932,000	0	6.75	15,525	WIRE	98.84	1,534,500	2,466,500
	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
7.22	MCC							185,400	0		0			8,200	193,600
	480V MCC	PER LINE UP	EST	6	EA	30900		185,400	0	12.00	83	WIRE	98.84	8,200	193,600
7.23	MIMIC PANELS		EST	1	EA	17500		17,500	0	40.00	46	WIRE	98.84	4,500	22,000
7.24	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
7.25	LIGHTING/ TRANSFORMERS & PANELS							156,000	150,000		0			159,100	465,100
	LIGHT FIXTURES		EST	200	EA		750	0	150,000	4.00	920	WIRE	98.84	90,900	240,900
	45KVA, 480V, 3 PHASE	LOW VOLTAGE XFMR	EST	6	EA	10000		60,000	0	40.00	276	WIRE	98.84	27,300	87,300
	37.7KVA, 480V, 3 PHASE	LOW VOLTAGE XFMR	EST	6	EA	7500		45,000	0	32.00	221	WIRE	98.84	21,800	66,800
	200A, 480-277V, 3 PHASE- RECEPTACLE PANEL	INCLUDING BREAKERS	EST	6	EA	5000		30,000	0	16.00	110	WIRE	98.84	10,900	40,900
	200A, 277V-120V, 3 PHASE- LIGHTING PANELS	INCLUDING BREAKERS	EST	6	EA	3500		21,000	0	12.00	83	WIRE	98.84	8,200	29,200
7.26	EMERGENCY POWER SYSTEM							108,300	0		0			24,400	132,700
	DC PANEL BOARDS		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	8HR-400A, 480V	EST	1	LT	36050		36,100	0	120.00	138	WIRE	98.84	13,600	49,700
7.27	RACEWAY, CABLE TRAY, & CONDUIT							0	1,574,900		0			7,540,300	9,115,200

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				FGD PROJECT - DRY FGD EST BASE (N/ESP)-1B - 3.0 LB/MM BTU										Date:	9/10/2010
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		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" X 6" AL CABLE TRAY	INCLUDING SUPPORT & FITTINGS	EST	5,000	LF		18.25	0	91,300	1.10	6,325	WIRE	98.84	625,200	716,500
	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	9,320	LF		27.10	0	252,600	1.75	18,757	WIRE	98.84	1,853,900	2,106,500
	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	28,000	LF		4.44	0	124,300	0.24	7,696	WIRE	98.84	760,700	885,000
	3/4" RGS CONDUIT	INCLUDING SUPPORT & FITTINGS	EST	47,000	LF		1.46	0	68,600	0.08	4,270	WIRE	98.84	422,000	490,600
7.28	HIGH VOLTAGE POWER CABLE & TERMINATION	1/C # 500KCMIL- 15KV	EST	5,750	LF		9.27	0	53,300	0.23	1,521	WIRE	98.84	150,300	203,600
7.29	MEDIUM VOLTAGE POWER CABLE & TERMINATION							0	82,500		0			243,200	325,700
	1/C # 500KCMIL- 5KV		EST	8,100	LF		9.27	0	75,100	0.23	2,142	WIRE	98.84	211,800	286,900
	1/C # 350KCMIL-5KV		EST	1,200	LF		6.13	0	7,400	0.23	317	WIRE	98.84	31,400	38,800
7.30	LOW VOLTAGE POWER CABLE & TERMINATION							0	409,900		0			537,400	947,300
	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	54,600	LF		7.22	0	394,200	0.08	4,960	WIRE	98.84	490,300	884,500
7.31	CONTROL & INSTRUMENT CABLE							0	99,200		0			278,400	377,600
	#14, #16 & PR # 20 & SHLD WIRE		EST	31,000	LF		3.20	0	99,200	0.08	2,816	WIRE	98.84	278,400	377,600
7.32	DUCT BANK							0	137,900	0.05	0			364,600	502,500
	DUCT BANK WITH 6-5" & 6-3" CONDUITS	5.2' H X 2.38' W	EST	250	LF		265.88	0	66,500	6.01	1,728	FORM	99.43	171,800	238,300
	DUCT BANK WITH 6-5" & 3-3" CONDUITS	5.2' H X 2.38' W	EST	300	LF		238.05	0	71,400	5.62	1,939	FORM	99.43	192,800	264,200
7.33	FOUNDATION FOR TRANSFORMERS							0	49,800		0			145,800	195,600
	FOR 21A & 21B		EST	178	CY		250	0	44,500	8.00	1,638	CONP	79.64	130,400	174,900
	FOR 31F, 31G		EST	21.0	CY		250	0	5,300	8.00	193	CONP	79.64	15,400	20,700
7.34	TRANSFORMER FIRE WALLS	FOR 21A & 21B	EST	15	CY		230	0	3,500	7.00	121	CONP	79.64	9,600	13,100
90.00	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS							45,252,500	18,689,200		698,734			65,947,400	129,889,100
	OTHER DIRECT & CONSTRUCTION INDIRECT COSTS														
	ADDITIONAL CRANE ALLOWANCE	2 CRANES		9	MN	90,000.00		810,000	0	1440.00	14,904	MECH	88.89	1,523,520	2,333,520

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	MOBILIZATION / DEMOBILIZATION - INCLUDED IN WAGE RATES ABOVE														0	
	COST DUE TO OVERTIME WORKING 5 X10 HOUR DAYS			1	LS											
	COST DUE TO OVERTIME INEFFICIENCY - SPECIFY % INEFFICIENCY			8.00	%						60,759		83.48	5,072,000	5,072,000	
	COST DUE TO OVERTIME PAY @1.5 TIMES OVERTIME PAY RATE - SPECIFY % ADDITIONAL HOURS PAID ON ACTUAL HOURS WORKED			10.00	%						77,440			5,432,496	5,432,496	
	PER DIEM	NONE		0.00	HR						851,837			0	0	
	CONSUMABLES - % of ACCT NO. 90			0.5	%				93,446					329,737	423,183	
	FREIGHT ON MATERIAL - % of ACCT NO. 90			5.0	%				934,460						934,460	
	FREIGHT ON EQUIPMENT - % of ACCT NO. 90			5.0	%			2,262,625							2,262,625	
	SALES TAX - NOT INCLUDED														0	
	SCAFFOLDING - % OF ACCT NO. 90			5.0	%				934,460					3,297,370	4,231,830	
	CONTRACTOR'S GENERAL AND ADMINISTRATION EXPENSE & PROFIT- % of ACCT NO. 90			15	%				2,803,380					9,892,110	12,695,490	
	SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS							3,072,600	4,765,700					25,547,200	33,385,600	
	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	ABSORBER ISLAND						48,325,100	23,454,900					91,494,600	163,274,700	
8.0	ACTIVATED CARBON INJECTION SYSTEM														0	
8.1	ACI MECHANICAL EQUIPMENT:		EST	1	LT	2805900		2,805,900	0	8690.00	9,994	MECH	88.89	888,300	3,694,200	
	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	
	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	

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	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					79,200	120,700
	EXCAVATION / BACKFILL		EST	404	CY		0	0	0	0.15	70	EXFD	90.00	6,300	6,300
	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	84,600					276,700	361,300
	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		1.46	0	4,400	0.08	273	WIRE	98.84	26900	31,300
	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	FORM	99.43	55600	84,200
8.8	LOW VOLTAGE POWER CABLE & TERMINATION							0	30,400					62,900	93,300
	#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							2,929,000	321,300		18,831			1,726,800	4,977,100
	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										
	COST DUE TO OVERTIME INEFFICIENCY - SPECIFY % INEFFICIENCY			8.00	%						1,637		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	%						2,047			143,591	143,591
	PER DIEM	NONE		0.00	HR						22,516			0	0
	CONSUMABLES - % of ACCT NO. 90			0.5	%				1,607					8,634	10,241
	FREIGHT ON MATERIAL - % of ACCT NO. 90			5.0	%				16,065						16,065
	FREIGHT ON EQUIPMENT - % of ACCT NO. 90			5.0	%			146,450							146,450
	SALES TAX - NOT INCLUDED														0
	SCAFFOLDING - % OF ACCT NO. 90			5.0	%				16,065					86,340	102,405
	CONTRACTOR'S GENERAL AND ADMINISTRATION EXPENSE & PROFIT- % of ACCT NO. 90			15	%				48,195					259,020	307,215
	SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS							146,500	81,900					634,600	863,000
	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	ACTIVATED CARBON INJECTION SYSTEM						3,075,500	403,200					2,361,400	5,840,100
9.0	COMPRESSED AIR SYSTEM														0
9.1	AIR COMPRESSOR & AUXILIARIES							664,000	0					155,400	819,400
	AIR COMPRESSOR	3000 CFM, OIL FREE	EST	2	EA	275000		550,000	0	650.00	1,495	MECH	88.89	132,900	682,900
	DRYERS	DESSICANT TYPE, HEATED AIR	EST	2	EA	45000		90,000	0	80.00	184	MECH	88.89	16,400	106,400
	RECEIVERS	2500 GAL WITH SAFETY RELIEF VALVE AND PRESSURE GAUGE	EST	2	EA	12000		24,000	0	30.00	69	MECH	88.89	6,100	30,100
9.2	PIPING - MECHANICAL							320,600	399,200					1,096,000	1,815,800
	LARGE BORE PIPING	4" CS, SCHEDULE 40, WELDED	EST	500	LF		23.0	0	11,500	1.48	851	SPNG	94.41	80,300	91,800
	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	EST	500	LF		68.3	0	34,200	1.82	1,047	SPNG	94.41	98,800	133,000
	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	EST	700	LF		179.9	0	125,900	2.49	2,004	SPNG	94.41	189,200	315,100
	SMALL BORE PIPING	2" CS, SCH 80 WELDED, UNDERGROUND WRAPPED	EST	700	LF		22.20	0	15,500	1.26	1,014	SPNG	94.41	95,800	111,300
	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
9.3	AIR COMPRESSOR BUILDING - FOUNDATIONS							0	96,100					174,000	270,100

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				FGD PROJECT - DRY FGD EST BASE (N/ESP)-1B - 3.0 LB/MM BTU										Date:	9/10/2010
				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
	EXCAVATION / BACKFILL		EST	950	CY			0	0	0.15	164	EXFD	90.00	14,700	14,700
	REINFORCING		EST	35	TN		1,150.00	0	40,300	20.00	805	REIN	78.27	63,000	103,300
	FORMWORK		EST	1,600	SF		2.50	0	4,000	0.14	258	FORM	99.43	25,600	29,600
	CONCRETE		EST	450	CY		105.00	0	47,300	1.50	776	CONP	79.64	61,800	109,100
	MUD MAT		EST	0	CY		105.00	0	0	1.50	0	CONP	79.64	0	0
	EMBEDDED STEEL		EST	1,800	LB		2.50	0	4,500	0.06	124	CARP	71.88	8,900	13,400
9.4	AIR COMPRESSOR BUILDING	100' L X 600' W X 20' H						0	510,000					0	510,000
	PREENGINEERED BUILDING INCLUDING H&V AND LIGHTING	SUBCONTRACT PRICE, INCLUDES LABOR	EST	6,000	SF	85		0	510,000	0.00	0	STST	105.71	0	510,000
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 ABSORBER ISLAND 7.0													
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
90.00	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS							1,000,100	1,015,800		15,768			1,447,700	3,463,600
	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										
	COST DUE TO OVERTIME INEFFICIENCY - SPECIFY % INEFFICIENCY			8.00	%						1,371		83.48	114,000	114,000
	COST DUE TO OVERTIME PAY @1.5 TIMES OVERTIME PAY RATE - SPECIFY % ADDITIONAL HOURS PAID ON ACTUAL HOURS WORKED			10.00	%						1,714			120,233	120,233
	PER DIEM	NONE		0.00	HR						18,853			0	0
	CONSUMABLES - % of ACCT NO. 90			0.5	%			5,079						7,239	12,318
	FREIGHT ON MATERIAL - % of ACCT NO. 90			5.0	%			50,790							50,790
	FREIGHT ON EQUIPMENT - % of ACCT NO. 90			5.0	%			50,005							50,005
	SALES TAX - NOT INCLUDED														0
	SCAFFOLDING - % OF ACCT NO. 90			5.0	%				50,790					72,385	123,175
	CONTRACTOR'S GENERAL AND ADMINISTRATION EXPENSE & PROFIT- % of ACCT NO. 90			15	%				152,370					217,155	369,525
	SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS							50,000	259,000					531,000	840,000
	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	COMPRESSED AIR SYSTEM						1,050,100	1,274,800					1,978,700	4,303,600
10.0	SERVICE WATER SYSTEM														
10.1	PUMPS							216,000	0					94,100	310,100
	SERVICE WATER PUMPS	4000 GPM, 200 HP	EST	2	EA	60000		120,000	0	240.00	552	MECH	88.89	49,100	169,100
	MAKE UP WATER PUMPS	4000 GPM, 100 HP	EST	2	EA	48000		96,000	0	220.00	506	MECH	88.89	45,000	141,000
10.2	PIPING - MECHANICAL		EST	1	LT			183,400	624,600					1,092,000	1,900,000
	LARGE BORE PIPING	4" SS, SCHEDULE 40, WELDED	EST	600	LF		68.3	0	41,000	1.82	1,256	SPNG	94.41	118,600	159,600
	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" SS, SCHEDULE 40, WELDED	EST	300	LF		179.9	0	54,000	2.49	859	SPNG	94.41	81,100	135,100

				AEP										Estimate No.:	30713B
				BIG SANDY UNIT 2										Project No.:	12721-000
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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
	LARGE BORE PIPING	12" SS, SCHEDULE 40, WELDED	EST	1,000	LF		353.8	0	353,800	4.12	4,738	SPNG	94.41	447,300	801,100
	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	16	EA	4,700		75,200	0	12.96	238	SPNG	94.41	22,500	97,700
	VALVE	8" GATE, 150 #, SS, WELDED	EST	6	EA	6,240		37,400	0	15.96	110	SPNG	94.41	10,400	47,800
	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	258	EA		125.00	0	32,300	3.00	891	MECH	88.89	79,200	111,500
	EXCAVATION / BACKFILL	FOR UNDERGROUND PIPING	EST	833	CY			0	0	0.20	192	EXFD	90.00	17,300	17,300
	BEDDING	FOR UNDERGROUND PIPING	EST	111	CY		35.0	0	3,900	0.25	32	EXFD	90.00	2,900	6,800
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	234,000					0	234,000
	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
	MAKE UP WATER TANK	40,000 GAL, CS, 20' DIA X 20' - SUBCONTRACT PRICE INCLUDES LABOR WITH EXTERIOR PRIMED AND FIELD PAINTED	EST	1	EA		114000.0	0	114,000	0.00	0	TANK	89.16	0	114,000
10.5	SERVICE WATER TANK & PUMP - FOUNDATIONS							0	17,300					35,000	52,300
	EXCAVATION / BACKFILL		EST	296	CY			0	0	0.15	51	EXFD	90.00	4,600	4,600
	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	MAKE UP WATER TANK & PUMP - FOUNDATIONS							0	22,200					44,400	66,600
	EXCAVATION / BACKFILL		EST	325	CY			0	0	0.15	56	EXFD	90.00	5,000	5,000
	REINFORCING		EST	11.0	TN		1,150.00	0	12,700	20.00	253	REIN	78.27	19,800	32,500
	FORMWORK		EST	519	SF		2.50	0	1,300	0.14	84	FORM	99.43	8,300	9,600
	CONCRETE		EST	65	CY		105.00	0	6,800	1.50	112	CONP	79.64	8,900	15,700
	MUD MAT		EST	6	CY		105.00	0	600	1.50	10	CONP	79.64	800	1,400
	EMBEDDED STEEL		EST	324	LB		2.50	0	800	0.06	22	CARP	71.88	1,600	2,400
10.7	ELECTRICAL	INCLUDED IN ABSORBER ISLAND 7.0													

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90.00	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS							580,600	1,182,700		20,823			1,938,800	3,702,100
	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										
	COST DUE TO OVERTIME INEFFICIENCY - SPECIFY % INEFFICIENCY			8.00	%						1,811		83.48	151,000	151,000
	COST DUE TO OVERTIME PAY @1.5 TIMES OVERTIME PAY RATE - SPECIFY % ADDITIONAL HOURS PAID ON ACTUAL HOURS WORKED			10.00	%						2,263			158,781	158,781
	PER DIEM	NONE		0.00	HR						24,898			0	0
	CONSUMABLES - % of ACCT NO. 90			0.5	%				5,914					9,694	15,608
	FREIGHT ON MATERIAL - % of ACCT NO. 90			5.0	%				59,135						59,135
	FREIGHT ON EQUIPMENT - % of ACCT NO. 90			5.0	%			29,030							29,030
	SALES TAX - NOT INCLUDED														0
	SCAFFOLDING - % OF ACCT NO. 90			5.0	%				59,135					96,940	156,075
	CONTRACTOR'S GENERAL AND ADMINISTRATION EXPENSE & PROFIT- % of ACCT NO. 90			15	%				177,405					290,820	468,225
	SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS							29,000	301,600					707,200	1,037,900
	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	SERVICE WATER SYSTEM						609,600	1,484,300					2,646,000	4,740,000
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	200,400					530,700	830,600
	LARGE BORE PIPING	4" SS, SCHEDULE 40, WELDED	EST	1,000	LF		68.3	0	68,300	1.82	2,093	SPNG	94.41	197,600	265,900
	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					8,800	14,000
	EXCAVATION / BACKFILL		EST	20	CY			0	0	0.15	3	EXFD	90.00	300	300
	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

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11.5	ELECTRICAL	INCLUDED IN ABSORBER ISLAND 7.0													
90.00	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS							129,500	214,100		5,969			557,900	901,500
	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										
	COST DUE TO OVERTIME INEFFICIENCY - SPECIFY % INEFFICIENCY			8.00	%						519		83.48	43,000	43,000
	COST DUE TO OVERTIME PAY @1.5 TIMES OVERTIME PAY RATE - SPECIFY % ADDITIONAL HOURS PAID ON ACTUAL HOURS WORKED			10.00	%						649			45,516	45,516
	PER DIEM	NONE		0.00	HR						7,137			0	0
	CONSUMABLES - % of ACCT NO. 90			0.5	%				1,071					2,790	3,860
	FREIGHT ON MATERIAL - % of ACCT NO. 90			5.0	%				10,705						10,705
	FREIGHT ON EQUIPMENT - % of ACCT NO. 90			5.0	%			6,475							6,475
	SALES TAX - NOT INCLUDED														0
	SCAFFOLDING - % OF ACCT NO. 90			5.0	%				10,705					27,895	38,600
	CONTRACTOR'S GENERAL AND ADMINISTRATION EXPENSE & PROFIT- % of ACCT NO. 90			15	%				32,115					83,685	115,800
	SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS							6,500	54,600					202,900	264,000
	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	POTABLE WATER SYSTEM						135,975	268,696					760,786	1,165,456
12.0	FGD SUBSTATION														
12.1	TRANSFORMERS							1,560,500	0					273,100	1,833,600
	FGD SUBSTATION-AUX TRANSFORMERS: 11A & 11B	138KV-13.8KV- 2 WINDING	EST	2	EA	695250		1,390,500	0	1200.00	2,760	EHEA	79.16	218,500	1,609,000
	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					131,700	204,900
	EXCAVATION / BACKFILL		EST	700	CY			0	0	0.15	121	EXFD	90.00	10,900	10,900
	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	STRUCTURE STEEL	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							930,000	0					136,200	1,066,200
	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
	MCC 1200A, 480v, 3 PHASE	INCLUDING STARTERs & DIS. SW	EST	4	EA	30000		120,000	0	16.00	74	WIRE	98.84	7,300	127,300
	EXISTING SCR SWITCHGEAR MODIFICATION	TURNKEY INCLUDING INSTALLATION & MATERIAL (EATON QUOTE 7/16/10)	Q	1	LT	120,000		120,000	0	750.00	863	WIRE	98.84	85,200	205,200

				AEP										Estimate No.:	30713B
				BIG SANDY UNIT 2										Project No.:	12721-000
				FGD PROJECT - DRY FGD EST BASE (N/ESP)-1B - 3.0 LB/MM BTU										Date:	9/10/2010
				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
12.6	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							117,500	0					13,600	131,100
	RELAY PANELS & INTERLOCK	ALLOWANCE	EST	1	LT	100000		100,000	0	80.00	92	WIRE	98.84	9,100	109,100
	MIMIC PANELS		EST	1	EA	17500		17,500	0	40.00	46	WIRE	98.84	4,500	22,000
12.9	UPS SYSTEM							108,300	0					24,400	132,700
	DC PANEL BOARDS		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
12.10	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
12.11	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
12.12	OUTDOOR LIGHTING	NEW AUX YARD LIGHTING - ALLOWANCE	EST	1	LT	25000		25,000	0	500.00	575	WIRE	98.84	56,800	81,800
12.13	RACEWAY, CABLE TRAY, & CONDUIT							0	372,900					1,787,900	2,160,800
	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		1.46	0	14,600	0.08	909	WIRE	98.84	89,800	104,400
12.14	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
12.15	LOW VOLTAGE POWER CABLE & TERMINATION							0	112,200					194,700	306,900
	3/C # 500KCML- 600V		EST	1,200	LF		26.12	0	31,300	0.69	952	WIRE	98.84	94,100	125,400

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	MOBILIZATION / DEMOBILIZATION - INCLUDED IN WAGE RATES ABOVE															0
	COST DUE TO OVERTIME WORKING 5 X10 HOUR DAYS			1	LS											
	COST DUE TO OVERTIME INEFFICIENCY - SPECIFY % INEFFICIENCY			8.00	%						1,715		83.48	143,000	143,000	
	COST DUE TO OVERTIME PAY @1.5 TIMES OVERTIME PAY RATE - SPECIFY % ADDITIONAL HOURS PAID ON ACTUAL HOURS WORKED			10.00	%						2,144			150,387	150,387	
	PER DIEM	NONE		0.00	HR						23,581			0	0	
	CONSUMABLES - % of ACCT NO. 90			0.5	%				3,548					8,721	12,268	
	FREIGHT ON MATERIAL - % of ACCT NO. 90			5.0	%				35,475						35,475	
	FREIGHT ON EQUIPMENT - % of ACCT NO. 90			5.0	%			135,000							135,000	
	SALES TAX - NOT INCLUDED														0	
	SCAFFOLDING - % OF ACCT NO. 90			5.0	%				35,475					87,205	122,680	
	CONTRACTOR'S GENERAL AND ADMINISTRATION EXPENSE & PROFIT- % of ACCT NO. 90			15	%				106,425					261,615	368,040	
	SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS							135,000	180,900					650,900	966,800	
	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	FGD DCS SYSTEM						2,835,000	890,400					2,395,000	6,120,400	
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	
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	
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' SUBBALLAST, 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	

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15.6	NEW CONCRETE ENCASEMENT	OVER AND AROUND DUCT BANK CONNECTING THE PLANT TO SWITCHYARD. THIS IS UNDER THE NEW TRACKWORK EXTENSION						0	33,200					67,700	100,900	
	EXCAVATION / BACKFILL		EST	170	CY			0	0	0.15	29	EXFD	90.00	2,600	2,600	
	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		23,607			2,080,400	4,337,100	
	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											
	COST DUE TO OVERTIME INEFFICIENCY - SPECIFY % INEFFICIENCY			8.00	%						2,053		83.48	171,000	171,000	
	COST DUE TO OVERTIME PAY @1.5 TIMES OVERTIME PAY RATE - SPECIFY % ADDITIONAL HOURS PAID ON ACTUAL HOURS WORKED			10.00	%						2,566			180,008	180,008	
	PER DIEM	NONE		0.00	HR						28,226			0	0	
	CONSUMABLES - % of ACCT NO. 90			0.5	%				10,221					10,402	20,623	
	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	
	SALES TAX - NOT INCLUDED														0	
	SCAFFOLDING - % OF ACCT NO. 90			5.0	%				102,210					104,020	206,230	
	CONTRACTOR'S GENERAL AND ADMINISTRATION EXPENSE & PROFIT- % of ACCT NO. 90			15	%				306,630					312,060	618,690	
	SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS							10,600	521,300					777,500	1,309,400	
	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	TRUCK & RAIL INFRASTRUCTURE						223,100	2,565,500					2,857,900	5,646,500	
16.0	SITE IMPROVEMENTS - CIVIL WORK															
16.1	SITE GRADING							0	0					538,800	538,800	
	CUT		EST	16,500	CY			0	0	0.08	1,518	ETWK	177.49	269,400	269,400	
	FILL		EST	16,500	CY			0	0	0.08	1,518	ETWK	177.49	269,400	269,400	
16.2	ROADS & SURFACING							0	918,600					1,237,000	2,155,600	
	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	4,600	SY		47	0	216,200	0.40	2,116	PBIT	90.25	191,000	407,200	
	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	6,320	SY		47	0	297,000	0.40	2,907	PBIT	90.25	262,400	559,400	

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16.18	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
90.00	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS							574,500	2,965,900		55,878			5,358,400	8,899,300
	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										
	COST DUE TO OVERTIME INEFFICIENCY - SPECIFY % INEFFICIENCY			8.00	%						4,859		83.48	406,000	406,000
	COST DUE TO OVERTIME PAY @1.5 TIMES OVERTIME PAY RATE - SPECIFY % ADDITIONAL HOURS PAID ON ACTUAL HOURS WORKED			10.00	%						6,074			426,074	426,074
	PER DIEM	NONE		0.00	HR						66,810			0	0
	CONSUMABLES - % of ACCT NO. 90			0.5	%				14,830					26,792	41,624
	FREIGHT ON MATERIAL - % of ACCT NO. 90			5.0	%				148,295						148,295
	FREIGHT ON EQUIPMENT - % of ACCT NO. 90			5.0	%			28,725							28,725
	SALES TAX - NOT INCLUDED														0
	SCAFFOLDING - % OF ACCT NO. 90			5.0	%				148,295					267,920	416,240
	CONTRACTOR'S GENERAL AND ADMINISTRATION EXPENSE & PROFIT- % of ACCT NO. 90			15	%				444,885					803,760	1,248,720
	SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS							28,700	756,300					1,930,500	2,715,700
	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	SITE IMPROVEMENTS - CIVIL WORK						603,200	3,722,200					7,288,900	11,615,000
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	134,200					514,800	649,000
	TOUCH UP PAINT FOR SHOP PAINTED STEEL		EST	17,033	SF		3	0	51,100	0.15	2,938	PNTR	66.72	196,000	247,100
	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							180,000	210,000					245,300	635,300
	MISC HOISTS & TROLLEYS	IN BUILDINGS FOR EQUIPMENT MAINTENANCE AND FOR ID FANS	EST	12	EA	15000	17500	180,000	210,000	200.00	2,760	MECH	88.89	245,300	635,300



Big Sandy Unit 2
Kentucky Power Company
American Electric Power Service Corporation
Order-of-Magnitude FGD Cost Estimate
WFGD, DFGD, IAQCS & NID Technologies
September 10, 2010

ATTACHMENT 3-7
DFGD Detailed Capital Cost Estimate No. 30711 Base Est-1A ESP in Service
(3.0 lb SO₂/MMbtu)

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				AEP										Estimate No.:	30711B
				BIG SANDY UNIT 2										Project No.:	12721-000
				FGD PROJECT - DRY FGD BASE EST (ESP)-1A - 3.0 LB/MM BTU										Date:	9/10/2010
				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			
<u>Account No.</u>	<u>Item Description</u>	<u>Scope Definition</u>	<u>Cost Type</u>	<u>Quantity</u>	<u>Unit of Measure</u>	<u>Unit Equip. Cost</u>	<u>Unit Material Cost</u>	<u>Total Equipment Cost</u>	<u>Total Material Cost</u>	<u>Unit Man-hours (Base)</u>	<u>Total Man-hours (w/ productivity)</u>	<u>Crew Code</u>	<u>Crew Wage Rate</u>	<u>Total Construction & Erection Cost</u>	<u>Total Projected Cost</u>
1.0	ID FANS														
1.1	ID FANS - OEM EQUIPMENT	1,785,000 ACFM WITH 14,300 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	3,144,000.000		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	FABRIC FILTER 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	60.00	55,200	FLDU	107.96	5,959,400	8,559,400
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 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 OUTLER DUCT TO FABRIC FILTERS 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					532,700	828,200
	EXCAVATION / BACKFILL		EST	1,900	CY			0	0	0.15	328	EXFD	90.00	29,500	29,500
	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					185,600	291,600
	EXCAVATION / BACKFILL		EST	600	CY			0	0	0.15	104	EXFD	90.00	9,300	9,300
	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

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1.11	ID FAN DFGD CONTROL ROOM - FOUNDATIONS							0	122,100					196,100	318,200
	EXCAVATION / BACKFILL		EST	467	CY			0	0	0.15	81	EXFD	90.00	7,300	7,300
	REINFORCING		EST	47	TN		1,150.00	0	54,100	20.00	1,081	REIN	78.27	84,600	138,700
	FORMWORK		EST	870	SF		2.50	0	2,200	0.14	140	FORM	99.43	13,900	16,100
	CONCRETE		EST	500	CY		105.00	0	52,500	1.50	863	CONP	79.64	68,700	121,200
	MUD MAT		EST	67	CY		105.00	0	7,000	1.50	116	CONP	79.64	9,200	16,200
	EMBEDDED STEEL		EST	2,500	LB		2.50	0	6,300	0.06	173	CARP	71.88	12,400	18,700
1.12	ID FAN DFGD CONTROL ROOM	SUBCONTRACT PRICE INCLUDES LABOR. COMPLETE WITH HVAC, FINISHES AND SANITARY FACILITIES	EST	2,500	SF		500.00	0	1,250,000	0.00	0	STST	105.71	0	1,250,000
1.13	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
1.14	HIGH VOLTAGE POWER CABLE & TERMINATION	1/C # 500KCMIL-15KV - 6600' ID FAN	EST	6,600	LF		9.27	0	61,200	0.23	1,746	WIRE	98.84	172,500	233,700
1.15	CONTROL & INSTRUMENT CABLE	#14, #16 & PR # 20 & SHLD WIRE	EST	37,800	LF		3.20	0	121,000	0.23	9,998	WIRE	98.84	988,200	1,109,200
1.16	EMERGENCY POWER SYSTEM							285,500	0					38,900	324,400
	DC PANEL BOARDD		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
1.17	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
1.18	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
1.19	RACEWAY, CABLE TRAY, & CONDUIT							0	326,300					1,792,700	2,119,000
	12" X 6" AL CABLE TRAY	INCLUDING SUPPORT & FITTINGS	EST	1,000	LF		18.25	0	18,300	1.10	1,265	WIRE	98.84	125,000	143,300
	24" X 6" AL CABLE TRAY	INCLUDING SUPPORT & FITTINGS	EST	2,000	LF		27.10	0	54,200	1.75	4,025	WIRE	98.84	397,800	452,000
	36" X 6" AL CABLE TRAY	INCLUDING SUPPORT & FITTINGS	EST	1,500	LF		30.30	0	45,500	1.95	3,364	WIRE	98.84	332,500	378,000
	4" RGS CONDUIT	INCLUDING SUPPORT & FITTINGS	EST	1,500	LF		31.00	0	46,500	0.81	1,392	WIRE	98.84	137,600	184,100
	3" RGS CONDUIT	INCLUDING SUPPORT & FITTINGS	EST	1,000	LF		21.50	0	21,500	0.65	742	WIRE	98.84	73,300	94,800
	2" RGS CONDUIT	INCLUDING SUPPORT & FITTINGS	EST	8,000	LF		9.25	0	74,000	0.35	3,238	WIRE	98.84	320,100	394,100

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	1" RGS CONDUIT	INCLUDING SUPPORT & FITTINGS	EST	10,000	LF		4.44	0	44,400	0.24	2,749	WIRE	98.84	271,700	316,100
	3/4" RGS CONDUIT	INCLUDING SUPPORT & FITTINGS	EST	15,000	LF		1.46	0	21,900	0.08	1,363	WIRE	98.84	134,700	156,600
1.20	LOW VOLTAGE POWER CABLE & TERMINATIONS							0	229,800					547,600	777,400
	3/C # 500KCMIL- 600V	1800' ID FAN AREA	EST	5,700	LF		26.12	0	148,900	0.69	4,523	WIRE	98.84	447,000	595,900
	#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
1.21	DUCT BANK							0	186,800					347,700	534,500
	DUCT BANK WITH 12-5" & 6-3" CONDUITS	3.02' H X 5.2' W	EST	100	LF		380.22	0	38,000	6.43	739	ECND	75.97	56,200	94,200
	DUCT BANK WITH 3-5" & 3-3" CONDUITS	3.08' H X 2.38' W	EST	100	LF		142.42	0	14,200	3.17	365	ECND	75.97	27,700	41,900
	DUCT BANK WITH 9-5" & 9-3" CONDUITS	5.2' H X 3.08' W	EST	100	LF		366.19	0	36,600	7.32	842	ECND	75.97	64,000	100,600
	DUCT BANK WITH 6-5" & 6-3" CONDUITS	5.2' H X 2.38" W	EST	100	LF		265.88	0	26,600	6.01	691	ECND	75.97	52,500	79,100
	DUCT BANK WITH 6-5" & 3-3" CONDUITS	5.2' H X 2.38" W	EST	300	LF		238.05	0	71,400	5.62	1,939	ECND	75.97	147,300	218,700
90.00	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS							7,545,600	7,680,500		166,678			16,117,900	31,344,000
	OTHER DIRECT & CONSTRUCTION INDIRECT COSTS														
	ADDITIONAL CRANE ALLOWANCE							0						0	0
	MOBILIZATION / DEMOBILIZATION - INCLUDED IN WAGE RATES ABOVE													0	0
	COST DUE TO OVERTIME WORKING 5 X10 HOUR DAYS			1	LS										
	COST DUE TO OVERTIME INEFFICIENCY - SPECIFY % INEFFICIENCY			8.00	%						14,494		83.48	1,210,000	1,210,000
	COST DUE TO OVERTIME PAY @1.5 TIMES OVERTIME PAY RATE - SPECIFY % ADDITIONAL HOURS PAID ON ACTUAL HOURS WORKED			10.00	%						18,117			1,270,946	1,270,946
	PER DIEM	NONE		0.00	HR						199,289			0	0
	CONSUMABLES - % of ACCT NO. 90			0.5	%				38,403					80,590	118,992
	FREIGHT ON MATERIAL - % of ACCT NO. 90			5.0	%				384,025						384,025
	FREIGHT ON EQUIPMENT - % of ACCT NO. 90			5.0	%			377,280							377,280
	SALES TAX - NOT INCLUDED													0	0
	SCAFFOLDING - % OF ACCT NO. 90			5.0	%				384,025					805,895	1,189,920
	CONTRACTOR'S GENERAL AND ADMINISTRATION EXPENSE & PROFIT- % of ACCT NO. 90			15	%				1,152,075					2,417,685	3,569,760
	SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS							377,300	1,958,500					5,785,100	8,120,900
	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	ID FANS						7,922,900	9,639,000					21,903,000	39,464,900
2.0	FABRIC FILTERS														
2.1	MECHANICAL EQUIPMENT	A SINGLE FABRIC FILTER (225" X 130') UNIT INCLUDING ALL INTERNAL FABRIC FILTER ELEMENTS SUCH AS BAGS, CAGES, ASH HOPPERS, 2 BROKEN BAG DETECTORS PER COMPARTMENT	EST	1	LT	19,276,000		19,276,000	0	121500.00	139,725	MECH	88.89	12,420,200	31,696,200
2.2	INSULATION FOR FABRIC FILTER	SUBCONTRACT COST INCLUDES LABOR	EST	81,000	SF	30		2,430,000	0	0.00	0	DINS	81.75	0	2,430,000
2.3	PENTHOUSE FOR FABRIC FILTER	SUPPORT STEEL AND PRLINS INCLUDED WITH OEM EQUIPMENT		29,500	SF			70,200	787,000					1,007,600	1,864,800
	SIDING FOR PENTHOUSE		EST	14,200	SF		12.00	0	170,400	0.11	1,796	SDNG	93.41	167,800	338,200
	CONCRETE FLOOR FOR PENTHOUSE		EST	250	CY		230.00	0	57,500	7.50	2,156	SDNG	93.41	201,400	258,900
	ROOFING FOR PENTHOUSE		EST	29,500	SF		18.00	0	531,000	0.22	7,464	ROOF	69.12	515,900	1,046,900
	H&V		EST	1	LT	70200	28080	70,200	28,100	1310.67	1,507	HVAC	81.24	122,500	220,800

[illegible]

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	FREIGHT ON MATERIAL - % of ACCT NO. 90			5.0	%				150,980						150,980
	FREIGHT ON EQUIPMENT - % of ACCT NO. 90			5.0	%			1,093,720							1,093,720
	SALES TAX - NOT INCLUDED														0
	SCAFFOLDING - % OF ACCT NO. 90			5.0	%				150,980					859,245	1,010,225
	CONTRACTOR'S GENERAL AND ADMINISTRATION EXPENSE & PROFIT- % of ACCT NO. 90			15	%				452,940					2,577,735	3,030,675
	SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS							1,093,700	770,000					6,384,800	8,248,500
	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	FABRIC FILTERS						22,968,100	3,789,600					23,569,700	50,327,400
3.0	NEW STACK														
3.1	CONCRETE STACK (DRY)	PROVIDED BY AEP													17,600,000
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 - 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	INCLUDES PNEUMATIC HANDLING SYSTEM, THREE VACUUM EXHAUSTER, TWO FILTER SEPARATORS	EST	1	LT	640,000		640,000	0	4000.00	4,600	MECH	88.89	408,900	1,048,900
4.3	PIPING - MECHANICAL							29,000	15,600					77,900	122,500
	SMALL BORE PIPING	2" CS, SCH 80 WELDED	EST	100	LF		22.20	0	2,200	1.26	145	SPNG	94.41	13,700	15,900
	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	200	LF		33.70	0	6,700	1.32	304	SPNG	94.41	28,700	35,400
	VALVE	2" GLOBE, 150# SS, WELDED	EST	20	EA	1,450		29,000	0	5.64	130	SPNG	94.41	12,200	41,200
	PIPE SUPPORTS		EST	50	EA		35.00	0	1,800	1.50	86	MECH	88.89	7,700	9,500
4.4	LIME STORAGE SILO ACCESS STAIR TOWER	THREE COAT SHOP PAINT	EST	50	TN		2,900.00	0	145,000	24.00	1,380	STST	105.71	145,900	290,900
4.5	PIPE RACK FOR LIME HANDLING, WASTE ASH HANDLING AND MISC MECHANICAL PIPING	THREE COAT SHOP PAINT	EST	270	TN		2,900.00	0	783,000	24.00	7,452	STST	105.71	787,800	1,570,800
4.6	RAIL CAR UNLOADING AREA - FOUNDATIONS	20 X 250 - NO SIDING						0	85,300					158,400	243,700
	EXCAVATION / BACKFILL		EST	1,000	CY			0	0	0.15	173	EXFD	90.00	15,500	15,500
	REINFORCING		EST	30	TN		1,150.00	0	34,500	20.00	690	REIN	78.27	54,000	88,500
	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	0	CY		105.00	0	0	1.50	0	CONP	79.64	0	0
	EMBEDDED STEEL		EST	2,000	LB		2.50	0	5,000	0.06	138	CARP	71.88	9,900	14,900
4.7	LIME UNLOADING BLOWER / ELECTRICAL BUILDING - FOUNDATIONS							0	160,700					281,500	442,200
	EXCAVATION / BACKFILL		EST	1,900	CY			0	0	0.15	328	EXFD	90.00	29,500	29,500
	REINFORCING		EST	100	TN		1,150.00	0	115,000	20.00	2,300	REIN	78.27	180,000	295,000
	FORMWORK		EST	640	SF		2.50	0	1,600	0.14	103	FORM	99.43	10,200	11,800
	CONCRETE		EST	300	CY		105.00	0	31,500	1.50	518	CONP	79.64	41,200	72,700
	MUD MAT		EST	60	CY		105.00	0	6,300	1.50	104	CONP	79.64	8,200	14,500
	EMBEDDED STEEL		EST	2,500	LB		2.50	0	6,300	0.06	173	CARP	71.88	12,400	18,700

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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
4.8	LIME UNLOADING BLOWER / ELECTRICAL BUILDING	130' L X 30' W X 30' H						75,000	351,500					24,400	450,900
	PREENGINEERED BUILDING INCLUDING H&V AND LIGHTING	SUBCONTRACT PRICE, INCLUDES LABOR	EST	3,900	SF		85	0	331,500	0.00	0	STST	105.71	0	331,500
	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
4.9	CONCRETE PIT FOR THE ELEVATOR		EST	10	CY		230.00	0	2,300	7.50	86	CONP	79.64	6,900	9,200
4.10	LIME STORAGE SILO - FOUNDATIONS							0	563,700					929,500	1,493,200
	EXCAVATION / BACKFILL		EST	4,320	CY		0	0	0	0.15	745	EXFD	90.00	67,100	67,100
	REINFORCING		EST	240.0	TN		1,150.00	0	276,000	20.00	5,520	REIN	78.27	432,100	708,100
	FORMWORK		EST	3,600	SF		2.50	0	9,000	0.14	580	FORM	99.43	57,600	66,600
	CONCRETE		EST	2,400	CY		105.00	0	252,000	1.50	4,140	CONP	79.64	329,700	581,700
	MUD MAT		EST	140	CY		105.00	0	14,700	1.50	242	CONP	79.64	19,200	33,900
	EMBEDDED STEEL		EST	4,800	LB		2.50	0	12,000	0.06	331	CARP	71.88	23,800	35,800
4.11	LIME STORAGE SILO ACCESS STAIR TOWER - FOUNDATIONS							0	14,200					26,200	40,400
	EXCAVATION / BACKFILL		EST	110	CY		0	0	0	0.15	19	EXFD	90.00	1,700	1,700
	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
4.12	PIPE RACK - FOUNDATIONS							0	94,200					208,200	302,400
	EXCAVATION / BACKFILL		EST	1,360	CY		0	0	0	0.15	235	EXFD	90.00	21,100	21,100
	REINFORCING		EST	32.2	TN		1,150.00	0	37,000	20.00	740	REIN	78.27	57,900	94,900
	FORMWORK		EST	4,000	SF		2.50	0	10,000	0.14	644	FORM	99.43	64,000	74,000
	CONCRETE		EST	402	CY		105.00	0	42,200	1.50	693	CONP	79.64	55,200	97,400
	MUD MAT		EST	0	CY		105.00	0	0	1.50	0	CONP	79.64	0	0
	EMBEDDED STEEL		EST	2,010	LB		2.50	0	5,000	0.06	139	CARP	71.88	10,000	15,000
4.13	TRANSFORMERS	SUS TRANSFORMERS: 33F, 33G, 13.8KV-480V,3PHASE, 3 WINDING XFMR 2/2.24/3-2MVA (DELTA TO DELTA)	EST	2	EA	85000		170,000	0	300.00	690	EHEA	79.16	54,600	224,600
4.14	SWITCHGEAR	480V LOW VOLTAGE (33F/G), SWITCHGEAR WITH 1-4000A BRKR & 3-600A BRKR & 1-4000A TIE BRKR-2-5 VER SEC	EST	5	EA	39200		196,000	0	230.00	1,323	EHEA	79.16	104,700	300,700
4.15	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
4.16	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
4.17	MIMIC PANELS		EST	1	EA	17500		17,500	0	12.00	14	WIRE	98.84	1,400	18,900

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4.18	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	8HR-400A, 480V	EST	1	LT	36050		36,100	0	120.00	138	WIRE	98.84	13,600	49,700
4.19	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
4.20	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
4.21	RACEWAY, CABLE TRAY, & CONDUIT							0	296,400					1,429,900	1,726,300
	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		1.46	0	12,000	0.08	745	WIRE	98.84	73,600	85,600
4.22	HIGH VOLTAGE POWER CABLE & TERMINATION	1/C # 500KCMIL-15KV, 12000' UNIT 2 + 3600' LIME UNLOAD	EST	15,600	LF		9.27	0	144,600	0.23	4,126	WIRE	98.84	407,800	552,400
4.23	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
4.24	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
4.25	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
4.26	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	FORM	99.43	152,100	213,200

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	FREIGHT ON MATERIAL - % of ACCT NO. 90			5.0	%				60,015						60,015
	FREIGHT ON EQUIPMENT - % of ACCT NO. 90			5.0	%			440,715							440,715
	SALES TAX - NOT INCLUDED														0
	SCAFFOLDING - % OF ACCT NO. 90			5.0	%				60,015					339,095	399,110
	CONTRACTOR'S GENERAL AND ADMINISTRATION EXPENSE & PROFIT- % of ACCT NO. 90			15	%				180,045					1,017,285	1,197,330
	SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS							440,700	306,100					2,530,200	3,277,000
	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	LIME SLAKER BUILDING						9,255,000	1,506,400					9,312,100	20,073,500
6.0	BYPRODUCT WASTE & FLY ASH HANDLING SYSTEMS														0
6.1	BYPRODUCT WASTE ASH HANDLING - MECHANICAL EQUIPMENT	INCLUDES PNEUMATIC HANDLING SYSTEM, THREE PRESSURE BLOWERS, ONE BIN VENT FILTER, ASH UNLOADING SYSTEM	EST	1	LT	2,047,000		2,047,000	0	13500.00	15,525	MECH	88.89	1,380,000	3,427,000
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	240,900					759,100	1,142,800
	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	4" SS, SCHEDULE 40, WELDED	EST	300	LF		68.3	0	20,500	1.82	628	SPNG	94.41	59,300	79,800
	LARGE BORE PIPING	6" CS, SCH 40 WELDED	EST	400	LF		41.7	0	16,700	1.61	741	SPNG	94.41	69,900	86,600
	LARGE BORE PIPING	8" HDPE (UNDERGROUND)	EST	800	LF		14.1	0	11,300	0.83	764	SPNG	94.41	72,100	83,400
	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	1,600	LF		72.8	0	116,500	1.45	2,668	SPNG	94.41	251,900	368,400
	SMALL BORE PIPING	2" CS, SCH 80 WELDED	EST	100	LF		22.20	0	2,200	1.26	145	SPNG	94.41	13,700	15,900
	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	200	LF		33.70	0	6,700	1.32	304	SPNG	94.41	28,700	35,400
	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	170	EA		75.00	0	12,800	2.50	489	MECH	88.89	43,400	56,200

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6.6	BYPRODUCT WASTE SILO	CONCRETE SILO 60' DIA X 98' H - 3475 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	SDA RECYCLE SILO	INCLUDED WITH OEM EQUIPMENT													
6.8	SDA FLY ASH SILO	46T STEEL -STORAGE SILO, 15' DIA X 19' H						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 SILO - FOUNDATIONS							0	144,100					237,800	381,900
	EXCAVATION / BACKFILL		EST	980	CY			0	0	0.15	169	EXFD	90.00	15,200	15,200
	REINFORCING		EST	60.0	TN		1,150.00	0	69,000	20.00	1,380	REIN	78.27	108,000	177,000
	FORMWORK		EST	970	SF		2.50	0	2,400	0.14	156	FORM	99.43	15,500	17,900
	CONCRETE		EST	600	CY		105.00	0	63,000	1.50	1,035	CONP	79.64	82,400	145,400
	MUD MAT		EST	35	CY		105.00	0	3,700	1.50	60	CONP	79.64	4,800	8,500
	EMBEDDED STEEL		EST	2,400	LB		2.50	0	6,000	0.06	166	CARP	71.88	11,900	17,900
6.10	FLY ASH SILO - FOUNDATIONS							0	10,800					21,000	31,800
	EXCAVATION / BACKFILL		EST	160	CY			0	0	0.15	28	EXFD	90.00	2,500	2,500
	REINFORCING		EST	5.0	TN		1,150.00	0	5,800	20.00	115	REIN	78.27	9,000	14,800
	FORMWORK		EST	200	SF		2.50	0	500	0.14	32	FORM	99.43	3,200	3,700
	CONCRETE		EST	30	CY		105.00	0	3,200	1.50	52	CONP	79.64	4,100	7,300
	MUD MAT		EST	5	CY		105.00	0	500	1.50	9	CONP	79.64	700	1,200
	EMBEDDED STEEL		EST	300	LB		2.50	0	800	0.06	21	CARP	71.88	1,500	2,300
6.11	FLY ASH BLOWER AND ELECTRICAL BUILDING - FOUNDATIONS							0	49,600					93,200	142,800
	EXCAVATION / BACKFILL		EST	578	CY			0	0	0.15	100	EXFD	90.00	9,000	9,000
	REINFORCING		EST	17	TN		1,150.00	0	19,600	20.00	391	REIN	78.27	30,600	50,200
	FORMWORK		EST	890	SF		2.50	0	2,200	0.14	143	FORM	99.43	14,200	16,400
	CONCRETE		EST	222	CY		105.00	0	23,300	1.50	383	CONP	79.64	30,500	53,800
	MUD MAT		EST	0	CY		105.00	0	0	1.50	0	CONP	79.64	0	0
	EMBEDDED STEEL		EST	1,800	LB		2.50	0	4,500	0.06	124	CARP	71.88	8,900	13,400
6.12	FLY ASH BLOWER AND ELECTRICAL BUILDING	90' L X 30' W X 25' H						28,000	244,500					16,200	288,700
	PREENGINEERED 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	10T PACKAGED UNIT. INCLUDES ALLOWANCE FOR CONCRETE PAD AND ELECTRICAL WORK	EST	1	LT	28000	15000	28,000	15,000	0.00	200	HVAC	81.24	16,200	59,200
6.13	RECYCLE ASH BUILDING - FOUNDATIONS							0	234,300					373,100	607,400
	EXCAVATION / BACKFILL		EST	950	CY			0	0	0.15	164	EXFD	90.00	14,700	14,700
	REINFORCING		EST	90	TN		1,150.00	0	103,500	20.00	2,070	REIN	78.27	162,000	265,500
	FORMWORK		EST	1,320	SF		2.50	0	3,300	0.14	213	FORM	99.43	21,100	24,400
	CONCRETE		EST	1,000	CY		105.00	0	105,000	1.50	1,725	CONP	79.64	137,400	242,400
	MUD MAT		EST	95	CY		105.00	0	10,000	1.50	164	CONP	79.64	13,100	23,100
	EMBEDDED STEEL		EST	5,000	LB		2.50	0	12,500	0.06	345	CARP	71.88	24,800	37,300
6.14	RECYCLE ASH BUILDING	100' L X 65' W X 50' H						58,500	1,306,700					1,194,500	2,559,700
	STRUCTURAL STEEL		EST	180	TN		2650	0	477,000	16.00	3,312	STST	105.71	350,100	827,100
	INSULATED METAL SIDING		EST	16,500	SF		12	0	198,000	0.11	2,087	SDNG	93.41	195,000	393,000
	ROLLING OVERHEAD DOOR		EST	640	SF		27	0	17,300	0.25	184	CARP	71.88	13,200	30,500
	METAL ROOF DECKING		EST	6,500	SF		2.7	0	17,600	0.06	449	STST	105.71	47,400	65,000

[illegible]

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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
7.6	SDA SUPERSTRUCTURE							75,000	764,900					1,227,300	2,067,200
	PENTHOUSE FOR SDA'S	TOTAL SUPPORT STEEL AND PURLINS	EST	138	TN		2650.0	0	364,400	30.00	4,744	STST	105.71	501,500	865,900
	ROOFING FOR SDA PENTHOUSE	STANDING SEAM TYPE	EST	10,000	SF		18.00	0	180,000	0.22	2,530	ROOF	69.12	174,900	354,900
	SIDING		EST	13,000	SF		12.00	0	156,000	0.11	1,645	SDNG	93.41	153,600	309,600
	CONCRETE FLOOR FOR PENTHOUSE	INCLUDES DECKING AND FORMWORK	EST	150	CY		230.00	0	34,500	7.50	1,294	CONP	79.64	103,000	137,500
	H&V		EST	3	LT	25000	10000	75,000	30,000	1050.00	3,623	HVAC	81.24	294,300	399,300
7.7	SDA BOTTOM ENCLOSURE - SUPPORT STEEL, GIRTS AND SIDING	TOTAL FOR THREE ABSORBERS	EST	9,053	SF		40.00	0	362,100	0.35	3,644	STST	105.71	385,200	747,300
7.8	SDA SHELL / ROOF INSULATION	61,000 SF. SUBCONTRACT COST INCLUDES LABOR	EST	61,000	SF	30		1,830,000	0		0	DINS	81.75	0	1,830,000
7.9	SDA - SUPPORT STEEL & ACCESS GALLERY							0	711,000					1,884,100	2,595,100
	SUPPORT STEEL	MATERIAL INCLUDED WITH OEM EQUIPMENT	EST	435	TN			0	0	24.00	12,006	STST	105.71	1,269,200	1,269,200
	ACCESS GALLERY		EST	15,800	SF		45.00	0	711,000	0.40	7,268	GALL	84.61	614,900	1,325,900
7.10	EXPANSION JOINTS		EST	850	LF		230.00	0	195,500	2.00	1,955	MECH	88.89	173,800	369,300
7.11	DUCTWORK							0	6,175,000					15,736,600	21,911,600
	SPRAY DRYER INLET	INCLUDES INTERNAL BRACING AND TURNING VANES	EST	1,900	TN		3,250.00	0	6,175,000	60.00	131,100	FLDU	107.96	14,153,600	20,328,600
	SPRAY DRYER OUTLET TO FABRIC FILTER INLET	INSTALLATION ONLY - MATERIAL INCLUDED WITH OEM EQUIPMENT	EST	213	TN			0	0	60.00	14,663	FLDU	107.96	1,583,000	1,583,000
7.12	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
7.13	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
7.14	CONCRETE PIT FOR ELEVATOR		EST	12	CY		230.00	0	2,800	7.50	104	CONP	79.64	8,200	11,000
7.15	SPRAY DRYER ABSORBER - FOUNDATIONS	TOTAL FOR THREE TOWERS						0	1,678,600					2,975,600	4,654,200
	EXCAVATION / BACKFILL		EST	16,000	CY			0	0	0.15	2,760	EXFD	90.00	248,400	248,400
	REINFORCING		EST	600	TN		1,150.00	0	690,000	20.00	13,800	REIN	78.27	1,080,100	1,770,100
	FORMWORK		EST	23,000	SF		2.50	0	57,500	0.14	3,703	FORM	99.43	368,200	425,700
	CONCRETE		EST	7,500	CY		105.00	0	787,500	1.50	12,938	CONP	79.64	1,030,300	1,817,800
	MUD MAT		EST	510	CY		105.00	0	53,600	1.50	880	CONP	79.64	70,100	123,700
	EMBEDDED STEEL		EST	36,000	LB		2.50	0	90,000	0.06	2,484	CARP	71.88	178,500	268,500
7.16	SDA PDC - FOUNDATION							0	85,600					152,700	238,300
	EXCAVATION / BACKFILL		EST	750	CY			0	0	0.15	129	EXFD	90.00	11,600	11,600
	REINFORCING		EST	31	TN		1,150.00	0	35,200	20.00	704	REIN	78.27	55,100	90,300
	FORMWORK		EST	1,250	SF		2.50	0	3,100	0.14	201	FORM	99.43	20,000	23,100
	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	2,500	LB		2.50	0	6,300	0.06	173	CARP	71.88	12,400	18,700
7.17	SDA PDC BUILDING	60' L X 40' W X 13' H. SUBCONTRACT PRICE INCLUDES LABOR	EST	2,400	SF		500.00	0	1,200,000	0.00	0	STST	105.71	0	1,200,000
7.18	FOUNDATIONS FOR SUPPORT STEEL							0	69,000					126,000	195,000
	EXCAVATION / BACKFILL		EST	784	CY			0	0	0.15	135	EXFD	90.00	12,200	12,200
	REINFORCING		EST	23	TN		1,150.00	0	26,100	20.00	522	REIN	78.27	40,900	67,000
	FORMWORK		EST	1,125	SF		2.50	0	2,800	0.14	181	FORM	99.43	18,000	20,800
	CONCRETE		EST	303	CY		105.00	0	31,800	1.50	522	CONP	79.64	41,600	73,400
	MUD MAT		EST	43	CY		105.00	0	4,500	1.50	73	CONP	79.64	5,800	10,300
	EMBEDDED STEEL		EST	1,513	LB		2.50	0	3,800	0.06	104	CARP	71.88	7,500	11,300

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7.19	TRANSFORMERS							770,000	0					145,600	915,600
	SST TRANSFORMERS: 21A & 21B	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
7.20	SWITCHGEAR							1,082,000	0		0			569,000	1,651,000
	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
	4.16 KV MEDIUM VOLTAGE (21A/B)	PRICE PER SECTION	EST	10	EA	39200		392,000	0	280.00	3,220	EHEA	79.16	254,900	646,900
	13KV MEDIUM VOLTAGE	PRICE PER SECTION	EST	10	EA	50000		500,000	0	230.00	2,645	EHEA	79.16	209,400	709,400
7.21	CABLE BUS & TERMINATIONS							1,082,500	35,800		0			1,853,300	2,971,600
	15KV CABLE BUS TO 13F/G)	CABLE BUS	EST	2,000	FT	466		932,000	0	6.75	15,525	WIRE	98.84	1,534,500	2,466,500
	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
7.22	MCC							185,400	0		0			8,200	193,600
	480V MCC	PER LINE UP	EST	6	EA	30900		185,400	0	12.00	83	WIRE	98.84	8,200	193,600
7.23	MIMIC PANELS		EST	1	EA	17500		17,500	0	40.00	46	WIRE	98.84	4,500	22,000
7.24	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
7.25	LIGHTING/ TRANSFORMERS & PANELS							156,000	150,000		0			159,100	465,100
	LIGHT FIXTURES		EST	200	EA		750	0	150,000	4.00	920	WIRE	98.84	90,900	240,900
	45KVA, 480V, 3 PHASE	LOW VOLTAGE XFMR	EST	6	EA	10000		60,000	0	40.00	276	WIRE	98.84	27,300	87,300
	37.7KVA, 480V, 3 PHASE	LOW VOLTAGE XFMR	EST	6	EA	7500		45,000	0	32.00	221	WIRE	98.84	21,800	66,800
	200A, 480-277V, 3 PHASE- RECEPTACLE PANEL	INCLUDING BREAKERS	EST	6	EA	5000		30,000	0	16.00	110	WIRE	98.84	10,900	40,900
	200A, 277V-120V, 3 PHASE- LIGHTING PANELS	INCLUDING BREAKERS	EST	6	EA	3500		21,000	0	12.00	83	WIRE	98.84	8,200	29,200
7.26	EMERGENCY POWER SYSTEM							108,300	0		0			24,400	132,700
	DC PANEL BOARDD		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	8HR-400A, 480V	EST	1	LT	36050		36,100	0	120.00	138	WIRE	98.84	13,600	49,700
7.27	RACEWAY, CABLE TRAY, & CONDUIT							0	1,574,900		0			7,540,300	9,115,200
	12" X 6" AL CABLE TRAY	INCLUDING SUPPORT & FITTINGS	EST	5,000	LF		18.25	0	91,300	1.10	6,325	WIRE	98.84	625,200	716,500

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	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	9,320	LF		27.10	0	252,600	1.75	18,757	WIRE	98.84	1,853,900	2,106,500
	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	28,000	LF		4.44	0	124,300	0.24	7,696	WIRE	98.84	760,700	885,000
	3/4" RGS CONDUIT	INCLUDING SUPPORT & FITTINGS	EST	47,000	LF		1.46	0	68,600	0.08	4,270	WIRE	98.84	422,000	490,600
7.28	HIGH VOLTAGE POWER CABLE & TERMINATION	1/C # 500KCMIL- 15KV	EST	5,750	LF		9.27	0	53,300	0.23	1,521	WIRE	98.84	150,300	203,600
7.29	MEDIUM VOLTAGE POWER CABLE & TERMINATION							0	82,500		0			243,200	325,700
	1/C # 500KCMIL - 5KV		EST	8,100	LF		9.27	0	75,100	0.23	2,142	WIRE	98.84	211,800	286,900
	1/C # 350KCMIL-5KV		EST	1,200	LF		6.13	0	7,400	0.23	317	WIRE	98.84	31,400	38,800
7.30	LOW VOLTAGE POWER CABLE & TERMINATION							0	409,900		0			537,400	947,300
	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	54,600	LF		7.22	0	394,200	0.08	4,960	WIRE	98.84	490,300	884,500
7.31	CONTROL & INSTRUMENT CABLE							0	99,200		0			278,400	377,600
	#14, #16 & PR # 20 & SHLD WIRE		EST	31,000	LF		3.20	0	99,200	0.08	2,816	WIRE	98.84	278,400	377,600
7.32	DUCT BANK							0	137,900	0.05	0			364,600	502,500
	DUCT BANK WITH 6-5" & 6-3" CONDUITS	5.2' H X 2.38' W	EST	250	LF		265.88	0	66,500	6.01	1,728	FORM	99.43	171,800	238,300
	DUCT BANK WITH 6-5" & 3-3" CONDUITS	5.2' H X 2.38' W	EST	300	LF		238.05	0	71,400	5.62	1,939	FORM	99.43	192,800	264,200
7.33	FOUNDATION FOR TRANSFORMERS							0	49,800		0			145,800	195,600
	FOR 21A & 21B		EST	178	CY		250	0	44,500	8.00	1,638	CONP	79.64	130,400	174,900
	FOR 31F, 31G		EST	21.0	CY		250	0	5,300	8.00	193	CONP	79.64	15,400	20,700
7.34	TRANSFORMER FIRE WALLS	FOR 21A & 21B	EST	15	CY		230	0	3,500	7.00	121	CONP	79.64	9,600	13,100
90.00	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS							45,252,500	18,689,200		698,734			65,947,400	129,889,100
	OTHER DIRECT & CONSTRUCTION INDIRECT COSTS														
	ADDITIONAL CRANE ALLOWANCE	2 CRANES		9	MN	90,000.00		810,000	0	1440.00	14,904	MECH	88.89	1,523,520	2,333,520
	MOBILIZATION / DEMOBILIZATION - INCLUDED IN WAGE RATES ABOVE														0

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	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					79,200	120,700
	EXCAVATION / BACKFILL		EST	404	CY			0	0	0.15	70	EXFD	90.00	6,300	6,300
	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	84,600					276,700	361,300
	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		1.46	0	4,400	0.08	273	WIRE	98.84	26900	31,300
	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	FORM	99.43	55600	84,200
8.8	LOW VOLTAGE POWER CABLE & TERMINATION							0	14,400					18,000	32,400
	#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							2,929,000	321,300		18,831			1,726,800	4,977,100
	OTHER DIRECT & CONSTRUCTION INDIRECT COSTS														
	ADDITIONAL CRANE ALLOWANCE								0					0	0

				AEP										Estimate No.:	30711B
				BIG SANDY UNIT 2										Project No.:	12721-000
				FGD PROJECT - DRY FGD BASE EST (ESP)-1A - 3.0 LB/MM BTU										Date:	9/10/2010
				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			
<u>Account No.</u>	<u>Item Description</u>	<u>Scope Definition</u>	<u>Cost Type</u>	<u>Quantity</u>	<u>Unit of Measure</u>	<u>Unit Equip.Cost</u>	<u>Unit Material Cost</u>	<u>Total Equipment Cost</u>	<u>Total Material Cost</u>	<u>Unit Man-hours (Base)</u>	<u>Total Man-hours (w/ productivity)</u>	<u>Crew Code</u>	<u>Crew Wage Rate</u>	<u>Total Construction & Erection Cost</u>	<u>Total Projected Cost</u>
	MOBILIZATION / DEMOBILIZATION - INCLUDED IN WAGE RATES ABOVE														0
	COST DUE TO OVERTIME WORKING 5 X10 HOUR DAYS			1	LS										
	COST DUE TO OVERTIME INEFFICIENCY - SPECIFY % INEFFICIENCY			8.00	%						1,637		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	%						2,047			143,591	143,591
	PER DIEM	NONE		0.00	HR						22,516			0	0
	CONSUMABLES - % of ACCT NO. 90			0.5	%				1,607					8,634	10,241
	FREIGHT ON MATERIAL - % of ACCT NO. 90			5.0	%				16,065						16,065
	FREIGHT ON EQUIPMENT - % of ACCT NO. 90			5.0	%			146,450							146,450
	SALES TAX - NOT INCLUDED														0
	SCAFFOLDING - % OF ACCT NO. 90			5.0	%				16,065					86,340	102,405
	CONTRACTOR'S GENERAL AND ADMINISTRATION EXPENSE & PROFIT- % of ACCT NO. 90			15	%				48,195					259,020	307,215
	SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS							146,500	81,900					634,600	863,000
	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	ACTIVATED CARBON INJECTION SYSTEM						3,075,500	403,200					2,361,400	5,840,100
9.0	COMPRESSED AIR SYSTEM														0
9.1	AIR COMPRESSOR & AUXILIARIES							664,000	0					155,400	819,400
	AIR COMPRESSOR	3000 CFM, OIL FREE	EST	2	EA	275000		550,000	0	650.00	1,495	MECH	88.89	132,900	682,900
	DRYERS	DESSICANT TYPE, HEATED AIR	EST	2	EA	45000		90,000	0	80.00	184	MECH	88.89	16,400	106,400
	RECEIVERS	2500 GAL WITH SAFETY RELIEF VALVE AND PRESSURE GAUGE	EST	2	EA	12000		24,000	0	30.00	69	MECH	88.89	6,100	30,100
9.2	PIPING - MECHANICAL							320,600	399,200					1,096,000	1,815,800
	LARGE BORE PIPING	4" CS, SCHEDULE 40, WELDED	EST	500	LF		23.0	0	11,500	1.48	851	SPNG	94.41	80,300	91,800
	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	EST	500	LF		68.3	0	34,200	1.82	1,047	SPNG	94.41	98,800	133,000
	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	EST	700	LF		179.9	0	125,900	2.49	2,004	SPNG	94.41	189,200	315,100
	SMALL BORE PIPING	2" CS, SCH 80 WELDED, UNDERGROUND WRAPPED	EST	700	LF		22.20	0	15,500	1.26	1,014	SPNG	94.41	95,800	111,300
	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
9.3	AIR COMPRESSOR BUILDING - FOUNDATIONS							0	96,100					174,000	270,100
	EXCAVATION / BACKFILL		EST	950	CY			0	0	0.15	164	EXFD	90.00	14,700	14,700
	REINFORCING		EST	35	TN		1,150.00	0	40,300	20.00	805	REIN	78.27	63,000	103,300

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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
	FORMWORK		EST	1,600	SF		2.50	0	4,000	0.14	258	FORM	99.43	25,600	29,600
	CONCRETE		EST	450	CY		105.00	0	47,300	1.50	776	CONP	79.64	61,800	109,100
	MUD MAT		EST	0	CY		105.00	0	0	1.50	0	CONP	79.64	0	0
	EMBEDDED STEEL		EST	1,800	LB		2.50	0	4,500	0.06	124	CARP	71.88	8,900	13,400
9.4	AIR COMPRESSOR BUILDING	100' L X 600' W X 20' H						0	510,000					0	510,000
	PREENGINEERED BUILDING INCLUDING H&V AND LIGHTING	SUBCONTRACT PRICE, INCLUDES LABOR	EST	6,000	SF		85	0	510,000	0.00	0	STST	105.71	0	510,000
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 ABSORBER ISLAND 7.0													
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
90.00	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS							1,000,100	1,015,800		15,768			1,447,700	3,463,600
	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										
	COST DUE TO OVERTIME INEFFICIENCY - SPECIFY % INEFFICIENCY			8.00	%						1,371		83.48	114,000	114,000
	COST DUE TO OVERTIME PAY @1.5 TIMES OVERTIME PAY RATE - SPECIFY % ADDITIONAL HOURS PAID ON ACTUAL HOURS WORKED			10.00	%						1,714			120,233	120,233
	PER DIEM	NONE		0.00	HR						18,853			0	0
	CONSUMABLES - % of ACCT NO. 90			0.5	%				5,079					7,239	12,318
	FREIGHT ON MATERIAL - % of ACCT NO. 90			5.0	%				50,790						50,790
	FREIGHT ON EQUIPMENT - % of ACCT NO. 90			5.0	%			50,005							50,005
	SALES TAX - NOT INCLUDED													0	
	SCAFFOLDING - % OF ACCT NO. 90			5.0	%				50,790					72,385	123,175
	CONTRACTOR'S GENERAL AND ADMINISTRATION EXPENSE & PROFIT- % of ACCT NO. 90			15	%				152,370					217,155	369,525
	SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS							50,000	259,000					531,000	840,000
	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	COMPRESSED AIR SYSTEM						1,050,100	1,274,800					1,978,700	4,303,600
10.0	SERVICE WATER SYSTEM														
10.1	PUMPS							216,000	0					94,100	310,100
	SERVICE WATER PUMPS	4000 GPM, 200 HP	EST	2	EA	60000		120,000	0	240.00	552	MECH	88.89	49,100	169,100
	MAKE UP WATER PUMPS	4000 GPM, 100 HP	EST	2	EA	48000		96,000	0	220.00	506	MECH	88.89	45,000	141,000
10.2	PIPING - MECHANICAL		EST	1	LT			183,400	624,600					1,092,000	1,900,000
	LARGE BORE PIPING	4" SS, SCHEDULE 40, WELDED	EST	600	LF		68.3	0	41,000	1.82	1,256	SPNG	94.41	118,600	159,600
	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" SS, SCHEDULE 40, WELDED	EST	300	LF		179.9	0	54,000	2.49	859	SPNG	94.41	81,100	135,100
	LARGE BORE PIPING	12" SS, SCHEDULE 40, WELDED	EST	1,000	LF		353.8	0	353,800	4.12	4,738	SPNG	94.41	447,300	801,100
	LARGE BORE PIPING	14" HDPE (UNDERGROUND)	EST	500	LF		65.5	0	32,800	1.02	587	SPNG	94.41	55,400	88,200

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	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	16	EA	4,700		75,200	0	12.96	238	SPNG	94.41	22,500	97,700
	VALVE	8" GATE, 150 #, SS, WELDED	EST	6	EA	6,240		37,400	0	15.96	110	SPNG	94.41	10,400	47,800
	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	258	EA		125.00	0	32,300	3.00	891	MECH	88.89	79,200	111,500
	EXCAVATION / BACKFILL	FOR UNDERGROUND PIPING	EST	833	CY			0		0.20	192	EXFD	90.00	17,300	17,300
	BEDDING	FOR UNDERGROUND PIPING	EST	111	CY		35.0	0	3,900	0.25	32	EXFD	90.00	2,900	6,800
10.3	PIPING - FIRE PROTECTION SYSTEM		EST	1	LT			181,200	284,600	89.55	7,176		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	234,000					0	234,000
	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
	MAKE UP WATER TANK	40,000 GAL, CS, 20' DIA X 20' - SUBCONTRACT PRICE INCLUDES LABOR WITH EXTERIOR PRIMED AND FIELD PAINTED	EST	1	EA	114000.0		0	114,000	0.00	0	TANK	89.16	0	114,000
10.5	SERVICE WATER TANK & PUMP - FOUNDATIONS							0	17,300					35,000	52,300
	EXCAVATION / BACKFILL		EST	296	CY			0	0	0.15	51	EXFD	90.00	4,600	4,600
	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	MAKE UP WATER TANK & PUMP - FOUNDATIONS							0	22,200					44,400	66,600
	EXCAVATION / BACKFILL		EST	325	CY			0	0	0.15	56	EXFD	90.00	5,000	5,000
	REINFORCING		EST	11.0	TN		1,150.00	0	12,700	20.00	253	REIN	78.27	19,800	32,500
	FORMWORK		EST	519	SF		2.50	0	1,300	0.14	84	FORM	99.43	8,300	9,600
	CONCRETE		EST	65	CY		105.00	0	6,800	1.50	112	CONP	79.64	8,900	15,700
	MUD MAT		EST	6	CY		105.00	0	600	1.50	10	CONP	79.64	800	1,400
	EMBEDDED STEEL		EST	324	LB		2.50	0	800	0.06	22	CARP	71.88	1,600	2,400
10.7	ELECTRICAL	INCLUDED IN ABSORBER ISLAND 7.0													
90.00	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS							580,600	1,182,700		20,823			1,938,800	3,702,100

[illegible]

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90.00	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS							129,500	214,100		5,969			557,900	901,500
	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										
	COST DUE TO OVERTIME INEFFICIENCY - SPECIFY % INEFFICIENCY			8.00	%						519		83.48	43,000	43,000
	COST DUE TO OVERTIME PAY @1.5 TIMES OVERTIME PAY RATE - SPECIFY % ADDITIONAL HOURS PAID ON ACTUAL HOURS WORKED			10.00	%						649			45,516	45,516
	PER DIEM	NONE		0.00	HR						7,137			0	0
	CONSUMABLES - % of ACCT NO. 90			0.5	%				1,071					2,790	3,860
	FREIGHT ON MATERIAL - % of ACCT NO. 90			5.0	%				10,705						10,705
	FREIGHT ON EQUIPMENT - % of ACCT NO. 90			5.0	%			6,475							6,475
	SALES TAX - NOT INCLUDED														0
	SCAFFOLDING - % OF ACCT NO. 90			5.0	%				10,705					27,895	38,600
	CONTRACTOR'S GENERAL AND ADMINISTRATION EXPENSE & PROFIT- % of ACCT NO. 90			15	%				32,115					83,685	115,800
	SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS							6,500	54,600					202,900	264,000
	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	POTABLE WATER SYSTEM						135,975	268,696					760,786	1,165,456
12.0	FGD SUBSTATION														
12.1	TRANSFORMERS							1,560,500	0					273,100	1,833,600
	FGD SUBSTATION-AUX TRANSFORMERS: 11A & 11B	138KV-13.8KV- 2 WINDING XFMR 50/66.7-50MVA (DELTA TO STAR)	EST	2	EA	695250		1,390,500	0	1200.00	2,760	EHEA	79.16	218,500	1,609,000
	SUS TRANSFORMERS: 32F, 32G	13.8KV-480V,3PHASE, 3 WINDING XFMR 2/2.24/3- 2MVA (DELTA TO DELTA)	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					131,700	204,900
	EXCAVATION / BACKFILL		EST	700	CY			0	0	0.15	121	EXFD	90.00	10,900	10,900
	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	STRUCTURE STEEL	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							930,000	0					136,200	1,066,200
	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
	MCC 1200A, 480v, 3 PHASE	INCLUDING STARTERS & DIS. SW	EST	4	EA	30000		120,000	0	16.00	74	WIRE	98.84	7,300	127,300
	EXISTING SCR SWITCHGEAR MODIFICATION	TURNKEY INCLUDING INSTALLATION & MATERIAL (EATON QUOTE 7/16/10)	Q	1	LT	120,000		120,000	0	750.00	863	WIRE	98.84	85,200	205,200
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

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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			
<u>Account No.</u>	<u>Item Description</u>	<u>Scope Definition</u>	<u>Cost Type</u>	<u>Quantity</u>	<u>Unit of Measure</u>	<u>Unit Equip.Cost</u>	<u>Unit Material Cost</u>	<u>Total Equipment Cost</u>	<u>Total Material Cost</u>	<u>Unit Man-hours (Base)</u>	<u>Total Man-hours (w/ productivity)</u>	<u>Crew Code</u>	<u>Crew Wage Rate</u>	<u>Total Construction & Erection Cost</u>	<u>Total Projected Cost</u>
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							117,500	0					13,600	131,100
	RELAY PANELS & INTERLOCK	ALLOWANCE	EST	1	LT	100000		100,000	0	80.00	92	WIRE	98.84	9,100	109,100
	MIMIC PANELS		EST	1	EA	17500		17,500	0	40.00	46	WIRE	98.84	4,500	22,000
12.9	UPS SYSTEM							108,300	0					24,400	132,700
	DC PANEL BOABRD		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
12.10	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
12.11	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
12.12	OUTDOOR LIGHTING	NEW AUX YARD LIGHTING - ALLOWANCE	EST	1	LT	25000		25,000	0	500.00	575	WIRE	98.84	56,800	81,800
12.13	RACEWAY, CABLE TRAY, & CONDUIT							0	372,900					1,787,900	2,160,800
	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		1.46	0	14,600	0.08	909	WIRE	98.84	89,800	104,400
12.14	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
12.15	LOW VOLTAGE POWER CABLE & TERMINATION							0	112,200					194,700	306,900
	3/C # 500KCMIL- 600V		EST	1,200	LF		26.12	0	31,300	0.69	952	WIRE	98.84	94,100	125,400
	#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

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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
12.16	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
12.17	FOUNDATION FOR AUX TRANSFORMER							0	70,200					183,600	253,800
	EXCAVATION / BACKFILL		EST	1,000	CY			0	0	0.15	173	EXFD	90.00	15,500	15,500
	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
12.18	FIREWALL FOR TRANSFORMERS							0	3,000					5,200	8,200
	REINFORCING		EST	1.0	TN		1,150.00	0	1,200	20.00	23	REIN	78.27	1,800	3,000
	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	1.50	26	CONP	79.64	2,100	3,700
90.00	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS							3,498,200	727,500		37,494			3,559,000	7,784,700
	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										
	COST DUE TO OVERTIME INEFFICIENCY - SPECIFY % INEFFICIENCY			8.00	%						3,260		83.48	272,000	272,000
	COST DUE TO OVERTIME PAY @1.5 TIMES OVERTIME PAY RATE - SPECIFY % ADDITIONAL HOURS PAID ON ACTUAL HOURS WORKED			10.00	%						4,075			285,898	285,898
	PER DIEM	NONE		0.00	HR						44,830			0	0
	CONSUMABLES - % of ACCT NO. 90			0.5	%				3,638					17,795	21,433
	FREIGHT ON MATERIAL - % of ACCT NO. 90			5.0	%				36,375						36,375
	FREIGHT ON EQUIPMENT - % of ACCT NO. 90			5.0	%			174,910							174,910
	SALES TAX - NOT INCLUDED														0
	SCAFFOLDING - % OF ACCT NO. 90			5.0	%				36,375					177,950	214,325
	CONTRACTOR'S GENERAL AND ADMINISTRATION EXPENSE & PROFIT- % of ACCT NO. 90			15	%				109,125					533,850	642,975
	SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS							174,900	185,500					1,287,493	1,647,900
	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	FGD SUBSTATION						3,673,100	913,000					4,846,500	9,432,600
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 MANDAYS @ \$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	709,500					930,500	1,640,000
	LOCALLY MOUNTED INSTRUMENTS		EST	300	EA		2200	0	660,000	20.00	6,900	INEL	88.43	610,200	1,270,200
	INSTRUMENT RACKS	INCLUDED WITH INSTRUMENTS													
	INSTRUMENT TUBING	ALLOWANCE	EST	9,000	LF		5.5	0	49,500	0.35	3,623	INEL	88.43	320,300	369,800
90.00	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS							2,700,000	709,500		19,723			1,744,100	5,153,600
	OTHER DIRECT & CONSTRUCTION INDIRECT COSTS														
	ADDITIONAL CRANE ALLOWANCE							0						0	0
	MOBILIZATION / DEMOBILIZATION - INCLUDED IN WAGE RATES ABOVE														0

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<u>Account No.</u>	<u>Item Description</u>	<u>Scope Definition</u>	<u>Cost Type</u>	<u>Quantity</u>	<u>Unit of Measure</u>	<u>Unit Equip. Cost</u>	<u>Unit Material Cost</u>	<u>Total Equipment Cost</u>	<u>Total Material Cost</u>	<u>Unit Man-hours (Base)</u>	<u>Total Man-hours (w/ productivity)</u>	<u>Crew Code</u>	<u>Crew Wage Rate</u>	<u>Total Construction & Erection Cost</u>	<u>Total Projected Cost</u>
	COST DUE TO OVERTIME WORKING 5 X10 HOUR DAYS			1	LS										
	COST DUE TO OVERTIME INEFFICIENCY - SPECIFY % INEFFICIENCY			8.00	%						1,715		83.48	143,000	143,000
	COST DUE TO OVERTIME PAY @1.5 TIMES OVERTIME PAY RATE - SPECIFY % ADDITIONAL HOURS PAID ON ACTUAL HOURS WORKED			10.00	%						2,144			150,387	150,387
	PER DIEM	NONE		0.00	HR						23,581			0	0
	CONSUMABLES - % of ACCT NO. 90			0.5	%				3,548					8,721	12,268
	FREIGHT ON MATERIAL - % of ACCT NO. 90			5.0	%				35,475						35,475
	FREIGHT ON EQUIPMENT - % of ACCT NO. 90			5.0	%			135,000							135,000
	SALES TAX - NOT INCLUDED														0
	SCAFFOLDING - % OF ACCT NO. 90			5.0	%				35,475					87,205	122,680
	CONTRACTOR'S GENERAL AND ADMINISTRATION EXPENSE & PROFIT- % of ACCT NO. 90			15	%				106,425					261,615	368,040
	SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS							135,000	180,900					650,900	966,800
	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	FGD DCS SYSTEM						2,835,000	890,400					2,395,000	6,120,400
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
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
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' SUBBALLAST, 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 TRACKWORK EXTENSION						0	33,200					67,700	100,900
	EXCAVATION / BACKFILL		EST	170	CY			0	0	0.15	29	EXFD	90.00	2,600	2,600
	REINFORCING		EST	13	TN		1,150.00	0	14,400	20.00	288	REIN	78.27	22,500	36,900

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				BIG SANDY UNIT 2										Project No.:	12721-000
				FGD PROJECT - DRY FGD BASE EST (ESP)-1A - 3.0 LB/MM BTU										Date:	9/10/2010
				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
	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		23,607			2,080,400	4,337,100
	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										
	COST DUE TO OVERTIME INEFFICIENCY - SPECIFY % INEFFICIENCY			8.00	%						2,053		83.48	171,000	171,000
	COST DUE TO OVERTIME PAY @1.5 TIMES OVERTIME PAY RATE - SPECIFY % ADDITIONAL HOURS PAID ON ACTUAL HOURS WORKED			10.00	%						2,566			180,008	180,008
	PER DIEM	NONE		0.00	HR						28,226			0	0
	CONSUMABLES - % of ACCT NO. 90			0.5	%				10,221					10,402	20,623
	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
	SALES TAX - NOT INCLUDED													0	
	SCAFFOLDING - % OF ACCT NO. 90			5.0	%				102,210					104,020	206,230
	CONTRACTOR'S GENERAL AND ADMINISTRATION EXPENSE & PROFIT- % of ACCT NO. 90			15	%				306,630					312,060	618,690
	SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS							10,600	521,300					777,500	1,309,400
	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	TRUCK & RAIL INFRASTRUCTURE						223,100	2,565,500					2,857,900	5,646,500
16.0	SITE IMPROVEMENTS - CIVIL WORK														
16.1	SITE GRADING							0	0					538,800	538,800
	CUT		EST	16,500	CY			0	0	0.08	1,518	ETWK	177.49	269,400	269,400
	FILL		EST	16,500	CY			0	0	0.08	1,518	ETWK	177.49	269,400	269,400
16.2	ROADS & SURFACING							0	918,600					1,237,000	2,155,600
	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	4,600	SY		47	0	216,200	0.40	2,116	PBIT	90.25	191,000	407,200
	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	6,320	SY		47	0	297,000	0.40	2,907	PBIT	90.25	262,400	559,400
	24' WIDE ACCESS ROAD AGGREGATE SHOULDERS	INCLUDES: 12" BASE COURSE 10 OZ/SY GEOTEXTILE	EST	1,600	SY		17.5	0	28,000	0.10	184	BCSE	105.94	19,500	47,500

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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
	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	800	SY		47	0	37,600	0.40	368	PBIT	90.25	33,200	70,800
	ASH LOADING AREA - SURFACING	12" REINFORCED CONCRETE	EST	750	SY		96	0	72,000	1.60	1,380	CONP	79.64	109,900	181,900
	ASH LOADING AREA	6" CONCRETE CURB	EST	330	LF		6.5	0	2,100	0.96	364	COND	70.04	25,500	27,600
	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	26,500	SY		9	0	238,500	0.17	5,181	BCSE	105.94	548,800	787,300
16.3	NEW CONCRETE ENCASEMENT	16' X 4' X 40' - FOR EXISTING ASH PIPE HAUL ROAD CROSSING						0	144,300					262,700	407,000
	EXCAVATION / BACKFILL		EST	1,100	CY			0	0	0.15	190	EXFD	90.00	17,100	17,100
	REINFORCING		EST	100.0	TN		1,150.00	0	115,000	20.00	2,300	REIN	78.27	180,000	295,000
	FORMWORK		EST	2,000	SF		2.50	0	5,000	0.14	322	FORM	99.43	32,000	37,000
	CONCRETE		EST	200	CY		105.00	0	21,000	1.50	345	CONP	79.64	27,500	48,500
	MUD MAT		EST	8	CY		105.00	0	800	1.50	14	CONP	79.64	1,100	1,900
	EMBEDDED STEEL		EST	1,000	LB		2.50	0	2,500	0.06	69	CARP	71.88	5,000	7,500
16.4	TRUCK WASH AREA - CONCRETE PAD							0	41,900					70,400	112,300
	EXCAVATION / BACKFILL		EST	192	CY			0	0	0.15	33	EXFD	90.00	3,000	3,000
	REINFORCING		EST	16	TN		1,150.00	0	18,400	20.00	368	REIN	78.27	28,800	47,200
	FORMWORK		EST	510	SF		2.50	0	1,300	0.14	82	FORM	99.43	8,200	9,500
	CONCRETE		EST	167	CY		105.00	0	17,500	1.50	288	CONP	79.64	22,900	40,400
	MUD MAT		EST	25	CY		105.00	0	2,600	1.50	43	CONP	79.64	3,400	6,000
	EMBEDDED STEEL		EST	835	LB		2.50	0	2,100	0.06	58	CARP	71.88	4,100	6,200
16.5	TRUCK WASH AREA - ENCLOSURE							0	67,400					95,300	162,700
	TRUCK WASH AREA - STEEL		EST	10	TN		2,650.00	0	26,500	24.00	276	STST	105.71	29,200	55,700
	TRUCK WASH AREA - SIDNG	20' X 40' X 20'H	EST	2,400	SF		12.00	0	28,800	0.11	304	SDNG	93.41	28,400	57,200
	TRUCK WASH AREA - LIGHTING	ALLOWANCE	EST	2,400	SF		2.50	0	6,000	0.05	138	WIRE	98.84	13,600	19,600
	TRUCK WASH AREA - DRAINAGE	10" HDPE (UNDERGROUND)	EST	200	LF		26.4	0	5,300	0.98	225	MECH	88.89	20,000	25,300
	EXCAVATION / BACKFILL	FOR UNDERGROUND PIPING	EST	167	CY			0	0	0.20	38	EXFD	90.00	3,500	3,500
	BEDDING	FOR UNDERGROUND PIPING	EST	22	CY		35.0	0	800	0.25	6	EXFD	90.00	600	1,400
16.6	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
16.7	PROCESS WATER STORAGE BASIN							60,000	110,400					312,600	483,000
	SAND EXCAVATION		EST	4,000	CY			0	0	0.03	120	ETWK	177.49	21,200	21,200
	ROCK EXCAVATION	ASSUME ROCK IS RIPPABLE	EST	500	CY			0	0	0.05	28	ETWK	177.49	4,900	4,900
	POND SURFACING	6" REINFORCED CONCRETE	EST	2,300	SY		48	0	110,400	1.20	3,174	CONP	79.64	252,800	363,200
	PUMPS	500 GPM, 75 PSIG	EST	2	EA	30000		60,000	0	165.00	380	MECH	88.89	33,700	93,700
16.8	PROCESS WATER STORAGE BASIN PUMP STRUCTURE - CONCRETE							0	47,000					105,400	152,400
	EXCAVATION / BACKFILL		EST	0	CY			0	0	0.15	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

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	EMBEDDED STEEL		EST	380	LB		2.50	0	1,000	0.06	26	CARP	71.88	1,900	2,900
	BYPRODUCT POND PUMP STRUCTURE - GALLERY		EST	5	TN		4,000.00	0	20,000	35.00	201	GALL	84.61	17,000	37,000
16.9	STORMWATER DRAINAGE TRENCH	2' W X 3' DEEP CAST-IN-PLACE CONCRETE TRENCH W/REINFORCING & HS-20 RATED GRATE COVERS	EST	3,700	LF		135	0	499,500	1.50	6,383	CONP	79.64	508,300	1,007,800
16.10	STORMWATER 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
16.11	STORM WATER POND PUMP STRUCTURE - CONCRETE							90,000	42,300					182,200	314,500
	EXCAVATION / BACKFILL		EST	0	CY			0	0	0.15	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
16.12	OILY WATER SEWER							4,500	105,000					223,600	333,100
	PIPING	6" CISP	EST	1,300	LF		21.5	0	28,000	0.33	493	YDPP	90.14	44,500	72,500
	PIPING	8" CISP	EST	1,300	LF		33.5	0	43,600	0.54	807	YDPP	90.14	72,800	116,400
	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
16.13	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
16.14	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
16.15	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
16.16	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
16.17	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



Big Sandy Unit 2
Kentucky Power Company
American Electric Power Service Corporation
Order-of-Magnitude FGD Cost Estimate
WFGD, DFGD, IAQCS & NID Technologies
September 10, 2010

ATTACHMENT 3-8
DFGD Detailed Capital Cost Estimate No. 30710 Est-2A ESP in Service
(1.7 lb SO₂/MMbtu)

DRAFT COPY

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				FGD PROJECT - DRY FGD EST (ESP)-2A - 1.7 LB/MM BTU										Project No.:	12721-000
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	GROUNDING TEST	TEST, CALIBRATION & DOCUMENTATION	EST	1	EA			0	0	4.00	5	WIRE	98.84	500	500
90.00	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS							22,007,400	3,019,600		192,820			17,236,000	42,263,000
	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										
	COST DUE TO OVERTIME INEFFICIENCY - SPECIFY % INEFFICIENCY			8.00	%						16,767		83.48	1,400,000	1,400,000
	COST DUE TO OVERTIME PAY @1.5 TIMES OVERTIME PAY RATE - SPECIFY % ADDITIONAL HOURS PAID ON ACTUAL HOURS WORKED			10.00	%						20,959			1,470,280	1,470,280
	PER DIEM	NONE		0.00	HR						230,546			0	0
	CONSUMABLES - % of ACCT NO. 90			0.5	%				15,098					86,180	101,278
	FREIGHT ON MATERIAL - % of ACCT NO. 90			5.0	%				150,980						150,980
	FREIGHT ON EQUIPMENT - % of ACCT NO. 90			5.0	%			1,100,370							1,100,370
	SALES TAX - NOT INCLUDED														0
	SCAFFOLDING - % OF ACCT NO. 90			5.0	%				150,980					861,800	1,012,780
	CONTRACTOR'S GENERAL AND ADMINISTRATION EXPENSE & PROFIT- % of ACCT NO. 90			15	%				452,940					2,585,400	3,038,340
	SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS							1,100,400	770,000					6,403,700	8,274,000
	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	FABRIC FILTERS						23,107,800	3,789,600					23,639,700	50,537,000
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 - 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	INCLUDES 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	PIPING - MECHANICAL							29,000	15,600					77,900	122,500
	SMALL BORE PIPING	2" CS, SCH 80 WELDED	EST	100	LF		22.20	0	2,200	1.26	145	SPNG	94.41	13,700	15,900
	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	200	LF		33.70	0	6,700	1.32	304	SPNG	94.41	28,700	35,400
	VALVE	2" GLOBE, 150# SS, WELDED	EST	20	EA	1,450		29,000	0	5.64	130	SPNG	94.41	12,200	41,200
	PIPE SUPPORTS		EST	50	EA		35.00	0	1,800	1.50	86	MECH	88.89	7,700	9,500
4.4	LIME STORAGE SILO ACCESS STAIR TOWER	THREE COAT SHOP PAINT	EST	50	TN		2,900.00	0	145,000	24.00	1,380	STST	105.71	145,900	290,900
4.5	PIPE RACK FOR LIME HANDLING, WASTE ASH HANDLING AND MISC MECHANICAL PIPING	THREE COAT SHOP PAINT	EST	270	TN		2,900.00	0	783,000	24.00	7,452	STST	105.71	787,800	1,570,800

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4.6	RAIL CAR UNLOADING AREA - FOUNDATIONS	20 X 250 - NO SIDING						0	85,300					158,400	243,700
	EXCAVATION / BACKFILL		EST	1,000	CY			0	0	0.15	173	EXFD	90.00	15,500	15,500
	REINFORCING		EST	30	TN		1,150.00	0	34,500	20.00	690	REIN	78.27	54,000	88,500
	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	0	CY		105.00	0	0	1.50	0	CONP	79.64	0	0
	EMBEDDED STEEL		EST	2,000	LB		2.50	0	5,000	0.06	138	CARP	71.88	9,900	14,900
4.7	LIME UNLOADING BLOWER / ELECTRICAL BUILDING - FOUNDATIONS							0	160,700					281,500	442,200
	EXCAVATION / BACKFILL		EST	1,900	CY			0	0	0.15	328	EXFD	90.00	29,500	29,500
	REINFORCING		EST	100	TN		1,150.00	0	115,000	20.00	2,300	REIN	78.27	180,000	295,000
	FORMWORK		EST	640	SF		2.50	0	1,600	0.14	103	FORM	99.43	10,200	11,800
	CONCRETE		EST	300	CY		105.00	0	31,500	1.50	518	CONP	79.64	41,200	72,700
	MUD MAT		EST	60	CY		105.00	0	6,300	1.50	104	CONP	79.64	8,200	14,500
	EMBEDDED STEEL		EST	2,500	LB		2.50	0	6,300	0.06	173	CARP	71.88	12,400	18,700
4.8	LIME UNLOADING BLOWER / ELECTRICAL BUILDING	130' L X 30' W X 30' H						75,000	351,500					24,400	450,900
	PREENGINEERED BUILDING INCLUDING H&V AND LIGHTING	SUBCONTRACT PRICE, INCLUDES LABOR	EST	3,900	SF		85	0	331,500	0.00	0	STST	105.71	0	331,500
	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
4.9	CONCRETE PIT FOR THE ELEVATOR		EST	10	CY		230.00	0	2,300	7.50	86	CONP	79.64	6,900	9,200
4.10	LIME STORAGE SILO - FOUNDATIONS							0	182,500					306,000	488,500
	EXCAVATION / BACKFILL		EST	1,500	CY			0	0	0.15	259	EXFD	90.00	23,300	23,300
	REINFORCING		EST	70.0	TN		1,150.00	0	80,500	20.00	1,610	REIN	78.27	126,000	206,500
	FORMWORK		EST	1,300	SF		2.50	0	3,300	0.14	209	FORM	99.43	20,800	24,100
	CONCRETE		EST	800	CY		105.00	0	84,000	1.50	1,380	CONP	79.64	109,900	193,900
	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
4.11	LIME STORAGE SILO ACCESS STAIR TOWER - FOUNDATIONS							0	14,200					26,200	40,400
	EXCAVATION / BACKFILL		EST	110	CY			0	0	0.15	19	EXFD	90.00	1,700	1,700
	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
4.12	PIPE RACK - FOUNDATIONS							0	94,200					208,200	302,400
	EXCAVATION / BACKFILL		EST	1,360	CY			0	0	0.15	235	EXFD	90.00	21,100	21,100
	REINFORCING		EST	32.2	TN		1,150.00	0	37,000	20.00	740	REIN	78.27	57,900	94,900
	FORMWORK		EST	4,000	SF		2.50	0	10,000	0.14	644	FORM	99.43	64,000	74,000
	CONCRETE		EST	402	CY		105.00	0	42,200	1.50	693	CONP	79.64	55,200	97,400
	MUD MAT		EST	0	CY		105.00	0	0	1.50	0	CONP	79.64	0	0
	EMBEDDED STEEL		EST	2,010	LB		2.50	0	5,000	0.06	139	CARP	71.88	10,000	15,000

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<u>Account No.</u>	<u>Item Description</u>	<u>Scope Definition</u>	<u>Cost Type</u>	<u>Quantity</u>	<u>Unit of Measure</u>	<u>Unit Equip. Cost</u>	<u>Unit Material Cost</u>	<u>Total Equipment Cost</u>	<u>Total Material Cost</u>	<u>Unit Man-hours (Base)</u>	<u>Total Man-hours (w/ productivity)</u>	<u>Crew Code</u>	<u>Crew Wage Rate</u>	<u>Total Construction & Erection Cost</u>	<u>Total Projected Cost</u>
4.13	TRANSFORMERS	SUS TRANSFORMERS: 33F, 33G, 13.8KV-480V	EST	2	EA	85000		170,000	0	300.00	690	EHEA	79.16	54,600	224,600
4.14	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
4.15	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
4.16	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
4.17	MIMIC PANELS		EST	1	EA	17500		17,500	0	12.00	14	WIRE	98.84	1,400	18,900
4.18	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	8HR-400A, 480V	EST	1	LT	36050		36,100	0	120.00	138	WIRE	98.84	13,600	49,700
4.19	GROUNDING							13,300	0					41,300	54,600
	GROUND ROD	3/4" - 20' LONG	EST	18	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
4.20	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
4.21	RACEWAY, CABLE TRAY, & CONDUIT							0	296,400					1,429,900	1,726,300
	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		1.46	0	12,000	0.08	745	WIRE	98.84	73,600	85,600

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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
	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
	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	10" CS, SCH 40 WELDED	EST	400	LF		110.3	0	44,100	2.40	1,104	SPNG	94.41	104,200	148,300
	LARGE BORE PIPING	14" CS, SCH 40 WELDED	EST	100	LF		205.9	0	20,600	2.87	330	SPNG	94.41	31,200	51,800
	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	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	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	AVERAGE COST FOR MISC PIPE SIZES	EST	110	EA		90.00	0	9,900	2.50	316	MECH	88.89	28,100	38,000
5.5	LIME SLURRY TANKS - FOUNDATIONS							0	166,400					278,300	444,700
	EXCAVATION / BACKFILL		EST	969	CY			0	0	0.15	167	EXFD	90.00	15,000	15,000
	REINFORCING		EST	90	TN		1,150.00	0	103,500	20.00	2,070	REIN	78.27	162,000	265,500
	FORMWORK		EST	1,166	SF		2.50	0	2,900	0.14	188	FORM	99.43	18,700	21,600
	CONCRETE		EST	475	CY		105.00	0	49,900	1.50	819	CONP	79.64	65,300	115,200
	MUD MAT		EST	40	CY		105.00	0	4,200	1.50	69	CONP	79.64	5,500	9,700
	EMBEDDED STEEL		EST	2,375	LB		2.50	0	5,900	0.06	164	CARP	71.88	11,800	17,700
5.6	LIME SLAKER BUILDING - FOUNDATIONS							0	119,200					194,200	313,400
	EXCAVATION / BACKFILL		EST	450	CY			0	0	0.15	78	EXFD	90.00	7,000	7,000
	REINFORCING		EST	50	TN		1,150.00	0	57,500	20.00	1,150	REIN	78.27	90,000	147,500
	FORMWORK		EST	1,000	SF		2.50	0	2,500	0.14	161	FORM	99.43	16,000	18,500
	CONCRETE		EST	450	CY		105.00	0	47,300	1.50	776	CONP	79.64	61,800	109,100
	MUD MAT		EST	60	CY		105.00	0	6,300	1.50	104	CONP	79.64	8,200	14,500
	EMBEDDED STEEL		EST	2,250	LB		2.50	0	5,600	0.06	155	CARP	71.88	11,200	16,800
5.7	LIME SLAKER BUILDING	135' L X 30' W X 50' H						40,500	776,800					721,000	1,538,300
	STRUCTURAL STEEL		EST	100	TN		2650	0	265,000	16.00	1,840	STST	105.71	194,500	459,500
	INSULATED METAL SIDING		EST	16,500	SF		12	0	198,000	0.11	2,087	SDNG	93.41	195,000	393,000
	ROLLING OVERHEAD DOOR		EST	320	SF		27	0	8,600	0.25	92	CARP	71.88	6,600	15,200
	METAL ROOF DECKING		EST	4,050	SF		2.7	0	10,900	0.06	279	STST	105.71	29,500	40,400
	RIGID ROOF INSULATION		EST	4,050	SF		2.4	0	9,700	0.02	70	ROOF	69.12	4,800	14,500
	ROOFING (4-PLY TAR & GRAVEL)		EST	4,050	SF		1.55	0	6,300	0.04	186	ROOF	69.12	12,900	19,200
	LIGHTWEIGHT CONCRETE FILL 1"		EST	50	CY		100	0	5,000	1.30	75	ROOF	69.12	5,200	10,200
	ROOF FLASHING		EST	350	LF		14.45	0	5,100	0.12	48	ROOF	69.12	3,300	8,400
	ROOF DRAINS		EST	1	LT		25000	0	25,000	240.00	276	PLMB	79.42	21,900	46,900
	FLOOR DRAINS		EST	1	LT		30000	0	30,000	280.00	322	PLMB	79.42	25,600	55,600
	FLOOR SLABS	INCLUDES METAL DECKING AND FORMWORK	EST	50	CY		210	0	10,500	7.50	431	CONP	79.64	34,300	44,800
	FLOOR FINISHES		EST	3,102	SF		2.5	0	7,800	0.05	178	CONP	79.64	14,200	22,000
	LOUVERS/WINDOWS/DOORS		EST	1,601	SF		40	0	64,000	0.35	644	CARP	71.88	46,300	110,300
	ROOF VENTILATORS		EST	4	EA		15000	0	60,000	24.00	110	HVAC	81.24	9,000	69,000
	GALLERIES & LANDINGS	SUPPORT STEEL WITH BUILDING STEEL	EST	1,215	SF		45	0	54,700	0.40	559	GALL	84.61	47,300	102,000
	H&V		EST	1	LT	40500	16200	40,500	16,200	756.00	869	HVAC	81.24	70,600	127,300
5.8	ELECTRICAL	INCLUDED WITH LIME HANDLING SYSTEM, ACCOUNT 4.0													
90.00	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS							6,112,300	1,173,800		64,686			5,721,300	13,007,400
	OTHER DIRECT & CONSTRUCTION INDIRECT COSTS														

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	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	170	EA		75.00	0	12,800	2.50	489	MECH	88.89	43,400	56,200	
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	SDA RECYCLE SILO	INCLUDED WITH OEM EQUIPMENT														
6.8	SDA FLY ASH SILO	46T STEEL - STORAGE SILO, 15' DIA X 19' H						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	
6.9	WASTE ASH STORAGE SILO - FOUNDATIONS							0	92,200					159,700	251,900	
	EXCAVATION / BACKFILL		EST	900	CY			0	0	0.15	155	EXFD	90.00	14,000	14,000	
	REINFORCING		EST	35.0	TN		1,150.00	0	40,300	20.00	805	REIN	78.27	63,000	103,300	
	FORMWORK		EST	900	SF		2.50	0	2,300	0.14	145	FORM	99.43	14,400	16,700	
	CONCRETE		EST	400	CY		105.00	0	42,000	1.50	690	CONP	79.64	55,000	97,000	
	MUD MAT		EST	25	CY		105.00	0	2,600	1.50	43	CONP	79.64	3,400	6,000	
	EMBEDDED STEEL		EST	2,000	LB		2.50	0	5,000	0.06	138	CARP	71.88	9,900	14,900	
6.10	FLY ASH SILO - FOUNDATIONS							0	10,800					21,000	31,800	
	EXCAVATION / BACKFILL		EST	160	CY			0	0	0.15	28	EXFD	90.00	2,500	2,500	
	REINFORCING		EST	5.0	TN		1,150.00	0	5,800	20.00	115	REIN	78.27	9,000	14,800	
	FORMWORK		EST	200	SF		2.50	0	500	0.14	32	FORM	99.43	3,200	3,700	
	CONCRETE		EST	30	CY		105.00	0	3,200	1.50	52	CONP	79.64	4,100	7,300	
	MUD MAT		EST	5	CY		105.00	0	500	1.50	9	CONP	79.64	700	1,200	
	EMBEDDED STEEL		EST	300	LB		2.50	0	800	0.06	21	CARP	71.88	1,500	2,300	
6.11	FLY ASH BLOWER AND ELECTRICAL BUILDING - FOUNDATIONS							0	49,600					93,200	142,800	
	EXCAVATION / BACKFILL		EST	578	CY			0	0	0.15	100	EXFD	90.00	9,000	9,000	
	REINFORCING		EST	17	TN		1,150.00	0	19,600	20.00	391	REIN	78.27	30,600	50,200	
	FORMWORK		EST	890	SF		2.50	0	2,200	0.14	143	FORM	99.43	14,200	16,400	
	CONCRETE		EST	222	CY		105.00	0	23,300	1.50	383	CONP	79.64	30,500	53,800	
	MUD MAT		EST	0	CY		105.00	0	0	1.50	0	CONP	79.64	0	0	
	EMBEDDED STEEL		EST	1,800	LB		2.50	0	4,500	0.06	124	CARP	71.88	8,900	13,400	
6.12	FLY ASH BLOWER AND ELECTRICAL BUILDING	90' L X 30' W X 25' H						28,000	244,500					16,200	288,700	
	PREENGINEERED 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	10T PACKAGED UNIT. INCLUDES ALLOANCE FOR CONCRETE PAD AND ELECTRICAL WORK	EST	1	LT	28000	15000	28,000	15,000	0.00	200	HVAC	81.24	16,200	59,200	
6.13	RECYCLE ASH BUILDING - FOUNDATIONS							0	234,300					373,100	607,400	
	EXCAVATION / BACKFILL		EST	950	CY			0	0	0.15	164	EXFD	90.00	14,700	14,700	
	REINFORCING		EST	90	TN		1,150.00	0	103,500	20.00	2,070	REIN	78.27	162,000	265,500	
	FORMWORK		EST	1,320	SF		2.50	0	3,300	0.14	213	FORM	99.43	21,100	24,400	

				AEP										Estimate No.:	30710B
				BIG SANDY UNIT 2										Project No.:	12721-000
				FGD PROJECT - DRY FGD EST (ESP)-2A - 1.7 LB/MM BTU										Date:	9/10/2010
				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
	CONCRETE		EST	1,000	CY		105.00	0	105,000	1.50	1,725	CONP	79.64	137,400	242,400
	MUD MAT		EST	95	CY		105.00	0	10,000	1.50	164	CONP	79.64	13,100	23,100
	EMBEDDED STEEL		EST	5,000	LB		2.50	0	12,500	0.06	345	CARP	71.88	24,800	37,300
6.14	RECYCLE ASH BUILDING	100' L X 65' W X 50' H						58,500	1,306,700					1,194,500	2,559,700
	STRUCTURAL STEEL		EST	180	TN		2650	0	477,000	16.00	3,312	STST	105.71	350,100	827,100
	INSULATED METAL SIDING		EST	16,500	SF		12	0	198,000	0.11	2,087	SDNG	93.41	195,000	393,000
	ROLLING OVERHEAD DOOR		EST	640	SF		27	0	17,300	0.25	184	CARP	71.88	13,200	30,500
	METAL ROOF DECKING		EST	6,500	SF		2.7	0	17,600	0.06	449	STST	105.71	47,400	65,000
	RIGID ROOF INSULATION		EST	6,500	SF		2.4	0	15,600	0.02	112	ROOF	69.12	7,800	23,400
	ROOFING (4-PLY TAR & GRAVEL)		EST	6,500	SF		1.55	0	10,100	0.04	299	ROOF	69.12	20,700	30,800
	LIGHTWEIGHT CONCRETE FILL 1"		EST	60	CY		100	0	6,000	1.30	90	ROOF	69.12	6,200	12,200
	ROOF FLASHING		EST	350	LF		14.45	0	5,100	0.12	48	ROOF	69.12	3,300	8,400
	ROOF DRAINS		EST	1	LT		25000	0	25,000	240.00	276	PLMB	79.42	21,900	46,900
	FLOOR DRAINS		EST	1	LT		30000	0	30,000	280.00	322	PLMB	79.42	25,600	55,600
	FLOOR SLABS	INCLUDES METAL DECKING AND FORMWORK	EST	60	CY		210	0	12,600	7.50	518	CONP	79.64	41,200	53,800
	FLOOR FINISHES		EST	5,000	SF		2.5	0	12,500	0.05	288	CONP	79.64	22,900	35,400
	LOUVERS/WINDOWS/DOORS		EST	2,600	SF		40	0	104,000	0.35	1,047	CARP	71.88	75,200	179,200
	ROOF VENTILATORS		EST	4	EA		15000	0	60,000	24.00	110	HVAC	81.24	9,000	69,000
	GALLERIES & LANDINGS	SUPPORT STEEL WITH BUILDING STEEL	EST	6,500	SF		45	0	292,500	0.40	2,990	GALL	84.61	253,000	545,500
	H&V		EST	1	LT	58500	23400	58,500	23,400	1092.00	1,256	HVAC	81.24	102,000	183,900
6.15	MCC	480V MCC PER LINE UP	EST	4	EA	30000		120,000	0	16.00	74	WIRE	98.84	7,300	127,300
6.16	EMERGENCY 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
6.17	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
6.18	RACEWAY, CABLE TRAY, & CONDUIT							0	32,800					177,400	210,200
	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		1.46	0	6,600	0.08	409	WIRE	98.84	40400	47,000
6.19	LOW VOLTAGE POWER CABLE & TERMINATION	#4/0 - #12 AWG-600V	EST	11,200	LF		7.22	0	80,900	0.08	1,018	WIRE	98.84	100600	181,500
6.20	CONTROL & INSTRUMENT CABLE	#14, #16 & PR # 20 & SHLD WIRE	EST	12,000	LF		3.20	0	38,400	0.23	3,174	WIRE	98.84	313,700	352,100
6.21	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
6.22	DUCT BANK	DUCT BANK WITH 12-5" & 6-3" CONDUITS, 5.2' H X 2.08" W	EST	300	LF		371.60	0	111,500	7.02	2,422	ECND	75.97	184000	295,500
90.00	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS							6,325,300	2,542,400		71,736			6,393,300	15,261,000
	OTHER DIRECT & CONSTRUCTION INDIRECT COSTS														

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<u>Account No.</u>	<u>Item Description</u>	<u>Scope Definition</u>	<u>Cost Type</u>	<u>Quantity</u>	<u>Unit of Measure</u>	<u>Unit Equip. Cost</u>	<u>Unit Material Cost</u>	<u>Total Equipment Cost</u>	<u>Total Material Cost</u>	<u>Unit Man-hours (Base)</u>	<u>Total Man-hours (w/ productivity)</u>	<u>Crew Code</u>	<u>Crew Wage Rate</u>	<u>Total Construction & Erection Cost</u>	<u>Total Projected Cost</u>
	TOTAL PROJECT COST														517,264,900
	REFERENCE COSTS:														
A	ESP STRUCTURAL INTEGRITY MODS	ALLOWANCE FOR 150 TON FRAMING REINFORCEMENT	EST	150	TN		2900	0	435,000	120.00	20,700	STST	105.71	2,188,200	2,623,200



Big Sandy Unit 2
Kentucky Power Company
American Electric Power Service Corporation
Order-of-Magnitude FGD Cost Estimate
WFGD, DFGD, IAQCS & NID Technologies
September 10, 2010

ATTACHMENT 3-9
DFGD Detailed Capital Cost Estimate No. 30712 Est-2B ESP not in Service
(1.7 lb SO₂/MMbtu)

DRAFT COPY

				AEP										Estimate No.:	30712B
				BIG SANDY UNIT 2										Project No.:	12721-000
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1.0	ID FANS														
1.1	ID FANS - OEM EQUIPMENT	1,870,000 ACFM WITH 19,200 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	3,369,000.000		6,738,000	0	8000.00	18,400	MECH	88.89	1,635,600	8,373,600
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	FABRIC FILTER 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	60.00	55,200	FLDU	107.96	5,959,400	8,559,400
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 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 OUTLER DUCT TO FABRIC FILTERS 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					532,700	828,200
	EXCAVATION / BACKFILL		EST	1,900	CY			0	0	0.15	328	EXFD	90.00	29,500	29,500
	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					185,600	291,600
	EXCAVATION / BACKFILL		EST	600	CY			0	0	0.15	104	EXFD	90.00	9,300	9,300
	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

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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
1.11	ID FAN DFGD CONTROL ROOM - FOUNDATIONS							0	122,100					196,100	318,200
	EXCAVATION / BACKFILL		EST	467	CY			0	0	0.15	81	EXFD	90.00	7,300	7,300
	REINFORCING		EST	47	TN		1,150.00	0	54,100	20.00	1,081	REIN	78.27	84,600	138,700
	FORMWORK		EST	870	SF		2.50	0	2,200	0.14	140	FORM	99.43	13,900	16,100
	CONCRETE		EST	500	CY		105.00	0	52,500	1.50	863	CONP	79.64	68,700	121,200
	MUD MAT		EST	67	CY		105.00	0	7,000	1.50	116	CONP	79.64	9,200	16,200
	EMBEDDED STEEL		EST	2,500	LB		2.50	0	6,300	0.06	173	CARP	71.88	12,400	18,700
1.12	ID FAN DFGD CONTROL ROOM	SUBCONTRACT PRICE INCLUDES LABOR. COMPLETE WITH HVAC, FINISHES AND SANITARY FACILITIES	EST	2,500	SF		500.00	0	1,250,000	0.00	0	STST	105.71	0	1,250,000
1.13	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
1.14	HIGH VOLTAGE POWER CABLE & TERMINATION	1/C # 500KCMIL-15KV - 6600' ID FAN	EST	6,600	LF		9.27	0	61,200	0.23	1,746	WIRE	98.84	172,500	233,700
1.15	CONTROL & INSTRUMENT CABLE	#14, #16 & PR # 20 & SHLD WIRE	EST	37,800	LF		3.20	0	121,000	0.23	9,998	WIRE	98.84	988,200	1,109,200
1.16	EMERGENCY POWER SYSTEM							285,500	0					38,900	324,400
	DC PANEL BOARDS		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
1.17	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
1.18	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
1.19	RACEWAY, CABLE TRAY, & CONDUIT							0	326,300					1,792,700	2,119,000
	12" X 6" AL CABLE TRAY	INCLUDING SUPPORT & FITTINGS	EST	1,000	LF		18.25	0	18,300	1.10	1,265	WIRE	98.84	125,000	143,300
	24" X 6" AL CABLE TRAY	INCLUDING SUPPORT & FITTINGS	EST	2,000	LF		27.10	0	54,200	1.75	4,025	WIRE	98.84	397,800	452,000
	36" X 6" AL CABLE TRAY	INCLUDING SUPPORT & FITTINGS	EST	1,500	LF		30.30	0	45,500	1.95	3,364	WIRE	98.84	332,500	378,000
	4" RGS CONDUIT	INCLUDING SUPPORT & FITTINGS	EST	1,500	LF		31.00	0	46,500	0.81	1,392	WIRE	98.84	137,600	184,100
	3" RGS CONDUIT	INCLUDING SUPPORT & FITTINGS	EST	1,000	LF		21.50	0	21,500	0.65	742	WIRE	98.84	73,300	94,800

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				FGD PROJECT - DRY FGD EST (N/ESP)-2B - 1.7 LB/MM BTU										Date:	9/10/2010
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		Cost Type:												Reviewer:	JMK
		Est.=Estimated												Approver:	PEF
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	SIDING FOR PENTHOUSE		EST	14,200	SF		12.00	0	170,400	0.11	1,796	SDNG	93.41	167,800	338,200
	CONCRETE FLOOR FOR PENTHOUSE		EST	250	CY		230.00	0	57,500	7.50	2,156	SDNG	93.41	201,400	258,900
	ROOFING FOR PENTHOUSE		EST	29,500	SF		18.00	0	531,000	0.22	7,464	ROOF	69.12	515,900	1,046,900
	H&V		EST	1	LT	70200	28080	70,200	28,100	1310.67	1,507	HVAC	81.24	122,500	220,800
2.4	BOTTOM ENCLOSURE FOR BAGHOUSE							60,000	1,204,000					1,359,800	2,623,800
	SUPPORT STEEL, GIRTS AND SIDING		EST	29,500	SF		40.00	0	1,180,000	0.35	11,874	STST	105.71	1,255,200	2,435,200
	H&V		EST	1	LT	60000	24000	60,000	24,000	1120.00	1,288	HVAC	81.24	104,600	188,600
2.5	PIPING & SUPPORTS - MECHANICAL							30,900	101,400					209,500	341,800
	LARGE BORE PIPING	6" SS, SCH 40 WELDED	EST	100	LF		111.00	0	11,100	2.02	232	SPNG	94.41	21,900	33,000
	LARGE BORE PIPING	12" CS, SCH 40 WELDED	EST	400	LF		188.70	0	75,500	2.80	1,288	SPNG	94.41	121,600	197,100
	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	12" GATE, 150 #, CS, WELDED	EST	2	EA	8,200		16,400	0	19.20	44	SPNG	94.41	4,200	20,600
	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	105	EA		75.00	0	7,900	2.50	302	MECH	88.89	26,800	34,700
2.6	FABRIC FILTER - FOUNDATIONS							0	550,700					973,600	1,524,300
	EXCAVATION / BACKFILL		EST	4,945	CY			0	0	0.15	853	EXFD	90.00	76,800	76,800
	REINFORCING		EST	192	TN		1,150.00	0	220,800	20.00	4,416	REIN	78.27	345,600	566,400
	FORMWORK		EST	7,800	SF		2.50	0	19,500	0.14	1,256	FORM	99.43	124,900	144,400
	CONCRETE		EST	2,400	CY		105.00	0	252,000	1.50	4,140	CONP	79.64	329,700	581,700
	MUD MAT		EST	270	CY		105.00	0	28,400	1.50	466	CONP	79.64	37,100	65,500
	EMBEDDED STEEL		EST	12,000	LB		2.50	0	30,000	0.06	828	CARP	71.88	59,500	89,500
2.7	FABRIC FILTER - SUPPORT STEEL AND ACCESS GALLERY							0	360,000					1,186,700	1,546,700
	SUPPORT STEEL	MATERIAL INCLUDED WITH OEM EQUIPMENT	EST	300	TN			0	0	24.00	8,280	STST	105.71	875,300	875,300
	ACCESS GALLERY		EST	8,000	SF		45.00	0	360,000	0.40	3,680	GALL	84.61	311,400	671,400
2.8	RACEWAY, CABLE TRAY, & CONDUIT	INCLUDED IN ABSORBER ISLAND 7.0													
2.9	LIGHT FIXTURE		EST	22	EA		750.00	0	16,500	4.00	101	WIRE	98.84	10,000	26,500
2.10	GROUNDING							7,300	0					17,500	24,800
	GROUND ROD	3/4" - 20' LONG	EST	4	EA	150		600	0	4.00	18	WIRE	98.84	1,800	2,400
	500 MCM	BARE COPPER WIRE	EST	850	FT	7.65		6,500	0	0.12	117	WIRE	98.84	11,600	18,100
	CADWELD		EST	16	EA	15		200	0	2.00	37	WIRE	98.84	3,600	3,800
	GROUNDING TEST	TEST, CALIBRATION & DOCUMENTATION	EST	1	EA			0	0	4.00	5	WIRE	98.84	500	500
90.00	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS							22,578,400	3,019,600		195,235			17,450,600	43,048,600
	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										
	COST DUE TO OVERTIME INEFFICIENCY - SPECIFY % INEFFICIENCY			8.00	%						16,977		83.48	1,417,000	1,417,000

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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	%						21,221			1,488,695	1,488,695
	PER DIEM	NONE		0.00	HR						233,433			0	0
	CONSUMABLES - % of ACCT NO. 90			0.5	%				15,098					87,253	102,351
	FREIGHT ON MATERIAL - % of ACCT NO. 90			5.0	%				150,980						150,980
	FREIGHT ON EQUIPMENT - % of ACCT NO. 90			5.0	%			1,128,920							1,128,920
	SALES TAX - NOT INCLUDED													0	0
	SCAFFOLDING - % OF ACCT NO. 90			5.0	%				150,980					872,530	1,023,510
	CONTRACTOR'S GENERAL AND ADMINISTRATION EXPENSE & PROFIT- % of ACCT NO. 90			15	%				452,940					2,617,590	3,070,530
	SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS							1,128,900	770,000					6,483,100	8,382,000
	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	FABRIC FILTERS						23,707,300	3,789,600					23,933,700	51,430,600
3.0	NEW STACK														
4.0	LIME HANDLING SYSTEM														
4.1	LIME STORAGE SILO							2,680,000	0					0	2,680,000
	SILO	CONCRETE SILO 65' DIA X 100' H - 5975 TONS -SUBCONTRACT COST INCLUDES LABOR	EST	1	EA	2,390,000.00		2,390,000	0	0.00	0	CONP	79.64	0	2,390,000
	ELEVATOR	MAINTENANCE ELEVATOR - 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	INCLUDES 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	PIPING - MECHANICAL							29,000	15,600					77,900	122,500
	SMALL BORE PIPING	2" CS, SCH 80 WELDED	EST	100	LF		22.20	0	2,200	1.26	145	SPNG	94.41	13,700	15,900
	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	200	LF		33.70	0	6,700	1.32	304	SPNG	94.41	28,700	35,400
	VALVE	2" GLOBE, 150# SS, WELDED	EST	20	EA	1,450		29,000	0	5.64	130	SPNG	94.41	12,200	41,200
	PIPE SUPPORTS		EST	50	EA		35.00	0	1,800	1.50	86	MECH	88.89	7,700	9,500
4.4	LIME STORAGE SILO ACCESS STAIR TOWER	THREE COAT SHOP PAINT	EST	50	TN		2,900.00	0	145,000	24.00	1,380	STST	105.71	145,900	290,900
4.5	PIPE RACK FOR LIME HANDLING, WASTE ASH HANDLING AND MISC MECHANICAL PIPING	THREE COAT SHOP PAINT	EST	270	TN		2,900.00	0	783,000	24.00	7,452	STST	105.71	787,800	1,570,800
4.6	RAIL CAR UNLOADING AREA - FOUNDATIONS	20 X 250 - NO SIDING						0	85,300					158,400	243,700
	EXCAVATION / BACKFILL		EST	1,000	CY			0	0	0.15	173	EXFD	90.00	15,500	15,500
	REINFORCING		EST	30	TN		1,150.00	0	34,500	20.00	690	REIN	78.27	54,000	88,500
	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	0	CY		105.00	0	0	1.50	0	CONP	79.64	0	0
	EMBEDDED STEEL		EST	2,000	LB		2.50	0	5,000	0.06	138	CARP	71.88	9,900	14,900
4.7	LIME UNLOADING BLOWER / ELECTRICAL BUILDING - FOUNDATIONS							0	160,700					281,500	442,200
	EXCAVATION / BACKFILL		EST	1,900	CY			0	0	0.15	328	EXFD	90.00	29,500	29,500
	REINFORCING		EST	100	TN		1,150.00	0	115,000	20.00	2,300	REIN	78.27	180,000	295,000
	FORMWORK		EST	640	SF		2.50	0	1,600	0.14	103	FORM	99.43	10,200	11,800

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	CONCRETE		EST	300	CY		105.00	0	31,500	1.50	518	CONP	79.64	41,200	72,700
	MUD MAT		EST	60	CY		105.00	0	6,300	1.50	104	CONP	79.64	8,200	14,500
	EMBEDDED STEEL		EST	2,500	LB		2.50	0	6,300	0.06	173	CARP	71.88	12,400	18,700
4.8	LIME UNLOADING BLOWER / ELECTRICAL BUILDING	130' L X 30' W X 30' H						75,000	351,500					24,400	450,900
	PREENGINEERED BUILDING INCLUDING H&V AND LIGHTING	SUBCONTRACT PRICE, INCLUDES LABOR	EST	3,900	SF		85	0	331,500	0.00	0	STST	105.71	0	331,500
	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
4.9	CONCRETE PIT FOR THE ELEVATOR		EST	10	CY		230.00	0	2,300	7.50	86	CONP	79.64	6,900	9,200
4.10	LIME STORAGE SILO - FOUNDATIONS							0	172,300					288,500	460,800
	EXCAVATION / BACKFILL		EST	1,350	CY			0	0	0.15	233	EXFD	90.00	21,000	21,000
	REINFORCING		EST	70.0	TN		1,150.00	0	80,500	20.00	1,610	REIN	78.27	126,000	206,500
	FORMWORK		EST	1,200	SF		2.50	0	3,000	0.14	193	FORM	99.43	19,200	22,200
	CONCRETE		EST	720	CY		105.00	0	75,600	1.50	1,242	CONP	79.64	98,900	174,500
	MUD MAT		EST	40	CY		105.00	0	4,200	1.50	69	CONP	79.64	5,500	9,700
	EMBEDDED STEEL		EST	3,600	LB		2.50	0	9,000	0.06	248	CARP	71.88	17,900	26,900
4.11	LIME STORAGE SILO ACCESS STAIR TOWER - FOUNDATIONS							0	14,200					26,200	40,400
	EXCAVATION / BACKFILL		EST	110	CY			0	0	0.15	19	EXFD	90.00	1,700	1,700
	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
4.12	PIPE RACK - FOUNDATIONS							0	94,200					208,200	302,400
	EXCAVATION / BACKFILL		EST	1,360	CY			0	0	0.15	235	EXFD	90.00	21,100	21,100
	REINFORCING		EST	32.2	TN		1,150.00	0	37,000	20.00	740	REIN	78.27	57,900	94,900
	FORMWORK		EST	4,000	SF		2.50	0	10,000	0.14	644	FORM	99.43	64,000	74,000
	CONCRETE		EST	402	CY		105.00	0	42,200	1.50	693	CONP	79.64	55,200	97,400
	MUD MAT		EST	0	CY		105.00	0	0	1.50	0	CONP	79.64	0	0
	EMBEDDED STEEL		EST	2,010	LB		2.50	0	5,000	0.06	139	CARP	71.88	10,000	15,000
4.13	TRANSFORMERS	SUS TRANSFORMERS: 33F, 33G, 13.8KV-480V	EST	2	EA	85000		170,000	0	300.00	690	EHEA	79.16	54,600	224,600
4.14	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
4.15	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
4.16	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

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4.17	MIMIC PANELS		EST	1	EA	17500		17,500	0	12.00	14	WIRE	98.84	1,400	18,900
4.18	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	8HR-400A, 480V	EST	1	LT	36050		36,100	0	120.00	138	WIRE	98.84	13,600	49,700
4.19	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
4.20	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
4.21	RACEWAY, CABLE TRAY, & CONDUIT							0	296,400					1,429,900	1,726,300
	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		1.46	0	12,000	0.08	745	WIRE	98.84	73,600	85,600
4.22	HIGH VOLTAGE POWER CABLE & TERMINATION	1/C # 500KCMIL-15KV, 12000' UNIT 2 + 3600' LIME UNLOAD	EST	15,600	LF		9.27	0	144,600	0.23	4,126	WIRE	98.84	407,800	552,400
4.23	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
4.24	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
4.25	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
4.26	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	FORM	99.43	152,100	213,200

				AEP										Estimate No.:	30712B
				BIG SANDY UNIT 2										Project No.:	12721-000
				FGD PROJECT - DRY FGD EST (N/ESP)-2B - 1.7 LB/MM BTU										Date:	9/10/2010
				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
4.27	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
90.00	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS							3,887,600	2,660,900		56,146			5,320,700	11,869,200
	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										
	COST DUE TO OVERTIME INEFFICIENCY - SPECIFY % INEFFICIENCY			8.00	%						4,882		83.48	408,000	408,000
	COST DUE TO OVERTIME PAY @1.5 TIMES OVERTIME PAY RATE - SPECIFY % ADDITIONAL HOURS PAID ON ACTUAL HOURS WORKED			10.00	%						6,103			428,122	428,122
	PER DIEM	NONE		0.00	HR						67,131			0	0
	CONSUMABLES - % of ACCT NO. 90			0.5	%				13,305					26,604	39,908
	FREIGHT ON MATERIAL - % of ACCT NO. 90			5.0	%				133,045						133,045
	FREIGHT ON EQUIPMENT - % of ACCT NO. 90			5.0	%			194,380							194,380
	SALES TAX - NOT INCLUDED													0	0
	SCAFFOLDING - % OF ACCT NO. 90			5.0	%				133,045					266,035	399,080
	CONTRACTOR'S GENERAL AND ADMINISTRATION EXPENSE & PROFIT- % of ACCT NO. 90			15	%				399,135					798,105	1,197,240
	SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS							194,400	678,500					1,926,900	2,799,800
	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	LIME HANDLING SYSTEM						4,082,000	3,339,400					7,247,600	14,669,000
5.0	LIME SLAKER BUILDING														0
5.1	MECHANICAL EQUIPMENT	INCLUDES:CHAIN CONVEYOR, SLAKERS THROUGH THE LIME SLURRY PUMPS, PIPING, AND LIME SLURRY STORAGE TANKS.	EST	1	LT	5,560,000		5,560,000	0	38900.00	44,735	MECH	88.89	3,976,500	9,536,500
5.2	LIME SLAKER BUILDING SUMP PUMPS	DUPLEX. INCLUDES CHECK & ISOLATION VALVES		2	EA	14,000		28,000	0	60.00	138	MECH	88.89	12,300	40,300
5.3	AGITATOR FOR SUMP PUMPS	5 HP		1	EA	12,000		12,000	0	45.00	52	MECH	88.89	4,600	16,600
5.4	PIPING - MECHANICAL		EST	1	LT			117,800	111,400					381,100	610,300
	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
	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	10" CS, SCH 40 WELDED	EST	400	LF		110.3	0	44,100	2.40	1,104	SPNG	94.41	104,200	148,300
	LARGE BORE PIPING	14" CS, SCH 40 WELDED	EST	100	LF		205.9	0	20,600	2.87	330	SPNG	94.41	31,200	51,800
	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	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

[illegible]

				AEP										Estimate No.:	30712B
				BIG SANDY UNIT 2										Project No.:	12721-000
				FGD PROJECT - DRY FGD EST (N/ESP)-2B - 1.7 LB/MM BTU										Date:	9/10/2010
				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						75,500			0	0
	CONSUMABLES - % of ACCT NO. 90			0.5	%				6,002					27,938	33,939
	FREIGHT ON MATERIAL - % of ACCT NO. 90			5.0	%				60,015						60,015
	FREIGHT ON EQUIPMENT - % of ACCT NO. 90			5.0	%			287,915							287,915
	SALES TAX - NOT INCLUDED														0
	SCAFFOLDING - % OF ACCT NO. 90			5.0	%				60,015					279,375	339,390
	CONTRACTOR'S GENERAL AND ADMINISTRATION EXPENSE & PROFIT- % of ACCT NO. 90			15	%				180,045					838,125	1,018,170
	SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS							287,900	306,100					2,084,900	2,678,900
	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	LIME SLAKER BUILDING						6,046,200	1,506,400					7,672,400	15,225,000
6.0	BYPRODUCT WASTE & FLY ASH HANDLING SYSTEMS														0
6.1	BYPRODUCT WASTE ASH HANDLING - MECHANICAL EQUIPMENT	INCLUDES PNEUMATIC HANDLING SYSTEM, THREE PRESSURE BLOWERS, ONE BIN VENT FILTER, ASH UNLOADING SYSTEM	EST	1	LT	2,047,000		2,047,000	0	13500.00	15,525	MECH	88.89	1,380,000	3,427,000
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	240,900					759,100	1,142,800
	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	4" SS, SCHEDULE 40, WELDED	EST	300	LF		68.3	0	20,500	1.82	628	SPNG	94.41	59,300	79,800
	LARGE BORE PIPING	6" CS, SCH 40 WELDED	EST	400	LF		41.7	0	16,700	1.61	741	SPNG	94.41	69,900	86,600
	LARGE BORE PIPING	8" HDPE (UNDERGROUND)	EST	800	LF		14.1	0	11,300	0.83	764	SPNG	94.41	72,100	83,400
	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	1,600	LF		72.8	0	116,500	1.45	2,668	SPNG	94.41	251,900	368,400
	SMALL BORE PIPING	2" CS, SCH 80 WELDED	EST	100	LF		22.20	0	2,200	1.26	145	SPNG	94.41	13,700	15,900
	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	200	LF		33.70	0	6,700	1.32	304	SPNG	94.41	28,700	35,400
	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	170	EA		75.00	0	12,800	2.50	489	MECH	88.89	43,400	56,200

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				FGD PROJECT - DRY FGD EST (N/ESP)-2B - 1.7 LB/MM BTU										Date:	9/10/2010
				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
	ROLLING OVERHEAD DOOR		EST	640	SF		27	0	17,300	0.25	184	CARP	71.88	13,200	30,500
	METAL ROOF DECKING		EST	6,500	SF		2.7	0	17,600	0.06	449	STST	105.71	47,400	65,000
	RIGID ROOF INSULATION		EST	6,500	SF		2.4	0	15,600	0.02	112	ROOF	69.12	7,800	23,400
	ROOFING (4-PLY TAR & GRAVEL)		EST	6,500	SF		1.55	0	10,100	0.04	299	ROOF	69.12	20,700	30,800
	LIGHTWEIGHT CONCRETE FILL 1"		EST	60	CY		100	0	6,000	1.30	90	ROOF	69.12	6,200	12,200
	ROOF FLASHING		EST	350	LF		14.45	0	5,100	0.12	48	ROOF	69.12	3,300	8,400
	ROOF DRAINS		EST	1	LT		25000	0	25,000	240.00	276	PLMB	79.42	21,900	46,900
	FLOOR DRAINS		EST	1	LT		30000	0	30,000	280.00	322	PLMB	79.42	25,600	55,600
	FLOOR SLABS	INCLUDES METAL DECKING AND FORMWORK	EST	60	CY		210	0	12,600	7.50	518	CONP	79.64	41,200	53,800
	FLOOR FINISHES		EST	5,000	SF		2.5	0	12,500	0.05	288	CONP	79.64	22,900	35,400
	LOUVERS/WINDOWS/DOORS		EST	2,600	SF		40	0	104,000	0.35	1,047	CARP	71.88	75,200	179,200
	ROOF VENTILATORS		EST	4	EA		15000	0	60,000	24.00	110	HVAC	81.24	9,000	69,000
	GALLERIES & LANDINGS	SUPPORT STEEL WITH BUILDING STEEL	EST	6,500	SF		45	0	292,500	0.40	2,990	GALL	84.61	253,000	545,500
	H&V		EST	1	LT	58500	23400	58,500	23,400	1092.00	1,256	HVAC	81.24	102,000	183,900
6.15	MCC	480V MCC PER LINE UP	EST	4	EA	30000		120,000	0	16.00	74	WIRE	98.84	7,300	127,300
6.16	EMERGENCY 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
6.17	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
6.18	RACEWAY, CABLE TRAY, & CONDUIT							0	32,800					177,400	210,200
	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		1.46	0	6,600	0.08	409	WIRE	98.84	40400	47,000
6.19	LOW VOLTAGE POWER CABLE & TERMINATION	#4/0 - #12 AWG-600V	EST	11,200	LF		7.22	0	80,900	0.08	1,018	WIRE	98.84	100600	181,500
6.20	CONTROL & INSTRUMENT CABLE	#14, #16 & PR # 20 & SHLD WIRE	EST	12,000	LF		3.20	0	38,400	0.23	3,174	WIRE	98.84	313,700	352,100
6.21	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
6.22	DUCT BANK	DUCT BANK WITH 12-5" & 6-3" CONDUITS, 5.2' H X 2.08" W	EST	300	LF		371.60	0	111,500	7.02	2,422	ECND	75.97	184000	295,500
90.00	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS							4,812,300	2,257,100		57,527			5,131,000	12,200,400
	OTHER DIRECT & CONSTRUCTION INDIRECT COSTS														
	ADDITIONAL CRANE ALLOWANCE							0						0	0
	MOBILIZATION / DEMOBILIZATION - INCLUDED IN WAGE RATES ABOVE														0

				AEP										Estimate No.:	30712B
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		Est=Estimated												Approver:	PEF
		Allow.=Allowance								Wage Rates Based on:		BIG SANDY			
		Q=Vendor Quote								Labor Productivity =		1.15			
<u>Account No.</u>	<u>Item Description</u>	<u>Scope Definition</u>	<u>Cost Type</u>	<u>Quantity</u>	<u>Unit of Measure</u>	<u>Unit Equip.Cost</u>	<u>Unit Material Cost</u>	<u>Total Equipment Cost</u>	<u>Total Material Cost</u>	<u>Unit Man-hours (Base)</u>	<u>Total Man-hours (w/ productivity)</u>	<u>Crew Code</u>	<u>Crew Wage Rate</u>	<u>Total Construction & Erection Cost</u>	<u>Total Projected Cost</u>
	COST DUE TO OVERTIME WORKING 5 X10 HOUR DAYS			1	LS										
	COST DUE TO OVERTIME INEFFICIENCY - SPECIFY % INEFFICIENCY			8.00	%						5,002		83.48	418,000	418,000
	COST DUE TO OVERTIME PAY @1.5 TIMES OVERTIME PAY RATE - SPECIFY % ADDITIONAL HOURS PAID ON ACTUAL HOURS WORKED			10.00	%						6,253			438,654	438,654
	PER DIEM	NONE		0.00	HR						68,783			0	0
	CONSUMABLES - % of ACCT NO. 90			0.5	%				11,286					25,655	36,941
	FREIGHT ON MATERIAL - % of ACCT NO. 90			5.0	%				112,855						112,855
	FREIGHT ON EQUIPMENT - % of ACCT NO. 90			5.0	%			240,615							240,615
	SALES TAX - NOT INCLUDED														0
	SCAFFOLDING - % OF ACCT NO. 90			5.0	%				112,855					256,550	369,405
	CONTRACTOR'S GENERAL AND ADMINISTRATION EXPENSE & PROFIT- % of ACCT NO. 90			15	%				338,565					769,650	1,108,215
	SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS							240,600	575,600					1,908,500	2,724,700
	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	BYPRODUCT WASTE & FLY ASH HANDLING SYSTEMS						5,052,900	2,832,700					7,039,500	14,925,100
7.0	ABSORBER ISLAND														0
8.0	ACTIVATED CARBON INJECTION SYSTEM														0
9.0	COMPRESSED AIR SYSTEM														0
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
18.0	CAPITAL REPLACEMENTS - REMOVAL AND RELOCATION OF EXISTING EQUIPMENT AND INFRASTRUCTURE														0
19.0	ARSENIC, ASBESTOS , LEAD ABATEMENT														
99.00	OVERALL - EQUIPMENT, MATERIAL AND LABOR COSTS							103,379,100	46,759,400		1,470,458			137,436,100	305,924,600
	OTHER DIRECT & CONSTRUCTION INDIRECT COSTS														
	ADDITIONAL CRANE ALLOWANCE							810,000	0					1,523,520	2,333,520
	MOBILIZATION / DEMOBILIZATION - INCLUDED IN WAGE RATES ABOVE														0



Big Sandy Unit 2
Kentucky Power Company
American Electric Power Service Corporation
Order-of-Magnitude FGD Cost Estimate
WFGD, DFGD, IAQCS & NID Technologies
September 10, 2010

ATTACHMENT 3-10
DFGD Summary Capital Cost Estimate No. 30713 Base Est-1B ESP not in Service
(3.0 lb SO₂/MMbtu)

DRAFT COPY

Sargent & Lundy, LLC

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

Estimate No.: 30713B
Project No.: 12721-000
Date: 9/10/2010
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	1,870,000 ACFM WITH 19,200 HP MOTORS (\$750,000 EACH). INCLUDES HYDRAULIC OIL UNITS, SEAL AIR FAN SKIDS, VIBRATION MONITORING EQUIPMENT, FAN STALL EQUIPMENT, FIELD SERVICE REP FOR 140	\$ 6,738,000	\$ -	\$ 1,635,600	\$ 8,373,600
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	FABRIC FILTER OUTLET TO ID FANS AND FROM ID FANS TO STACK - INCLUDES INTERNAL BRACING AND TURNING VANES	\$ -	\$ 2,600,000	\$ 5,959,400	\$ 8,559,400
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 ACOUSTICAL INSULATION	\$ -	\$ 168,000	\$ 217,200	\$ 385,200
1.8	DUCTWORK INSULATION & LAGGING	INCLUDES INSULATION FOR SPRAY DRYER OUTLER DUCT TO FABRIC FILTERS SUPPLIED WITH THE OEM EQUIPMENT	\$ -	\$ 864,000	\$ 1,692,200	\$ 2,556,200
1.9	DUCT SUPPORT STEEL - FOUNDATIONS		\$ -	\$ 295,500	\$ 532,700	\$ 828,200
1.10	ID FAN FOUNDATIONS INCLUDING ID FAN AUX EQUIPMENT		\$ -	\$ 106,000	\$ 185,600	\$ 291,600
1.11	ID FAN DFGD CONTROL ROOM - FOUNDATIONS		\$ -	\$ 122,100	\$ 196,100	\$ 318,200

Sargent & Lundy, LLC

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

Estimate No.: 30713B
Project No.: 12721-000
Date: 9/10/2010
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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
1.12	ID FAN DFGD CONTROL ROOM	SUBCONTRACT PRICE INCLUDES LABOR. COMPLETE WITH HVAC, FINISHES AND SANITARY FACILITIES	\$ -	\$ 1,250,000	\$ -	\$ 1,250,000
1.13	MCC		\$ 120,000	\$ -	\$ 7,200	\$ 127,200
1.14	HIGH VOLTAGE POWER CABLE & TERMINATION	1/C # 500KCMIL-15KV - 6600' ID FAN	\$ -	\$ 61,200	\$ 172,500	\$ 233,700
1.15	CONTROL & INSTRUMENT CABLE	#14, #16 & PR # 20 & SHLD WIRE	\$ -	\$ 121,000	\$ 988,200	\$ 1,109,200
1.16	EMERGENCY POWER SYSTEM		\$ 285,500	\$ -	\$ 38,900	\$ 324,400
1.17	GROUNDING		\$ 23,300	\$ -	\$ 59,100	\$ 82,400
1.18	LIGHTING/ TRANSFORMERS & PANELS		\$ 26,000	\$ 30,000	\$ 29,500	\$ 85,500
1.19	RACEWAY, CABLE TRAY, & CONDUIT		\$ -	\$ 326,300	\$ 1,792,700	\$ 2,119,000
1.20	LOW VOLTAGE POWER CABLE & TERMINATIONS		\$ -	\$ 229,800	\$ 547,600	\$ 777,400
1.21	DUCT BANK		\$ -	\$ 186,800	\$ 347,700	\$ 534,500
90.00	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS		\$ 7,995,600	\$ 7,680,500	\$ 16,158,800	\$ 31,834,900
	SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS		\$ 399,800	\$ 1,958,500	\$ 5,800,000	\$ 8,158,300
	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	ID FANS	\$ 8,395,400	\$ 9,639,000	\$ 21,958,800	\$ 39,993,200
2.0	FABRIC FILTERS					
2.1	MECHANICAL EQUIPMENT	A SINGLE FABRIC FILTER (225" X 130') UNIT INCLUDING ALL INTERNAL FABRIC FILTER ELEMENTS SUCH AS BAGS, CAGES, ASH HOPPERS, 2 BROKEN BAG DETECTORS PER	\$ 19,761,000	\$ -	\$ 12,604,200	\$ 32,365,200
2.2	INSULATION FOR FABRIC FILTER	SUBCONTRACT COST INCLUDES LABOR	\$ 2,430,000	\$ -	\$ -	\$ 2,430,000

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2.3	PENTHOUSE FOR FABRIC FILTER	SUPPORT STEEL AND PRLINS INCLUDED WITH OEM EQUIPMENT	\$ 70,200	\$ 787,000	\$ 1,007,600	\$ 1,864,800
2.4	BOTTOM ENCLOSURE FOR BAGHOUSE		\$ 60,000	\$ 1,204,000	\$ 1,359,800	\$ 2,623,800
2.5	PIPING & SUPPORTS - MECHANICAL		\$ 30,900	\$ 101,400	\$ 209,500	\$ 341,800
2.6	FABRIC FILTER - FOUNDATIONS		\$ -	\$ 550,700	\$ 973,600	\$ 1,524,300
2.7	FABRIC FILTER - SUPPORT STEEL AND ACCESS GALLERY		\$ -	\$ 360,000	\$ 1,186,700	\$ 1,546,700
2.8	RACEWAY, CABLE TRAY, & CONDUIT	INCLUDED IN ABSORBER ISLAND 7.0	\$ -	\$ -	\$ -	\$ -
2.9	LIGHT FIXTURE		\$ -	\$ 16,500	\$ 10,000	\$ 26,500
2.10	GROUNDING		\$ 7,300	\$ -	\$ 17,500	\$ 24,800
90.00	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS		\$ 22,359,400	\$ 3,019,600	\$ 17,368,900	\$ 42,747,900
	SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS		\$ 1,118,000	\$ 770,000	\$ 6,453,300	\$ 8,341,300
	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	FABRIC FILTERS	\$ 23,477,400	\$ 3,789,600	\$ 23,822,200	\$ 51,089,200
3.0	NEW STACK					
3.1	CONCRETE STACK (DRY)	PROVIDED BY AEP	\$ -	\$ -	\$ -	\$ 17,600,000
4.0	LIME HANDLING SYSTEM					
4.1	LIME STORAGE SILO		\$ 5,762,000	\$ -	\$ -	\$ 5,762,000
4.2	LIME UNLOADING SYSTEM	INCLUDES PNEUMATIC HANDLING SYSTEM, THREE VACUUM EXHAUSTER, TWO FILTER SEPARATORS	\$ 640,000	\$ -	\$ 408,900	\$ 1,048,900
4.3	PIPING - MECHANICAL		\$ 29,000	\$ 15,600	\$ 77,900	\$ 122,500
4.4	LIME STORAGE SILO ACCESS STAIR TOWER	THREE COAT SHOP PAINT	\$ -	\$ 145,000	\$ 145,900	\$ 290,900
4.5	PIPE RACK FOR LIME HANDLING, WASTE ASH HANDLING AND MISC MECHANICAL PIPING	THREE COAT SHOP PAINT	\$ -	\$ 783,000	\$ 787,800	\$ 1,570,800
4.6	RAIL CAR UNLOADING AREA - FOUNDATIONS	20 X 250 - NO SIDING	\$ -	\$ 85,300	\$ 158,400	\$ 243,700
4.7	LIME UNLOADING BLOWER / ELECTRICAL BUILDING - FOUNDATIONS		\$ -	\$ 160,700	\$ 281,500	\$ 442,200

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4.8	LIME UNLOADING BLOWER / ELECTRICAL BUILDING	130' L X 30' W X 30' H	\$ 75,000	\$ 351,500	\$ 24,400	\$ 450,900
4.9	CONCRETE PIT FOR THE ELEVATOR		\$ -	\$ 2,300	\$ 6,900	\$ 9,200
4.10	LIME STORAGE SILO - FOUNDATIONS		\$ -	\$ 469,600	\$ 774,300	\$ 1,243,900
4.11	LIME STORAGE SILO ACCESS STAIR TOWER - FOUNDATIONS		\$ -	\$ 14,200	\$ 26,200	\$ 40,400
4.12	PIPE RACK - FOUNDATIONS		\$ -	\$ 94,200	\$ 208,200	\$ 302,400
4.13	TRANSFORMERS	SUS TRANSFORMERS: 33F, 33G, 13.8KV-480V	\$ 170,000	\$ -	\$ 54,600	\$ 224,600
4.14	SWITCHGEAR	480V LOW VOLTAGE (33F/G), SWITCHGEAR	\$ 196,000	\$ -	\$ 104,700	\$ 300,700
4.15	CABLE BUS DUCT		\$ 134,700	\$ 10,800	\$ 200,200	\$ 345,700
4.16	MCC		\$ 61,800	\$ -	\$ 3,600	\$ 65,400
4.17	MIMIC PANELS		\$ 17,500	\$ -	\$ 1,400	\$ 18,900
4.18	EMERGENCY POWER SYSTEM		\$ 108,300	\$ -	\$ 24,400	\$ 132,700
4.19	GROUNDING		\$ 13,300	\$ -	\$ 41,300	\$ 54,600
4.20	LIGHTING/ TRANSFORMERS & PANELS		\$ 52,000	\$ 135,000	\$ 104,500	\$ 291,500
4.21	RACEWAY, CABLE TRAY, & CONDUIT		\$ -	\$ 296,400	\$ 1,429,900	\$ 1,726,300
4.22	HIGH VOLTAGE POWER CABLE & TERMINATION	1/C # 500KCMIL-15KV, 12000' UNIT 2 + 3600' LIME UNLOAD	\$ -	\$ 144,600	\$ 407,800	\$ 552,400
4.23	MEDIUM VOLTAGE POWER CABLE & TERMINATION	1/C # 350KCMIL-5KV	\$ -	\$ 66,200	\$ 282,300	\$ 348,500
4.24	LOW VOLTAGE POWER CABLE & TERMINATION		\$ -	\$ 93,000	\$ 143,200	\$ 236,200
4.25	CONTROL & INSTRUMENT CABLE	#14, #16 & PR # 20 & SHLD WIRE	\$ -	\$ 26,200	\$ 73,600	\$ 99,800
4.26	DUCT BANK	DUCT BANK WITH 4-5" & 4-3" CONDUITS, 2.38' H X 3.79' W	\$ -	\$ 61,100	\$ 152,100	\$ 213,200
4.27	FOUNDATIONS FOR TRANSFORMERS	FOR XFMR 33F, 33G, INCLUDES MUD MAT	\$ -	\$ 3,500	\$ 10,300	\$ 13,800
90.00	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS		\$ 7,259,600	\$ 2,958,200	\$ 5,934,300	\$ 16,152,100
	SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS		\$ 363,000	\$ 754,300	\$ 2,163,600	\$ 3,280,900
	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	LIME HANDLING SYSTEM	\$ 7,622,600	\$ 3,712,500	\$ 8,097,900	\$ 19,433,000

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5.0	LIME SLAKER BUILDING					
5.1	MECHANICAL EQUIPMENT	INCLUDES:CHAIN CONVEYOR, SLAKERS THROUGH THE LIME SLURRY PUMPS, PIPING, AND LIME SLURRY STORAGE TANKS.	\$ 7,985,000	\$ -	\$ 4,942,500	\$ 12,927,500
5.2	LIME SLAKER BUILDING SUMP PUMPS	DUPLEX. INCLUDES CHECK & ISOLATION VALVES	\$ 28,000	\$ -	\$ 12,300	\$ 40,300
5.3	AGITATOR FOR SUMP PUMPS	5 HP	\$ 12,000	\$ -	\$ 4,600	\$ 16,600
5.4	PIPING - MECHANICAL		\$ 117,800	\$ 111,400	\$ 381,100	\$ 610,300
5.5	LIME SLURRY TANKS - FOUNDATIONS		\$ -	\$ 166,400	\$ 278,300	\$ 444,700
5.6	LIME SLAKER BUILDING - FOUNDATIONS		\$ -	\$ 119,200	\$ 194,200	\$ 313,400
5.7	LIME SLAKER BUILDING	135' L X 30' W X 50' H	\$ 40,500	\$ 803,300	\$ 740,500	\$ 1,584,300
5.8	ELECTRICAL	INCLUDED WITH LIME HANDLING SYSTEM, ACCOUNT 4.0	\$ -	\$ -	\$ -	\$ -
90.00	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS		\$ 8,183,300	\$ 1,200,300	\$ 6,553,500	\$ 15,937,100
	SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS		\$ 409,200	\$ 306,100	\$ 2,444,800	\$ 3,160,100
	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	LIME SLAKER BUILDING	\$ 8,592,500	\$ 1,506,400	\$ 8,998,300	\$ 19,097,200
6.0	BYPRODUCT WASTE & FLY ASH HANDLING SYSTEMS					
6.1	BYPRODUCT WASTE ASH HANDLING - MECHANICAL EQUIPMENT	INCLUDES PNEUMATIC HANDLING SYSTEM, THREE PRESSURE BLOWERS, ONE BIN VENT FILTER, ASH UNLOADING SYSTEM	\$ 2,047,000	\$ -	\$ 1,380,000	\$ 3,427,000

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6.2	ECONOMIZER ASH HANDLING - MECHANICAL EQUIPMENT	INCLUDES JET PUMPS AND PIPING / SUPPORTS TO THE BOTTOM ASH POND	\$ 400,000	\$ 50,000	\$ 327,100	\$ 777,100
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	\$ 240,900	\$ 759,100	\$ 1,142,800
6.6	BYPRODUCT WASTE SILO	CONCRETE SILO 65' DIA X 111' H - 4700 TONS - SUBCONTRACT COST INCLUDES LABOR	\$ 2,630,000	\$ -	\$ -	\$ 2,630,000
6.7	SDA RECYCLE SILO	INCLUDED WITH OEM EQUIPMENT	\$ -	\$ -	\$ -	\$ -
6.8	SDA FLY ASH SILO	NOT REQUIRED - ECONOMIZER FLY ASH SLUICED TO BOTTOM ASH POND	\$ -	\$ -	\$ -	\$ -
6.9	WASTE ASH STORAGE SILO - FOUNDATIONS		\$ -	\$ 186,400	\$ 311,300	\$ 497,700
6.10	FLY ASH SILO - FOUNDATIONS	NOT REQUIRED	\$ -	\$ -	\$ -	\$ -
6.11	FLY ASH BLOWER AND ELECTRICAL BUILDING - FOUNDATIONS	NOT REQUIRED	\$ -	\$ -	\$ -	\$ -
6.12	FLY ASH BLOWER AND ELECTRICAL BUILDING	NOT REQUIRED	\$ -	\$ -	\$ -	\$ -
6.13	RECYCLE ASH BUILDING - FOUNDATIONS		\$ -	\$ 234,300	\$ 373,100	\$ 607,400
6.14	RECYCLE ASH BUILDING	100' L X 65' W X 50' H	\$ 58,500	\$ 1,306,700	\$ 1,194,500	\$ 2,559,700
6.15	MCC	480V MCC PER LINE UP	\$ 120,000	\$ -	\$ 7,300	\$ 127,300
6.16	EMERGENCY POWER SYSTEM		\$ 185,500	\$ -	\$ 40,000	\$ 225,500
6.17	LIGHTING/ TRANSFORMERS & PANELS		\$ 18,500	\$ 75,000	\$ 53,200	\$ 146,700
6.18	RACEWAY, CABLE TRAY, & CONDUIT		\$ -	\$ 32,800	\$ 177,400	\$ 210,200
6.19	LOW VOLTAGE POWER CABLE & TERMINATION	#4/0 - #12 AWG-600V	\$ -	\$ 80,900	\$ 100,600	\$ 181,500

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6.20	CONTROL & INSTRUMENT CABLE	#14, #16 & PR # 20 & SHLD WIRE	\$ -	\$ 38,400	\$ 313,700	\$ 352,100
6.21	GROUNDING		\$ -	\$ 4,500	\$ 10,900	\$ 15,400
6.22	DUCT BANK	DUCT BANK WITH 12-5" & 6-3" CONDUITS, 5.2' H X 2.08" W	\$ -	\$ 111,500	\$ 184,000	\$ 295,500
90.0	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS		\$ 5,642,300	\$ 2,361,400	\$ 5,249,100	\$ 13,252,800
	SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS		\$ 282,100	\$ 602,200	\$ 1,953,700	\$ 2,838,000
	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	BYPRODUCT WASTE & FLY ASH HANDLING SYSTEMS	\$ 5,924,400	\$ 2,963,600	\$ 7,202,800	\$ 16,090,800
7.0	ABSORBER ISLAND					
7.1	MECHANICAL EQUIPMENT	INCLUDES: ABSORBER MODULES AND ATOMIZERS WITH LUBE OIL, DUCT WORK FROM THE ABSORBERS TO THE FABRIC FILTER, AND COMPLETE RECYCLE SYSTEM WITH PIPING INSIDE FGD	\$ 39,438,000	\$ -	\$ 24,186,100	\$ 63,624,100
7.2	ELEVATOR	MAINTENANCE ELEVATOR - SUBCONTRACT COST INCLUDES LABOR	\$ 325,000	\$ -	\$ -	\$ 325,000
7.3	BUILDING SUMP PUMPS	FOR BUILDINGS - DUPLEX. INCLUDES CHECK & ISOLATION VALVES.	\$ 28,000	\$ -	\$ 12,300	\$ 40,300

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7.4	AGITATOR FOR SUMP PUMPS	5 HP	\$ 12,000	\$ -	\$ 4,600	\$ 16,600
7.5	PIPING - MECHANICAL		\$ 142,800	\$ 36,900	\$ 227,900	\$ 407,600
7.6	SDA SUPERSTRUCTURE		\$ 75,000	\$ 764,900	\$ 1,227,300	\$ 2,067,200
7.7	SDA BOTTOM ENCLOSURE - SUPPORT STEEL, GIRTS AND SIDING	TOTAL FOR THREE ABSORBERS	\$ -	\$ 362,100	\$ 385,200	\$ 747,300
7.8	SDA SHELL / ROOF INSULATION	61,000 SF. SUBCONTRACT COST INCLUDES LABOR	\$ 1,830,000	\$ -	\$ -	\$ 1,830,000
7.9	SDA - SUPPORT STEEL & ACCESS GALLERY		\$ -	\$ 711,000	\$ 1,884,100	\$ 2,595,100
7.10	EXPANSION JOINTS		\$ -	\$ 195,500	\$ 173,800	\$ 369,300
7.11	DUCTWORK		\$ -	\$ 6,175,000	\$ 15,736,600	\$ 21,911,600
7.12	DUCT SUPPORT STEEL	THREE COAT SHOP PAINT	\$ -	\$ 2,755,000	\$ 2,771,700	\$ 5,526,700
7.13	DUCTWORK INSULATION & LAGGING		\$ -	\$ 2,040,000	\$ 3,995,500	\$ 6,035,500
7.14	CONCRETE PIT FOR ELEVATOR		\$ -	\$ 2,800	\$ 8,200	\$ 11,000
7.15	SPRAY DRYER ABSORBER - FOUNDATIONS	TOTAL FOR THREE TOWERS	\$ -	\$ 1,678,600	\$ 2,975,600	\$ 4,654,200
7.16	SDA PDC - FOUNDATION		\$ -	\$ 85,600	\$ 152,700	\$ 238,300
7.17	SDA PDC BUILDING	60' L X 40' W X 13' H. SUBCONTRACT PRICE INCLUDES LABOR	\$ -	\$ 1,200,000	\$ -	\$ 1,200,000
7.18	FOUNDATIONS FOR SUPPORT STEEL		\$ -	\$ 69,000	\$ 126,000	\$ 195,000
7.19	TRANSFORMERS		\$ 770,000	\$ -	\$ 145,600	\$ 915,600
7.20	SWITCHGEAR		\$ 1,082,000	\$ -	\$ 569,000	\$ 1,651,000
7.21	CABLE BUS & TERMINATIONS		\$ 1,082,500	\$ 35,800	\$ 1,853,300	\$ 2,971,600
7.22	MCC		\$ 185,400	\$ -	\$ 8,200	\$ 193,600
7.23	MIMIC PANELS		\$ 17,500	\$ -	\$ 4,500	\$ 22,000
7.24	GROUNDING		\$ -	\$ 16,000	\$ 46,100	\$ 62,100
7.25	LIGHTING/ TRANSFORMERS & PANELS		\$ 156,000	\$ 150,000	\$ 159,100	\$ 465,100
7.26	EMERGENCY POWER SYSTEM		\$ 108,300	\$ -	\$ 24,400	\$ 132,700
7.27	RACEWAY, CABLE TRAY, & CONDUIT		\$ -	\$ 1,574,900	\$ 7,540,300	\$ 9,115,200
7.28	HIGH VOLTAGE POWER CABLE & TERMINATION	1/C # 500KCML- 15KV	\$ -	\$ 53,300	\$ 150,300	\$ 203,600
7.29	MEDIUM VOLTAGE POWER CABLE & TERMINATION		\$ -	\$ 82,500	\$ 243,200	\$ 325,700
7.30	LOW VOLTAGE POWER CABLE & TERMINATION		\$ -	\$ 409,900	\$ 537,400	\$ 947,300
7.31	CONTROL & INSTRUMENT CABLE		\$ -	\$ 99,200	\$ 278,400	\$ 377,600
7.32	DUCT BANK		\$ -	\$ 137,900	\$ 364,600	\$ 502,500

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7.33	FOUNDATION FOR TRANSFORMERS		\$ -	\$ 49,800	\$ 145,800	\$ 195,600
7.34	TRANSFORMER FIRE WALLS	FOR 21A & 21B	\$ -	\$ 3,500	\$ 9,600	\$ 13,100
90.0	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS		\$ 45,252,500	\$ 18,689,200	\$ 65,947,400	\$ 129,889,100
	SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS		\$ 3,072,600	\$ 4,765,700	\$ 25,547,200	\$ 33,385,600
	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	ABSORBER ISLAND	\$ 48,325,100	\$ 23,454,900	\$ 91,494,600	\$ 163,274,700
8.0	ACTIVATED CARBON INJECTION SYSTEM					
8.1	ACI MECHANICAL EQUIPMENT:		\$ 2,805,900	\$ -	\$ 888,300	\$ 3,694,200
8.2	PIPING - MECHANICAL		\$ 29,800	\$ 149,800	\$ 377,100	\$ 556,700
8.3	ACI SYSTEM - FOUNDATIONS		\$ -	\$ 41,500	\$ 79,200	\$ 120,700
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		\$ -	\$ 84,600	\$ 276,700	\$ 361,300
8.8	LOW VOLTAGE POWER CABLE & TERMINATION		\$ -	\$ 30,400	\$ 62,900	\$ 93,300
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		\$ 2,929,000	\$ 321,300	\$ 1,726,800	\$ 4,977,100
	SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS		\$ 146,500	\$ 81,900	\$ 634,600	\$ 863,000
	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	ACTIVATED CARBON INJECTION SYSTEM	\$ 3,075,500	\$ 403,200	\$ 2,361,400	\$ 5,840,100
9.0	COMPRESSED AIR SYSTEM					
9.1	AIR COMPRESSOR & AUXILIARIES		\$ 664,000	\$ -	\$ 155,400	\$ 819,400
9.2	PIPING - MECHANICAL		\$ 320,600	\$ 399,200	\$ 1,096,000	\$ 1,815,800
9.3	AIR COMPRESSOR BUILDING - FOUNDATIONS		\$ -	\$ 96,100	\$ 174,000	\$ 270,100

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9.4	AIR COMPRESSOR BUILDING	100' L X 600' W X 20' H	\$ -	\$ 510,000	\$ -	\$ 510,000
9.5	LIGHTING/ TRANSFORMERS & PANELS		\$ 11,000	\$ 10,500	\$ 11,400	\$ 32,900
9.6	RACEWAY, CABLE TRAY, & CONDUIT	INCLUDED IN ABSORBER ISLAND 7.0	\$ -	\$ -	\$ -	\$ -
9.7	GROUNDING		\$ 4,500	\$ -	\$ 10,900	\$ 15,400
90.00	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS		\$ 1,000,100	\$ 1,015,800	\$ 1,447,700	\$ 3,463,600
	SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS		\$ 50,000	\$ 259,000	\$ 531,000	\$ 840,000
	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	COMPRESSED AIR SYSTEM	\$ 1,050,100	\$ 1,274,800	\$ 1,978,700	\$ 4,303,600
10.0	SERVICE WATER SYSTEM					
10.1	PUMPS		\$ 216,000	\$ -	\$ 94,100	\$ 310,100
10.2	PIPING - MECHANICAL		\$ 183,400	\$ 624,600	\$ 1,092,000	\$ 1,900,000
10.3	PIPING - FIRE PROTECTION SYSTEM		\$ 181,200	\$ 284,600	\$ 673,300	\$ 1,139,100
10.4	TANKS		\$ -	\$ 234,000	\$ -	\$ 234,000
10.5	SERVICE WATER TANK & PUMP - FOUNDATIONS		\$ -	\$ 17,300	\$ 35,000	\$ 52,300
10.6	MAKE UP WATER TANK & PUMP - FOUNDATIONS		\$ -	\$ 22,200	\$ 44,400	\$ 66,600
10.7	ELECTRICAL	INCLUDED IN ABSORBER ISLAND 7.0	\$ -	\$ -	\$ -	\$ -
90.0	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS		\$ 580,600	\$ 1,182,700	\$ 1,938,800	\$ 3,702,100
	SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS		\$ 29,000	\$ 301,600	\$ 707,200	\$ 1,037,900
	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	SERVICE WATER SYSTEM	\$ 609,600	\$ 1,484,300	\$ 2,646,000	\$ 4,740,000
11.0	POTABLE WATER SYSTEM					
11.1	PUMPS		\$ 30,000	\$ -	\$ 18,400	\$ 48,400
11.2	PIPING - MECHANICAL		\$ 99,500	\$ 200,400	\$ 530,700	\$ 830,600
11.3	TANKS		\$ -	\$ 8,500	\$ -	\$ 8,500
11.4	POTABLE WATER TANK & PUMP - FOUNDATIONS		\$ -	\$ 5,200	\$ 8,800	\$ 14,000
11.5	ELECTRICAL	INCLUDED IN ABSORBER ISLAND 7.0	\$ -	\$ -	\$ -	\$ -

Sargent & Lundy, LLC

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

Estimate No.: 30713B
Project No.: 12721-000
Date: 9/10/2010
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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
90.0	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS		\$ 129,500	\$ 214,100	\$ 557,900	\$ 901,500
	SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS		\$ 6,500	\$ 54,600	\$ 202,900	\$ 264,000
	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	POTABLE WATER SYSTEM	\$ 135,975	\$ 268,696	\$ 760,786	\$ 1,165,456
12.0	FGD SUBSTATION					
12.1	TRANSFORMERS		\$ 1,560,500	\$ -	\$ 273,100	\$ 1,833,600
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	\$ 131,700	\$ 204,900
12.4	138KV MAIN FEEDER & TERMINATIONS		\$ 264,000	\$ -	\$ 254,000	\$ 518,000
12.5	SWITCHGEAR		\$ 930,000	\$ -	\$ 136,200	\$ 1,066,200
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		\$ 117,500	\$ -	\$ 13,600	\$ 131,100
12.9	UPS SYSTEM		\$ 108,300	\$ -	\$ 24,400	\$ 132,700
12.10	GROUNDING		\$ 23,300	\$ -	\$ 59,100	\$ 82,400
12.11	LIGHTING/ TRANSFORMERS & PANELS		\$ 26,000	\$ 30,000	\$ 29,500	\$ 85,500
12.12	OUTDOOR LIGHTING	NEW AUX YARD LIGHTING - ALLOWANCE	\$ 25,000	\$ -	\$ 56,800	\$ 81,800
12.13	RACEWAY, CABLE TRAY, & CONDUIT		\$ -	\$ 372,900	\$ 1,787,900	\$ 2,160,800
12.14	DUCT BANK		\$ -	\$ 26,200	\$ 54,300	\$ 80,500
12.15	LOW VOLTAGE POWER CABLE & TERMINATION		\$ -	\$ 112,200	\$ 194,700	\$ 306,900
12.16	CONTROL & INSTRUMENT CABLE	#14, #16 & PR # 20 & SHLD WIRE	\$ -	\$ 21,800	\$ 61,100	\$ 82,900
12.17	FOUNDATION FOR AUX TRANSFORMER		\$ -	\$ 70,200	\$ 183,600	\$ 253,800
12.18	FIREWALL FOR TRANSFORMERS		\$ -	\$ 3,000	\$ 5,200	\$ 8,200
90.0	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS		\$ 3,498,200	\$ 727,500	\$ 3,559,000	\$ 7,784,700

Sargent & Lundy, LLC

AEP
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	SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS		\$ 174,900	\$ 185,500	\$ 1,287,493	\$ 1,647,900
	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	FGD SUBSTATION	\$ 3,673,100	\$ 913,000	\$ 4,846,500	\$ 9,432,600
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 MANDAYS @ \$1500/DAY - SHOWN AS SUBCONTRACT COST	\$ 300,000	\$ -	\$ -	\$ 300,000
13.3	LOCALLY MOUNTED INSTRUMENTS		\$ -	\$ 709,500	\$ 930,500	\$ 1,640,000
90.0	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS		\$ 2,700,000	\$ 709,500	\$ 1,744,100	\$ 5,153,600
	SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS		\$ 135,000	\$ 180,900	\$ 650,900	\$ 966,800
	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	FGD DCS SYSTEM	\$ 2,835,000	\$ 890,400	\$ 2,395,000	\$ 6,120,400
14.0	CEM SYSTEM					
14.1	CEM	PROVIDED BY AEP	\$ 1,260,000	\$ 540,000	\$ 310,000	\$ 2,110,000
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

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15.3	NEW RAILROAD TRACK	INCLUDES, 132LB RAIL, 7" TIMBERS, TIE PLATES, SPIKES, BOLTS, 12" SUBBALLAST, 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 TRACKWORK	\$ -	\$ 33,200	\$ 67,700	\$ 100,900
90.0	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS		\$ 212,500	\$ 2,044,200	\$ 2,080,400	\$ 4,337,100
	SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS		\$ 10,600	\$ 521,300	\$ 777,500	\$ 1,309,400
	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	TRUCK & RAIL INFRASTRUCTURE	\$ 223,100	\$ 2,565,500	\$ 2,857,900	\$ 5,646,500
16.0	SITE IMPROVEMENTS - CIVIL WORK					
16.1	SITE GRADING		\$ -	\$ -	\$ 538,800	\$ 538,800
16.2	ROADS & SURFACING		\$ -	\$ 918,600	\$ 1,237,000	\$ 2,155,600
16.3	NEW CONCRETE ENCASEMENT	16' X 4' X 40' - FOR EXISTING ASH PIPE HALL ROAD CROSSING	\$ -	\$ 144,300	\$ 262,700	\$ 407,000
16.4	TRUCK WASH AREA - CONCRETE PAD		\$ -	\$ 41,900	\$ 70,400	\$ 112,300
16.5	TRUCK WASH AREA - ENCLOSURE		\$ -	\$ 67,400	\$ 95,300	\$ 162,700

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16.6	TRUCK SCALE & CONCRETE APPROACH		\$ 170,000	\$ 27,300	\$ 92,000	\$ 289,300
16.7	PROCESS WATER STORAGE BASIN		\$ 60,000	\$ 110,400	\$ 312,100	\$ 482,500
16.8	PROCESS WATER STORAGE BASIN PUMP STRUCTURE - CONCRETE		\$ -	\$ 47,000	\$ 105,400	\$ 152,400
16.9	STORMWATER DRAINAGE TRENCH	2' W X 3' DEEP CAST-IN-PLACE CONCRETE TRENCH W/REINFORCING & HS-20 RATED GRATE	\$ -	\$ 499,500	\$ 508,300	\$ 1,007,800
16.10	STORMWATER RUNOFF POND		\$ -	\$ 15,000	\$ 122,600	\$ 137,600
16.11	STORM WATER POND PUMP STRUCTURE - CONCRETE		\$ 90,000	\$ 42,300	\$ 182,200	\$ 314,500
16.12	OILY WATER SEWER		\$ 4,500	\$ 105,000	\$ 223,600	\$ 333,100
16.13	OIL SEPARATOR	500 GPM W/ INTEGRAL LIFT STATION	\$ 100,000	\$ -	\$ 116,100	\$ 216,100
16.14	SANITARY SEWER		\$ -	\$ 22,200	\$ 96,900	\$ 119,100
16.15	SANITARY LIFT STATION	PACKAGED TYPE COMPLETE WITH PUMPS 100,000 GPD	\$ 150,000	\$ -	\$ 49,200	\$ 199,200
16.16	CONSTRUCTION LAYDOWN AREA	ALLOWANCE FOR 10 ACRES, DOES NOT INCLUDE LAND ACQUISITION, IF REQUIRED.	\$ -	\$ 700,000	\$ 828,000	\$ 1,528,000
16.17	CRAFT PARKING	DOES NOT INCLUDE LAND ACQUISITION, IF REQUIRED. ALLOWANCE FOR 20,000 SY INCLUDES: 6" BASE COURSE 10 OZ/SY GEOTEXTILE	\$ -	\$ 180,000	\$ 414,200	\$ 594,200

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16.18	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	\$ -	\$ 45,000	\$ 103,600	\$ 148,600
90.0	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS		\$ 574,500	\$ 2,965,900	\$ 5,358,400	\$ 8,899,300
	SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS		\$ 28,700	\$ 756,300	\$ 1,930,500	\$ 2,715,700
	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	SITE IMPROVEMENTS - CIVIL WORK	\$ 603,200	\$ 3,722,200	\$ 7,288,900	\$ 11,615,000
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)		\$ -	\$ 134,200	\$ 514,800	\$ 649,000
17.4	HOISTS & TROLLEYS		\$ 180,000	\$ 210,000	\$ 245,300	\$ 635,300
17.5	MISC AUX STEEL FOR PIPE SUPPORTS	FIELD FABRICATED	\$ -	\$ 122,500	\$ 510,600	\$ 633,100
17.6	MISC PIPE SUPPORT FOUNDATIONS		\$ -	\$ 10,500	\$ 19,600	\$ 30,100
17.7	EYE WASH STATIONS		\$ 30,000	\$ 5,000	\$ 30,700	\$ 65,700
17.8	FIRE PROTECTION FOR MISC BUILDINGS & AREAS		\$ -	\$ 360,000	\$ 294,400	\$ 654,400
90.0	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS		\$ 210,000	\$ 1,051,800	\$ 1,969,900	\$ 3,231,700
	SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS		\$ 10,500	\$ 268,209	\$ 750,035	\$ 1,028,744
	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	BOP ITEMS	\$ 220,500	\$ 1,320,000	\$ 2,719,900	\$ 4,260,400

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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	\$ 738,700	\$ 1,015,000
90.0	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS		\$ -	\$ 479,000	\$ 1,146,600	\$ 1,625,600
	SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS		\$ -	\$ 122,100	\$ 401,400	\$ 523,600
	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	CAPITAL REPLACEMENTS - REMOVAL AND RELOCATION OF EXISTING EQUIPMENT AND INFRASTRUCTURE	\$ -	\$ 601,100	\$ 1,548,000	\$ 2,149,200
19.0	ARSENIC, ASBESTOS , LEAD ABATEMENT					
19.1	ARSENIC, ASBESTOS , LEAD ABATEMENT	ALLOWANCE PROVIDED BY AEP	\$ -	\$ -	\$ -	\$ 750,000
99.0	OVERALL - EQUIPMENT, MATERIAL AND LABOR COSTS		\$ 109,787,100	\$ 47,161,000	\$ 139,051,600	\$ 314,349,700
	OVERALL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS		\$ 6,236,400	\$ 11,888,400	\$ 52,236,300	\$ 70,361,000
	OVERALL TOTAL DIRECT & CONSTRUCTION INDIRECT COST		\$ 116,023,500	\$ 59,049,400	\$ 191,287,900	\$ 384,710,700

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	OVERALL PROJECT INDIRECT COSTS					
	ENGINEERING, PROCUREMENT, & PROJECT SERVICES					\$ 25,000,000
	CONSTRUCTION MANAGEMENT					\$ 11,541,300
	S-U / COMMISSIONING					\$ 3,847,100
	CRAFT START-UP SUPPORT					\$ 1,638,400
	INITIAL FILLS					\$ 1,154,100
	OPERATOR & TRAINING MANUALS					\$ 300,000
	SUBCONTRACTORS (NOISE & DUCTWORK CONSULTANT, GEOTECHNICAL INVESTIGATION)					\$ 400,000
	OWNERS COST	BY AEP				\$ -
	TOTAL PROJECT DIRECT AND INDIRECT COSTS					\$ 428,591,600
	SPARE PARTS FOR THE OEM & THE BOP EQUIPMENT					\$ 1,508,300
	SPARE PARTS FOR THE OEM EQUIPMENT	0.80				\$ 935,146
	SPARE PARTS FOR THE BOP EQUIPMENT	0.50				\$ 573,154
	CONTINGENCY	15.1				\$ 64,916,400
	ESCALATION					\$ 30,079,800
	EQUIPMENT					\$ 12,108,100
	MATERIAL					\$ 2,996,900
	LABOR					\$ 12,180,600
	INDIRECTS					\$ 2,794,200
	INTEREST DURING CONSTRUCTION (AFUDC)	BY AEP				
	TOTAL PROJECT COST					\$ 525,096,100
	REFERENCE COSTS:					
A	ESP DEMOLITION	ALLOWANCE FOR 1000T STRUCTURE	\$ -	\$ -	\$ 832,300	\$ 832,300
B	REMOVE BOOSTER AIR FANS	ALLOWANCE FOR 150 TON FRAMING REINFORCEMENT	\$ -	\$ -	\$ 111,000	\$ 111,000



Big Sandy Unit 2
Kentucky Power Company
American Electric Power Service Corporation
Order-of-Magnitude FGD Cost Estimate
WFGD, DFGD, IAQCS & NID Technologies
September 10, 2010

ATTACHMENT 3-11
DFGD Summary Capital Cost Estimate No. 30711 Base Est-1A ESP in Service
(3.0 lb SO₂/MMbtu)

DRAFT COPY

Sargent & Lundy, LLC

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1.0	ID FANS					
1.1	ID FANS - OEM EQUIPMENT	1,785,000 ACFM WITH 14,300 HP MOTORS (\$625,000 EACH). INCLUDES HYDRAULIC OIL UNITS, SEAL AIR FAN SKIDS, VIBRATION MONITORING EQUIPMENT, FAN STALL EQUIPMENT, FIELD SERVICE REP FOR 140	\$ 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	FABRIC FILTER OUTLET TO ID FANS AND FROM ID FANS TO STACK - INCLUDES INTERNAL BRACING AND TURNING VANES	\$ -	\$ 2,600,000	\$ 5,959,400	\$ 8,559,400
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 ACOUSTICAL INSULATION	\$ -	\$ 168,000	\$ 217,200	\$ 385,200
1.8	DUCTWORK INSULATION & LAGGING	INCLUDES INSULATION FOR SPRAY DRYER OUTLET DUCT TO FABRIC FILTERS SUPPLIED WITH THE OEM EQUIPMENT	\$ -	\$ 864,000	\$ 1,692,200	\$ 2,556,200
1.9	DUCT SUPPORT STEEL - FOUNDATIONS		\$ -	\$ 295,500	\$ 532,700	\$ 828,200

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1.10	ID FAN FOUNDATIONS INCLUDING ID FAN AUX EQUIPMENT		\$ -	\$ 106,000	\$ 185,600	\$ 291,600
1.11	ID FAN DFGD CONTROL ROOM - FOUNDATIONS		\$ -	\$ 122,100	\$ 196,100	\$ 318,200
1.12	ID FAN DFGD CONTROL ROOM	SUBCONTRACT PRICE INCLUDES LABOR. COMPLETE WITH HVAC, FINISHES AND SANITARY FACILITIES	\$ -	\$ 1,250,000	\$ -	\$ 1,250,000
1.13	MCC		\$ 120,000	\$ -	\$ 7,200	\$ 127,200
1.14	HIGH VOLTAGE POWER CABLE & TERMINATION	1/C # 500KCMIL-15KV - 6600' ID FAN	\$ -	\$ 61,200	\$ 172,500	\$ 233,700
1.15	CONTROL & INSTRUMENT CABLE	#14, #16 & PR # 20 & SHLD WIRE	\$ -	\$ 121,000	\$ 988,200	\$ 1,109,200
1.16	EMERGENCY POWER SYSTEM		\$ 285,500	\$ -	\$ 38,900	\$ 324,400
1.17	GROUNDING		\$ 23,300	\$ -	\$ 59,100	\$ 82,400
1.18	LIGHTING/ TRANSFORMERS & PANELS		\$ 26,000	\$ 30,000	\$ 29,500	\$ 85,500
1.19	RACEWAY, CABLE TRAY, & CONDUIT		\$ -	\$ 326,300	\$ 1,792,700	\$ 2,119,000
1.20	LOW VOLTAGE POWER CABLE & TERMINATIONS		\$ -	\$ 229,800	\$ 547,600	\$ 777,400
1.21	DUCT BANK		\$ -	\$ 186,800	\$ 347,700	\$ 534,500
90.00	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS		\$ 7,545,600	\$ 7,680,500	\$ 16,117,900	\$ 31,344,000
	SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS		\$ 377,300	\$ 1,958,500	\$ 5,785,100	\$ 8,120,900
	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	ID FANS	\$ 7,922,900	\$ 9,639,000	\$ 21,903,000	\$ 39,464,900
2.0	FABRIC FILTERS					

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2.1	MECHANICAL EQUIPMENT	A SINGLE FABRIC FILTER (225" X 130") UNIT INCLUDING ALL INTERNAL FABRIC FILTER ELEMENTS SUCH AS BAGS, CAGES, ASH HOPPERS, 2 BROKEN BAG DETECTORS PER	\$ 19,276,000	\$ -	\$ 12,420,200	\$ 31,696,200
2.2	INSULATION FOR FABRIC FILTER	SUBCONTRACT COST INCLUDES LABOR	\$ 2,430,000	\$ -	\$ -	\$ 2,430,000
2.3	PENTHOUSE FOR FABRIC FILTER	SUPPORT STEEL AND PRLINS INCLUDED WITH OEM EQUIPMENT	\$ 70,200	\$ 787,000	\$ 1,007,600	\$ 1,864,800
2.4	BOTTOM ENCLOSURE FOR BAGHOUSE		\$ 60,000	\$ 1,204,000	\$ 1,359,800	\$ 2,623,800
2.5	PIPING & SUPPORTS - MECHANICAL		\$ 30,900	\$ 101,400	\$ 209,500	\$ 341,800
2.6	FABRIC FILTER - FOUNDATIONS		\$ -	\$ 550,700	\$ 973,600	\$ 1,524,300
2.7	FABRIC FILTER - SUPPORT STEEL AND ACCESS GALLERY		\$ -	\$ 360,000	\$ 1,186,700	\$ 1,546,700
2.8	RACEWAY, CABLE TRAY, & CONDUIT	INCLUDED IN ABSORBER ISLAND 7.0	\$ -	\$ -	\$ -	\$ -
2.9	LIGHT FIXTURE		\$ -	\$ 16,500	\$ 10,000	\$ 26,500
2.10	GROUNDING		\$ 7,300	\$ -	\$ 17,500	\$ 24,800
90.00	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS		\$ 21,874,400	\$ 3,019,600	\$ 17,184,900	\$ 42,078,900
	SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS		\$ 1,093,700	\$ 770,000	\$ 6,384,800	\$ 8,248,500
	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	FABRIC FILTERS	\$ 22,968,100	\$ 3,789,600	\$ 23,569,700	\$ 50,327,400
3.0	NEW STACK		\$ -	\$ -	\$ -	\$ -
3.1	CONCRETE STACK (DRY)	PROVIDED BY AEP	\$ -	\$ -	\$ -	\$ 17,600,000
4.0	LIME HANDLING SYSTEM					

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
4.1	LIME STORAGE SILO		\$ 6,770,000	\$ -	\$ -	\$ 6,770,000
4.2	LIME UNLOADING SYSTEM	INCLUDES PNEUMATIC HANDLING SYSTEM, THREE VACUUM EXHAUSTER, TWO FILTER SEPARATORS	\$ 640,000	\$ -	\$ 408,900	\$ 1,048,900
4.3	PIPING - MECHANICAL		\$ 29,000	\$ 15,600	\$ 77,900	\$ 122,500
4.4	LIME STORAGE SILO ACCESS STAIR TOWER	THREE COAT SHOP PAINT	\$ -	\$ 145,000	\$ 145,900	\$ 290,900
4.5	PIPE RACK FOR LIME HANDLING, WASTE ASH HANDLING AND MISC MECHANICAL PIPING	THREE COAT SHOP PAINT	\$ -	\$ 783,000	\$ 787,800	\$ 1,570,800
4.6	RAIL CAR UNLOADING AREA - FOUNDATIONS	20 X 250 - NO SIDING	\$ -	\$ 85,300	\$ 158,400	\$ 243,700
4.7	LIME UNLOADING BLOWER / ELECTRICAL BUILDING - FOUNDATIONS		\$ -	\$ 160,700	\$ 281,500	\$ 442,200
4.8	LIME UNLOADING BLOWER / ELECTRICAL BUILDING	130' L X 30' W X 30' H	\$ 75,000	\$ 351,500	\$ 24,400	\$ 450,900
4.9	CONCRETE PIT FOR THE ELEVATOR		\$ -	\$ 2,300	\$ 6,900	\$ 9,200
4.10	LIME STORAGE SILO - FOUNDATIONS		\$ -	\$ 563,700	\$ 929,500	\$ 1,493,200
4.11	LIME STORAGE SILO ACCESS STAIR TOWER - FOUNDATIONS		\$ -	\$ 14,200	\$ 26,200	\$ 40,400
4.12	PIPE RACK - FOUNDATIONS		\$ -	\$ 94,200	\$ 208,200	\$ 302,400
4.13	TRANSFORMERS	SUS TRANSFORMERS: 33F, 33G, 13.8KV-480V, 3PHASE, 3 WINDING XFMR 2/2.24/3-2MVA (DELTA TO DELTA)	\$ 170,000	\$ -	\$ 54,600	\$ 224,600
4.14	SWITCHGEAR	480V LOW VOLTAGE (33F/G), SWITCHGEAR WITH 1-4000A BRKR & 3-600A BRKRs & 1- 4000A TIE BRKR 2.5 MVA SEC	\$ 196,000	\$ -	\$ 104,700	\$ 300,700
4.15	CABLE BUS DUCT		\$ 134,700	\$ 10,800	\$ 200,200	\$ 345,700
4.16	MCC		\$ 61,800	\$ -	\$ 3,600	\$ 65,400
4.17	MIMIC PANELS		\$ 17,500	\$ -	\$ 1,400	\$ 18,900
4.18	EMERGENCY POWER SYSTEM		\$ 108,300	\$ -	\$ 24,400	\$ 132,700
4.19	GROUNDING		\$ 13,300	\$ -	\$ 41,300	\$ 54,600

Sargent & Lundy, LLC

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

Estimate No.: 30711B
Project No.: 12721-000
Date: 9/10/2010

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
4.20	LIGHTING/ TRANSFORMERS & PANELS		\$ 52,000	\$ 135,000	\$ 104,500	\$ 291,500
4.21	RACEWAY, CABLE TRAY, & CONDUIT		\$ -	\$ 296,400	\$ 1,429,900	\$ 1,726,300
4.22	HIGH VOLTAGE POWER CABLE & TERMINATION	1/C # 500KCMIL-15KV, 12000' UNIT 2 + 3600' LIME UNLOAD	\$ -	\$ 144,600	\$ 407,800	\$ 552,400
4.23	MEDIUM VOLTAGE POWER CABLE & TERMINATION	1/C # 350KCMIL-5KV	\$ -	\$ 66,200	\$ 282,300	\$ 348,500
4.24	LOW VOLTAGE POWER CABLE & TERMINATION		\$ -	\$ 93,000	\$ 143,200	\$ 236,200
4.25	CONTROL & INSTRUMENT CABLE	#14, #16 & PR # 20 & SHLD WIRE	\$ -	\$ 26,200	\$ 73,600	\$ 99,800
4.26	DUCT BANK	DUCT BANK WITH 4-5" & 4-3" CONDUITS, 2.38' H X 3.79' W	\$ -	\$ 61,100	\$ 152,100	\$ 213,200
4.27	FOUNDATIONS FOR TRANSFORMERS	FOR XFMR 33F, 33G, INCLUDES MUD MAT	\$ -	\$ 3,500	\$ 10,300	\$ 13,800
90.00	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS		\$ 8,267,600	\$ 3,052,300	\$ 6,089,500	\$ 17,409,400
	SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS		\$ 413,400	\$ 778,300	\$ 2,224,100	\$ 3,415,900
	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	LIME HANDLING SYSTEM	\$ 8,681,000	\$ 3,830,600	\$ 8,313,600	\$ 20,825,300
5.0	LIME SLAKER BUILDING					
5.1	MECHANICAL EQUIPMENT	INCLUDES:CHAIN CONVEYOR, SLAKERS THROUGH THE LIME SLURRY PUMPS, PIPING, AND LIME SLURRY STORAGE TANKS.	\$ 8,616,000	\$ -	\$ 5,170,900	\$ 13,786,900
5.2	LIME SLAKER BUILDING SUMP PUMPS	DUPLEX. INCLUDES CHECK & ISOLATION VALVES	\$ 28,000	\$ -	\$ 12,300	\$ 40,300
5.3	AGITATOR FOR SUMP PUMPS	5 HP	\$ 12,000	\$ -	\$ 4,600	\$ 16,600
5.4	PIPING - MECHANICAL		\$ 117,800	\$ 111,400	\$ 381,100	\$ 610,300
5.5	LIME SLURRY TANKS - FOUNDATIONS		\$ -	\$ 166,400	\$ 278,300	\$ 444,700

Sargent & Lundy, LLC

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

Estimate No.: 30711B
Project No.: 12721-000
Date: 9/10/2010

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
5.6	LIME SLAKER BUILDING - FOUNDATIONS		\$ -	\$ 119,200	\$ 194,200	\$ 313,400
5.7	LIME SLAKER BUILDING	135' L X 30' W X 50' H	\$ 40,500	\$ 803,300	\$ 740,500	\$ 1,584,300
5.8	ELECTRICAL	INCLUDED WITH LIME HANDLING SYSTEM, ACCOUNT 4.0	\$ -	\$ -	\$ -	\$ -
90.00	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS		\$ 8,814,300	\$ 1,200,300	\$ 6,781,900	\$ 16,796,500
	SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS		\$ 440,700	\$ 306,100	\$ 2,530,200	\$ 3,277,000
	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	LIME SLAKER BUILDING	\$ 9,255,000	\$ 1,506,400	\$ 9,312,100	\$ 20,073,500
6.0	BYPRODUCT WASTE & FLY ASH HANDLING SYSTEMS					
6.1	BYPRODUCT WASTE ASH HANDLING - MECHANICAL EQUIPMENT	INCLUDES PNEUMATIC HANDLING SYSTEM, THREE PRESSURE BLOWERS, ONE BIN VENT FILTER, ASH UNLOADING SYSTEM	\$ 2,047,000	\$ -	\$ 1,380,000	\$ 3,427,000
6.2	FLY ASH HANDLING - MECHANICAL EQUIPMENT	INCLUDES PNEUMATIC HANDLING SYSTEM, TWO PRESSURE EXHAUSTERS, TRANSFER STATION, ONE BIN VENT FILTER, ASH UNLOADING	\$ 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

Sargent & Lundy, LLC

AEP
BIG SANDY UNIT 2
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Estimate No.: 30711B
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Date: 9/10/2010

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
6.5	PIPING - MECHANICAL		\$ 142,800	\$ 240,900	\$ 759,100	\$ 1,142,800
6.6	BYPRODUCT WASTE SILO	CONCRETE SILO 60' DIA X 98' H - 3475 TONS - SUBCONTRACT COST INCLUDES LABOR	\$ 1,885,000	\$ -	\$ -	\$ 1,885,000
6.7	SDA RECYCLE SILO	INCLUDED WITH OEM EQUIPMENT	\$ -	\$ -	\$ -	\$ -
6.8	SDA FLY ASH SILO	46T STEEL -STORAGE SILO. 15' DIA X 19' H	\$ 45,000	\$ 23,200	\$ 64,300	\$ 132,500
6.9	BYPRODUCT WASTE SILO - FOUNDATIONS		\$ -	\$ 144,100	\$ 237,800	\$ 381,900
6.10	FLY ASH SILO - FOUNDATIONS		\$ -	\$ 10,800	\$ 21,000	\$ 31,800
6.11	FLY ASH BLOWER AND ELECTRICAL BUILDING - FOUNDATIONS		\$ -	\$ 49,600	\$ 93,200	\$ 142,800
6.12	FLY ASH BLOWER AND ELECTRICAL BUILDING	90' L X 30' W X 25' H	\$ 28,000	\$ 244,500	\$ 16,200	\$ 288,700
6.13	RECYCLE ASH BUILDING - FOUNDATIONS		\$ -	\$ 234,300	\$ 373,100	\$ 607,400
6.14	RECYCLE ASH BUILDING	100' L X 65' W X 50' H	\$ 58,500	\$ 1,306,700	\$ 1,194,500	\$ 2,559,700
6.15	MCC	480V MCC PER LINE UP	\$ 120,000	\$ -	\$ 7,300	\$ 127,300
6.16	EMERGENCY POWER SYSTEM		\$ 185,500	\$ -	\$ 40,000	\$ 225,500
6.17	LIGHTING/ TRANSFORMERS & PANELS		\$ 18,500	\$ 75,000	\$ 53,200	\$ 146,700
6.18	RACEWAY, CABLE TRAY, & CONDUIT		\$ -	\$ 32,800	\$ 177,400	\$ 210,200
6.19	LOW VOLTAGE POWER CABLE & TERMINATION	#4/0 - #12 AWG-600V	\$ -	\$ 80,900	\$ 100,600	\$ 181,500
6.20	CONTROL & INSTRUMENT CABLE	#14, #16 & PR # 20 & SHLD WIRE	\$ -	\$ 38,400	\$ 313,700	\$ 352,100
6.21	GROUNDING		\$ -	\$ 4,500	\$ 10,900	\$ 15,400
6.22	DUCT BANK	DUCT BANK WITH 12-5" & 6-3" CONDUITS, 5.2' H X 2.08" W	\$ -	\$ 111,500	\$ 184,000	\$ 295,500
90.0	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS		\$ 6,855,300	\$ 2,597,200	\$ 6,474,300	\$ 15,926,800
	SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS		\$ 342,800	\$ 662,300	\$ 2,410,000	\$ 3,415,000

Sargent & Lundy, LLC

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

Estimate No.: 30711B
Project No.: 12721-000
Date: 9/10/2010

COST ESTIMATE SUMMARY

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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
	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	BYPRODUCT WASTE & FLY ASH HANDLING SYSTEMS	\$ 7,198,100	\$ 3,259,500	\$ 8,884,300	\$ 19,341,800
7.0	ABSORBER ISLAND					
7.1	MECHANICAL EQUIPMENT	INCLUDES: ABSORBER MODULES AND ATOMIZERS WITH LUBE OIL, DUCT WORK FROM THE ABSORBERS TO THE FABRIC FILTER, AND COMPLETE RECYCLE SYSTEM WITH PIPING INSIDE FGD	\$ 39,438,000	\$ -	\$ 24,186,100	\$ 63,624,100
7.2	ELEVATOR	MAINTENANCE ELEVATOR - SUBCONTRACT COST INCLUDES LABOR	\$ 325,000	\$ -	\$ -	\$ 325,000
7.3	BUILDING SUMP PUMPS	FOR BUILDINGS - DUPLEX. INCLUDES CHECK & ISOLATION VALVES.	\$ 28,000	\$ -	\$ 12,300	\$ 40,300
7.4	AGITATOR FOR SUMP PUMPS	5 HP	\$ 12,000	\$ -	\$ 4,600	\$ 16,600
7.5	PIPING - MECHANICAL		\$ 142,800	\$ 36,900	\$ 227,900	\$ 407,600
7.6	SDA SUPERSTRUCTURE		\$ 75,000	\$ 764,900	\$ 1,227,300	\$ 2,067,200
7.7	SDA BOTTOM ENCLOSURE - SUPPORT STEEL, GIRTS AND SIDING	TOTAL FOR THREE ABSORBERS	\$ -	\$ 362,100	\$ 385,200	\$ 747,300
7.8	SDA SHELL / ROOF INSULATION	61,000 SF. SUBCONTRACT COST INCLUDES LABOR	\$ 1,830,000	\$ -	\$ -	\$ 1,830,000
7.9	SDA - SUPPORT STEEL & ACCESS GALLERY		\$ -	\$ 711,000	\$ 1,884,100	\$ 2,595,100
7.10	EXPANSION JOINTS		\$ -	\$ 195,500	\$ 173,800	\$ 369,300

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
7.11	DUCTWORK		\$ -	\$ 6,175,000	\$ 15,736,600	\$ 21,911,600
7.12	DUCT SUPPORT STEEL	THREE COAT SHOP PAINT	\$ -	\$ 2,755,000	\$ 2,771,700	\$ 5,526,700
7.13	DUCTWORK INSULATION & LAGGING		\$ -	\$ 2,040,000	\$ 3,995,500	\$ 6,035,500
7.14	CONCRETE PIT FOR ELEVATOR		\$ -	\$ 2,800	\$ 8,200	\$ 11,000
7.15	SPRAY DRYER ABSORBER - FOUNDATIONS	TOTAL FOR THREE TOWERS	\$ -	\$ 1,678,600	\$ 2,975,600	\$ 4,654,200
7.16	SDA PDC - FOUNDATION		\$ -	\$ 85,600	\$ 152,700	\$ 238,300
7.17	SDA PDC BUILDING	60' L X 40' W X 13' H. SUBCONTRACT PRICE INCLUDES LABOR	\$ -	\$ 1,200,000	\$ -	\$ 1,200,000
7.18	FOUNDATIONS FOR SUPPORT STEEL		\$ -	\$ 69,000	\$ 126,000	\$ 195,000
7.19	TRANSFORMERS		\$ 770,000	\$ -	\$ 145,600	\$ 915,600
7.20	SWITCHGEAR		\$ 1,082,000	\$ -	\$ 569,000	\$ 1,651,000
7.21	CABLE BUS & TERMINATIONS		\$ 1,082,500	\$ 35,800	\$ 1,853,300	\$ 2,971,600
7.22	MCC		\$ 185,400	\$ -	\$ 8,200	\$ 193,600
7.23	MIMIC PANELS		\$ 17,500	\$ -	\$ 4,500	\$ 22,000
7.24	GROUNDING		\$ -	\$ 16,000	\$ 46,100	\$ 62,100
7.25	LIGHTING/ TRANSFORMERS & PANELS		\$ 156,000	\$ 150,000	\$ 159,100	\$ 465,100
7.26	EMERGENCY POWER SYSTEM		\$ 108,300	\$ -	\$ 24,400	\$ 132,700
7.27	RACEWAY, CABLE TRAY, & CONDUIT		\$ -	\$ 1,574,900	\$ 7,540,300	\$ 9,115,200
7.28	HIGH VOLTAGE POWER CABLE & TERMINATION	1/C # 500KCMIL- 15KV	\$ -	\$ 53,300	\$ 150,300	\$ 203,600
7.29	MEDIUM VOLTAGE POWER CABLE & TERMINATION		\$ -	\$ 82,500	\$ 243,200	\$ 325,700
7.30	LOW VOLTAGE POWER CABLE & TERMINATION		\$ -	\$ 409,900	\$ 537,400	\$ 947,300
7.31	CONTROL & INSTRUMENT CABLE		\$ -	\$ 99,200	\$ 278,400	\$ 377,600
7.32	DUCT BANK		\$ -	\$ 137,900	\$ 364,600	\$ 502,500
7.33	FOUNDATION FOR TRANSFORMERS		\$ -	\$ 49,800	\$ 145,800	\$ 195,600
7.34	TRANSFORMER FIRE WALLS		\$ -	\$ 3,500	\$ 9,600	\$ 13,100
90.0	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS		\$ 45,252,500	\$ 18,689,200	\$ 65,947,400	\$ 129,889,100
	SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS		\$ 3,072,600	\$ 4,765,700	\$ 25,531,100	\$ 33,369,500
	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	ABSORBER ISLAND	\$ 48,325,100	\$ 23,454,900	\$ 91,478,500	\$ 163,258,600
8.0	ACTIVATED CARBON INJECTION SYSTEM					
8.1	ACI MECHANICAL EQUIPMENT:		\$ 2,805,900	\$ -	\$ 888,300	\$ 3,694,200

Sargent & Lundy, LLC

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

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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
8.2	PIPING - MECHANICAL		\$ 29,800	\$ 149,800	\$ 377,100	\$ 556,700
8.3	ACI SYSTEM - FOUNDATIONS		\$ -	\$ 41,500	\$ 79,200	\$ 120,700
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		\$ -	\$ 84,600	\$ 276,700	\$ 361,300
8.8	LOW VOLTAGE POWER CABLE & TERMINATION		\$ -	\$ 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		\$ 2,929,000	\$ 321,300	\$ 1,726,800	\$ 4,977,100
	SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS		\$ 146,500	\$ 81,900	\$ 634,600	\$ 863,000
	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	ACTIVATED CARBON INJECTION SYSTEM	\$ 3,075,500	\$ 403,200	\$ 2,361,400	\$ 5,840,100
9.0	COMPRESSED AIR SYSTEM					
9.1	AIR COMPRESSOR & AUXILIARIES		\$ 664,000	\$ -	\$ 155,400	\$ 819,400
9.2	PIPING - MECHANICAL		\$ 320,600	\$ 399,200	\$ 1,096,000	\$ 1,815,800
9.3	AIR COMPRESSOR BUILDING - FOUNDATIONS		\$ -	\$ 96,100	\$ 174,000	\$ 270,100
9.4	AIR COMPRESSOR BUILDING	100' L X 600' W X 20' H	\$ -	\$ 510,000	\$ -	\$ 510,000
9.5	LIGHTING/ TRANSFORMERS & PANELS		\$ 11,000	\$ 10,500	\$ 11,400	\$ 32,900
9.6	RACEWAY, CABLE TRAY, & CONDUIT	INCLUDED IN ABSORBER ISLAND 7.0	\$ -	\$ -	\$ -	\$ -
9.7	GROUNDING		\$ 4,500	\$ -	\$ 10,900	\$ 15,400
90.00	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS		\$ 1,000,100	\$ 1,015,800	\$ 1,447,700	\$ 3,463,600

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AEP
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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		\$ 50,000	\$ 259,000	\$ 531,000	\$ 840,000
	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	COMPRESSED AIR SYSTEM	\$ 1,050,100	\$ 1,274,800	\$ 1,978,700	\$ 4,303,600
10.0	SERVICE WATER SYSTEM					
10.1	PUMPS		\$ 216,000	\$ -	\$ 94,100	\$ 310,100
10.2	PIPING - MECHANICAL		\$ 183,400	\$ 624,600	\$ 1,092,000	\$ 1,900,000
10.3	PIPING - FIRE PROTECTION SYSTEM		\$ 181,200	\$ 284,600	\$ 673,300	\$ 1,139,100
10.4	TANKS		\$ -	\$ 234,000	\$ -	\$ 234,000
10.5	SERVICE WATER TANK & PUMP - FOUNDATIONS		\$ -	\$ 17,300	\$ 35,000	\$ 52,300
10.6	MAKE UP WATER TANK & PUMP - FOUNDATIONS		\$ -	\$ 22,200	\$ 44,400	\$ 66,600
10.7	ELECTRICAL	INCLUDED IN ABSORBER ISLAND 7.0	\$ -	\$ -	\$ -	\$ -
90.0	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS		\$ 580,600	\$ 1,182,700	\$ 1,938,800	\$ 3,702,100
	SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS		\$ 29,000	\$ 301,600	\$ 707,200	\$ 1,037,900
	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	SERVICE WATER SYSTEM	\$ 609,600	\$ 1,484,300	\$ 2,646,000	\$ 4,740,000
11.0	POTABLE WATER SYSTEM					
11.1	PUMPS		\$ 30,000	\$ -	\$ 18,400	\$ 48,400
11.2	PIPING - MECHANICAL		\$ 99,500	\$ 200,400	\$ 530,700	\$ 830,600
11.3	TANKS		\$ -	\$ 8,500	\$ -	\$ 8,500
11.4	POTABLE WATER TANK & PUMP - FOUNDATIONS		\$ -	\$ 5,200	\$ 8,800	\$ 14,000
11.5	ELECTRICAL	INCLUDED IN ABSORBER ISLAND 7.0	\$ -	\$ -	\$ -	\$ -
90.0	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS		\$ 129,500	\$ 214,100	\$ 557,900	\$ 901,500
	SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS		\$ 6,500	\$ 54,600	\$ 202,900	\$ 264,000

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
	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	POTABLE WATER SYSTEM	\$ 135,975	\$ 268,696	\$ 760,786	\$ 1,165,456
12.0	FGD SUBSTATION					
12.1	TRANSFORMERS		\$ 1,560,500	\$ -	\$ 273,100	\$ 1,833,600
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	\$ 131,700	\$ 204,900
12.4	138KV MAIN FEEDER & TERMINATIONS		\$ 264,000	\$ -	\$ 254,000	\$ 518,000
12.5	SWITCHGEAR		\$ 930,000	\$ -	\$ 136,200	\$ 1,066,200
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		\$ 117,500	\$ -	\$ 13,600	\$ 131,100
12.90	UPS SYSTEM		\$ 108,300	\$ -	\$ 24,400	\$ 132,700
12.10	GROUNDING		\$ 23,300	\$ -	\$ 59,100	\$ 82,400
12.11	LIGHTING/ TRANSFORMERS & PANELS		\$ 26,000	\$ 30,000	\$ 29,500	\$ 85,500
12.12	OUTDOOR LIGHTING	NEW AUX YARD LIGHTING -	\$ 25,000	\$ -	\$ 56,800	\$ 81,800
12.13	RACEWAY, CABLE TRAY, & CONDUIT		\$ -	\$ 372,900	\$ 1,787,900	\$ 2,160,800
12.14	DUCT BANK		\$ -	\$ 26,200	\$ 54,300	\$ 80,500
12.15	LOW VOLTAGE POWER CABLE & TERMINATION		\$ -	\$ 112,200	\$ 194,700	\$ 306,900
12.16	CONTROL & INSTRUMENT CABLE	#14, #16 & PR # 20 & SHLD WIRE	\$ -	\$ 21,800	\$ 61,100	\$ 82,900
12.17	FOUNDATION FOR AUX TRANSFORMER		\$ -	\$ 70,200	\$ 183,600	\$ 253,800
12.18	FIREWALL FOR TRANSFORMERS		\$ -	\$ 3,000	\$ 5,200	\$ 8,200
90.0	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS		\$ 3,498,200	\$ 727,500	\$ 3,559,000	\$ 7,784,700
	SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS		\$ 174,900	\$ 185,500	\$ 1,287,493	\$ 1,647,900
	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	FGD SUBSTATION	\$ 3,673,100	\$ 913,000	\$ 4,846,500	\$ 9,432,600

Sargent & Lundy, LLC

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

Estimate No.: 30711B
Project No.: 12721-000
Date: 9/10/2010

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
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 MANDAYS @ \$1500/DAY - SHOWN AS SUBCONTRACT COST	\$ 300,000	\$ -	\$ -	\$ 300,000
13.3	LOCALLY MOUNTED INSTRUMENTS		\$ -	\$ 709,500	\$ 930,500	\$ 1,640,000
90.0	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS		\$ 2,700,000	\$ 709,500	\$ 1,744,100	\$ 5,153,600
	SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS		\$ 135,000	\$ 180,900	\$ 650,900	\$ 966,800
	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	FGD DCS SYSTEM	\$ 2,835,000	\$ 890,400	\$ 2,395,000	\$ 6,120,400
14.0	CEM SYSTEM					
14.1	CEM	PROVIDED BY AEP	\$ 1,260,000	\$ 540,000	\$ 310,000	\$ 2,110,000
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" SUBBALLAST, 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

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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 TRACKWORK	\$ -	\$ 33,200	\$ 67,700	\$ 100,900
90.0	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS		\$ 212,500	\$ 2,044,200	\$ 2,080,400	\$ 4,337,100
	SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS		\$ 10,600	\$ 521,300	\$ 777,500	\$ 1,309,400
	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	TRUCK & RAIL INFRASTRUCTURE	\$ 223,100	\$ 2,565,500	\$ 2,857,900	\$ 5,646,500
16.0	SITE IMPROVEMENTS - CIVIL WORK					
16.1	SITE GRADING		\$ -	\$ -	\$ 538,800	\$ 538,800
16.2	ROADS & SURFACING		\$ -	\$ 918,600	\$ 1,237,000	\$ 2,155,600
16.3	NEW CONCRETE ENCASEMENT	16' X 4' X 40' - FOR EXISTING ASH PIPE HALL ROAD CROSSING	\$ -	\$ 144,300	\$ 262,700	\$ 407,000
16.4	TRUCK WASH AREA - CONCRETE PAD		\$ -	\$ 41,900	\$ 70,400	\$ 112,300
16.5	TRUCK WASH AREA - ENCLOSURE		\$ -	\$ 67,400	\$ 95,300	\$ 162,700
16.6	TRUCK SCALE & CONCRETE APPROACH		\$ 170,000	\$ 27,300	\$ 92,000	\$ 289,300
16.7	PROCESS WATER STORAGE BASIN		\$ 60,000	\$ 110,400	\$ 312,600	\$ 483,000
16.8	PROCESS WATER STORAGE BASIN PUMP STRUCTURE - CONCRETE		\$ -	\$ 47,000	\$ 105,400	\$ 152,400

Sargent & Lundy, LLC

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16.9	STORMWATER DRAINAGE TRENCH	2' W X 3' DEEP CAST-IN-PLACE CONCRETE TRENCH W/REINFORCING & HS-20 RATED GRATE COVERS	\$ -	\$ 499,500	\$ 508,300	\$ 1,007,800
16.10	STORMWATER RUNOFF POND		\$ -	\$ 15,000	\$ 122,600	\$ 137,600
16.11	STORM WATER POND PUMP STRUCTURE - CONCRETE		\$ 90,000	\$ 42,300	\$ 182,200	\$ 314,500
16.12	OILY WATER SEWER		\$ 4,500	\$ 105,000	\$ 223,600	\$ 333,100
16.13	OIL SEPARATOR	500 GPM W/ INTEGRAL LIFT STATION	\$ 100,000	\$ -	\$ 116,100	\$ 216,100
16.14	SANITARY SEWER		\$ -	\$ 22,200	\$ 96,900	\$ 119,100
16.15	SANITARY LIFT STATION	PACKAGED TYPE COMPLETE WITH PUMPS 100,000 GPD	\$ 150,000	\$ -	\$ 49,200	\$ 199,200
16.16	CONSTRUCTION LAYDOWN AREA	ALLOWANCE FOR 10 ACRES, DOES NOT INCLUDE LAND ACQUISITION, IF REQUIRED	\$ -	\$ 700,000	\$ 828,000	\$ 1,528,000
16.17	CRAFT PARKING	DOES NOT INCLUDE LAND ACQUISITION, IF REQUIRED. ALLOWANCE FOR 20,000 SY INCLUDES: 6" BASE COURSE 10 OZ/SY GEOTEXTILE	\$ -	\$ 180,000	\$ 414,200	\$ 594,200

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16.18	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	\$ -	\$ 45,000	\$ 103,600	\$ 148,600
90.0	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS		\$ 574,500	\$ 2,965,900	\$ 5,358,900	\$ 8,899,300
	SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS		\$ 28,700	\$ 756,300	\$ 1,930,600	\$ 2,715,700
	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	SITE IMPROVEMENTS - CIVIL WORK	\$ 603,200	\$ 3,722,200	\$ 7,289,500	\$ 11,615,000
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)		\$ -	\$ 134,200	\$ 514,800	\$ 649,000
17.4	HOISTS & TROLLEYS		\$ 180,000	\$ 210,000	\$ 245,300	\$ 635,300
17.5	MISC AUX STEEL FOR PIPE SUPPORTS	FIELD FABRICATED	\$ -	\$ 122,500	\$ 510,600	\$ 633,100
17.6	MISC PIPE SUPPORT FOUNDATIONS		\$ -	\$ 10,500	\$ 19,600	\$ 30,100
17.7	EYE WASH STATIONS		\$ 30,000	\$ 5,000	\$ 30,700	\$ 65,700
17.8	FIRE PROTECTION FOR MISC BUILDINGS & AREAS		\$ -	\$ 360,000	\$ 294,400	\$ 654,400
90.0	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS		\$ 210,000	\$ 1,051,800	\$ 1,969,900	\$ 3,231,700
	SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS		\$ 10,500	\$ 268,209	\$ 750,035	\$ 1,028,744
	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	BOP ITEMS	\$ 220,500	\$ 1,320,000	\$ 2,719,900	\$ 4,260,400

Sargent & Lundy, LLC

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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	\$ 738,700	\$ 1,015,000
90.0	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS		\$ -	\$ 479,000	\$ 1,146,600	\$ 1,625,600
	SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS		\$ -	\$ 122,100	\$ 401,400	\$ 523,600
	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	CAPITAL REPLACEMENTS - REMOVAL AND RELOCATION OF EXISTING EQUIPMENT AND INFRASTRUCTURE	\$ -	\$ 601,100	\$ 1,548,000	\$ 2,149,200
19.0	ARSENIC, ASBESTOS , LEAD ABATEMENT	0.0				
19.1	ARSENIC, ASBESTOS , LEAD ABATEMENT	ALLOWANCE PROVIDED	\$ -	\$ -	\$ -	\$ 750,000
99.0	OVERALL - EQUIPMENT, MATERIAL AND LABOR COSTS		\$ 111,704,100	\$ 47,490,900	\$ 140,436,000	\$ 317,981,000
	OVERALL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS		\$ 6,332,200	\$ 11,972,500	\$ 52,739,200	\$ 71,043,900
	OVERALL TOTAL DIRECT & CONSTRUCTION INDIRECT COST		\$ 118,036,300	\$ 59,463,400	\$ 193,175,200	\$ 389,774,900

Sargent & Lundy, LLC

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	OVERALL PROJECT INDIRECT COSTS					
	ENGINEERING, PROCUREMENT, & PROJECT SERVICES					\$ 25,000,000
	CONSTRUCTION MANAGEMENT					\$ 11,648,200
	S-U / COMMISSIONING					\$ 3,882,700
	CRAFT START-UP SUPPORT					\$ 1,654,800
	INITIAL FILLS					\$ 1,164,800
	OPERATOR & TRAINING MANUALS					\$ 300,000
	SUBCONTRACTORS (NOISE & DUCTWORK CONSULTANT, GEOTECHNICAL INVESTIGATION)					\$ 400,000
	OWNERS COST	BY AEP				\$ -
	TOTAL PROJECT DIRECT AND INDIRECT COSTS					\$ 432,325,400
	SPARE PARTS FOR THE OEM & THE BOP EQUIPMENT					\$ 1,534,500
	SPARE PARTS FOR THE OEM EQUIPMENT	0.80				\$ 951,390
	SPARE PARTS FOR THE BOP EQUIPMENT	0.50				\$ 583,110
	CONTINGENCY	15.2				\$ 65,904,800
	ESCALATION					\$ 30,441,900
	EQUIPMENT					\$ 12,318,200
	MATERIAL					\$ 3,017,900
	LABOR					\$ 12,300,800
	INDIRECTS					\$ 2,805,000
	INTEREST DURING CONSTRUCTION (AFUDC)	BY AEP				
	TOTAL PROJECT COST					\$ 530,206,600
	REFERENCE COSTS:					

Sargent & Lundy, LLC				AEP BIG SANDY UNIT 2 FGD PROJECT - DRY FGD BASE EST (ESP)-1A - 3.0 LB/MM BTU		Estimate No.: 30711B Project No.: 12721-000 Date: 9/10/2010	
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	
A	ESP STRUCTURAL INTEGRITY MODS	ALLOWANCE FOR 150 TON FRAMING REINFORCEMENT	\$ -	\$ 435,000	\$ 2,140,500	\$ 2,575,500	



Big Sandy Unit 2
Kentucky Power Company
American Electric Power Service Corporation
Order-of-Magnitude FGD Cost Estimate
WFGD, DFGD, IAQCS & NID Technologies
September 10, 2010

ATTACHMENT 3-12
DFGD Summary Capital Cost Estimate No. 30710 Est-2A ESP in Service
(1.7 lb SO₂/MMbtu)

DRAFT COPY

Sargent & Lundy, LLC

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

Estimate No.: 30710B
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
1.0	ID FANS					
2.0	FABRIC FILTERS					
2.1	MECHANICAL EQUIPMENT	A SINGLE FABRIC FILTER (225" X 130") UNIT INCLUDING ALL INTERNAL FABRIC FILTER ELEMENTS SUCH AS BAGS, CAGES, ASH HOPPERS, 2 BROKEN BAG DETECTORS PER	\$ 19,409,000	\$ -	\$ 12,471,300	\$ 31,880,300
2.2	INSULATION FOR FABRIC FILTER	SUBCONTRACT COST INCLUDES LABOR	\$ 2,430,000	\$ -	\$ -	\$ 2,430,000
2.3	PENTHOUSE FOR FABRIC FILTER	SUPPORT STEEL AND PURLINS INCLUDED WITH OEM EQUIPMENT	\$ 70,200	\$ 787,000	\$ 1,007,600	\$ 1,864,800
2.4	BOTTOM ENCLOSURE FOR BAGHOUSE		\$ 60,000	\$ 1,204,000	\$ 1,359,800	\$ 2,623,800
2.5	PIPING & SUPPORTS - MECHANICAL		\$ 30,900	\$ 101,400	\$ 209,500	\$ 341,800
2.6	FABRIC FILTER - FOUNDATIONS		\$ -	\$ 550,700	\$ 973,600	\$ 1,524,300
2.7	FABRIC FILTER - SUPPORT STEEL AND ACCESS GALLERY		\$ -	\$ 360,000	\$ 1,186,700	\$ 1,546,700
2.8	RACEWAY, CABLE TRAY, & CONDUIT	INCLUDED IN ABSORBER ISLAND 7.0	\$ -	\$ -	\$ -	\$ -
2.9	LIGHT FIXTURE		\$ -	\$ 16,500	\$ 10,000	\$ 26,500
2.10	GROUNDING		\$ 7,300	\$ -	\$ 17,500	\$ 24,800
90.00	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS		\$ 22,007,400	\$ 3,019,600	\$ 17,236,000	\$ 42,263,000
	SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS		\$ 1,100,400	\$ 770,000	\$ 6,403,700	\$ 8,274,000
	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	FABRIC FILTERS	\$ 23,107,800	\$ 3,789,600	\$ 23,639,700	\$ 50,537,000
3.0	NEW STACK					

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4.0	LIME HANDLING SYSTEM					
4.1	LIME STORAGE SILO		\$ 3,054,000	\$ -	\$ -	\$ 3,054,000
4.2	LIME UNLOADING SYSTEM	INCLUDES PNEUMATIC HANDLING SYSTEM, THREE VACUUM EXHAUSTER, TWO FILTER SEPARATORS	\$ 350,000	\$ -	\$ 281,100	\$ 631,100
4.3	PIPING - MECHANICAL		\$ 29,000	\$ 15,600	\$ 77,900	\$ 122,500
4.4	LIME STORAGE SILO ACCESS STAIR TOWER	THREE COAT SHOP PAINT	\$ -	\$ 145,000	\$ 145,900	\$ 290,900
4.5	PIPE RACK FOR LIME HANDLING, WASTE ASH HANDLING AND MISC MECHANICAL PIPING	THREE COAT SHOP PAINT	\$ -	\$ 783,000	\$ 787,800	\$ 1,570,800
4.6	RAIL CAR UNLOADING AREA - FOUNDATIONS	20 X 250 - NO SIDING	\$ -	\$ 85,300	\$ 158,400	\$ 243,700
4.7	LIME UNLOADING BLOWER / ELECTRICAL BUILDING - FOUNDATIONS		\$ -	\$ 160,700	\$ 281,500	\$ 442,200
4.8	LIME UNLOADING BLOWER / ELECTRICAL BUILDING	130' L X 30' W X 30' H	\$ 75,000	\$ 351,500	\$ 24,400	\$ 450,900
4.9	CONCRETE PIT FOR THE ELEVATOR		\$ -	\$ 2,300	\$ 6,900	\$ 9,200
4.10	LIME STORAGE SILO - FOUNDATIONS		\$ -	\$ 182,500	\$ 306,000	\$ 488,500
4.11	LIME STORAGE SILO ACCESS STAIR TOWER - FOUNDATIONS		\$ -	\$ 14,200	\$ 26,200	\$ 40,400
4.12	PIPE RACK - FOUNDATIONS		\$ -	\$ 94,200	\$ 208,200	\$ 302,400
4.13	TRANSFORMERS	SUS TRANSFORMERS: 33F, 33G, 13.8KV-480V	\$ 170,000	\$ -	\$ 54,600	\$ 224,600
4.14	SWITCHGEAR	480V LOW VOLTAGE (33F/G), SWITCHGEAR	\$ 196,000	\$ -	\$ 104,700	\$ 300,700
4.15	CABLE BUS DUCT		\$ 134,700	\$ 10,800	\$ 200,200	\$ 345,700
4.16	MCC		\$ 61,800	\$ -	\$ 3,600	\$ 65,400
4.17	MIMIC PANELS		\$ 17,500	\$ -	\$ 1,400	\$ 18,900
4.18	EMERGENCY POWER SYSTEM		\$ 108,300	\$ -	\$ 24,400	\$ 132,700
4.19	GROUNDING		\$ 13,300	\$ -	\$ 41,300	\$ 54,600
4.20	LIGHTING/ TRANSFORMERS & PANELS		\$ 52,000	\$ 135,000	\$ 104,500	\$ 291,500
4.21	RACEWAY, CABLE TRAY, & CONDUIT		\$ -	\$ 296,400	\$ 1,429,900	\$ 1,726,300
4.22	HIGH VOLTAGE POWER CABLE & TERMINATION	1/C # 500KCMIL-15KV, 12000' UNIT 2 + 3600' LIME UNLOAD	\$ -	\$ 144,600	\$ 407,800	\$ 552,400
4.23	MEDIUM VOLTAGE POWER CABLE & TERMINATION	1/C # 350KCMIL-5KV	\$ -	\$ 66,200	\$ 282,300	\$ 348,500

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4.24	LOW VOLTAGE POWER CABLE & TERMINATION		\$ -	\$ 93,000	\$ 143,200	\$ 236,200
4.25	CONTROL & INSTRUMENT CABLE	#14, #16 & PR # 20 & SHLD WIRE	\$ -	\$ 26,200	\$ 73,600	\$ 99,800
4.26	DUCT BANK	DUCT BANK WITH 4-5" & 4-3" CONDUITS, 2.38' H X 3.79' W	\$ -	\$ 61,100	\$ 152,100	\$ 213,200
4.27	FOUNDATIONS FOR TRANSFORMERS	FOR XFMR 33F, 33G, INCLUDES MUD MAT	\$ -	\$ 3,500	\$ 10,300	\$ 13,800
90.00	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS		\$ 4,261,600	\$ 2,671,100	\$ 5,338,200	\$ 12,270,900
	SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS		\$ 213,100	\$ 681,100	\$ 1,933,100	\$ 2,827,300
	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	LIME HANDLING SYSTEM	\$ 4,474,700	\$ 3,352,200	\$ 7,271,300	\$ 15,098,200
5.0	LIME SLAKER BUILDING					
5.1	MECHANICAL EQUIPMENT	INCLUDES:CHAIN CONVEYOR, SLAKERS THROUGH THE LIME SLURRY PUMPS, PIPING, AND LIME SLURRY STORAGE TANKS.	\$ 5,914,000	\$ -	\$ 4,129,800	\$ 10,043,800
5.2	LIME SLAKER BUILDING SUMP PUMPS	DUPLEX. INCLUDES CHECK & ISOLATION VALVES	\$ 28,000	\$ -	\$ 12,300	\$ 40,300
5.3	AGITATOR FOR SUMP PUMPS	5 HP	\$ 12,000	\$ -	\$ 4,600	\$ 16,600
5.4	PIPING - MECHANICAL		\$ 117,800	\$ 111,400	\$ 381,100	\$ 610,300
5.5	LIME SLURRY TANKS - FOUNDATIONS		\$ -	\$ 166,400	\$ 278,300	\$ 444,700
5.6	LIME SLAKER BUILDING - FOUNDATIONS		\$ -	\$ 119,200	\$ 194,200	\$ 313,400
5.7	LIME SLAKER BUILDING	135' L X 30' W X 50' H	\$ 40,500	\$ 776,800	\$ 721,000	\$ 1,538,300
5.8	ELECTRICAL	INCLUDED WITH LIME HANDLING SYSTEM, ACCOUNT 4.0	\$ -	\$ -	\$ -	\$ -
90.00	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS		\$ 6,112,300	\$ 1,173,800	\$ 5,721,300	\$ 13,007,400

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	SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS		\$ 305,600	\$ 299,300	\$ 2,136,100	\$ 2,741,000
	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	LIME SLAKER BUILDING	\$ 6,417,900	\$ 1,473,100	\$ 7,857,400	\$ 15,748,400
6.0	BYPRODUCT WASTE & FLY ASH HANDLING SYSTEMS					
6.1	BYPRODUCT WASTE ASH HANDLING - MECHANICAL EQUIPMENT	INCLUDES PNEUMATIC HANDLING SYSTEM, THREE PRESSURE BLOWERS, ONE BIN VENT FILTER, ASH UNLOADING SYSTEM	\$ 2,047,000	\$ -	\$ 1,380,000	\$ 3,427,000
6.2	FLY ASH HANDLING - MECHANICAL EQUIPMENT	INCLUDES PNEUMATIC HANDLING SYSTEM, TWO PRESSURE EXHAUSTERS, TRANSFER STATION, ONE BIN VENT FILTER, ASH UNLOADING	\$ 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	\$ 240,900	\$ 759,100	\$ 1,142,800
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	SDA RECYCLE SILO	INCLUDED WITH OEM EQUIPMENT	\$ -	\$ -	\$ -	\$ -

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Account No.	Item Description	Scope Definition	Total Equipment Cost	Total Material Cost	Total Construction & Erection Cost	Total Projected Cost
6.8	SDA FLY ASH SILO	46T STEEL -STORAGE SILO. 15' DIA X 19' H	\$ 25,000	\$ 20,300	\$ 61,400	\$ 106,700
6.9	WASTE ASH STORAGE SILO - FOUNDATIONS		\$ -	\$ 92,200	\$ 159,700	\$ 251,900
6.10	FLY ASH SILO - FOUNDATIONS		\$ -	\$ 10,800	\$ 21,000	\$ 31,800
6.11	FLY ASH BLOWER AND ELECTRICAL BUILDING - FOUNDATIONS		\$ -	\$ 49,600	\$ 93,200	\$ 142,800
6.12	FLY ASH BLOWER AND ELECTRICAL BUILDING	90' L X 30' W X 25' H	\$ 28,000	\$ 244,500	\$ 16,200	\$ 288,700
6.13	RECYCLE ASH BUILDING - FOUNDATIONS		\$ -	\$ 234,300	\$ 373,100	\$ 607,400
6.14	RECYCLE ASH BUILDING	100' L X 65' W X 50' H	\$ 58,500	\$ 1,306,700	\$ 1,194,500	\$ 2,559,700
6.15	MCC	480V MCC PER LINE UP	\$ 120,000	\$ -	\$ 7,300	\$ 127,300
6.16	EMERGENCY POWER SYSTEM		\$ 185,500	\$ -	\$ 40,000	\$ 225,500
6.17	LIGHTING/ TRANSFORMERS & PANELS		\$ 18,500	\$ 75,000	\$ 53,200	\$ 146,700
6.18	RACEWAY, CABLE TRAY, & CONDUIT		\$ -	\$ 32,800	\$ 177,400	\$ 210,200
6.19	LOW VOLTAGE POWER CABLE & TERMINATION	#4/0 - #12 AWG-600V	\$ -	\$ 80,900	\$ 100,600	\$ 181,500
6.20	CONTROL & INSTRUMENT CABLE	#14, #16 & PR # 20 & SHLD WIRE	\$ -	\$ 38,400	\$ 313,700	\$ 352,100
6.21	GROUNDING		\$ -	\$ 4,500	\$ 10,900	\$ 15,400
6.22	DUCT BANK	DUCT BANK WITH 12-5" & 6-3" CONDUITS, 5.2' H X 2.08" W	\$ -	\$ 111,500	\$ 184,000	\$ 295,500
90.0	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS		\$ 6,325,300	\$ 2,542,400	\$ 6,393,300	\$ 15,261,000
	SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS		\$ 316,300	\$ 648,300	\$ 2,378,600	\$ 3,343,200
	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	BYPRODUCT WASTE & FLY ASH HANDLING SYSTEMS	\$ 6,641,600	\$ 3,190,700	\$ 8,771,900	\$ 18,604,200
7.0	ABSORBER ISLAND					
8.0	ACTIVATED CARBON INJECTION SYSTEM					
9.0	COMPRESSED AIR SYSTEM					

Sargent & Lundy, LLC

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

Estimate No.: 30710B
Project No.: 12721-000
Date: 9/10/2010
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
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					
18.0	CAPITAL REPLACEMENTS - REMOVAL AND RELOCATION OF EXISTING EQUIPMENT AND INFRASTRUCTURE					
19.0	ARSENIC, ASBESTOS , LEAD ABATEMENT	0.0				
99.0	OVERALL - EQUIPMENT, MATERIAL AND LABOR COSTS		\$ 104,599,100	\$ 47,028,400	\$ 138,594,200	\$ 308,571,700
	OVERALL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS		\$ 5,977,000	\$ 11,854,500	\$ 52,057,600	\$ 69,889,100
	OVERALL TOTAL DIRECT & CONSTRUCTION INDIRECT COST		\$ 110,576,100	\$ 58,882,900	\$ 190,651,800	\$ 378,460,800
	OVERALL PROJECT INDIRECT COSTS					
	ENGINEERING, PROCUREMENT, & PROJECT SERVICES					\$ 25,000,000
	CONSTRUCTION MANAGEMENT					\$ 11,353,800

Sargent & Lundy, LLC

AEP
BIG SANDY UNIT 2
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	S-U / COMMISSIONING					\$ 3,784,600
	CRAFT START-UP SUPPORT					\$ 1,633,100
	INITIAL FILLS					\$ 1,135,400
	OPERATOR & TRAINING MANUALS					\$ 300,000
	SUBCONTRACTORS (NOISE & DUCTWORK CONSULTANT, GEOTECHNICAL INVESTIGATION)					\$ 400,000
	OWNERS COST	BY AEP				\$ -
	TOTAL PROJECT DIRECT AND INDIRECT COSTS					\$ 422,067,700
	SPARE PARTS FOR THE OEM & THE BOP EQUIPMENT					\$ 1,437,500
	SPARE PARTS FOR THE OEM EQUIPMENT	0.80				\$ 891,250
	SPARE PARTS FOR BOP EQUIPMENT	0.50				\$ 546,250
	CONTINGENCY	15.2				\$ 64,314,800
	ESCALATION					\$ 29,444,900
	EQUIPMENT					\$ 11,539,600
	MATERIAL					\$ 2,988,500
	LABOR					\$ 12,140,100
	INDIRECTS					\$ 2,776,700
	INTEREST DURING CONSTRUCTION (AFUDC)	BY AEP				
	TOTAL PROJECT COST					\$ 517,264,900
	REFERENCE COSTS:					
A	ESP STRUCTURAL INTEGRITY MODS	ALLOWANCE FOR 150 TON FRAMING REINFORCEMENT	\$ -	\$ 435,000	\$ 2,188,200	\$ 2,623,200



Big Sandy Unit 2
Kentucky Power Company
American Electric Power Service Corporation
Order-of-Magnitude FGD Cost Estimate
WFGD, DFGD, IAQCS & NID Technologies
September 10, 2010

ATTACHMENT 3-13
DFGD Summary Capital Cost Estimate No. 30712 Est-2B ESP not in Service
(1.7 lb SO₂/MMbtu)

DRAFT COPY

Sargent & Lundy, LLC

AEP
BIG SANDY UNIT 2
FGD PROJECT - DRY FGD EST (N/ESP)-2B - 1.7 LB/MM BTU
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1.0	ID FANS					
1.1	ID FANS - OEM EQUIPMENT	1,870,000 ACFM WITH 19,200 HP MOTORS (\$750,000 EACH). INCLUDES HYDRAULIC OIL UNITS, SEAL AIR FAN SKIDS, VIBRATION MONITORING EQUIPMENT, FAN STALL EQUIPMENT, FIELD SERVICE REP FOR 140	\$ 6,738,000	\$ -	\$ 1,635,600	\$ 8,373,600
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	FABRIC FILTER OUTLET TO ID FANS AND FROM ID FANS TO STACK - INCLUDES INTERNAL BRACING AND TURNING VANES	\$ -	\$ 2,600,000	\$ 5,959,400	\$ 8,559,400
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 ACOUSTICAL INSULATION	\$ -	\$ 168,000	\$ 217,200	\$ 385,200
1.8	DUCTWORK INSULATION & LAGGING	INCLUDES INSULATION FOR SPRAY DRYER OUTLER DUCT TO FABRIC FILTERS SUPPLIED WITH THE OEM EQUIPMENT	\$ -	\$ 864,000	\$ 1,692,200	\$ 2,556,200
1.9	DUCT SUPPORT STEEL - FOUNDATIONS		\$ -	\$ 295,500	\$ 532,700	\$ 828,200
1.10	ID FAN FOUNDATIONS INCLUDING ID FAN AUX EQUIPMENT		\$ -	\$ 106,000	\$ 185,600	\$ 291,600
1.11	ID FAN DFGD CONTROL ROOM - FOUNDATIONS		\$ -	\$ 122,100	\$ 196,100	\$ 318,200

Sargent & Lundy, LLC

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1.12	ID FAN DFGD CONTROL ROOM	SUBCONTRACT PRICE INCLUDES LABOR. COMPLETE WITH HVAC, FINISHES AND SANITARY FACILITIES	\$ -	\$ 1,250,000	\$ -	\$ 1,250,000
1.13	MCC		\$ 120,000	\$ -	\$ 7,200	\$ 127,200
1.14	HIGH VOLTAGE POWER CABLE & TERMINATION	1/C # 500KCMIL-15KV - 6600' ID FAN	\$ -	\$ 61,200	\$ 172,500	\$ 233,700
1.15	CONTROL & INSTRUMENT CABLE	#14, #16 & PR # 20 & SHLD WIRE	\$ -	\$ 121,000	\$ 988,200	\$ 1,109,200
1.16	EMERGENCY POWER SYSTEM		\$ 285,500	\$ -	\$ 38,900	\$ 324,400
1.17	GROUNDING		\$ 23,300	\$ -	\$ 59,100	\$ 82,400
1.18	LIGHTING/ TRANSFORMERS & PANELS		\$ 26,000	\$ 30,000	\$ 29,500	\$ 85,500
1.19	RACEWAY, CABLE TRAY, & CONDUIT		\$ -	\$ 326,300	\$ 1,792,700	\$ 2,119,000
1.20	LOW VOLTAGE POWER CABLE & TERMINATIONS		\$ -	\$ 229,800	\$ 547,600	\$ 777,400
1.21	DUCT BANK		\$ -	\$ 186,800	\$ 347,700	\$ 534,500
90.00	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS		\$ 7,995,600	\$ 7,680,500	\$ 16,158,800	\$ 31,834,900
	SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS		\$ 399,800	\$ 1,958,500	\$ 5,800,000	\$ 8,158,300
	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	ID FANS	\$ 8,395,400	\$ 9,639,000	\$ 21,958,800	\$ 39,993,200
2.0	FABRIC FILTERS					
2.1	MECHANICAL EQUIPMENT	A SINGLE FABRIC FILTER (225" X 130') UNIT INCLUDING ALL INTERNAL FABRIC FILTER ELEMENTS SUCH AS BAGS, CAGES, ASH HOPPERS, 2 BROKEN BAG DETECTORS PER	\$ 19,980,000	\$ -	\$ 12,685,900	\$ 32,665,900
2.2	INSULATION FOR FABRIC FILTER	SUBCONTRACT COST INCLUDES LABOR	\$ 2,430,000	\$ -	\$ -	\$ 2,430,000

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2.3	PENTHOUSE FOR FABRIC FILTER	SUPPORT STEEL AND PRLINS INCLUDED WITH OEM EQUIPMENT	\$ 70,200	\$ 787,000	\$ 1,007,600	\$ 1,864,800
2.4	BOTTOM ENCLOSURE FOR BAGHOUSE		\$ 60,000	\$ 1,204,000	\$ 1,359,800	\$ 2,623,800
2.5	PIPING & SUPPORTS - MECHANICAL		\$ 30,900	\$ 101,400	\$ 209,500	\$ 341,800
2.6	FABRIC FILTER - FOUNDATIONS		\$ -	\$ 550,700	\$ 973,600	\$ 1,524,300
2.7	FABRIC FILTER - SUPPORT STEEL AND ACCESS GALLERY		\$ -	\$ 360,000	\$ 1,186,700	\$ 1,546,700
2.8	RACEWAY, CABLE TRAY, & CONDUIT	INCLUDED IN ABSORBER ISLAND 7.0	\$ -	\$ -	\$ -	\$ -
2.9	LIGHT FIXTURE		\$ -	\$ 16,500	\$ 10,000	\$ 26,500
2.10	GROUNDING		\$ 7,300	\$ -	\$ 17,500	\$ 24,800
90.00	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS		\$ 22,578,400	\$ 3,019,600	\$ 17,450,600	\$ 43,048,600
	SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS		\$ 1,128,900	\$ 770,000	\$ 6,483,100	\$ 8,382,000
	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	FABRIC FILTERS	\$ 23,707,300	\$ 3,789,600	\$ 23,933,700	\$ 51,430,600
3.0	NEW STACK					
4.0	LIME HANDLING SYSTEM					
4.1	LIME STORAGE SILO		\$ 2,680,000	\$ -	\$ -	\$ 2,680,000
4.2	LIME UNLOADING SYSTEM	INCLUDES PNEUMATIC HANDLING SYSTEM, THREE VACUUM EXHAUSTER, TWO FILTER SEPARATORS	\$ 350,000	\$ -	\$ 281,100	\$ 631,100
4.3	PIPING - MECHANICAL		\$ 29,000	\$ 15,600	\$ 77,900	\$ 122,500
4.4	LIME STORAGE SILO ACCESS STAIR TOWER	THREE COAT SHOP PAINT	\$ -	\$ 145,000	\$ 145,900	\$ 290,900
4.5	PIPE RACK FOR LIME HANDLING, WASTE ASH HANDLING AND MISC MECHANICAL PIPING	THREE COAT SHOP PAINT	\$ -	\$ 783,000	\$ 787,800	\$ 1,570,800
4.6	RAIL CAR UNLOADING AREA - FOUNDATIONS	20 X 250 - NO SIDING	\$ -	\$ 85,300	\$ 158,400	\$ 243,700
4.7	LIME UNLOADING BLOWER / ELECTRICAL BUILDING - FOUNDATIONS		\$ -	\$ 160,700	\$ 281,500	\$ 442,200
4.8	LIME UNLOADING BLOWER / ELECTRICAL BUILDING	130' L X 30' W X 30' H	\$ 75,000	\$ 351,500	\$ 24,400	\$ 450,900

Sargent & Lundy, LLC

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4.9	CONCRETE PIT FOR THE ELEVATOR		\$ -	\$ 2,300	\$ 6,900	\$ 9,200
4.10	LIME STORAGE SILO - FOUNDATIONS		\$ -	\$ 172,300	\$ 288,500	\$ 460,800
4.11	LIME STORAGE SILO ACCESS STAIR TOWER - FOUNDATIONS		\$ -	\$ 14,200	\$ 26,200	\$ 40,400
4.12	PIPE RACK - FOUNDATIONS		\$ -	\$ 94,200	\$ 208,200	\$ 302,400
4.13	TRANSFORMERS	SUS TRANSFORMERS: 33F, 33G, 13.8KV-480V	\$ 170,000	\$ -	\$ 54,600	\$ 224,600
4.14	SWITCHGEAR	480V LOW VOLTAGE (33F/G). SWITCHGEAR	\$ 196,000	\$ -	\$ 104,700	\$ 300,700
4.15	CABLE BUS DUCT		\$ 134,700	\$ 10,800	\$ 200,200	\$ 345,700
4.16	MCC		\$ 61,800	\$ -	\$ 3,600	\$ 65,400
4.17	MIMIC PANELS		\$ 17,500	\$ -	\$ 1,400	\$ 18,900
4.18	EMERGENCY POWER SYSTEM		\$ 108,300	\$ -	\$ 24,400	\$ 132,700
4.19	GROUNDING		\$ 13,300	\$ -	\$ 41,300	\$ 54,600
4.20	LIGHTING/ TRANSFORMERS & PANELS		\$ 52,000	\$ 135,000	\$ 104,500	\$ 291,500
4.21	RACEWAY, CABLE TRAY, & CONDUIT		\$ -	\$ 296,400	\$ 1,429,900	\$ 1,726,300
4.22	HIGH VOLTAGE POWER CABLE & TERMINATION	1/C # 500KCMIL-15KV, 12000' UNIT 2 + 3600' LIME UNLOAD	\$ -	\$ 144,600	\$ 407,800	\$ 552,400
4.23	MEDIUM VOLTAGE POWER CABLE & TERMINATION	1/C # 350KCMIL-5KV	\$ -	\$ 66,200	\$ 282,300	\$ 348,500
4.24	LOW VOLTAGE POWER CABLE & TERMINATION		\$ -	\$ 93,000	\$ 143,200	\$ 236,200
4.25	CONTROL & INSTRUMENT CABLE	#14, #16 & PR # 20 & SHLD WIRE	\$ -	\$ 26,200	\$ 73,600	\$ 99,800
4.26	DUCT BANK	DUCT BANK WITH 4-5" & 4-3" CONDUITS, 2.38' H X 3.79' W	\$ -	\$ 61,100	\$ 152,100	\$ 213,200
4.27	FOUNDATIONS FOR TRANSFORMERS	FOR XFMR 33F, 33G, INCLUDES MUD MAT	\$ -	\$ 3,500	\$ 10,300	\$ 13,800
90.00	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS		\$ 3,887,600	\$ 2,660,900	\$ 5,320,700	\$ 11,869,200
	SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS		\$ 194,400	\$ 678,500	\$ 1,926,900	\$ 2,799,800
	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	LIME HANDLING SYSTEM	\$ 4,082,000	\$ 3,339,400	\$ 7,247,600	\$ 14,669,000
5.0	LIME SLAKER BUILDING					

Sargent & Lundy, LLC

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5.1	MECHANICAL EQUIPMENT	INCLUDES:CHAIN CONVEYOR, SLAKERS THROUGH THE LIME SLURRY PUMPS, PIPING, AND LIME SLURRY STORAGE TANKS.	\$ 5,560,000	\$ -	\$ 3,976,500	\$ 9,536,500
5.2	LIME SLAKER BUILDING SUMP PUMPS	DUPLEX. INCLUDES CHECK & ISOLATION VALVES	\$ 28,000	\$ -	\$ 12,300	\$ 40,300
5.3	AGITATOR FOR SUMP PUMPS	5 HP	\$ 12,000	\$ -	\$ 4,600	\$ 16,600
5.4	PIPING - MECHANICAL		\$ 117,800	\$ 111,400	\$ 381,100	\$ 610,300
5.5	LIME SLURRY TANKS - FOUNDATIONS		\$ -	\$ 166,400	\$ 278,300	\$ 444,700
5.6	LIME SLAKER BUILDING - FOUNDATIONS		\$ -	\$ 119,200	\$ 194,200	\$ 313,400
5.7	LIME SLAKER BUILDING	135' L X 30' W X 50' H	\$ 40,500	\$ 803,300	\$ 740,500	\$ 1,584,300
5.8	ELECTRICAL	INCLUDED WITH LIME HANDLING SYSTEM, ACCOUNT 4.0	\$ -	\$ -	\$ -	\$ -
90.00	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS		\$ 5,758,300	\$ 1,200,300	\$ 5,587,500	\$ 12,546,100
	SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS		\$ 287,900	\$ 306,100	\$ 2,084,900	\$ 2,678,900
	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	LIME SLAKER BUILDING	\$ 6,046,200	\$ 1,506,400	\$ 7,672,400	\$ 15,225,000
6.0	BYPRODUCT WASTE & FLY ASH HANDLING SYSTEMS					
6.1	BYPRODUCT WASTE ASH HANDLING - MECHANICAL EQUIPMENT	INCLUDES PNEUMATIC HANDLING SYSTEM, THREE PRESSURE BLOWERS, ONE BIN VENT FILTER, ASH UNLOADING SYSTEM	\$ 2,047,000	\$ -	\$ 1,380,000	\$ 3,427,000

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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	\$ 240,900	\$ 759,100	\$ 1,142,800
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	SDA RECYCLE SILO	INCLUDED WITH OEM EQUIPMENT	\$ -	\$ -	\$ -	\$ -
6.8	SDA FLY ASH SILO	NOT REQUIRED - ECONOMIZER FLY ASH SLUICED TO BOTTOM ASH POND	\$ -	\$ -	\$ -	\$ -
6.9	WASTE ASH STORAGE SILO - FOUNDATIONS	0.0	\$ -	\$ 132,100	\$ 223,900	\$ 356,000
6.10	FLY ASH SILO - FOUNDATIONS	NOT REQUIRED	\$ -	\$ -	\$ -	\$ -
6.11	FLY ASH BLOWER AND ELECTRICAL BUILDING - FOUNDATIONS	NOT REQUIRED	\$ -	\$ -	\$ -	\$ -
6.12	FLY ASH BLOWER AND ELECTRICAL BUILDING	NOT REQUIRED	\$ -	\$ -	\$ -	\$ -
6.13	RECYCLE ASH BUILDING - FOUNDATIONS		\$ -	\$ 234,300	\$ 373,100	\$ 607,400
6.14	RECYCLE ASH BUILDING	100' L X 65' W X 50' H	\$ 58,500	\$ 1,306,700	\$ 1,194,500	\$ 2,559,700
6.15	MCC	480V MCC PER LINE UP	\$ 120,000	\$ -	\$ 7,300	\$ 127,300
6.16	EMERGENCY POWER SYSTEM		\$ 185,500	\$ -	\$ 40,000	\$ 225,500
6.17	LIGHTING/ TRANSFORMERS & PANELS		\$ 18,500	\$ 75,000	\$ 53,200	\$ 146,700
6.18	RACEWAY, CABLE TRAY, & CONDUIT		\$ -	\$ 32,800	\$ 177,400	\$ 210,200
6.19	LOW VOLTAGE POWER CABLE & TERMINATION	#4/0 - #12 AWG-600V	\$ -	\$ 80,900	\$ 100,600	\$ 181,500

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6.20	CONTROL & INSTRUMENT CABLE	#14, #16 & PR # 20 & SHLD WIRE	\$ -	\$ 38,400	\$ 313,700	\$ 352,100
6.21	GROUNDING		\$ -	\$ 4,500	\$ 10,900	\$ 15,400
6.22	DUCT BANK	DUCT BANK WITH 12-5" & 6-3" CONDUITS, 5.2' H X 2.08" W	\$ -	\$ 111,500	\$ 184,000	\$ 295,500
90.0	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS		\$ 4,812,300	\$ 2,257,100	\$ 5,131,000	\$ 12,200,400
	SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS		\$ 240,600	\$ 575,600	\$ 1,908,500	\$ 2,724,700
	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	BYPRODUCT WASTE & FLY ASH HANDLING SYSTEMS	\$ 5,052,900	\$ 2,832,700	\$ 7,039,500	\$ 14,925,100
7.0	ABSORBER ISLAND					
8.0	ACTIVATED CARBON INJECTION SYSTEM					
10.0	SERVICE WATER SYSTEM					
11.0	POTABLE WATER SYSTEM					
12.0	FGD SUBSTATION					
13.0	FGD DCS SYSTEM					
14.0	CEM SYSTEM					
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16.0	SITE IMPROVEMENTS - CIVIL WORK					
17.0	BOP ITEMS					

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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		\$ 103,379,100	\$ 46,759,400	\$ 137,436,100	\$ 305,924,600
	OVERALL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS		\$ 5,916,000	\$ 11,785,900	\$ 51,585,400	\$ 69,287,300
	OVERALL TOTAL DIRECT & CONSTRUCTION INDIRECT COST		\$ 109,295,100	\$ 58,545,300	\$ 189,021,500	\$ 375,211,900
	OVERALL PROJECT INDIRECT COSTS					
	ENGINEERING, PROCUREMENT, & PROJECT SERVICES					\$ 25,000,000
	CONSTRUCTION MANAGEMENT					\$ 11,256,400
	S-U / COMMISSIONING					\$ 3,752,100
	CRAFT START-UP SUPPORT					\$ 1,619,400
	INITIAL FILLS					\$ 1,125,600
	OPERATOR & TRAINING MANUALS					\$ 300,000
	SUBCONTRACTORS (NOISE & DUCTWORK CONSULTANT, GEOTECHNICAL INVESTIGATION)					\$ 400,000
	OWNERS COST	BY AEP				\$ -
	TOTAL PROJECT DIRECT AND INDIRECT COSTS					\$ 418,665,400
	SPARE PARTS FOR THE OEM & THE BOP EQUIPMENT					\$ 1,420,800
	SPARE PARTS FOR THE OEM EQUIPMENT	0.80				\$ 880,896
	SPARE PARTS FOR THE BOP EQUIPMENT	0.50				\$ 539,904
	CONTINGENCY	15.24				\$ 64,026,600

Sargent & Lundy, LLC

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

Estimate No.: 30712B
Project No.: 12721-000
Date: 9/10/2010
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
	ESCALATION					\$ 29,180,500
	EQUIPMENT					\$ 11,405,900
	MATERIAL					\$ 2,971,300
	LABOR					\$ 12,036,300
	INDIRECTS					\$ 2,767,000
	INTEREST DURING CONSTRUCTION (AFUDC)	BY AEP				
	TOTAL PROJECT COST					\$ 513,293,300
	REFERENCE COSTS:					
A	ESP DEMOLITION	ALLOWANCE FOR 1000T STRUCTURE	\$ -	\$ -	\$ 832,300	\$ 832,300
B	REMOVE BOOSTER AIR FANS	ALLOWANCE FOR 150 TON FRAMING REINFORCEMENT	\$ -	\$ -	\$ 111,000	\$ 111,000



Big Sandy Unit 2
Kentucky Power Company
American Electric Power Service Corporation
Order-of-Magnitude FGD Cost Estimate
WFGD, DFGD, IAQCS & NID Technologies
September 10, 2010

ATTACHMENT 3-14
O&M Costs – Fixed and Variable (DFGD)

DRAFT COPY

AEP

Order-of-Magnitude EPC Cost Estimate – Attachment 3-14
Big Sandy Station – Unit 2

Project No. 12721-000
September 10, 2010

DFGD O&M Costs – Revision B

GENERAL

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

VARIABLE O&M COSTS

The variable O&M costs include:

- Reagent and Disposal
- DFGD byproduct includes 30 wt% dust control water for weight of solids transported to the landfill
- Makeup water for the process only. The water consumption includes: lime slaking water, recycle slurry water, and dust control water only.
- Activated carbon injection rate is based on 2 lb/MMacfm into the DFGD system.
- Bag replacement every 3 years
- Cage replacement every 9 years
- Auxiliary Power (displayed as MW consumed)
- The draft power accounts for the DFGD 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.
- A second value for the draft power is provided that shows the estimated requirement for the FGD system only (absorber 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.

AEP

Order-of-Magnitude EPC Cost Estimate – Attachment 3-14
Big Sandy Station – Unit 2

Project No. 12721-000
September 10, 2010

DFGD O&M Costs – Revision B**FIXED O&M COSTS**

The fixed O&M costs include:

- Operating Labor

The FGD system will require additional staff to operate the equipment. The minimum additional staff used in the estimate was based on:

Operation	Staff
Absorber Island Operation	1 person per shift for 5 shifts (5 operators total)
Recycle System	3 operators total
Total	8 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.
Reagent Preparation	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.

- Maintenance Labor
Including: maintenance mechanics, I&C technicians, maintenance planner, supervision, and overhead.
- Maintenance Materials
Including: all preventative and corrective maintenance materials for the slakers, pumps, blowers/compressors, fans, atomizers, agitators, etc...

AEP

Order-of-Magnitude EPC Cost Estimate – Attachment 3-14
Big Sandy Station – Unit 2

Project No. 12721-000
September 10, 2010

DFGD O&M Costs – Revision B**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) ^{Note 5}	139 (Delivered by Rail Costs)
Activated Carbon (\$/ton) ^{Note 4}	1440 (Delivered 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 1 dated June 21, 2010 provided by AEP.
- 2) The labor rate is a total pay and benefits rate.
- 3) Disposal cost for by-product, 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.

AEP

Order-of-Magnitude EPC Cost Estimate – Attachment 3-14
Big Sandy Station – Unit 2

Project No. 12721-000
September 10, 2010

DFGD O&M Costs – Revision B

Table 3. O&M Costs for DFGD Systems (2010 dollars)

Fuel	1.7 w/o ESP	3.0 w/o ESP	1.7 w/ ESP	3.0 w/ ESP
Fixed O&M (\$/year)				
Operating Labor	832,000	832,000	832,000	832,000
Maintenance Material	2,076,000	2,136,000	2,076,000	2,136,000
Maintenance Labor	1,384,000	1,424,000	1,384,000	1,424,000
Total Fixed O&M (\$/year)	4,292,000	4,392,000	4,292,000	4,392,000
Variable O&M (\$/year)				
Reagent Cost	8,601,000	19,605,000	9,924,000	23,281,000
Activated Carbon	2,344,000	2,319,000	2,267,000	2,243,000
FGD Byproduct Disposal Cost	4,148,000	5,612,000	1,793,000	3,817,000
Makeup Water Cost	509,000	521,000	464,000	482,000
Wastewater Treatment Chemicals	NA	NA	NA	NA
Bags and Cages Replacement	651,000	651,000	651,000	651,000
Total Variable O&M excluding Auxiliary Power (\$/year)	16,253,000	28,708,000	15,099,000	30,474,000
Auxiliary Power at Full Load (MW)				
Overall Draft (Furnace to Stack)	23	23	27	27
FGD Draft Only	8	8	8	8
FGD Equipment Load	4	5	4	5
Existing ESP	0	0	4	4
WESP	NA	NA	NA	NA
Total Auxiliary Power at Full Load (MW)	27	28	35	36

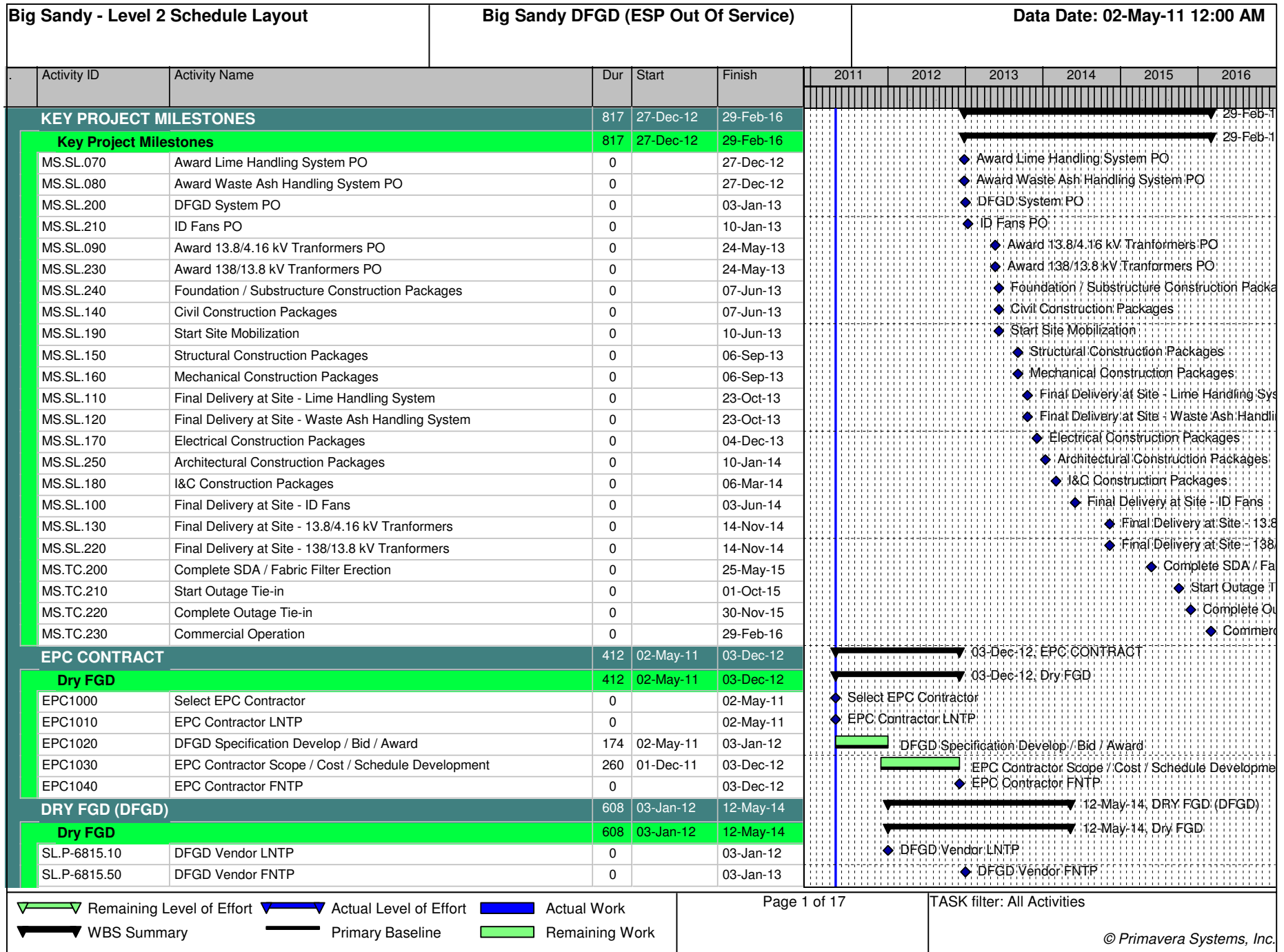
Note: NA = Not Applicable

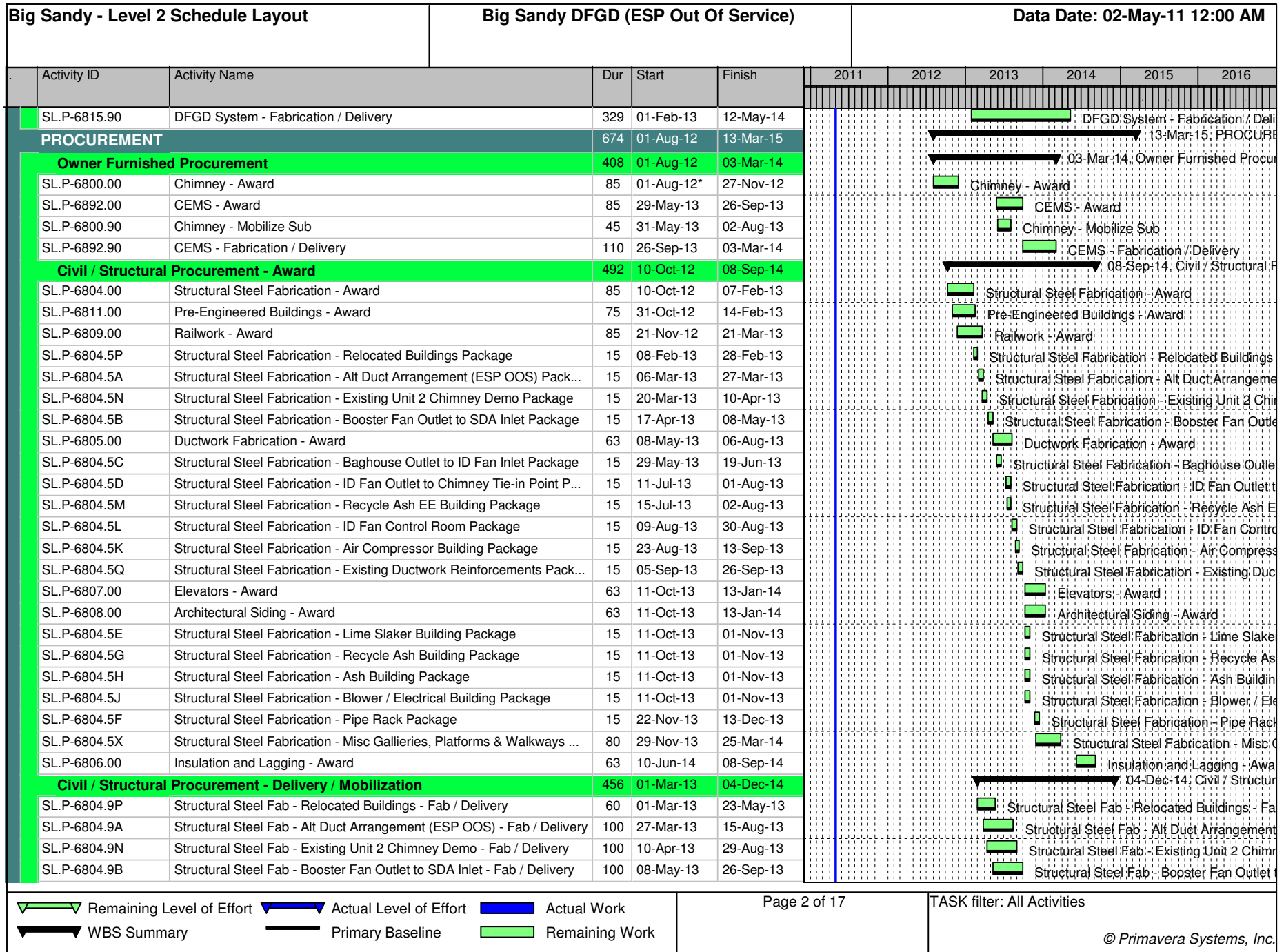


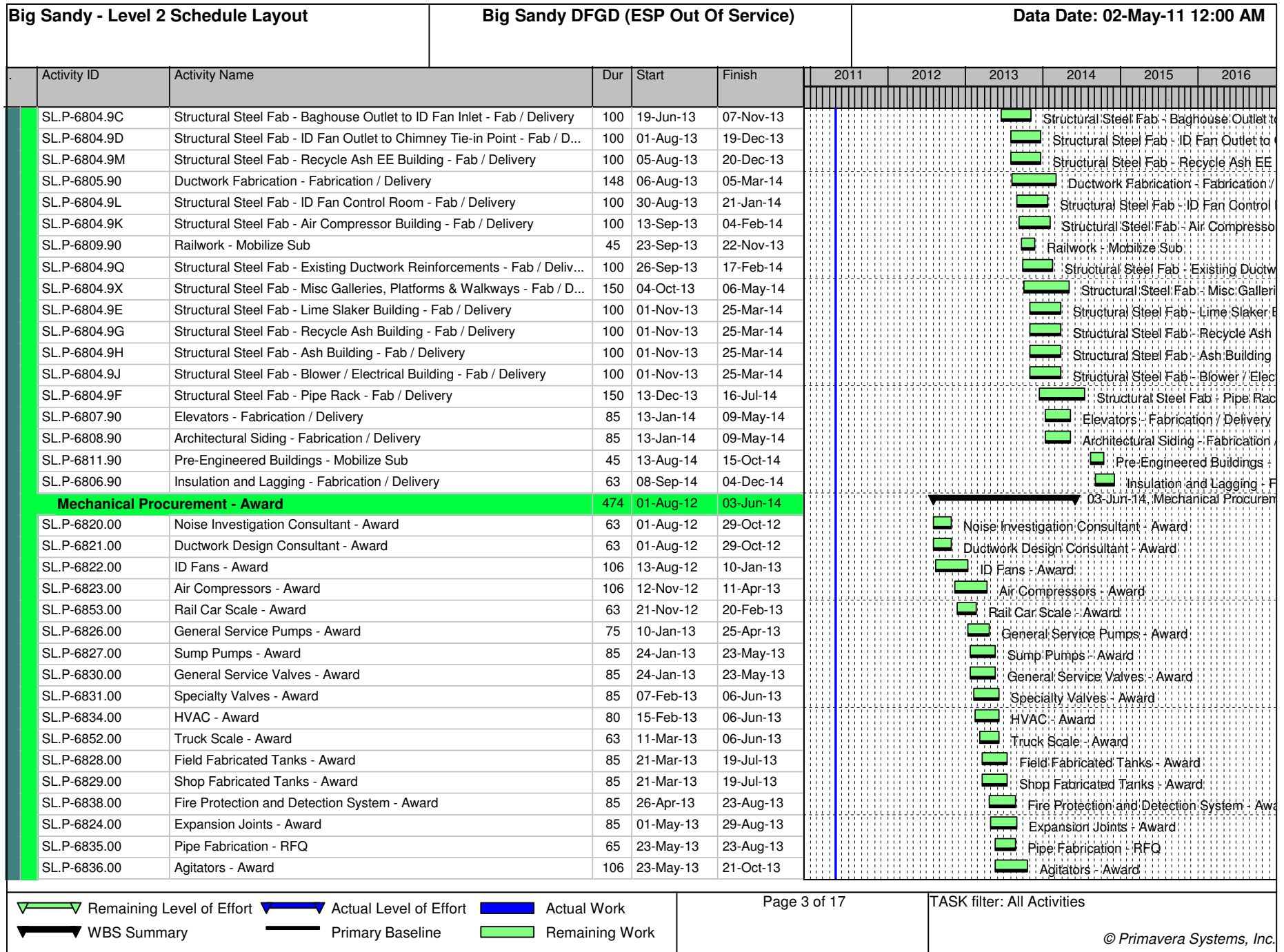
Big Sandy Unit 2
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September 10, 2010

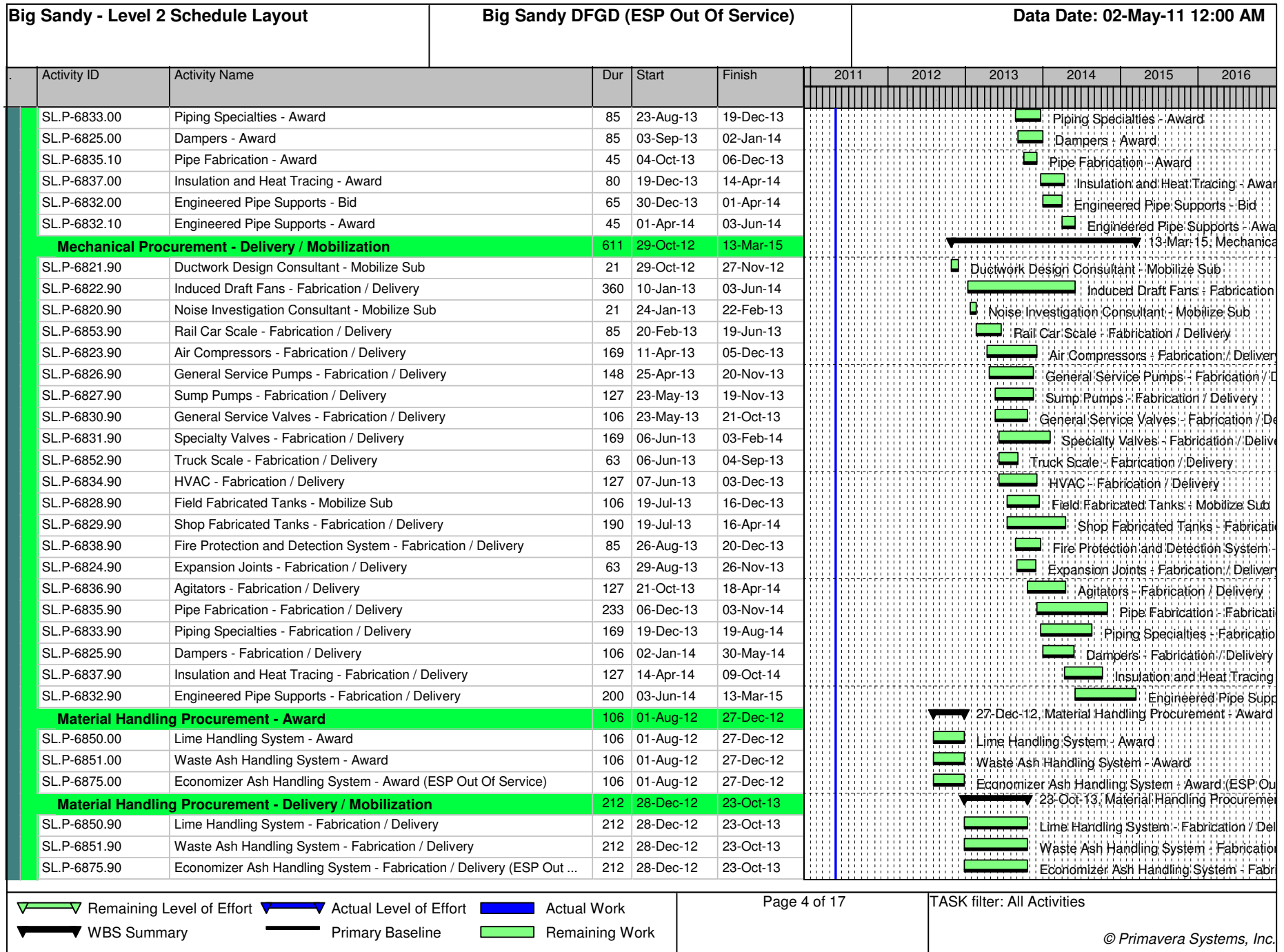
ATTACHMENT 3-15
Project Schedule (DFGD)

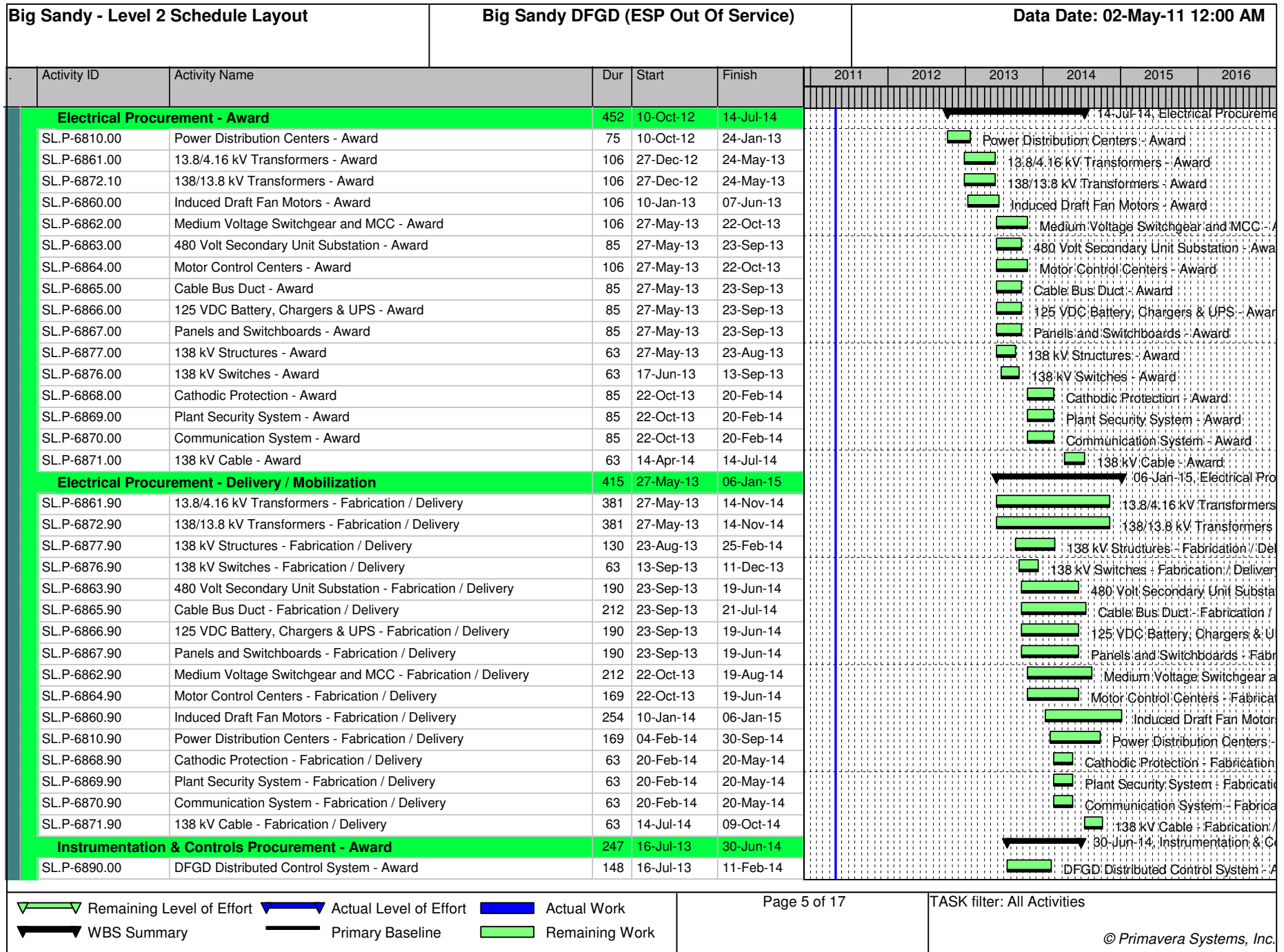
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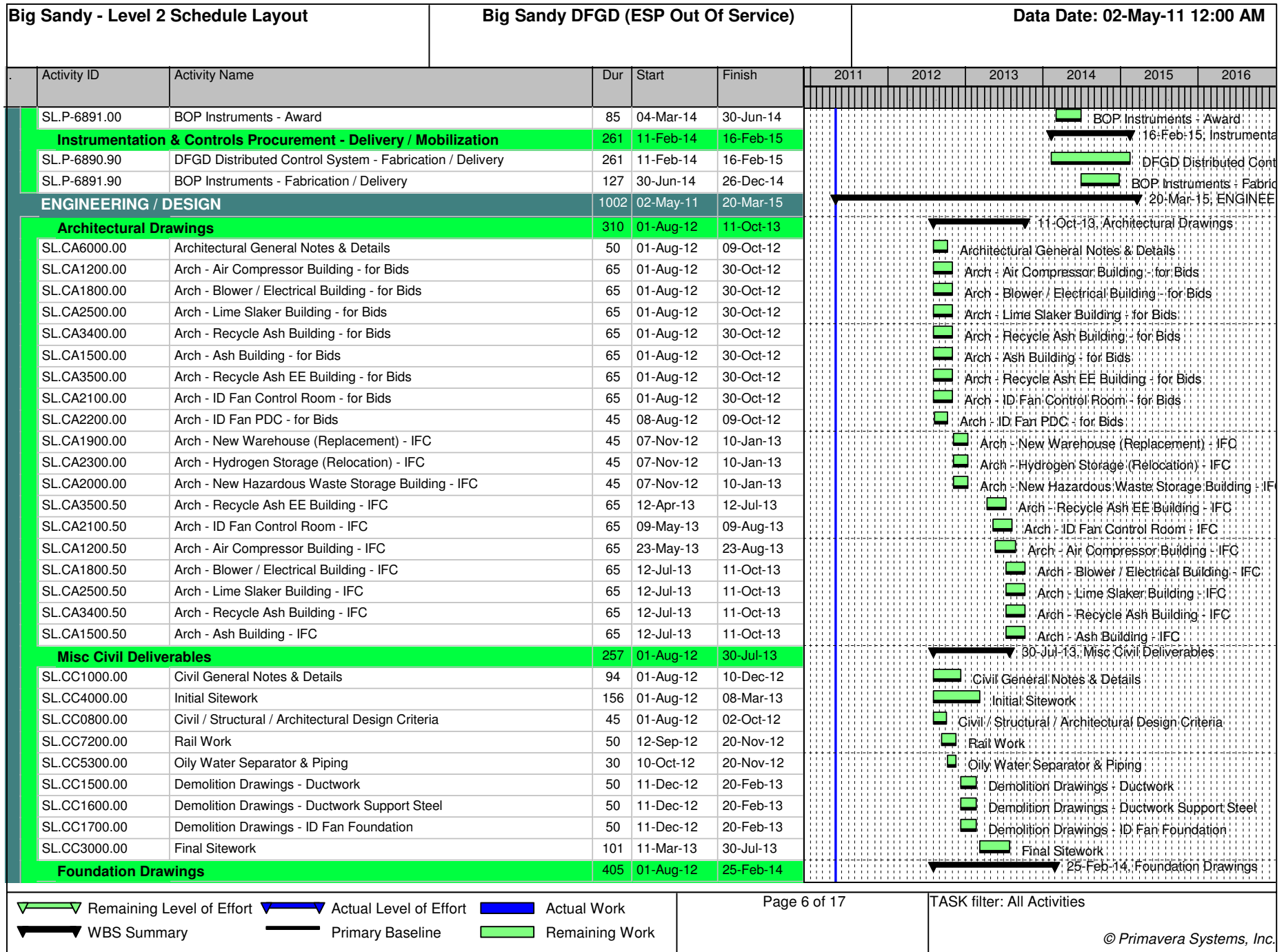


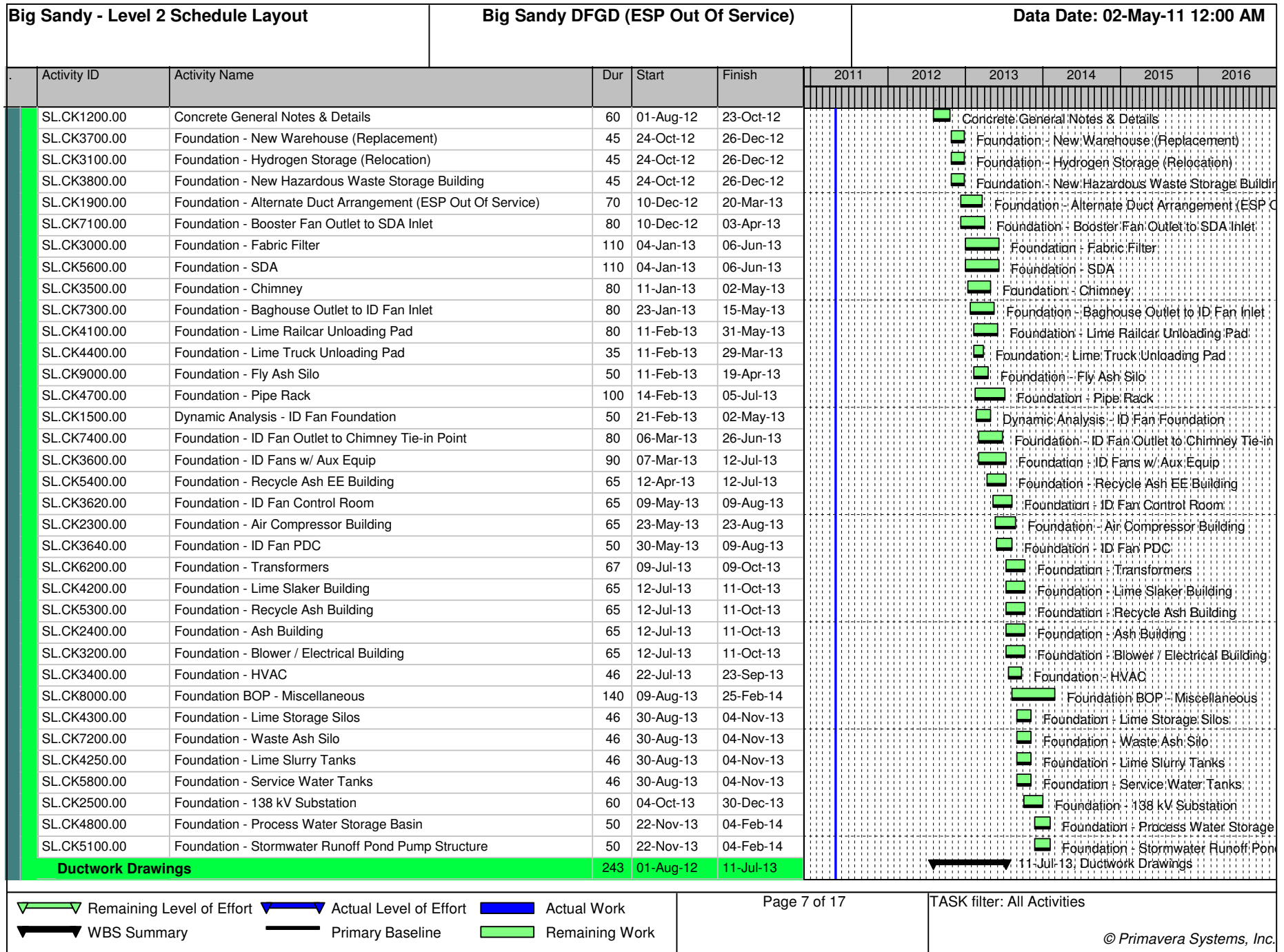












Big Sandy - Level 2 Schedule Layout

Big Sandy DFGD (ESP Out Of Service)

Data Date: 02-May-11 12:00 AM

Activity ID	Activity Name	Dur	Start	Finish	2011	2012	2013	2014	2015	2016
SL.CS2500.00	Ductwork General Notes & Details	55	01-Aug-12	16-Oct-12						
SL.CS1200.00	Ductwork - Booster Fan Outlet to SDA Inlet	90	29-Oct-12	06-Mar-13						
SL.CS1700.00	Ductwork - Existing Unit 2 Chimney Demo	60	29-Oct-12	23-Jan-13						
SL.CS1700.10	Ductwork - Alternate Arrangement w/o ESP	60	29-Oct-12	23-Jan-13						
SL.CS1400.00	Ductwork - Baghouse 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						
Structural 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.CS3100.00	Struct Steel - Alternate Duct Arrangement (ESP Out Of Service)	60	10-Dec-12	06-Mar-13						
SL.CS3300.00	Struct Steel - Booster Fan Outlet to SDA Inlet	90	10-Dec-12	17-Apr-13						
SL.CS5100.00	Struct Steel - Existing Unit 2 Chimney Demo	70	10-Dec-12	20-Mar-13						
SL.CS4000.00	Struct Steel - Baghouse Outlet to ID Fan Inlet	90	23-Jan-13	29-May-13						
SL.CS4500.00	Struct Steel - ID Fan Outlet to Chimney Tie-in Point	90	06-Mar-13	11-Jul-13						
SL.CS5400.00	Struct Steel - Recycle Ash EE Building	65	12-Apr-13	12-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.CS4700.00	Struct Steel - Lime Slaker Building	65	12-Jul-13	11-Oct-13						
SL.CS5000.00	Struct Steel - Recycle Ash Building	65	12-Jul-13	11-Oct-13						
SL.CS2400.00	Struct Steel - Ash Building	65	12-Jul-13	11-Oct-13						
SL.CS5300.00	Struct Steel - Blower / 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						

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

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TASK filter: All Activities

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