EXHIBIT 1-1
Order of Magnitude/Relative Capital Installed Cost Estimate Specification

EXHIBIT 1-2
Capital Cost Estimate Outline

EXHIBIT 1-2
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	**WET ESP**	S&L	S&L	Previous OEM proposals and S&L Estimates	
3.0	**NEW STACK**	AEP	AEP		
4.0	**LIMESTONE HANDLING SYSTEM**	S&L	S&L	Previous OEM proposals and S&L Estimates	
5.0	**REAGENT PREPARATION ISLAND**	S&L	S&L	Previous OEM proposals and S&L Estimates	
6.0	**BYPRODUCT DEWATERING ISLAND**	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	**FGD WASTE WATER TREATMENT PLANT**	S&L	S&L	Previous OEM proposals and S&L Projects	
9.0	**COMPRESSED AIR SYSTEM**	S&L	S&L	Past & Current S&L Projects	

EXHIBIT 1-2

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 1-2
CAPITAL COST ESTIMATE OUTLINE
INDIRECT COSTS

PROJECT INDIRECT COSTS			
ACCT	COST ESTIMATE CATEGORY	TOTAL COST RESPONSIBILITY	ESTIMATE SOURCE
	ENGINEERING, PROCUREMENT, & PROJECT SERVICES	S&L	Past FGD and AEP Projects
	CONSTRUCTION MANAGEMENT	S&L	Estimating Percentage
	S-U / COMMISSIONING	S&L	Estimating Percentage
	OWNERS COST	AEP	
	EPC FEE	AEP	
	SALES/USE TAX	AEP	
	ESCALATION	S&L	Material, Equipment and Labor Indices
	CONTINGENCY	S&L	Range Estimating
	INTEREST DURING CONSTRUCTION (AFUDC)	AEP	

EXHIBIT 1-3
AACE International
Recommended Practice No. 18R-97,
February 2, 2005

AACE International Recommended Practice No. 18R-97

COST ESTIMATE CLASSIFICATION SYSTEM – AS APPLIED IN ENGINEERING, PROCUREMENT, AND CONSTRUCTION FOR THE PROCESS INDUSTRIES

TCM Framework: 7.3 – Cost Estimating and Budgeting

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AACE International Recommended Practice No. 18R-97

COST ESTIMATE CLASSIFICATION SYSTEM – AS APPLIED IN ENGINEERING, PROCUREMENT, AND CONSTRUCTION FOR THE PROCESS INDUSTRIES

TCM Framework: 7.3 – Cost Estimating and Budgeting

February 2, 2005

PURPOSE

As a recommended practice of AACE International, the Cost Estimate Classification System provides guidelines for applying the general principles of estimate classification to project cost estimates (i.e., cost estimates that are used to evaluate, approve, and/or fund projects). The Cost Estimate Classification System maps the phases and stages of project cost estimating together with a generic maturity and quality matrix, which can be applied across a wide variety of industries.

This addendum to the generic recommended practice provides guidelines for applying the principles of estimate classification specifically to project estimates for engineering, procurement, and construction (EPC) work for the process industries. This addendum supplements the generic recommended practice (17R-97) by providing:

- a section that further defines classification concepts as they apply to the process industries;
- charts that compare existing estimate classification practices in the process industry; and
- a chart that maps the extent and maturity of estimate input information (project definition deliverables) against the class of estimate.

As with the generic standard, an intent of this addendum is to improve communications among all of the stakeholders involved with preparing, evaluating, and using project cost estimates specifically for the process industries.

It is understood that each enterprise may have its own project and estimating processes and terminology, and may classify estimates in particular ways. This guideline provides a generic and generally acceptable classification system for process industries that can be used as a basis to compare against. It is hoped that this addendum will allow each user to better assess, define, and communicate their own processes and standards in the light of generally-accepted cost engineering practice.

INTRODUCTION

For the purposes of this addendum, the term process industries is assumed to include firms involved with the manufacturing and production of chemicals, petrochemicals, and hydrocarbon processing. The common thread among these industries (for the purpose of estimate classification) is their reliance on process flow diagrams (PFDs) and piping and instrument diagrams (P&IDs) as primary scope defining documents. These documents are key deliverables in determining the level of project definition, and thus the extent and maturity of estimate input information.

Estimates for process facilities center on mechanical and chemical process equipment, and they have significant amounts of piping, instrumentation, and process controls involved. As such, this addendum may apply to portions of other industries, such as pharmaceutical, utility, metallurgical, converting, and similar industries. Specific addendums addressing these industries may be developed over time.

This addendum specifically does not address cost estimate classification in nonprocess industries such as commercial building construction, environmental remediation, transportation infrastructure, “dry” processes such as assembly and manufacturing, “soft asset” production such as software development, and similar industries. It also does not specifically address estimates for the exploration, production, or transportation of mining or hydrocarbon materials, although it may apply to some of the intermediate processing steps in these systems.

The cost estimates covered by this addendum are for engineering, procurement, and construction (EPC) work only. It does not cover estimates for the products manufactured by the process facilities, or for research and development work in support of the process industries. This guideline does not cover the

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significant building construction that may be a part of process plants. Building construction will be covered in a separate addendum.

This guideline reflects generally-accepted cost engineering practices. This addendum was based upon the practices of a wide range of companies in the process industries from around the world, as well as published references and standards. Company and public standards were solicited and reviewed by the AACE International Cost Estimating Committee. The practices were found to have significant commonalities that are conveyed in this addendum.

COST ESTIMATE CLASSIFICATION MATRIX FOR THE PROCESS INDUSTRIES

The five estimate classes are presented in figure 1 in relationship to the identified characteristics. Only the level of project definition determines the estimate class. The other four characteristics are secondary characteristics that are generally correlated with the level of project definition, as discussed in the generic standard. The characteristics are typical for the process industries but may vary from application to application.

This matrix and guideline provide an estimate classification system that is specific to the process industries. Refer to the generic standard for a general matrix that is non-industry specific, or to other addendums for guidelines that will provide more detailed information for application in other specific industries. These will typically provide additional information, such as input deliverable checklists to allow meaningful categorization in those particular industries.

	Primary Characteristic	***Secondary Characteristic***			
ESTIMATE CLASS	**LEVEL OF PROJECT DEFINITION** Expressed as % of complete definition	**END USAGE** Typical purpose of estimate	**METHODOLOGY** Typical estimating method	**EXPECTED ACCURACY RANGE** Typical variation in low and high ranges [a]	**PREPARATION EFFORT** Typical degree of effort relative to least cost index of 1 [b]
Class 5	0% to 2%	Concept Screening	Capacity Factored, Parametric Models, Judgment, or Analogy	L: -20% to -50% H: +30% to +100%	1
Class 4	1% to 15%	Study or Feasibility	Equipment Factored or Parametric Models	L: -15% to -30% H: +20% to +50%	2 to 4
Class 3	10% to 40%	Budget, Authorization, or Control	Semi-Detailed Unit Costs with Assembly Level Line Items	L: -10% to -20% H: +10% to +30%	3 to 10
Class 2	30% to 70%	Control or Bid/ Tender	Detailed Unit Cost with Forced Detailed Take-Off	L: -5% to -15% H: +5% to +20%	4 to 20
Class 1	50% to 100%	Check Estimate or Bid/Tender	Detailed Unit Cost with Detailed Take-Off	L: -3% to -10% H: +3% to +15%	5 to 100

Notes: [a] The state of process technology and availability of applicable reference cost data affect the range markedly. The +/- value represents typical percentage variation of actual costs from the cost estimate after application of contingency (typically at a 50% level of confidence) for given scope.

[b] If the range index value of "1" represents 0.005% of project costs, then an index value of 100 represents 0.5%. Estimate preparation effort is highly dependent upon the size of the project and the quality of estimating data and tools.

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Figure 1. – Cost Estimate Classification Matrix for Process Industries

CHARACTERISTICS OF THE ESTIMATE CLASSES

The following charts (figures 2a through 2e) provide detailed descriptions of the five estimate classifications as applied in the process industries. They are presented in the order of least-defined estimates to the most-defined estimates. These descriptions include brief discussions of each of the estimate characteristics that define an estimate class.

For each chart, the following information is provided:

- **Description:** a short description of the class of estimate, including a brief listing of the expected estimate inputs based on the level of project definition.
- **Level of Project Definition Required:** expressed as a percent of full definition. For the process industries, this correlates with the percent of engineering and design complete.
- **End Usage:** a short discussion of the possible end usage of this class of estimate.
- **Estimating Methods Used:** a listing of the possible estimating methods that may be employed to develop an estimate of this class.
- **Expected Accuracy Range:** typical variation in low and high ranges after the application of contingency (determined at a 50% level of confidence). Typically, this results in a 90% confidence that the actual cost will fall within the bounds of the low and high ranges.
- **Effort to Prepare:** this section provides a typical level of effort (in hours) to produce a complete estimate for a US$20,000,000 plant. Estimate preparation effort is highly dependent on project size, project complexity, estimator skills and knowledge, and on the availability of appropriate estimating cost data and tools.
- **ANSI Standard Reference (1989) Name:** this is a reference to the equivalent estimate class in the existing ANSI standards.
- **Alternate Estimate Names, Terms, Expressions, Synonyms:** this section provides other commonly used names that an estimate of this class might be known by. These alternate names are not endorsed by this Recommended Practice. The user is cautioned that an alternative name may not always be correlated with the class of estimate as identified in the chart.

CLASS 5 ESTIMATE	
Description: Class 5 estimates are generally prepared based on very limited information, and subsequently have wide accuracy ranges. As such, some companies and organizations have elected to determine that due to the inherent inaccuracies, such estimates cannot be classified in a conventional and systemic manner. Class 5 estimates, due to the requirements of end use, may be prepared within a very limited amount of time and with little effort expended—sometimes requiring less than an hour to prepare. Often, little more than proposed plant type, location, and capacity are known at the time of estimate preparation. **Level of Project Definition Required:** 0% to 2% of full project definition. **End Usage:** Class 5 estimates are prepared for any number of strategic business planning purposes, such as but not limited to market studies, assessment of initial viability, evaluation of alternate schemes, project screening, project location studies, evaluation of resource needs and budgeting, long-range capital planning, etc.	**Estimating Methods Used:** Class 5 estimates virtually always use stochastic estimating methods such as cost/capacity curves and factors, scale of operations factors, Lang factors, Hand factors, Chilton factors, Peters-Timmerhaus factors, Guthrie factors, and other parametric and modeling techniques. **Expected Accuracy Range:** Typical accuracy ranges for Class 5 estimates are - 20% to -50% on the low side, and +30% to +100% on the high side, depending on the technological complexity of the project, appropriate reference information, and the inclusion of an appropriate contingency determination. Ranges could exceed those shown in unusual circumstances. **Effort to Prepare (for US$20MM project):** As little as 1 hour or less to perhaps more than 200 hours, depending on the project and the estimating methodology used. **ANSI Standard Reference Z94.2-1989 Name:** Order of magnitude estimate (typically -30% to +50%). **Alternate Estimate Names, Terms, Expressions, Synonyms:** Ratio, ballpark, blue sky, seat-of-pants, ROM, idea study, prospect estimate, concession license estimate, guesstimate, rule-of-thumb.

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Figure 2a. – Class 5 Estimate

CLASS 4 ESTIMATE	
Description: Class 4 estimates are generally prepared based on limited information and subsequently have fairly wide accuracy ranges. They are typically used for project screening, determination of feasibility, concept evaluation, and preliminary budget approval. Typically, engineering is from 1% to 15% complete, and would comprise at a minimum the following: plant capacity, block schematics, indicated layout, process flow diagrams (PFDs) for main process systems, and preliminary engineered process and utility equipment lists. **Level of Project Definition Required:** 1% to 15% of full project definition. **End Usage:** Class 4 estimates are prepared for a number of purposes, such as but not limited to, detailed strategic planning, business development, project screening at more developed stages, alternative scheme analysis, confirmation of economic and/or technical feasibility, and preliminary budget approval or approval to proceed to next stage.	**Estimating Methods Used:** Class 4 estimates virtually always use stochastic estimating methods such as equipment factors, Lang factors, Hand factors, Chilton factors, Peters-Timmerhaus factors, Guthrie factors, the Miller method, gross unit costs/ratios, and other parametric and modeling techniques. **Expected Accuracy Range:** Typical accuracy ranges for Class 4 estimates are -15% to -30% on the low side, and +20% to +50% on the high side, depending on the technological complexity of the project, appropriate reference information, and the inclusion of an appropriate contingency determination. Ranges could exceed those shown in unusual circumstances. **Effort to Prepare (for US$20MM project):** Typically, as little as 20 hours or less to perhaps more than 300 hours, depending on the project and the estimating methodology used. **ANSI Standard Reference Z94.2-1989 Name:** Budget estimate (typically -15% to + 30%). **Alternate Estimate Names, Terms, Expressions, Synonyms:** Screening, top-down, feasibility, authorization, factored, pre-design, pre-study.

Figure 2b. – Class 4 Estimate

CLASS 3 ESTIMATE	
Description: Class 3 estimates are generally prepared to form the basis for budget authorization, appropriation, and/or funding. As such, they typically form the initial control estimate against which all actual costs and resources will be monitored. Typically, engineering is from 10% to 40% complete, and would comprise at a minimum the following: process flow diagrams, utility flow diagrams, preliminary piping and instrument diagrams, plot plan, developed layout drawings, and essentially complete engineered process and utility equipment lists. **Level of Project Definition Required:** 10% to 40% of full project definition. **End Usage:** Class 3 estimates are typically prepared to support full project funding requests, and become the first of the project phase "control estimates" against which all actual costs and resources will be monitored for variations to the budget. They are used as the project budget until replaced by more detailed estimates. In many owner organizations, a Class 3 estimate may be the last estimate required and could well form the only basis for cost/schedule control.	**Estimating Methods Used:** Class 3 estimates usually involve more deterministic estimating methods than stochastic methods. They usually involve a high degree of unit cost line items, although these may be at an assembly level of detail rather than individual components. Factoring and other stochastic methods may be used to estimate less-significant areas of the project. **Expected Accuracy Range:** Typical accuracy ranges for Class 3 estimates are -10% to -20% on the low side, and +10% to +30% on the high side, depending on the technological complexity of the project, appropriate reference information, and the inclusion of an appropriate contingency determination. Ranges could exceed those shown in unusual circumstances. **Effort to Prepare (for US$20MM project):** Typically, as little as 150 hours or less to perhaps more than 1,500 hours, depending on the project and the estimating methodology used. **ANSI Standard Reference Z94.2-1989 Name:** Budget estimate (typically -15% to + 30%). **Alternate Estimate Names, Terms, Expressions, Synonyms:** Budget, scope, sanction, semi-detailed, authorization, preliminary control, concept study, development, basic engineering phase estimate, target estimate.

Figure 2c. – Class 3 Estimate

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CLASS 2 ESTIMATE	
Description: Class 2 estimates are generally prepared to form a detailed control baseline against which all project work is monitored in terms of cost and progress control. For contractors, this class of estimate is often used as the "bid" estimate to establish contract value. Typically, engineering is from 30% to 70% complete, and would comprise at a minimum the following: process flow diagrams, utility flow diagrams, piping and instrument diagrams, heat and material balances, final plot plan, final layout drawings, complete engineered process and utility equipment lists, single line diagrams for electrical, electrical equipment and motor schedules, vendor quotations, detailed project execution plans, resourcing and work force plans, etc. **Level of Project Definition Required:** 30% to 70% of full project definition. **End Usage:** Class 2 estimates are typically prepared as the detailed control baseline against which all actual costs and resources will now be monitored for variations to the budget, and form a part of the change/variation control program.	**Estimating Methods Used:** Class 2 estimates always involve a high degree of deterministic estimating methods. Class 2 estimates are prepared in great detail, and often involve tens of thousands of unit cost line items. For those areas of the project still undefined, an assumed level of detail takeoff (forced detail) may be developed to use as line items in the estimate instead of relying on factoring methods. **Expected Accuracy Range:** Typical accuracy ranges for Class 2 estimates are -5% to -15% on the low side, and +5% to +20% on the high side, depending on the technological complexity of the project, appropriate reference information, and the inclusion of an appropriate contingency determination. Ranges could exceed those shown in unusual circumstances. **Effort to Prepare (for US$20MM project):** Typically, as little as 300 hours or less to perhaps more than 3,000 hours, depending on the project and the estimating methodology used. Bid estimates typically require more effort than estimates used for funding or control purposes. **ANSI Standard Reference Z94.2-1989 Name:** Definitive estimate (typically -5% to + 15%). **Alternate Estimate Names, Terms, Expressions, Synonyms:** Detailed control, forced detail, execution phase, master control, engineering, bid, tender, change order estimate.

Figure 2d. – Class 2 Estimate

CLASS 1 ESTIMATE	
Description: Class 1 estimates are generally prepared for discrete parts or sections of the total project rather than generating this level of detail for the entire project. The parts of the project estimated at this level of detail will typically be used by subcontractors for bids, or by owners for check estimates. The updated estimate is often referred to as the current control estimate and becomes the new baseline for cost/schedule control of the project. Class 1 estimates may be prepared for parts of the project to comprise a fair price estimate or bid check estimate to compare against a contractor's bid estimate, or to evaluate/dispute claims. Typically, engineering is from 50% to 100% complete, and would comprise virtually all engineering and design documentation of the project, and complete project execution and commissioning plans. **Level of Project Definition Required:** 50% to 100% of full project definition. **End Usage:** Class 1 estimates are typically prepared to form a current control estimate to be used as the final control baseline against which all actual costs and resources will now be monitored for variations to the budget, and form a part of the change/variation control program. They may be used to evaluate bid checking, to support vendor/contractor negotiations, or for claim evaluations and dispute resolution.	**Estimating Methods Used:** Class 1 estimates involve the highest degree of deterministic estimating methods, and require a great amount of effort. Class 1 estimates are prepared in great detail, and thus are usually performed on only the most important or critical areas of the project. All items in the estimate are usually unit cost line items based on actual design quantities. **Expected Accuracy Range:** Typical accuracy ranges for Class 1 estimates are -3% to -10% on the low side, and +3% to +15% on the high side, depending on the technological complexity of the project, appropriate reference information, and the inclusion of an appropriate contingency determination. Ranges could exceed those shown in unusual circumstances. **Effort to Prepare (for US$20MM project):** Class 1 estimates require the most effort to create, and as such are generally developed for only selected areas of the project, or for bidding purposes. A complete Class 1 estimate may involve as little as 600 hours or less, to perhaps more than 6,000 hours, depending on the project and the estimating methodology used. Bid estimates typically require more effort than estimates used for funding or control purposes. **ANSI Standard Reference Z94.2 Name:** Definitive estimate (typically -5% to + 15%). **Alternate Estimate Names, Terms, Expressions, Synonyms:** Full detail, release, fall-out, tender, firm price, bottoms-up, final, detailed control, forced detail, execution phase, master control, fair price, definitive, change order estimate.

Figure 2e. – Class 1 Estimate

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COMPARISON OF CLASSIFICATION PRACTICES

Figures 3a through 3c provide a comparison of the estimate classification practices of various firms, organizations, and published sources against one another and against the guideline classifications. These tables permits users to benchmark their own classification practices.

INCREASING PROJECT DEFINITION

AACE Classification Standard	ANSI Standard Z94.0	AACE Pre-1972	Association of Cost Engineers (UK) ACostE	Norwegian Project Management Association (NFP)	American Society of Professional Estimators (ASPE)
Class 5	Order of Magnitude Estimate -30/+50	Order of Magnitude Estimate	Order of Magnitude Estimate Class IV -30/+30	Concession Estimate Exploration Estimate Feasibility Estimate	Level 1
Class 4	Budget Estimate -15/+30	Study Estimate	Study Estimate Class III -20/+20	Authorization Estimate	Level 2
Class 3		Preliminary Estimate	Budget Estimate Class II -10/+10	Master Control Estimate	Level 3
Class 2	Definitive Estimate -5/+15	Definitive Estimate	Definitive Estimate Class I -5/+5	Current Control Estimate	Level 4
Class 1		Detailed Estimate			Level 5 Level 6

Figure 3a. – Comparison of Classification Practices

INCREASING PROJECT DEFINITION

AACE Classification Standard	Major Consumer Products Company (Confidential)	Major Oil Company (Confidential)	Major Oil Company (Confidential)	Major Oil Company (Confidential)
Class 5	Class S Strategic Estimate	Class V Order of Magnitude Estimate	Class A Prospect Estimate Class B Evaluation Estimate	Class V
Class 4	Class 1 Conceptual Estimate	Class IV Screening Estimate	Class C Feasibility Estimate Class D Development Estimate	Class IV
Class 3	Class 2 Semi-Detailed Estimate	Class III Primary Control Estimate	Class E Preliminary Estimate	Class III
Class 2	Class 3 Detailed Estimate	Class II Master Control Estimate	Class F Master Control Estimate	Class II
Class 1		Class I Current Control Estimate	Current Control Estimate	Class I

Figure 3b. – Comparison of Classification Practices

INCREASING PROJECT DEFINITION

AACE Classification Standard	J.R. Heizelman, 1988 AACE Transactions [1]	K.T. Yeo, The Cost Engineer, 1989 [2]	Stevens & Davis, 1988 AACE Transactions [3]	P. Behrenbruck, Journal of Petroleum Technology, 1993 [4]
Class 5	Class V	Class V Order of Magnitude	Class III*	Order of Magnitude
Class 4	Class IV	Class IV Factor Estimate	Class II	Study Estimate
Class 3	Class III	Class III Office Estimate		Budget Estimate
Class 2	Class II	Class II Definitive Estimate		
Class 1	Class I	Class I Final Estimate	Class I	Control Estimate

[1] John R. Heizelman, ARCO Oil & Gas Co., 1988 AACE Transactions, Paper V3.7
[2] K.T. Yeo, The Cost Engineer, Vol. 27, No. 6, 1989
[3] Stevens & Davis, BP International Ltd., 1988 AACE Transactions, Paper B4.1 (* Class III is inferred)
[4] Peter Behrenbruck, BHP Petroleum Pty., Ltd., article in Petroleum Technology, August 1993

Figure 3c. – Comparison of Classification Practices

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ESTIMATE INPUT CHECKLIST AND MATURITY MATRIX

Figure 4 maps the extent and maturity of estimate input information (deliverables) against the five estimate classification levels. This is a checklist of basic deliverables found in common practice in the process industries. The maturity level is an approximation of the degree of completion of the deliverable. The degree of completion is indicated by the following letters.

- None (blank): development of the deliverable has not begun.
- Started (S): work on the deliverable has begun. Development is typically limited to sketches, rough outlines, or similar levels of early completion.
- Preliminary (P): work on the deliverable is advanced. Interim, cross-functional reviews have usually been conducted. Development may be near completion except for final reviews and approvals.
- Complete (C): the deliverable has been reviewed and approved as appropriate.

	ESTIMATE CLASSIFICATION				
General Project Data:	**CLASS 5**	**CLASS 4**	**CLASS 3**	**CLASS 2**	**CLASS 1**
Project Scope Description	General	Preliminary	Defined	Defined	Defined
Plant Production/Facility Capacity	Assumed	Preliminary	Defined	Defined	Defined
Plant Location	General	Approximate	Specific	Specific	Specific
Soils & Hydrology	None	Preliminary	Defined	Defined	Defined
Integrated Project Plan	None	Preliminary	Defined	Defined	Defined
Project Master Schedule	None	Preliminary	Defined	Defined	Defined
Escalation Strategy	None	Preliminary	Defined	Defined	Defined
Work Breakdown Structure	None	Preliminary	Defined	Defined	Defined
Project Code of Accounts	None	Preliminary	Defined	Defined	Defined
Contracting Strategy	Assumed	Assumed	Preliminary	Defined	Defined
Engineering Deliverables:					
Block Flow Diagrams	S/P	P/C	C	C	C
Plot Plans		S	P/C	C	C
Process Flow Diagrams (PFDs)		S/P	P/C	C	C
Utility Flow Diagrams (UFDs)		S/P	P/C	C	C
Piping & Instrument Diagrams (P&IDs)		S	P/C	C	C
Heat & Material Balances		S	P/C	C	C
Process Equipment List		S/P	P/C	C	C
Utility Equipment List		S/P	P/C	C	C
Electrical One-Line Drawings		S/P	P/C	C	C
Specifications & Datasheets		S	P/C	C	C
General Equipment Arrangement Drawings		S	P/C	C	C
Spare Parts Listings			S/P	P	C
Mechanical Discipline Drawings			S	P	P/C
Electrical Discipline Drawings			S	P	P/C
Instrumentation/Control System Discipline Drawings			S	P	P/C
Civil/Structural/Site Discipline Drawings			S	P	P/C

Figure 4. – Estimate Input Checklist and Maturity Matrix

REFERENCES

ANSI Standard Z94.2-1989. **Industrial Engineering Terminology: Cost Engineering**.
AACE International Recommended Practice No.17R-97, **Cost Estimate Classification System**.

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EXHIBIT 1-4
Contingency Analysis Summary

(LATER)

EXHIBIT 1-5
Union Labor Rate Summary

Exhibit 1-5
Union Labor Rate Summary

2010 BIG SANDY CRAFTS Union Labor Rates

Craft Rates								
Craft	Means Title	S&L Title	Base	W. Comp	Fringes	Travel	FICA	Craft Total
1	Insulation Worker		27.00	5.53	16.34	0.00	2.60	51.47
2	Boilermaker		31.04	6.35	18.06	0.00	2.91	58.36
3	Bricklayer		24.98	5.11	16.37	0.00	2.44	48.90
4	Carpenter		26.30	5.38	14.31	0.00	2.54	48.53
5	Cement Finisher	Cement Mason	25.25	5.17	15.22	0.00	2.46	48.10
6	Electrician		28.68	5.87	19.71	0.00	2.73	56.99
7	Elevator Constr		26.63	5.45	18.04	0.00	2.57	52.69
8	Glazier		26.63	5.45	18.04	0.00	2.57	52.69
9	Structural Steel Worker	Ironworker	26.63	5.45	18.04	0.00	2.57	52.69
10	Common Bldg Laborer	Laborer, Bulding	22.90	4.69	12.37	0.00	2.28	42.24
11	Common Bldg Laborer	Laborer, Chimney	22.90	4.69	12.37	0.00	2.28	42.24
12	Com Bldg Lab, Air Tool	Laborer, Jackhammer	22.90	4.69	12.37	0.00	2.28	42.24
13	Plasterers Helper	Laborer, Plasterer	22.90	4.69	12.37	0.00	2.28	42.24
14	Lather		22.77	4.66	11.10	0.00	2.27	40.80
15	Equip Oper - Med	Lineman	24.32	4.98	13.02	0.00	2.39	44.71
16	Mill Wright		28.04	5.74	14.86	0.00	2.68	51.32
17	Equip Oper - Light	Oper Engr, Air Comp.	20.65	4.23	13.02	0.00	2.11	40.01
18	Equip Oper - Oiler	Oper Eng, Oiler	20.65	4.23	13.02	0.00	2.11	40.01
19	Equip Oper - Heavy	Loader > 2.5 Cu Yds	25.08	5.13	13.02	0.00	2.45	45.68
20	Equip Oper - Med	Loader < 2.5 Cu Yds	24.32	4.98	13.02	0.00	2.39	44.71
21	Equip Oper - Heavy	Oper Eng, Crane	25.08	5.13	13.02	0.00	2.45	45.68
22	Painter, Struct Steel	Painter	22.77	4.66	11.10	0.00	2.27	40.80
23	Pipefitter		24.63	5.04	19.35	0.00	2.42	51.44
24	Plumber		24.63	5.04	19.35	0.00	2.42	51.44
25	Roofer, Composition		24.30	4.97	11.18	0.00	2.39	42.84
26	Sheet Metal Worker		23.18	4.74	19.37	0.00	2.31	49.60
27	Tile Layer		24.98	5.11	16.37	0.00	2.44	48.90
28	Truck Driver - Heavy	Teamster	29.39	6.02	13.18	0.00	2.78	51.37
29	Waterproofer		22.77	4.66	11.10	0.00	2.27	40.80
30	Plasterer		22.77	4.66	11.10	0.00	2.27	40.80

Average 47.01

Exhibit 1-5
Union Labor Rate Summary

2010 BIG SANDY CRAFTS Union Labor Rates

Site Overhead is increased to 38% for Sep Revision

Crew Rates			Crew Mix																																					
Crew	Title	Base	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30		Comp	Fringes	Travel	Other	Equipment [1]	FICA	Site OH	Total
BAGH	BAGHOUSE	29.78		0.75		0.02		0.02			0.07	0.03											0.09							0.02			1.00	6.09	17.29	0.00	2.98	19.56	2.81	29.83	108.34
BCSE	BASE COURSE	23.85										0.30								0.15		0.45								0.10			1.00	4.88	12.84	0.00	2.39	30.45	2.36	29.17	105.94
CARP	CARPENTRY	25.96				0.90						0.10																					1.00	5.31	14.12	0.00	2.60	1.58	2.52	19.79	71.88
CLHG	COAL HANDLING	27.08		0.05		0.05	0.01	0.02			0.13	0.10						0.50					0.10					0.01		0.03			1.00	5.55	15.07	0.00	2.71	14.11	2.60	25.50	92.62
CNDR	CONDENSER	29.36		0.70		0.07		0.01				0.07						0.02					0.07		0.04					0.02			1.00	6.01	16.95	0.00	2.94	9.53	2.79	25.68	93.26
CONB	CONCRETE BUCKET	24.05				0.10	0.14				0.10	0.51								0.05			0.10										1.00	4.92	13.62	0.00	2.41	14.37	2.37	23.46	85.20
CONC	CONCRETE CHIMNEY	23.49									0.10	0.15	0.55							0.05			0.15										1.00	4.81	13.06	0.00	2.35	9.11	2.33	20.96	76.11
COND	CONCRETE DIRECT	24.01				0.10	0.17				0.10	0.63																					1.00	4.92	13.61	0.00	2.40	3.44	2.37	19.29	70.04
CONP	CONCRETE PUMP	23.72				0.10	0.14				0.10	0.56							0.10														1.00	4.86	13.59	0.00	2.37	10.83	2.34	21.93	79.64
CTMC	COOL. TWR. CONCRETE	25.17				0.17	0.30	0.01			0.10	0.26						0.04					0.10							0.02			1.00	5.15	14.37	0.00	2.52	14.13	2.47	24.25	88.06
CTMW	COOLING TWR. WOOD	25.72				0.60	0.02	0.01				0.15						0.05					0.05		0.10					0.02			1.00	5.26	14.54	0.00	2.57	14.67	2.49	24.80	90.05
CURB	CURB AND GUTTER	24.74				0.28	0.29					0.28										0.15											1.00	5.07	13.83	0.00	2.47	2.50	2.42	19.39	70.42
CYNC	COOLING TWR. NATURAL	25.15				0.22	0.30	0.01			0.10	0.25											0.10							0.02			1.00	5.14	14.37	0.00	2.52	8.93	2.47	22.26	80.84
DCKG	DECKING STEEL	26.47									0.90									0.02			0.06							0.02			1.00	5.42	17.54	0.00	2.65	3.66	2.56	22.15	80.45
DINS	DUCT THERM. INSUL.	25.66	0.55									0.10											0.05					0.25		0.05			1.00	5.26	16.38	0.00	2.57	6.87	2.50	22.51	81.75
DWTR	DEWATERING	21.10										0.20							0.80														1.00	4.32	12.89	0.00	2.11	5.22	2.15	18.16	65.95
ECND	CONDUITS AND TRAYS	26.65				0.25		0.50				0.25																					1.00	5.46	16.53	0.00	2.67	1.16	2.58	20.92	75.97
EDCO	ELECTRICAL DUCTS	26.17				0.18		0.28			0.09	0.10								0.09			0.18							0.08			1.00	5.35	15.52	0.00	2.62	6.45	2.53	22.28	80.92
EDEX	EXCAVATION DUCTRUNS	25.73				0.22					0.11	0.12								0.11			0.22							0.22			1.00	5.26	13.80	0.00	2.57	4.60	2.49	20.69	75.14
EHEA	ELEC. HEAVY EQ. 1	27.26						0.40			0.10	0.20						0.20												0.10			1.00	5.59	16.44	0.00	2.73	2.71	2.63	21.80	79.16
EHEB	ELEC. HEAVY EQ. 2&3	26.29						0.30			0.30	0.15								0.05			0.15							0.05			1.00	5.38	16.44	0.00	2.63	4.03	2.55	21.78	79.10
EHEC	ELEC. HEAVY EQ. 4	26.29						0.30			0.30	0.15								0.05			0.15							0.05			1.00	5.38	16.44	0.00	2.63	5.63	2.55	22.39	81.31
ELEV	ELEVATORS	26.63							1.00																								1.00	5.45	18.04	0.00	2.66	0.28	2.57	21.14	76.77
ESSW	ELEC. SWITCHYARD	24.46									0.38	0.39								0.08			0.15										1.00	5.01	14.67	0.00	2.45	4.03	2.41	20.15	73.18
ETEX	EXCAVATION TRENCHES	24.40										0.30								0.30			0.10							0.30			1.00	5.00	12.87	0.00	2.44	9.95	2.39	21.68	78.73
ETRL	TRANSMISSION LINES	23.72										0.25					0.38			0.12	0.25												1.00	4.85	12.86	0.00	2.37	6.02	2.34	19.82	71.98
ETWK	EARTHWORK	24.78										0.07								0.15			0.66							0.12			1.00	5.07	12.99	0.00	2.48	80.87	2.43	48.87	177.49
EXFD	EXCAVATION	26.71																		0.12			0.38							0.50			1.00	5.47	13.10	0.00	2.67	14.70	2.57	24.78	90.00
FLDU	FLUES AND DUCTS	29.52		0.72		0.05					0.05	0.04											0.12							0.02			1.00	6.04	16.93	0.00	2.95	19.99	2.80	29.73	107.96
FORM	FORMWORK	25.37				0.65						0.25								0.02			0.05							0.03			1.00	5.19	13.70	0.00	2.54	22.79	2.46	27.38	99.43
GALL	GALLERY WORK	26.47									0.90									0.02			0.06							0.02			1.00	5.42	17.54	0.00	2.65	6.67	2.56	23.30	84.61
HVAC	HVAC	24.32	0.10			0.02		0.06				0.06						0.02							0.16			0.57		0.01			1.00	4.97	18.41	0.00	2.43	6.34	2.40	22.37	81.24
INEL	INSTRUMENTATION ELEC	28.68						1.00																									1.00	5.87	19.71	0.00	2.87	4.22	2.73	24.35	88.43
INPE	PNEUMATIC INSTRUMENT	24.63																							1.00								1.00	5.04	19.35	0.00	2.46	2.56	2.42	21.46	77.92
INSL	INSULATION	25.42	0.60									0.20																0.20					1.00	5.21	16.14	0.00	2.54	2.60	2.48	20.67	75.06
LAND	LAND	22.90										1.00																					1.00	4.69	12.37	0.00	2.29	0.00	2.28	16.92	61.45
MECH	MISC. MECHANICAL EQ.	26.08		0.05		0.01	0.03	0.05				0.01						0.24							0.59					0.02			1.00	5.34	17.86	0.00	2.61	9.98	2.54	24.48	88.89
MSRY	MASONRY	24.30			0.67							0.33																					1.00	4.97	15.05	0.00	2.43	4.05	2.38	20.21	73.39
MSTR	SEEDING & MULCHING	22.90										1.00																					1.00	4.69	12.37	0.00	2.29	13.47	2.28	22.04	80.04
PBIT	PAVING BITUMINOUS	23.77										0.60									0.40												1.00	4.86	12.63	0.00	2.38	19.41	2.35	24.85	90.25
PCON	PAVING CONCRETE	24.05					0.31					0.50									0.19												1.00	4.92	13.38	0.00	2.41	6.84	2.37	20.51	74.48
PCRF	PRECAST CONCRETE	24.52					0.15				0.30	0.32								0.08			0.15										1.00	5.03	14.64	0.00	2.45	0.50	2.41	18.83	68.38
PILE	SHEET PILING	23.46										0.50								0.12			0.38										1.00	4.81	12.70	0.00	2.35	38.57	2.32	32.00	116.21
PINS	PIPE INSULATION	24.29	0.23			0.12						0.55																0.10					1.00	4.97	14.22	0.00	2.43	2.07	2.38	19.14	69.50
PLAS	PLASTERING	22.84													0.50																	0.50	1.00	4.68	11.74	0.00	2.28	1.86	2.28	17.36	63.04
PLMB	PLUMBING	24.63																								1.00							1.00	5.04	19.35	0.00	2.46	3.65	2.42	21.87	79.42
PNTR	PAINTING	22.77																						1.00									1.00	4.66	11.10	0.00	2.28	5.27	2.27	18.37	66.72
PREC	PRECIPITATOR	29.21		0.62		0.04		0.08			0.05	0.04						0.03					0.07		0.02			0.03		0.02			1.00	5.98	17.33	0.00	2.92	18.58	2.77	29.18	105.97
PUMP	PUMPS AND DRIVES	25.74				0.01	0.01	0.05			0.03	0.01						0.21					0.07		0.59					0.02			1.00	5.26	17.65	0.00	2.57	9.73	2.51	24.12	87.58
REIN	REINFORCING CADWELDS	26.63									1.00																						1.00	5.45	18.04	0.00	2.66	1.37	2.57	21.55	78.27
ROOF	ROOFING MEMBRANE	24.30																									1.00						1.00	4.97	11.18	0.00	2.43	4.82	2.39	19.03	69.12
RRAP	RIP RAP	23.33										0.60								0.10			0.30										1.00	4.77	12.63	0.00	2.33	6.66	2.32	19.78	71.82
RRTK	RAILROAD TRACK	24.05										0.55								0.08			0.25							0.12			1.00	4.92	12.68	0.00	2.41	17.54	2.36	24.30	88.26
SCRB	SCR BACKFIT WORK	29.52		0.72		0.05					0.05	0.04											0.12							0.02			1.00	6.04	16.93	0.00	2.95	39.99	2.80	37.33	135.56
SDNG	SIDING	23.18																										1.00					1.00	4.74	19.37	0.00	2.32	15.77	2.31	25.72	93.41
SDWK	SIDEWALK	23.71				0.10	0.20					0.70																					1.00	4.85	13.13	0.00	2.37	2.50	2.34	18.58	67.48
SGEN	STEAM GENERATOR	28.50	0.12	0.51		0.02		0.02			0.05	0.02						0.01					0.10		0.10			0.03		0.02			1.00	5.82	17.23	0.00	2.85	20.75	2.72	29.59	107.46
SPNG	STATION PIPING	24.92				0.07		0.02				0.07											0.06		0.74					0.04			1.00	5.11	17.89	0.00	2.49	15.56	2.44	26.00	94.41
SSCL	SUSPENSION SYSTEM	22.77														1.00																	1.00	4.66	11.10	0.00	2.28	2.32	2.27	17.25	62.65
STST	STRUCTURAL STEEL	25.88									0.75									0.08			0.17										1.00	5.30	16.78	0.00	2.59	23.53	2.52	29.11	105.71
TANK	TANKS	25.47				0.01	0.01	0.05				0.11						0.21							0.59					0.02			1.00	5.21	17.44	0.00	2.55	11.45	2.49	24.55	89.16
TILE	TILE CERAMIC	24.98																											1.00				1.00	5.11	16.37	0.00	2.50	2.06	2.44	20.31	73.77
TKFE	TANKS FIELD ERECTED	29.32		0.68		0.05	0.01				0.04	0.06						0.02					0.11							0.03			1.00	5.99	16.74	0.00	2.93	16.40	2.77	28.18	102.33
TRZO	TERRAZZO	25.02					0.90					0.10																					1.00	5.12	14.94	0.00	2.50	7.15	2.44	21.73	78.90
TURB	TURBINE GENERATOR	26.87	0.04			0.02	0.01	0.04			0.08	0.02						0.49					0.08		0.20					0.02			1.00	5.49	16.02	0.00	2.69	2.65	2.59	21.40	77.71
WIRE	WIREMEN	28.14						0.85															0.15										1.00	5.76	18.70	0.00	2.81	13.52	2.69	27.22	98.84
WNDW	WINDOWS GLAZED	26.34								0.45	0.45									0.03			0.07										1.00	5.39	17.54	0.00	2.63	4.52	2.55	22.41	81.38
WRKG	WRECKING	24.53												0.55						0.05			0.20							0.20			1.00	5.02	12.69	0.00	2.45	40.31	2.41	33.22	120.63
WTRP	WATERPROOFING	22.77																													1.00		1.00	4.66	11.10	0.00	2.28	5.37	2.27	18.41	66.86
WTRT	WATER TREATMENT	26.14		0.05		0.01	0.03	0.14			0.01	0.01						0.14							0.59					0.02			1.00	5.34	18.32	0.00	2.61	10.86	2.55	25.01	90.83
YDPP	YARD PIPING	24.66				0.07		0.02				0.07								0.06					0.74					0.04			1.00	5.05	17.89	0.00	2.47	12.83	2.42	24.82	90.14
YDRN	YARD DRAINAGE	23.28										0.70								0.08		0.17								0.05			1.00	4.77	12.57	0.00	2.33	12.21	2.32	21.84	79.32

Note 1: Equipment includes small tools and equipment such as air compressors, welding machies, JLG's, forklifts, chain hoists, etc. Heavy cranes and crawlers are not included but shown as separate line items in the cost estimate if needed.

Average 85.34

Sargent & Lundy Labor Rate Make-Up and Calculations

Indirect Cost Items

Total Payroll Wages

Base Hourly Rate		
Payroll Taxes		
Social Security - FICA	Calculated as a percent of Base	(Set by the Federal Government Annually)
State Unemployment - SUI	Calculated as a percent of Base	(Set by each State Government and adjusted periodically)
Federal Unemployment - FUI	Calculated as a percent of Base	(Set by the Federal Government and adjusted periodically)
Total Payroll Taxes		
Insurance		
Workmen's Compensation	Calculated as a percent of Base	(Set by each State and adjusted periodically)
Total Insurance Burden		
Fringe Benefits	Calculated as a percent of Base	(Set By Union/Project Agreements)

Other

Other			
Expendable/Small Tools	6.00%	Calculated as a percent of Base	(Set By Contractor)
Show-up Time	2%	Allowance	
Working Foreman	0%	Calculated as a percent of Base	
General Liability	2.35%	Calculated as a percent of Base	(Set by Contractor)

Construction Equipment	Fixed	Calculation based on Required Equipment x Rental Rate. Rental rate is based on monthly rate/173 to arrive at an hourly rate

Site Overheaeds

Overheads — 38% - This item is strictly all field overheads. (38% of Total Payroll Wages + Other + Construction Equipment)

Indirects	**Percentage breakdown of Site Overhead Factor**
Job Supervision-Field Staff	4.29
Administration-Field Staff	6.67
Personnel Hiring	4.29
Craft Superintendents	12.87
Safety	4.17
Purchasing/Expediting-Field Staff	2.98
Material Control-Field Staff	1.40
Engineering Liaison-Field Staff	0.53
Project Controls-Field Staff	6.61
Cost/Schedule Controls-Field Staff	4.41
Quality Control Inspection-Field Staff	5.54
Project Office Supplies-Field Staff	1.10
Computer Expenses	2.58
Service Trucks/Supplies	2.57
Field and Shop Mechanics and Supplies	2.77
Subcontract Administration	1.63
Warehousing-Field Staff	1.46
Field Surveying	2.66
Water & Ice	0.44
Sanitation and Cleanup	2.15
Move In/Move Out	3.52
Detours/Barricades/Flags	0.22
Security	3.13
Temp. Utilities/Distr/Hookup	1.47
Temporary Site Improvement	0.39
Temporary Facilities/Buildings	0.80
Utilities Consumption	2.19
Employee Expenses	16.31
Legal Expenses/Claims	0.52
Permits and Fees	0.07
Timekeeping	0.26
Total Indirect Labor Burdened	100.00

EXHIBIT 1-6.1
Capital Cost Estimate Summary
Wet FGD Base Case

Sargent & Lundy, LLC

AEP
BIG SANDY UNIT 2
FGD PROJECT - WFGD BASE EST-1 - 4.5 LB/MMBTU
COST ESTIMATE SUMMARY

Estimate No.:	30708B
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	1,700,000 ACFM WITH 18,000 HP MOTORS ($675,000 EACH. INCLUDES HYDRAULIC OIL UNITS, SEAL AIR FAN SKIDS, VIBRATION MONITORING EQUIPMENT, FAN STALL EQUIPMENT, FIELD SERVICE REP FOR 140	$ 6,588,000	$ -	$ 1,635,600	$ 8,223,600
1.2	PIPING & SUPPORTS - MECHANICAL		$ 29,000	$ 21,400	$ 95,700	$ 146,100
1.3	DAMPERS		$ 449,200	$ -	$ 210,600	$ 659,800
1.4	EXPANSION JOINTS		$ -	$ 82,800	$ 73,600	$ 156,400
1.5	DUCTWORK	INCLUDES INTERNAL BRACING AND TURNING VANES	$ -	$ 1,150,500	$ 2,637,000	$ 3,787,500
1.6	DUCT SUPPORT STEEL	THREE-COAT SHOP PAINT	$ -	$ 513,300	$ 516,400	$ 1,029,700
1.7	ID FAN INSULATION & LAGGING	TOTAL FOR TWO FANS. PRICE REFLECTS ACOUSTICAL INSULATION	$ -	$ 168,000	$ 217,200	$ 385,200
1.8	DUCTWORK INSULATION & LAGGING		$ -	$ 289,100	$ 566,200	$ 855,300
1.9	SUPPORT STEEL - FOUNDATIONS		$ -	$ 73,600	$ 134,000	$ 207,600
1.10	ID FAN PDC / CONTROL ROOM - FOUNDATIONS		$ -	$ 122,100	$ 196,100	$ 318,200
1.11	ID FAN PDC / CONTROL ROOM - CONCRETE PIERS	28 PIERS	$ -	$ 20,700	$ 61,800	$ 82,500
1.12	ID FAN - FOUNDATIONS	TOTAL FOR TWO FANS	$ -	$ 229,300	$ 387,500	$ 616,800
1.13	SWITCHGEAR		$ 700,000	$ -	$ 36,400	$ 736,400
1.14	MCC		$ 123,600	$ -	$ 11,300	$ 134,900

Sargent & Lundy, LLC

AEP
BIG SANDY UNIT 2
FGD PROJECT - WFGD BASE EST-1 - 4.5 LB/MMBTU
COST ESTIMATE SUMMARY

Estimate No.: 30708B
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
1.15	ID FAN PDC / CONTROL ROOM	25W X 70' X 13'H	$ 875,000	$ -	$ 63,800	$ 938,800
1.16	138 kV PANELS - RELAY		$ 100,000	$ -	$ 9,100	$ 109,100
1.17	2000A, 15KV CABLE BUS & TERMINATIONS		$ 132,600	$ 7,200	$ 127,500	$ 267,300
1.18	MIMIC PANELS		$ 17,500	$ -	$ 6,800	$ 24,300
1.19	EMERGENCY POWER SYSTEM		$ 285,500	$ -	$ 38,900	$ 324,400
1.20	GROUNDING		$ 3,800	$ -	$ 14,800	$ 18,600
1.21	LIGHTING/ TRANSFORMERS & PANELS		$ 26,000	$ 30,000	$ 29,500	$ 85,500
1.22	RACEWAY, CABLE TRAY, & CONDUIT		$ -	$ 372,900	$ 1,787,900	$ 2,160,800
1.23	HIGH VOLTAGE POWER CABLE & TERMINATION	1/C # 500KCMIL-15KV	$ -	$ 12,500	$ 35,300	$ 47,800
1.24	LOW VOLTAGE POWER CABLE & TERMINATION		$ -	$ -	$ 112,200	$ 112,200
1.25	CONTROL & INSTRUMENT CABLE	#14, #16 & PR # 20 & SHLD WIRE	$ -	$ 41,000	$ 114,900	$ 155,900
1.26	DUCT BANK	37"H X 62.5"W (75'+150'=225')	$ -	$ 73,400	$ 2,000	$ 75,400
90.00	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS		$ 9,330,200	$ 3,207,800	$ 9,122,100	$ 21,660,100
	SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS		$ 466,500	$ 818,000	$ 3,496,300	$ 4,780,800
	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	ID FANS	$ 9,796,700	$ 4,025,800	$ 12,618,400	$ 26,440,900
2.0	WET ESP					
2.1	MECHANICAL EQUIPMENT	INCLUDES: INTEGRAL ESP WITH THE ABSORBER, ADDITIONAL SUPPORT STRUCTURES FOR INTEGRATED ESP DESIGN, AND ALL ASSOCIATED INTEGRAL PIPING.	$ 41,021,000	$ -	$ 35,778,200	$ 76,799,200
2.2	ADDITIONAL COST FOR C276 SHELL MATERIAL ABOVE THE PRICE OF A2205 ABSORBER SHELL	LABOR COST REFLECTS DIFFICULTY FACTOR WORKING WITH C276 VS. A2205	$ -	$ 12,300,000	$ 6,286,700	$ 18,586,700

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2.3	PIPING & SUPPORTS - MECHANICAL		$ 30,200	$ 115,300	$ 362,600	$ 508,100
2.4	WET ESP - FOUNDATIONS	INCLUDED WITH ABSORBER FOUNDATIONS				
2.5	ELECTRICAL	INCLUDED WITH ABSORBER ISLAND SECTION 7.0				
90.00	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS		$ 41,051,200	$ 12,415,300	$ 42,427,500	$ 95,894,000
	SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS		$ 2,052,600	$ 3,165,900	$ 16,262,000	$ 21,480,500
	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	WET ESP	$ 43,103,800	$ 15,581,200	$ 58,689,500	$ 117,374,500
3.0	NEW STACK					
3.1	CONCRETE STACK (WET)	PROVIDED BY AEP	$ 780,000	$ 15,000,000	$ 15,700,000	$ 31,480,000
4.0	LIMESTONE HANDLING SYSTEM					
4.1	MATERIAL HANDLING EQUIPMENT		$ 4,690,100	$ 845,000	$ 3,544,400	$ 9,079,500
4.2	FIRE PROTECTION SYSTEM FOR BELT CONVEYORS	DELUGE SYSTEM, DRY PIPE, SENSORS, ACTIVATION VALVE AND FM APPROVED PANEL - SUBCONTRACT PRICE FOR ALL CONVEYORS INCLUDES LABOR	$ 660,000	$ -	$ -	$ 660,000
4.3	PIPING - MECHANICAL		$ 4,800	$ 1,700	$ 13,200	$ 19,700
4.4	CONVEYOR STRUCTURE SUPPORT STEEL	THREE-COAT SHOP PAINT	$ -	$ 290,000	$ 291,800	$ 581,800
4.5	CONVEYOR SUPPORT STEEL - FOUNDATIONS		$ -	$ 16,000	$ 45,500	$ 61,500
4.6	RAILCAR LIMESTONE UNLOADING HOPPER, CONVEYOR TUNNEL AND ESCAPE TUNNEL - FOUNDATIONS		$ -	$ 542,000	$ 1,330,800	$ 1,872,800
4.7	LIMESTONE TRANSFER TOWER - FOUNDATIONS		$ -	$ 15,400	$ 28,200	$ 43,600
4.8	LIMESTONE TRANSFER CONVEYOR - FOUNDATIONS		$ -	$ 62,000	$ 116,600	$ 178,600

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4.9	LIMESTONE RECLAIM HOPPER, CONVEYOR TUNNEL AND ESCAPE TUNNEL - FOUNDATIONS		$ -	$ 542,000	$ 1,330,800	$ 1,872,800
4.10	LIMESTONE UNLOADING PDC - FOUNDATIONS		$ -	$ 24,100	$ 42,000	$ 66,100
4.11	LIMESTONE UNLOADING PDC - CONCRETE PIERS	10 PIERS	$ -	$ 6,900	$ 20,600	$ 27,500
4.12	LIMESTONE RECLAIM PDC - FOUNDATIONS		$ -	$ 16,800	$ 30,100	$ 46,900
4.13	LIMESTONE RECLAIM PDC - CONCRETE PIERS	10 PIERS	$ -	$ 6,900	$ 20,600	$ 27,500
4.14	TRANSFORMERS	LIMESTONE UNLOADING & RECLAIM AREAS	$ 170,000	$ -	$ 63,700	$ 233,700
4.15	SWITCHGEAR	LIMESTONE UNLOADING & RECLAIM AREAS	$ 156,800	$ -	$ 14,600	$ 171,400
4.16	LIMESTONE UNLOADING PDC	18W X 50' X 10'H	$ 450,000	$ -	$ 32,800	$ 482,800
4.17	LIMESTONE RECLAIM PDC	15W X 30' X 10'H	$ 225,000	$ -	$ 16,400	$ 241,400
4.18	MCC	LIMESTONE UNLOADING & RECLAIM AREAS	$ 123,600	$ -	$ 7,200	$ 130,800
4.19	CABLE BUS DUCT	LIMESTONE UNLOADING & RECLAIM AREAS	$ 134,700	$ 5,400	$ 187,900	$ 328,000
4.20	MIMIC PANELS		$ 17,500	$ -	$ 4,500	$ 22,000
4.21	EMERGENCY POWER SYSTEM	LIMESTONE UNLOADING & RECLAIM AREAS	$ 216,300	$ -	$ 49,100	$ 265,400
4.22	LIGHTING/ TRANSFORMERS & PANELS		$ 26,000	$ 67,500	$ 52,200	$ 145,700
4.23	GROUNDING	LIMESTONE UNLOADING & RECLAIM AREAS	$ 24,100	$ -	$ 62,200	$ 86,300
4.24	RACEWAY, CABLE TRAY, & CONDUIT		$ -	$ 758,600	$ 3,283,700	$ 4,042,300
4.25	HIGH VOLTAGE POWER CABLE & TERMINATION	1/C # 500KCMIL-15KV	$ -	$ 33,400	$ 94,100	$ 127,500
4.26	LOW VOLTAGE POWER CABLE & TERMINATION		$ -	$ 130,600	$ 715,400	$ 846,000
4.27	CONTROL & INSTRUMENT CABLE	#14, #16 & PR # 20 & SHLD WIRE	$ -	$ 140,800	$ 395,100	$ 535,900
4.28	DUCT BANK	DUCT BANK WITH 12-5" CONDUIT, 37"H X 62.5"W (325'+50'=375')	$ -	$ 122,400	$ 3,400	$ 125,800

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4.29	FOUNDATIONS FOR TRANSFORMERS	LIMESTONE UNLOADING & RECLAIM AREAS	$ -	$ 3,500	$ 10,300	$ 13,800
90.00	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS		$ 6,898,900	$ 3,631,000	$ 11,807,200	$ 22,337,100
	SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS		$ 344,900	$ 925,900	$ 4,526,000	$ 5,796,800
	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	LIMESTONE HANDLING SYSTEM	$ 7,243,800	$ 4,556,900	$ 16,333,200	$ 28,133,900
5.0	REAGENT PREPARATION ISLAND					
5.1	MECHANICAL EQUIPMENT	INCLUDES LIMESTONE FEEDERS, FROM THE DAY SILOS THROUGH THE SLURRY STORAGE TANKS AND TRANSFER PUMPS WITH INTEGRAL PIPING	$ 15,167,000	$ -	$ 12,266,800	$ 27,433,800
5.2	REAGENT PREPARATION 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		$ 278,900	$ 205,000	$ 587,300	$ 1,071,200
5.5	LIMESTONE SLURRY TANKS - FOUNDATIONS		$ -	$ 166,400	$ 278,300	$ 444,700
5.6	REAGENT PREPARATION BUILDING - FOUNDATIONS		$ -	$ 682,000	$ 1,072,100	$ 1,754,100
5.7	REAGENT PREPARATION BUILDING	120' L X 130' W X 130' H	$ 269,400	$ 4,865,000	$ 4,251,600	$ 9,386,000
5.8	PIPE SUPPORT PAD - REAGENT PREP BUILDING		$ -	$ 13,800	$ 25,100	$ 38,900
5.9	LIGHTING/ TRANSFORMERS & PANELS		$ 52,000	$ 135,000	$ 104,500	$ 291,500
5.10	GROUNDING		$ 2,000	$ -	$ 7,900	$ 9,900
5.11	ELECTRICAL CABLE AND RACEWAY	INCLUDED IN ABSORBER ISLAND SECTION 7.0	$ -	$ -	$ -	$ -

Sargent & Lundy, LLC	AEP BIG SANDY UNIT 2 FGD PROJECT - WFGD BASE EST-1 - 4.5 LB/MMBTU COST ESTIMATE SUMMARY	Estimate No.: Project No.: Date: Preparer: Reviewer: Approver:	30708B 12721-000 9/10/2010 MNO JMK PEF

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90.00	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS		$ 15,809,300	$ 6,067,200	$ 18,610,500	$ 40,487,000
	SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS		$ 790,500	$ 1,547,100	$ 7,133,100	$ 9,470,700
	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	REAGENT PREPARATION ISLAND	$ 16,599,800	$ 7,614,300	$ 25,743,600	$ 49,957,700
6.0	BYPRODUCT DEWATERING ISLAND					
6.1	MECHANICAL EQUIPMENT	PRIMARY & SECONDARY DEWATERING INCLUDING HYDROCLONES, PUMPS, INTEGRAL PIPING, BELT VACUUM FILTERS, AND DISCHARGE CONVEYORS	$ 8,701,000	$ -	$ 6,644,500	$ 15,345,500
6.2	PIPING - MECHANICAL		$ 282,700	$ 1,202,400	$ 2,577,100	$ 4,062,200
6.3	MATERIAL HANDLING EQUIPMENT		$ 724,000	$ 5,000	$ 604,400	$ 1,333,400
6.4	FIRE PROTECTION SYSTEM FOR BELT CONVEYORS	DELUGE SYSTEM, DRY PIPE, SENSORS, ACTIVATION VALVE AND FM APPROVED PANEL - SUBCONTRACT PRICE FOR ALL CONVEYORS INCLUDES LABOR	$ 170,000	$ -	$ -	$ 170,000
6.5	BYPRODUCT DEWATERING BUILDING SUMP PUMPS & AGITATORS		$ 40,000	$ -	$ 16,900	$ 56,900
6.6	CONVEYOR STRUCTURE SUPPORT STEEL	THREE-COAT SHOP PAINT	$ -	$ 99,000	$ 99,600	$ 198,600
6.7	BYPRODUCT STACKOUT CONVEYOR - FOUNDATIONS		$ -	$ 30,100	$ 59,300	$ 89,400

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6.8	BYPRODUCT STACKOUT PILE - FOUNDATIONS	INCLUDES CONTAINMENT AREA SLAB	$ -	$ 1,155,700	$ 1,779,300	$ 2,935,000
6.9	BYPRODUCT CONTAINMENT WALLS		$ -	$ 137,300	$ 224,400	$ 361,700
6.10	INSTALL WIND SCREEN		$ -	$ 525,000	$ 192,300	$ 717,300
6.11	BYPRODUCT DEWATERING BUILDING - FOUNDATIONS		$ -	$ 291,400	$ 456,200	$ 747,600
6.12	BYPRODUCT DEWATERING BUILDING	120' L X 75' W X 65' H	$ 145,200	$ 1,595,300	$ 1,495,900	$ 3,236,400
6.13	PIPE SUPPORT PAD		$ -	$ 13,800	$ 25,000	$ 38,800
6.14	TRANSFORMERS		$ 170,000	$ -	$ 54,600	$ 224,600
6.15	SWITCHGEAR	480V LOW VOLATAGE SWITCHGEAR, PRICE PER SECTION	$ 196,000	$ -	$ 104,700	$ 300,700
6.16	CABLE BUS DUCT		$ 269,400	$ 10,800	$ 375,800	$ 656,000
6.17	MCC		$ 123,600	$ -	$ 6,300	$ 129,900
6.18	MIMIC PANELS		$ 17,500	$ -	$ 1,600	$ 19,100
6.19	EMERGENCY POWER SYSTEM		$ 108,300	$ -	$ 24,400	$ 132,700
6.20	GROUNDING		$ 5,500	$ -	$ 18,600	$ 24,100
6.21	LIGHTING/ TRANSFORMERS & PANELS		$ 52,000	$ 135,000	$ 104,500	$ 291,500
6.22	RACEWAY, CABLE TRAY, & CONDUIT		$ -	$ 310,500	$ 1,278,800	$ 1,589,300
6.23	HIGH VOLTAGE POWER CABLE & TERMINATION	1/C # 500KCMIL-15KV	$ -	$ 13,900	$ 39,200	$ 53,100
6.24	LOW VOLTAGE POWER CABLE & TERMINATION		$ -	$ 73,100	$ 533,900	$ 607,000
6.25	CONTROL & INSTRUMENT CABLE	#14, #16 & PR # 20 & SHLD WIRE	$ -	$ 99,200	$ 278,400	$ 377,600
6.26	FOUNDATIONS FOR TRANSFORMERS		$ -	$ 3,500	$ 10,300	$ 13,800
90.0	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS		$ 11,005,200	$ 5,701,000	$ 17,006,000	$ 33,712,200
	SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS		$ 550,300	$ 1,453,800	$ 6,518,600	$ 8,522,600
	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	BYPRODUCT DEWATERING ISLAND	$ 11,555,500	$ 7,154,800	$ 23,524,600	$ 42,234,800
7.0	ABSORBER ISLAND					

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7.1	MECHANICAL EQUIPMENT	INCLUDES ABSORBER MODULE (A2205) WITH INTERNALS, INLET DUCT ONLY THROUGH WET/DRY INTERFACE, PIPING INSIDE ABSORBER BUILDING TO TERMINAL POINTS, RECYCLE PUMPS, OXIDATION BLOWERS, MIST ELIMINATOR AND WASH PUMPS AND OTHER MISC. EQUIPMENT AND	$ 41,363,000	$ -	$ 40,889,400	$ 82,252,400
7.2	ADDITIONAL COST FOR C276 ABSORBER SHELL MATERIAL ABOVE THE PRICE OF A2205 ABSORBER SHELL	LABOR COST REFLECTS DIFFICULTY FACTOR WORKING WITH C276 VS. A2205	$ -	$ 14,940,000	$ 7,636,100	$ 22,576,100
7.3	ABSORBER BUILDING SUMP PUMPS	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	EMERGENCY DIESEL DRIVEN QUENCH PUMP	WITH FUEL DAY TANK. FOUNDATIONS INCLUDED WITH ABSORBER BUILDING FOUNDATIONS	$ 150,000	$ -	$ 30,700	$ 180,700
7.6	PIPING - MECHANICAL	ALL PIPING INCLUDED IN OEM EQUIPMENT COST. NO BOP PIPING	$ -	$ -	$ -	$ -
7.7	ABSORBER VESSEL - FOUNDATIONS		$ -	$ 366,900	$ 609,400	$ 976,300
7.8	ABSORBER BUILDING - FOUNDATIONS		$ -	$ 579,500	$ 908,200	$ 1,487,700
7.9	ABSORBER BUILDING	150' L X 90' W X 60' H	$ 164,500	$ 2,622,800	$ 2,402,700	$ 5,190,000
7.10	PIPE SUPPORT PAD - ABSORBER BUILDING		$ -	$ 7,700	$ 14,100	$ 21,800

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7.11	OXIDATION AIR BLOWER BUILDING - FOUNDATIONS		$ -	$ 37,000	$ 63,200	$ 100,200
7.12	OXIDATION AIR BLOWER BUILDING	30' L X 30' W X 25' H	$ 33,800	$ 191,000	$ 201,400	$ 426,200
7.13	PIPE SUPPORT PAD - OXIDATION BUILDING		$ -	$ 7,700	$ 13,100	$ 20,800
7.14	DUCTWORK	INCLUDES INTERNAL BRACING AND TURNING VANES	$ -	$ 3,558,800	$ 8,156,900	$ 11,715,700
7.15	DUCT SUPPORT STEEL	THREE-COAT SHOP PAINT	$ -	$ 1,586,300	$ 1,595,900	$ 3,182,200
7.16	DUCTWORK INSULATION & LAGGING		$ -	$ 1,261,200	$ 2,470,200	$ 3,731,400
7.17	FOUNDATIONS FOR DUCT SUPPORT STEEL		$ -	$ 69,000	$ 126,000	$ 195,000
7.18	TRANSFORMERS		$ 1,181,000	$ -	$ 263,900	$ 1,444,900
7.19	SWITCHGEAR		$ 1,838,400	$ -	$ 1,118,900	$ 2,957,300
7.20	CABLE BUS & TERMINATIONS		$ 1,658,300	$ 46,600	$ 2,982,700	$ 4,687,600
7.21	MCC		$ 432,600	$ -	$ 22,100	$ 454,700
7.22	MIMIC PANELS		$ 17,500	$ -	$ 4,000	$ 21,500
7.23	GROUNDING		$ 16,000	$ -	$ 46,100	$ 62,100
7.24	LIGHTING/ TRANSFORMERS & PANELS		$ 164,500	$ 165,000	$ 171,300	$ 500,800
7.25	EMERGENCY POWER SYSTEM		$ 108,300	$ -	$ 24,400	$ 132,700
7.26	RACEWAY, CABLE TRAY, & CONDUIT		$ -	$ 1,421,900	$ 5,191,200	$ 6,613,100
7.27	HIGH VOLTAGE POWER CABLE & TERMINATION		$ -	$ 58,400	$ 164,700	$ 223,100
7.28	MEDIUM VOLTAGE POWER CABLE & TERMINATION		$ -	$ 114,600	$ 431,700	$ 546,300
7.29	LOW VOLTAGE POWER CABLE & TERMINATION		$ -	$ 795,900	$ 1,500,700	$ 2,296,600
7.30	CONTROL & INSTRUMENT CABLE		$ -	$ 512,000	$ 1,436,700	$ 1,948,700
7.31	FOUNDATION FOR TRANSFORMERS		$ -	$ 59,000	$ 173,700	$ 232,700
7.32	TRANSFORMER FIRE WALLS		$ -	$ 3,500	$ 9,600	$ 13,100
90.0	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS		$ 47,167,900	$ 28,404,800	$ 78,675,900	$ 154,248,600
	SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS		$ 3,033,400	$ 7,243,200	$ 30,940,700	$ 41,217,300
	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	ABSORBER ISLAND	$ 50,201,300	$ 35,648,000	$ 109,616,600	$ 195,465,900
8.0	FGD WASTE WATER TREATMENT PLANT					
8.1	WWT MECHANICAL EQUIPMENT:		$ 4,500,000	$ -	$ 1,073,300	$ 5,573,300

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8.2	PIPING - MECHANICAL		$ 46,800	$ 281,200	$ 888,700	$ 1,216,700
8.3	PUMPS		$ 58,000	$ 29,300	$ 74,100	$ 161,400
8.4	TANKS		$ -	$ 2,385,000	$ 792,000	$ 3,177,000
8.5	PRIMARY CLARIFIER - FOUNDATIONS		$ -	$ 23,400	$ 47,300	$ 70,700
8.6	SECONDARY CLARIFIER - FOUNDATIONS		$ -	$ 23,400	$ 47,300	$ 70,700
8.7	RECLAIM WATER TANKS - FOUNDATIONS	TOTAL FOR TWO TANKS	$ -	$ 26,000	$ 47,600	$ 73,600
8.8	EQUALIZATION TANKS - FOUNDATIONS	TOTAL FOR TWO TANKS	$ -	$ 5,400	$ 11,000	$ 16,400
8.9	MAINTENANCE STORAGE TANK - FOUNDATIONS		$ -	$ 100,000	$ 163,900	$ 263,900
8.10	WWT BUILDING - FOUNDATIONS		$ -	$ 301,900	$ 494,800	$ 796,700
8.11	WWT BUILDING	125' L X 90' W X 25' H	$ 42,000	$ 885,100	$ 855,600	$ 1,782,700
8.12	PIPE SUPPORT PAD		$ -	$ 13,800	$ 24,800	$ 38,600
8.13	MCC		$ 61,800	$ -	$ 3,600	$ 65,400
8.14	EMERGENCY POWER SYSTEM		$ 108,300	$ -	$ 24,400	$ 132,700
8.15	GROUNDING		$ 5,500	$ -	$ 18,600	$ 24,100
8.16	LIGHTING / TRANSFORMERS & PANELS		$ 52,000	$ 60,000	$ 59,100	$ 171,100
8.17	RACEWAY, CABLE TRAY, & CONDUIT		$ -	$ 511,400	$ 1,992,800	$ 2,504,200
8.18	LOW VOLTAGE POWER CABLE & TERMINATION		$ -	$ 148,000	$ 184,100	$ 332,100
8.19	CONTROL & INSTRUMENT CABLE	#14, #16 & PR # 20 & SHLD WIRE	$ -	$ 102,400	$ 287,300	$ 389,700
90.0	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS		$ 4,874,400	$ 4,896,300	$ 7,090,300	$ 16,861,000
	SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS		$ 243,700	$ 1,248,600	$ 2,718,100	$ 4,210,400
	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	FGD WASTE WATER TREATMENT PLANT	$ 5,118,100	$ 6,144,900	$ 9,808,400	$ 21,071,400
9.0	COMPRESSED AIR SYSTEM					
9.1	AIR COMPRESSOR & AUXILIARIES		$ 399,000	$ -	$ 112,500	$ 511,500
9.2	PIPING - MECHANICAL		$ 938,000	$ 1,019,200	$ 4,148,200	$ 6,105,400
9.3	ELECTRICAL	INCLUDED IN REAGENT PREPARATION, SECTION 5.0	$ -	$ -	$ -	$ -

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90.00	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS		$ 1,337,000	$ 1,019,200	$ 4,260,700	$ 6,616,900
	SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS		$ 66,900	$ 259,900	$ 1,632,600	$ 1,959,400
	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	COMPRESSED AIR SYSTEM	$ 1,403,900	$ 1,279,100	$ 5,893,300	$ 8,576,300
10.0	SERVICE WATER SYSTEM					
10.1	PUMPS		$ 160,000	$ -	$ 73,600	$ 233,600
10.2	PIPING - MECHANICAL		$ 478,800	$ 1,205,400	$ 2,725,900	$ 4,410,100
10.3	PIPING - FIRE PROTECTION SYSTEM		$ 266,200	$ 143,400	$ 537,600	$ 947,200
10.4	TANKS		$ -	$ 152,500	$ -	$ 152,500
10.5	SERVICE WATER TANK & PUMP - FOUNDATIONS		$ -	$ 17,300	$ 35,000	$ 52,300
10.6	MAKE UP WATER TANK & PUMP - FOUNDATIONS		$ -	$ 11,600	$ 24,500	$ 36,100
10.7	ELECTRICAL	INCLUDED IN REAGENT PREPARATION, SECTION 5.0	$ -	$ -	$ -	$ -
90.0	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS		$ 905,000	$ 1,530,200	$ 3,396,600	$ 5,831,800
	SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS		$ 45,300	$ 390,200	$ 1,301,600	$ 1,737,000
	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	SERVICE WATER SYSTEM	$ 950,300	$ 1,920,400	$ 4,698,200	$ 7,568,800
11.0	POTABLE WATER SYSTEM					
11.1	PUMPS		$ 30,000	$ -	$ 18,400	$ 48,400
11.2	PIPING - MECHANICAL		$ 137,000	$ 120,800	$ 389,400	$ 647,200
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 REAGENT PREPARATION, SECTION 5.0	$ -	$ -	$ -	$ -
90.0	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS		$ 167,000	$ 134,500	$ 416,600	$ 718,100

Sargent & Lundy, LLC

AEP
BIG SANDY UNIT 2
FGD PROJECT - WFGD BASE EST-1 - 4.5 LB/MMBTU
COST ESTIMATE SUMMARY

Estimate No.: 30708B
Project No.: 12721-000
Date: 9/10/2010
Preparer: MNO
Reviewer: JMK
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Account No.	Item Description	Scope Definition	Total Equipment Cost	Total Material Cost	Total Construction & Erection Cost	Total Projected Cost
	SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS		$ 8,400	$ 34,300	$ 159,500	$ 202,100
	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	POTABLE WATER SYSTEM	$ 175,400	$ 168,800	$ 576,100	$ 920,200
12.0	FGD SUBSTATION					
12.1	138/13.8 KV STATION SERVICE TRANSFORMERS		$ 1,390,500	$ -	$ 218,500	$ 1,609,000
12.2	138KV MAIN FEEDER & TERMINATIONS		$ 264,000	$ -	$ 254,000	$ 518,000
12.3	SWITCHGEAR		$ 124,200	$ -	$ 85,200	$ 209,400
12.4	DUCTBANKS		$ -	$ 108,200	$ 154,100	$ 262,300
12.5	GROUNDING		$ 10,100	$ -	$ 26,800	$ 36,900
12.6	OUTDOOR LIGHTING		$ 25,000	$ -	$ 56,800	$ 81,800
12.7	FOUNDATION FOR AUX TRANSFORMER		$ -	$ 63,200	$ 170,800	$ 234,000
12.8	FIRE WALL FOR AUX TRANSFORMER		$ -	$ 21,300	$ 63,600	$ 84,900
90.0	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS		$ 1,813,800	$ 192,700	$ 1,029,800	$ 3,036,300
	SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS		$ 90,700	$ 49,100	$ 395,172	$ 535,000
	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	FGD SUBSTATION	$ 1,904,500	$ 241,800	$ 1,425,000	$ 3,571,300
13.0	FGD DCS SYSTEM					
13.1	DCS	4000 I/O POINTS	$ -	$ 3,000,000	$ 1,016,900	$ 4,016,900
13.2	DCS - VENDOR FIELD SUPPORT	200 MANDAYS @ $1500/DAY - SHOWN AS SUBCONTRACT COST	$ 300,000	$ -	$ -	$ 300,000
13.3	LOCALLY MOUNTED INSTRUMENTS		$ -	$ 827,800	$ 1,085,600	$ 1,913,400
90.0	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS		$ 300,000	$ 3,827,800	$ 2,102,500	$ 6,230,300
	SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS		$ 15,000	$ 976,100	$ 806,100	$ 1,797,100
	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	FGD DCS SYSTEM	$ 315,000	$ 4,803,900	$ 2,908,600	$ 8,027,400

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14.0	CEM SYSTEM					
14.1	CEM SYSTEM	PROVIDED BY AEP	$ 1,260,000	$ 540,000	$ 310,000	$ 2,110,000
15.0	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
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	$ -	$ 33,100	$ 67,700	$ 100,800
90.0	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS		$ 212,500	$ 2,044,100	$ 2,080,400	$ 4,337,000

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	SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS		$ 10,600	$ 521,200	$ 797,500	$ 1,329,400
	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	RAIL INFRASTRUCTURE	$ 223,100	$ 2,565,300	$ 2,877,900	$ 5,666,400
16.0	SITE IMPROVEMENTS - CIVIL WORK					
16.1	SITE GRADING		$ -	$ -	$ 516,000	$ 516,000
16.2	ROADS & SURFACING		$ -	$ 605,100	$ 833,500	$ 1,438,600
16.3	LIMESTONE HANDLING & STORAGE		$ -	$ 340,100	$ 541,700	$ 881,800
16.4	GYPSUM HANDLING & STORAGE		$ -	$ 1,147,200	$ 1,784,100	$ 2,931,300
16.5	GYPSUM RUNOFF POND		$ 60,000	$ 110,400	$ 312,600	$ 483,000
16.6	BYPRODUCT POND PUMP STRUCTURE - CONCRETE		$ -	$ 47,000	$ 105,400	$ 152,400
16.7	NEW CONCRETE ENCASEMENT	8' X 4' X 40' - FOR EXISTING ASH PIPE HAUL ROAD CROSSING	$ -	$ 15,200	$ 31,500	$ 46,700
16.8	TRUCK WASH AREA - CONCRETE PAD		$ -	$ 41,900	$ 70,400	$ 112,300
16.9	TRUCK WASH AREA - ENCLOSURE		$ -	$ 67,400	$ 95,300	$ 162,700
16.10	TRUCK SCALE & CONCRETE APPROACH		$ 170,000	$ 27,300	$ 92,000	$ 289,300
16.11	STORMWATER DRAINAGE TRENCH	2' W X 3' DEEP CAST-IN-PLACE CONCRETE TRENCH W/REINFORCING & HS-20 RATED GRATE	$ -	$ 472,500	$ 480,800	$ 953,300
16.12	STORMWATER RUNOFF POND		$ -	$ 15,000	$ 122,600	$ 137,600
16.13	STORM WATER POND PUMP STRUCTURE - CONCRETE		$ 90,000	$ 42,300	$ 182,200	$ 314,500
16.14	OILY WATER SEWER		$ 4,500	$ 80,600	$ 186,100	$ 271,200
16.15	OIL SEPARATOR	500 GPM W/ INTEGRAL LIFT STATION	$ 100,000	$ -	$ 116,100	$ 216,100
16.16	SANITARY SEWER		$ -	$ 22,200	$ 96,900	$ 119,100
16.17	SANITARY LIFT STATION	PACKAGED TYPE COMPLETE WITH PUMPS, 100,000 GPD	$ 150,000	$ -	$ 49,200	$ 199,200

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16.18	CONSTRUCTION LAYDOWN AREA	ALLOWANCE FOR 10 ACRES, DOES NOT INCLUDE LAND ACQUISITION, IF REQUIRED	$ -	$ 700,000	$ 828,000	$ 1,528,000
16.19	CRAFT PARKING	DOES NOT INCLUDE LAND ACQUISITION, IF REQUIRED. ALLOWANCE FOR 20,000 SY INCLUDES: 6" BASE COURSE 10 OZ/SY GEOTEXTILE 12" SUBGRADE PREP	$ -	$ 180,000	$ 405,200	$ 585,200
16.20	CONTRACTOR OFFICES (AREA)	DOES NOT INCLUDE LAND ACQUISITION, IF REQUIRED. ALLOWANCE FOR 5,000 SY AREA (TRAILERS BY CONTRACTORS) INCLUDES: 6" BASE COURSE 10 OZ/SY GEOTEXTILE 12" SUBGRADE PREP	$ -	$ 45,000	$ 101,300	$ 146,300
90.0	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS		$ 574,500	$ 3,959,200	$ 6,950,900	$ 11,484,600
	SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS		$ 28,700	$ 1,009,600	$ 2,663,800	$ 3,702,200
	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	SITE IMPROVEMENTS - CIVIL WORK	$ 603,200	$ 4,968,800	$ 9,614,700	$ 15,186,800
17.0	BOP ITEMS					

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17.1	PIPE INSULATION	AVERAGE 6" PIPE SIZE	$ -	$ 78,000	$ 243,100	$ 321,100
17.2	HEAT TRACING		$ -	$ 332,700	$ 474,800	$ 807,500
17.3	TOUCH UP PAINT (INCLUDES PAINTING CS PIPE)		$ -	$ 186,600	$ 715,700	$ 902,300
17.4	HOISTS & TROLLEYS		$ 180,000	$ 210,000	$ 245,300	$ 635,300
17.5	MISC AUX STEEL FOR PIPE SUPPORTS	FIELD FABRICATED	$ -	$ 140,000	$ 583,500	$ 723,500
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		$ -	$ 420,000	$ 343,500	$ 763,500
90.0	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS		$ 210,000	$ 1,382,800	$ 2,656,200	$ 4,249,000
	SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS		$ 10,500	$ 352,614	$ 1,018,141	$ 1,381,255
	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	BOP ITEMS	$ 220,500	$ 1,735,400	$ 3,674,300	$ 5,630,300
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	$ 722,700	$ 999,000
90.0	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS		$ -	$ 479,000	$ 1,130,600	$ 1,609,600
	SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS		$ -	$ 122,100	$ 433,000	$ 555,200

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	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	CAPITAL REPLACEMENTS - REMOVAL AND RELOCATION OF EXISTING EQUIPMENT AND INFRASTRUCTURE	$ -	$ 601,100	$ 1,563,600	$ 2,164,800
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		$ 143,696,900	$ 94,432,900	$ 224,773,800	$ 463,653,600
	OVERALL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS		$ 7,757,800	$ 20,117,700	$ 80,802,000	$ 108,677,600
	OVERALL TOTAL DIRECT & CONSTRUCTION INDIRECT COST		$ 151,454,700	$ 114,550,600	$ 305,575,800	$ 572,331,200
	OVERALL PROJECT INDIRECT COSTS					
	ENGINEERING, PROCUREMENT, & PROJECT SERVICES					$ 30,000,000
	CONSTRUCTION MANAGEMENT					$ 17,169,900
	S-U / COMMISSIONING					$ 5,723,300
	CRAFT START-UP SUPPORT					$ 2,649,200
	INITIAL FILLS					$ 1,717,000
	OPERATOR & TRAINING MANUALS					$ 300,000
	SUBCONTRACTORS (NOISE & DUCTWORK CONSULTANT, GEOTECHNICAL INVESTIGATION)					$ 400,000
	OWNERS COST - % of ACCT NOS. 92, 93.1, 93.2, 93.3, 93.4					$ -

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Account No.	Item Description	Scope Definition	Total Equipment Cost	Total Material Cost	Total Construction & Erection Cost	Total Projected Cost
	TOTAL PROJECT DIRECT AND INDIRECT COSTS					$ 630,290,600
	SPARE PARTS FOR THE OEM & THE BOP EQUIPMENT					$ 1,514,500
	SPARE PARTS FOR THE OEM EQUIPMENT	0.80				$ 938,990
	SPARE PARTS FOR THE BOP EQUIPMENT	0.50				$ 575,510
	CONTINGENCY	14.7				$ 92,638,200
	ESCALATION					$ 56,795,700
	EQUIPMENT					$ 15,758,900
	MATERIAL					$ 8,221,000
	LABOR					$ 27,583,900
	INDIRECTS					$ 5,231,900
	INTEREST DURING CONSTRUCTION (AFUDC)					
	TOTAL PROJECT COST					$ 781,239,000
	REFERENCE COSTS:					
A	ESP STRUCTURAL INTEGRITY MODS	ALLOWANCE FOR 150 TON FRAMING REINFORCEMENT	$ -	$ 435,000	$ 2,188,200	$ 2,623,200
B	REMOVE BOOSTER AIR FANS		$ -	$ -	$ 111,000	$ 111,000

EXHIBIT 1-6.2
Capital Cost Estimate Summary
Dry FGD Base Case w/o ESP

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
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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	$ 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

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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
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	$ 1,766,500	$ 5,396,000	$ 7,562,300
	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	ID FANS	$ 8,395,400	$ 9,447,000	$ 21,554,800	$ 39,397,200
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 COMPARTMENT	$ 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
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	$ 694,500	$ 6,019,100	$ 7,831,600
	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	FABRIC FILTERS	$ 23,477,400	$ 3,714,100	$ 23,388,000	$ 50,579,500
3.0	NEW STACK					
3.1	CONCRETE STACK (DRY)	PROVIDED BY AEP	$ -	$ -	$ -	$ 17,600,000

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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
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

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
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Approver: PEF

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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	$ 680,400	$ 2,015,300	$ 3,058,600
	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	LIME HANDLING SYSTEM	$ 7,622,600	$ 3,638,600	$ 7,949,600	$ 19,210,700
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

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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	$ 276,100	$ 2,281,000	$ 2,966,200
	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	LIME SLAKER BUILDING	$ 8,592,500	$ 1,476,400	$ 8,834,500	$ 18,903,300
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	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

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.: Project No.: Date: Preparer: Reviewer: Approver:	30713B 12721-000 9/10/2010 MNO JMK PEF

Account No.	Item Description	Scope Definition	Total Equipment Cost	Total Material Cost	Total Construction & Erection Cost	Total Projected Cost
6.6	BYPRODUCT WASTE SILO	CONCRETE SILO 65' DIA X 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
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	$ 543,100	$ 1,822,500	$ 2,647,700

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	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	BYPRODUCT WASTE & FLY ASH HANDLING SYSTEMS	$ 5,924,400	$ 2,904,500	$ 7,071,600	$ 15,900,500
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 BUILDINGS.	$ 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

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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 # 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	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	$ 4,298,500	$ 23,898,500	$ 31,269,700
	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	ABSORBER ISLAND	$ 48,325,100	$ 22,987,700	$ 89,845,900	$ 161,158,800

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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	$ 73,900	$ 591,400	$ 811,800
	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	ACTIVATED CARBON INJECTION SYSTEM	$ 3,075,500	$ 395,200	$ 2,318,200	$ 5,788,900
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

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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	$ 233,600	$ 494,800	$ 778,500
	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	COMPRESSED AIR SYSTEM	$ 1,050,100	$ 1,249,400	$ 1,942,500	$ 4,242,100
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	$ 272,000	$ 658,800	$ 959,800
	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	SERVICE WATER SYSTEM	$ 609,600	$ 1,454,700	$ 2,597,600	$ 4,661,900
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

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	SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS		$ 6,500	$ 49,200	$ 188,900	$ 244,700
	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	POTABLE WATER SYSTEM	$ 135,975	$ 263,343	$ 746,838	$ 1,146,156
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
	SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS		$ 174,900	$ 167,300	$ 1,198,518	$ 1,540,800

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	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	FGD SUBSTATION	$ 3,673,100	$ 894,800	$ 4,757,500	$ 9,325,500
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	$ 163,200	$ 607,300	$ 905,500
	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	FGD DCS SYSTEM	$ 2,835,000	$ 872,700	$ 2,351,400	$ 6,059,100
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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Account No.	Item Description	Scope Definition	Total Equipment Cost	Total Material Cost	Total Construction & Erection Cost	Total Projected Cost
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 EXTENSION	$ -	$ 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	$ 470,200	$ 725,500	$ 1,206,300
	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	TRUCK & RAIL INFRASTRUCTURE	$ 223,100	$ 2,514,400	$ 2,805,900	$ 5,543,400
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

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16.3	NEW CONCRETE ENCASEMENT	16' X 4' X 40' - FOR EXISTING ASH PIPE HAUL 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	$ 312,100	$ 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 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

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Account No.	Item Description	Scope Definition	Total Equipment Cost	Total Material Cost	Total Construction & Erection Cost	Total Projected Cost
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	$ -	$ 180,000	$ 414,200	$ 594,200
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	$ -	$ 45,000	$ 103,600	$ 148,600
90.0	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS		$ 574,500	$ 2,965,900	$ 5,358,400	$ 8,898,800
	SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS		$ 28,700	$ 682,200	$ 1,796,600	$ 2,507,500
	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	SITE IMPROVEMENTS - CIVIL WORK	$ 603,200	$ 3,648,100	$ 7,155,000	$ 11,406,300
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

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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	$ 241,914	$ 700,787	$ 953,201
	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	BOP ITEMS	$ 220,500	$ 1,293,700	$ 2,670,700	$ 4,184,900
18.0	CAPITAL REPLACEMENTS - REMOVAL AND RELOCATION OF EXISTING EQUIPMENT AND INFRASTRUCTURE					
18.1	RELOCATE HYDROGEN STORAGE TANK		$ -	$ 15,600	$ 86,800	$ 102,400
18.2	NEW HYDROGEN LINE TO PLANT		$ -	$ 62,100	$ 150,600	$ 212,700
18.3	RELOCATE MISC. UNDERGROUND UTILITIES	ALLOWANCE	$ -	$ 125,000	$ 170,500	$ 295,500
18.4	OUTAGE TIE-IN DUCTWORK	ALLOWANCE FOR 85 TON DUCTWORK	$ -	$ 276,300	$ 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		$ -	$ 110,200	$ 372,800	$ 483,000
	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	CAPITAL REPLACEMENTS - REMOVAL AND RELOCATION OF EXISTING EQUIPMENT AND INFRASTRUCTURE	$ -	$ 589,200	$ 1,519,400	$ 2,108,600
19.0	ARSENIC, ASBESTOS , LEAD ABATEMENT					

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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	$ 10,722,800	$ 48,767,800	$ 65,727,000
	OVERALL TOTAL DIRECT & CONSTRUCTION INDIRECT COST		$ 116,023,500	$ 57,883,800	$ 187,819,400	$ 380,076,700
	OVERALL PROJECT INDIRECT COSTS					
	ENGINEERING, PROCUREMENT, & PROJECT SERVICES					$ 25,000,000
	CONSTRUCTION MANAGEMENT					$ 11,402,300
	S-U / COMMISSIONING					$ 3,800,800
	CRAFT START-UP SUPPORT					$ 1,638,400
	INITIAL FILLS					$ 1,140,200
	OPERATOR & TRAINING MANUALS					$ 300,000
	SUBCONTRACTORS (NOISE & DUCTWORK CONSULTANT, GEOTECHNICAL INVESTIGATION)					$ 400,000
	OWNERS COST	BY AEP				$ -
	TOTAL PROJECT DIRECT AND INDIRECT COSTS					$ 423,758,400
	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				$ 64,186,900
	ESCALATION					$ 29,787,000
	EQUIPMENT					$ 12,108,100
	MATERIAL					$ 2,937,700
	LABOR					$ 11,959,700

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	INDIRECTS					$ 2,781,500
	INTEREST DURING CONSTRUCTION (AFUDC)	BY AEP				
	TOTAL PROJECT COST					$ 519,240,600
	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

EXHIBIT 1-6.3
Capital Cost Estimate Summary
IAQCS FGD Base case w/o ESP

EXHIBIT 1-6.4
Capital Cost Estimate Summary
NID FGD Base Case w/o ESP

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1.0	ID FANS					
1.1	ID FANS - OEM EQUIPMENT	1,875,000 ACFM WITH 19,500 HP MOTORS ($750,000 EACH). INCLUDES HYDRAULIC OIL UNITS, SEAL AIR FAN SKIDS, VIBRATION MONITORING EQUIPMENT, FAN STALL EQUIPMENT, FIELD SERVICE REP FOR 140 DAYS	$ 6,920,000	$ -	$ 1,674,400	$ 8,594,400
1.2	PIPING & SUPPORTS - MECHANICAL		$ 21,800	$ 28,700	$ 120,500	$ 171,000
1.3	DAMPERS		$ 553,500	$ -	$ 263,200	$ 816,700
1.4	EXPANSION JOINTS		$ -	$ 131,100	$ 116,500	$ 247,600
1.5	DUCTWORK	NID MODULE OUTLET TO ID FANS AND FROM ID FANS TO STACK - INCLUDES INTERNAL BRACING AND TURNING VANES	$ -	$ 2,600,000	$ 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	$ -	$ 200,000	$ 258,500	$ 458,500

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1.8	DUCTWORK INSULATION & LAGGING	INCLUDES INSULATION FOR SPRAY DRYER OUTLET DUCT TO NID MODULES SUPPLIED WITH THE OEM EQUIPMENT	$ -	$ 864,000	$ 1,692,200	$ 2,556,200
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	NID CONTROL & SWITCHGEAR BUILDING - FOUNDATIONS		$ -	$ 273,800	$ 433,700	$ 707,500
1.12	NID CONTROL & SWITCHGEAR BUILDING	SUBCONTRACT PRICE INCLUDES LABOR. COMPLETE WITH HVAC, FINISHES AND SANITARY FACILITIES	$ -	$ 3,937,500	$ -	$ 3,937,500
1.13	TRANSFORMERS		$ 770,000	$ -	$ 145,600	$ 915,600
1.14	SWITCHGEAR		$ 1,082,000	$ -	$ 569,000	$ 1,651,000
1.15	CABLE BUS & TERMINATIONS		$ 756,300	$ 35,800	$ 1,316,200	$ 2,108,300
1.16	MCC		$ 120,000	$ -	$ 7,200	$ 127,200
1.17	MIMIC PANELS		$ 17,500	$ -	$ 4,500	$ 22,000
1.18	EMERGENCY POWER SYSTEM		$ 285,500	$ -	$ 38,900	$ 324,400
1.19	HIGH VOLTAGE POWER CABLE & TERMINATION	1/C 750KCMIL- 13.8KV	$ -	$ 186,300	$ 283,200	$ 469,500
1.20	MEDIUM VOLTAGE POWER CABLE & TERMINATION		$ -	$ 91,600	$ 393,700	$ 485,300
1.21	LOW VOLTAGE POWER CABLE & TERMINATION		$ -	$ 543,000	$ 794,800	$ 1,337,800
1.22	CONTROL & INSTRUMENT CABLE	#14, #16 & PR # 20 & SHLD WIRE	$ -	$ 345,000	$ 2,818,200	$ 3,163,200
1.23	GROUNDING		$ 11,100	$ -	$ 37,200	$ 48,300
1.24	LIGHTING/ TRANSFORMERS & PANELS		$ 26,000	$ 30,000	$ 29,500	$ 85,500
1.25	RACEWAY, CABLE TRAY, & CONDUIT		$ -	$ 1,569,000	$ 7,502,000	$ 9,071,000
1.26	DUCT BANK		$ -	$ 40,800	$ 280,000	$ 320,800
1.27	FOUNDATION FOR TRANSFORMERS		$ -	$ 64,600	$ 168,200	$ 232,800
1.28	FIREWALL FOR TRANSFORMERS		$ -	$ 3,200	$ 8,300	$ 11,500

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90.00	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS		$ 10,563,700	$ 12,505,900	$ 26,800,200	$ 49,869,800
	SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS		$ 528,200	$ 3,189,000	$ 9,621,100	$ 13,338,300
	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	ID FANS	$ 11,091,900	$ 15,694,900	$ 36,421,300	$ 63,208,100
2.0	NID MODULES					
2.1	MECHANICAL EQUIPMENT	A 12-MODULE NID SYSTEM (160' X 160') INCLUDING LIME DAY SILOS, HYDRATORS, MIXERS, J-DUCTS, FABRIC FILTER MODULES, ALL INTERNAL ELEMENTS (BAGS, CAGES, ASH HOPPERS, 2 BROKEN BAG DETECTORS / COMPARTMENT), ASH RECYCLE SYSTEM, VACUUM PIPING, AND ALL INTERNAL PIPING & DUCTWORK FOR THE VARIOUS MODULES.	$ 50,231,000	$ -	$ 42,381,900	$ 92,612,900
2.2	INSULATION FOR NID MODULES	SUBCONTRACT COST INCLUDES LABOR	$ 2,419,200	$ -	$ -	$ 2,419,200
2.3	PENTHOUSE FOR NID MODULES	14 FT HIGH, 25600 SF	$ 58,100	$ 1,316,900	$ 1,747,600	$ 3,122,600
2.4	BOTTOM ENCLOSURE FOR NID MODULES	40 FT HIGH	$ 92,200	$ 2,428,900	$ 2,544,900	$ 5,066,000
2.5	PIPING & SUPPORTS - MECHANICAL		$ 125,200	$ 174,500	$ 385,900	$ 685,600
2.6	DUCTWORK		$ -	$ 4,797,000	$ 10,995,100	$ 15,792,100
2.7	DUCT SUPPORT STEEL	THREE COAT SHOP PAINT	$ -	$ 2,140,200	$ 2,153,200	$ 4,293,400

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2.8	DUCTWORK INSULATION & LAGGING		$ -	$ 1,632,000	$ 3,196,400	$ 4,828,400
2.9	NID MODULE- FOUNDATIONS		$ -	$ 1,087,000	$ 1,682,500	$ 2,769,500
2.10	NID MODULE - SUPPORT STEEL AND ACCESS GALLERY		$ -	$ 1,152,000	$ 2,863,700	$ 4,015,700
2.11	GROUNDING		$ -	$ 16,000	$ 46,100	$ 62,100
2.12	LIGHTING/ TRANSFORMERS & PANELS		$ 156,000	$ 150,000	$ 159,100	$ 465,100
2.13	RACEWAY, CABLE TRAY, & CONDUIT	INCLUDED IN ID FANS, 1.0	$ -	$ -	$ -	$ -
90.00	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS		$ 53,081,700	$ 14,894,500	$ 68,156,400	$ 136,132,600
	SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS		$ 3,329,100	$ 3,798,100	$ 25,728,500	$ 32,855,700
	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	NID MODULES	$ 56,410,800	$ 18,692,600	$ 93,884,900	$ 168,988,300
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		$ 5,992,400	$ -	$ -	$ 5,992,400
4.2	LIME UNLOADING SYSTEM	INCLUDE PNEUMATIC HANDLING SYSTEM, THREE VACUUM EXHAUSTER, TWO FILTER SEPARATORS	$ 700,000	$ -	$ 449,800	$ 1,149,800
4.3	LIME TRANSPORT SYSTEM TO DAY BINS	INCLUDE PNEUMATIC HANDLING SYSTEM, THREE VACUUM EXHAUSTERS, TWO FILTER SEPARATORS	$ 1,100,000	$ -	$ 654,200	$ 1,754,200
4.4	PIPING - MECHANICAL		$ 88,700	$ 130,300	$ 342,600	$ 561,600
4.5	LIME STORAGE SILO ACCESS STAIR TOWER		$ -	$ 159,500	$ 160,500	$ 320,000

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4.6	PIPE RACK FOR LIME HANDLING, WASTE HANDLING AND MISC MECHANICAL PIPING	THREE COAT SHOP PAINT	$ -	$ 1,885,000	$ 1,896,400	$ 3,781,400
4.7	RAIL CAR UNLOADING AREA - FOUNDATIONS	20' X 120' - NO SIDING	$ -	$ 42,700	$ 79,300	$ 122,000
4.8	LIME UNLOADING BLOWER / ELECTRICAL BUILDING - FOUNDATIONS		$ -	$ 69,600	$ 130,200	$ 199,800
4.9	LIME UNLOADING BLOWER / ELECTRICAL BUILDING	100' L X 30' W X 30' H	$ 75,000	$ 335,000	$ 24,400	$ 434,400
4.10	CONCRETE PIT FOR THE ELEVATOR		$ -	$ 2,300	$ 6,900	$ 9,200
4.11	LIME STORAGE SILO - FOUNDATIONS	INCLUDES FOUNDATIONS FOR LIME TRANSPORT SYSTEM PRESSURE BLOWERS	$ -	$ 368,100	$ 613,200	$ 981,300
4.12	LIME STORAGE SILO ACCESS STAIR TOWER - FOUNDATIONS	0	$ -	$ 14,200	$ 26,200	$ 40,400
4.13	PIPE RACK - FOUNDATIONS		$ -	$ 239,600	$ 519,100	$ 758,700
4.14	TRANSFORMERS	SUS TRANSFORMERS: 33F, 33G, 13.8KV-480V,3PHASE, 3 WINDING XFMR	$ 170,000	$ -	$ 54,600	$ 224,600
4.15	SWITCHGEAR	480V LOW VOLTAGE (33F/G), SWITCHGEAR	$ 196,000	$ -	$ 104,700	$ 300,700
4.16	CABLE BUS DUCT		$ 134,700	$ 10,800	$ 200,200	$ 345,700
4.17	MCC		$ 61,800	$ -	$ 3,600	$ 65,400
4.18	MIMIC PANELS		$ 17,500	$ -	$ 1,400	$ 18,900
4.19	EMERGENCY POWER SYSTEM		$ 108,300	$ -	$ 24,400	$ 132,700
4.20	GROUNDING		$ 13,300	$ -	$ 41,300	$ 54,600
4.21	LIGHTING/ TRANSFORMERS & PANELS		$ 52,000	$ 135,000	$ 104,500	$ 291,500
4.22	RACEWAY, CABLE TRAY, & CONDUIT		$ -	$ 296,400	$ 1,429,900	$ 1,726,300
4.23	HIGH VOLTAGE POWER CABLE & TERMINATION	1/C # 2/0-15KV	$ -	$ 23,400	$ 87,800	$ 111,200
4.24	MEDIUM VOLTAGE POWER CABLE & TERMINATION	1/C # 2/0-5KV	$ -	$ 9,500	$ 47,900	$ 57,400
4.25	LOW VOLTAGE POWER CABLE & TERMINATION		$ -	$ 132,200	$ 260,800	$ 393,000
4.26	CONTROL & INSTRUMENT CABLE	#14, #16 & PR # 20 & SHLD WIRE	$ -	$ 57,600	$ 161,600	$ 219,200

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4.27	DUCT BANK	DUCT BANK WITH 4-5" & 4-3" CONDUITS, 2.38' H X 3.79' W	$ -	$ 61,100	$ 152,100	$ 213,200
4.28	FOUNDATIONS FOR TRANSFORMERS	FOR XFMR 33F, 33G, INCLUDES MUD MAT	$ -	$ 3,500	$ 10,300	$ 13,800
90.00	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS		$ 8,709,700	$ 3,975,800	$ 7,587,900	$ 20,273,400
	SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS		$ 435,500	$ 1,013,800	$ 2,748,700	$ 4,198,100
	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	LIME HANDLING SYSTEM	$ 9,145,200	$ 4,989,600	$ 10,336,600	$ 24,471,500
5.0	LIME SLAKER BUILDING	NOT REQUIRED FOR NID				
6.0	BYPRODUCT WASTE & FLY ASH HANDLING SYSTEMS					
6.1	BYPRODUCT WASTE HANDLING - MECHANICAL EQUIPMENT	INCLUDES PNEUMATIC HANDLING SYSTEM, THREE PRESSURE BLOWERS, ONE BIN VENT FILTER, ASH UNLOADING SYSTEM	$ 2,822,000	$ -	$ 1,609,000	$ 4,431,000
6.2	ECONOMIZER ASH HANDLING - MECHANICAL EQUIPMENT	INCLUDES JET PUMPS AND PIPING / SUPPORTS TO THE BOTTOM ASH POND	$ 400,000	$ -	$ 296,400	$ 696,400
6.3	BUILDING SUMP PUMPS	FOR BUILDINGS - DUPLEX. INCLUDES CHECK & ISOLATION VALVES.	$ 28,000	$ -	$ 12,300	$ 40,300

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6.4	AGITATOR FOR SUMP PUMPS	5 HP	$ 12,000	$ -	$ 4,600	$ 16,600
6.5	PIPING - MECHANICAL		$ 142,800	$ 131,000	$ 408,700	$ 682,500
6.6	BYPRODUCT WASTE SILO	CONCRETE SILO 60' DIA X 143' H - 5400 TONS - SUBCONTRACT COST INCLUDES LABOR	$ 2,430,000	$ -	$ -	$ 2,430,000
6.7	RECYCLE SILO	NOT REQUIRED FOR NID	$ -	$ -	$ -	$ -
6.8	FLY ASH SILO	NOT REQUIRED - ECONOMIZER FLY ASH SLUICD TO BOTTOM ASH POND	$ -	$ -	$ -	$ -
6.9	BYPRODUCT WASTE STORAGE SILO - FOUNDATIONS		$ -	$ 162,400	$ 273,700	$ 436,100
6.10	FLY ASH SILO - FOUNDATIONS	NOT REQUIRED	$ -	$ -	$ -	$ -
6.11	BYPRODUCT TRANSPORT BLOWER BUILDING - FOUNDATIONS		$ -	$ 97,600	$ 161,900	$ 259,500
6.12	BYPRODUCT TRANSPORT BLOWER BUILDING	90' L X 30' W X 20' H	$ 40,000	$ 241,500	$ 26,200	$ 307,700
6.13	FLY ASH BLOWER AND ELECTRICAL BUILDING - FOUNDATIONS	NOT REQUIRED	$ -	$ -	$ -	$ -
6.14	FLY ASH BLOWER AND ELECTRICAL BUILDING	NOT REQUIRED	$ -	$ -	$ -	$ -
6.15	LOAD OUT AREA PDC	SUBCONTRACT PRICE INCLUDES LABOR. COMPLETE WITH HVAC, & FINISHES.	$ -	$ 300,000	$ -	$ 300,000
6.16	MCC	480V MCC PER LINE UP	$ 120,000	$ -	$ 7,300	$ 127,300
6.17	EMERGENBCY POWER SYSTEM		$ 185,500	$ -	$ 40,000	$ 225,500
6.18	LIGHTING/ TRANSFORMERS & PANELS		$ 18,500	$ 75,000	$ 53,200	$ 146,700
6.19	RACEWAY, CABLE TRAY, & CONDUIT		$ -	$ 32,800	$ 177,400	$ 210,200
6.20	GROUNDING		$ -	$ 4,500	$ 10,900	$ 15,400
6.21	MEDIUM VOLTAGE POWER CABLE & TERMINATION	1/C # 2/0-5KV	$ -	$ 9,500	$ 47,900	$ 57,400
6.22	LOW VOLTAGE POWER CABLE & TERMINATION		$ -	$ 63,300	$ 143,000	$ 206,300
6.23	CONTROL & INSTRUMENT CABLE	#14, #16 & PR # 20 & SHLD WIRE	$ -	$ 20,800	$ 58,400	$ 79,200

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6.24	DUCT BANK	DUCT BANK WITH 4-5" & 4-3" CONDUITS	$ -	$ 6,200	$ 10,600	$ 16,800
90.0	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS		$ 6,198,800	$ 1,144,600	$ 3,341,500	$ 10,684,900
	SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS		$ 309,900	$ 291,900	$ 1,240,600	$ 1,842,500
	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	BYPRODUCT WASTE & FLY ASH HANDLING SYSTEMS	$ 6,508,700	$ 1,436,500	$ 4,582,100	$ 12,527,400
7.0	ABSORBER ISLAND	NOT REQUIRED FOR NID				
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		$ -	$ 16,000	$ 62,900	$ 78,900
90.0	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS		$ 2,929,000	$ 306,900	$ 1,726,800	$ 4,962,700
	SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS		$ 146,500	$ 78,300	$ 634,600	$ 859,300
	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	ACTIVATED CARBON INJECTION SYSTEM	$ 3,075,500	$ 385,200	$ 2,361,400	$ 5,822,000
9.0	COMPRESSED AIR SYSTEM					

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9.1	AIR COMPRESSOR & AUXILIARIES		$ 848,000	$ -	$ 184,600	$ 1,032,600
9.2	PIPING - MECHANICAL		$ 320,600	$ 344,800	$ 875,600	$ 1,541,000
9.3	AIR COMPRESSOR BUILDING - FOUNDATIONS		$ -	$ 249,800	$ 395,800	$ 645,600
9.4	AIR COMPRESSOR BUILDING	120' L X 60' W X 20' H	$ -	$ 612,000	$ -	$ 612,000
9.5	LIGHTING/ TRANSFORMERS & PANELS		$ 11,000	$ 10,500	$ 11,400	$ 32,900
9.6	RACEWAY, CABLE TRAY, & CONDUIT	INCLUDED IN ID FANS, 1.0	$ -	$ -	$ -	$ -
9.7	GROUNDING		$ 4,500	$ -	$ 10,900	$ 15,400
90.00	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS		$ 1,184,100	$ 1,217,100	$ 1,478,300	$ 3,879,500
	SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS		$ 59,200	$ 310,400	$ 549,500	$ 919,100
	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	COMPRESSED AIR SYSTEM	$ 1,243,300	$ 1,527,500	$ 2,027,800	$ 4,798,600
10.0	SERVICE WATER SYSTEM					
10.1	PUMPS		$ 186,000	$ -	$ 90,000	$ 276,000
10.2	PIPING - MECHANICAL		$ 298,400	$ 342,800	$ 688,300	$ 1,329,500
10.3	PIPING - FIRE PROTECTION SYSTEM		$ 181,200	$ 284,600	$ 673,300	$ 1,139,100
10.4	TANKS		$ -	$ 234,000	$ -	$ 234,000
10.5	SERVICE WATER TANK & PUMP - FOUNDATIONS		$ -	$ 41,100	$ 73,300	$ 114,400
10.6	MAKE UP WATER TANK & PUMP - FOUNDATION		$ -	$ 27,300	$ 48,800	$ 76,100
10.7	ELECTRICAL	INCLUDED IN ID FANS, 1.0	$ -	$ -	$ -	$ -
90.0	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS		$ 665,600	$ 929,800	$ 1,573,700	$ 3,169,100
	SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS		$ 33,300	$ 237,100	$ 575,300	$ 845,600
	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	SERVICE WATER SYSTEM	$ 698,900	$ 1,166,900	$ 2,149,000	$ 4,014,700
11.0	POTABLE WATER SYSTEM					

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11.1	PUMPS		$ 30,000	$ -	$ 18,400	$ 48,400
11.2	PIPING - MECHANICAL		$ 99,500	$ 181,900	$ 448,200	$ 729,600
11.3	TANKS		$ -	$ 8,500	$ -	$ 8,500
11.4	POTABLE WATER TANK & PUMP - FOUNDATIONS		$ -	$ 5,200	$ 8,800	$ 14,000
11.5	ELECTRICAL	INCLUDED IN ID FANS, 1.0	$ -	$ -	$ -	$ -
90.0	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS		$ 129,500	$ 195,600	$ 475,400	$ 800,500
	SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS		$ 6,500	$ 49,900	$ 173,300	$ 229,700
	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	POTABLE WATER SYSTEM	$ 136,000	$ 245,500	$ 648,700	$ 1,030,200
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		$ 914,200	$ -	$ 121,600	$ 1,035,800
12.6	MCC	480V MCC, PER LINE UP	$ 60,000	$ -	$ 3,600	$ 63,600
12.7	CABLE BUS		$ 181,100	$ 18,000	$ 290,200	$ 489,300
12.8	PANELS - RELAY		$ 100,000	$ -	$ 9,100	$ 109,100
12.9	MIMIC PANELS		$ 17,500	$ -	$ 4,500	$ 22,000
12.10	EMERGENCY POWER SYSTEM		$ 108,300	$ -	$ 24,400	$ 132,700
12.11	GROUNDING		$ 23,300	$ -	$ 59,100	$ 82,400
12.12	LIGHTING/ TRANSFORMERS & PANELS		$ 26,000	$ 30,000	$ 29,500	$ 85,500
12.13	OUTDOOR LIGHTING	NEW AUX YARD LIGHTING - ALLOWANCE	$ 25,000	$ -	$ 56,800	$ 81,800
12.14	RACEWAY, CABLE TRAY, & CONDUIT		$ -	$ 372,900	$ 1,787,900	$ 2,160,800
12.15	DUCT BANK		$ -	$ 26,200	$ 54,300	$ 80,500
12.16	HIGH VOLTAGE POWER CABLE & TERMINATION	1/C # 500KCMIL- 15KV	$ -	$ 16,700	$ 47,100	$ 63,800

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12.17	LOW VOLTAGE POWER CABLE & TERMINATION		$ -	$ 96,600	$ 147,700	$ 244,300
12.18	CONTROL & INSTRUMENT CABLE	#14, #16 & PR # 20 & SHLD WIRE	$ -	$ 21,800	$ 61,100	$ 82,900
12.19	FOUNDATION FOR AUX TRANSFORMER		$ -	$ 70,200	$ 183,600	$ 253,800
12.20	FIREWALL FOR TRANSFORMERS		$ -	$ 4,300	$ 7,600	$ 11,900
90.0	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS		$ 3,482,400	$ 729,900	$ 3,546,900	$ 7,759,200
	SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS		$ 174,100	$ 186,100	$ 1,282,979	$ 1,643,200
	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	FGD SUBSTATION	$ 3,656,500	$ 916,000	$ 4,829,900	$ 9,402,400
13.0	FGD DCS SYSTEM					
13.1	DCS	3200 I/O POINTS	$ 2,400,000	$ -	$ 813,600	$ 3,213,600
13.2	DCS - VENDOR FIELD SUPPORT	200 MAN DAYS @ $1500/DAY - SHOWN AS SUBCONTRACT COST	$ 300,000	$ -	$ -	$ 300,000
13.3	LOCALLY MOUNTED INSTRUMENTS		$ -	$ 650,400	$ 852,900	$ 1,503,300
90.0	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS		$ 2,700,000	$ 650,400	$ 1,666,500	$ 5,016,900
	SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS		$ 135,000	$ 165,900	$ 622,300	$ 923,200
	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	FGD DCS SYSTEM	$ 2,835,000	$ 816,300	$ 2,288,800	$ 5,940,100
14.0	CEM SYSTEM					
14.1	CEM SYSTEM	PROVIDED BY AEP	$ 1,260,000	$ 540,000	$ 310,000	$ 2,110,000
15.0	TRUCK & RAIL INFRASTRUCTURE					

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15.1	EXISTING RAILROAD IMPROVEMENTS	FOR FULL RAILCAR STORAGE TRACK IMPROVEMENTS - 3250 LF	$ -	$ 660,200	$ 689,200	$ 1,349,400
15.2	EXISTING RAILROAD IMPROVEMENTS	FOR LOOP TRACK UPGRADE - 5000 LF	$ -	$ 1,008,800	$ 1,055,600	$ 2,064,400
15.3	NEW RAILROAD TRACK	INCLUDES, 132LB RAIL, 7" TIMBERS, TIE PLATES, SPIKES, BOLTS, 12: SUB BALLAST, 12" BALLAST, 12 OZ/SY GEOTEXTILE MEMBRANE, 12" SUBGRADE PREP	$ -	$ 252,000	$ 213,100	$ 465,100
15.4	FIELD FABRICATED TURNOUTS	#8 TURNOUT	$ -	$ 90,000	$ 54,800	$ 144,800
15.5	RAIL SCALE	SUBCONTRACT COST, INCLUDES FOUNDATIONS	$ 212,500	$ -	$ -	$ 212,500
15.6	NEW CONCRETE ENCASEMENT	OVER AND AROUND DUCT BANK CONNECTING THE PLANT TO SWITCHYARD. THIS IS UNDER THE NEW TRACK WORK EXTENSION	$ -	$ 33,200	$ 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					

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16.1	SITE GRADING		$ -	$ -	$ 555,200	$ 555,200
16.2	ROADS & SURFACING		$ -	$ 1,204,900	$ 1,667,500	$ 2,872,400
16.3	NEW CONCRETE ENCASEMENT	16' X 4' X 40' - FOR EXISTING ASH PIPE HAUL ROAD CROSSING	$ -	$ 36,500	$ 66,500	$ 103,000
16.4	TRUCK SCALE & CONCRETE APPROACH		$ 170,000	$ 27,300	$ 92,000	$ 289,300
16.5	PROCESS WATER STORAGE BASIN		$ 60,000	$ 81,600	$ 240,300	$ 381,900
16.6	PROCESS WATER STORAGE BASIN PUMP STRUCTURE - CONCRETE		$ -	$ 47,000	$ 105,400	$ 152,400
16.7	STORM WATER DRAINAGE TRENCH	2' W X 3' DEEP CAST-IN-PLACE CONCRETE TRENCH W/REINFORCING & HS-20 RATED GRATE COVERS	$ -	$ 526,500	$ 535,800	$ 1,062,300
16.8	STORM WATER RUNOFF POND		$ -	$ 15,000	$ 122,600	$ 137,600
16.9	STORM WATER RUNOFF POND PUMP STRUCTURE - CONCRETE		$ 90,000	$ 42,300	$ 182,200	$ 314,500
16.10	OILY WATER SEWER		$ 4,500	$ 112,600	$ 236,000	$ 353,100
16.11	OIL SEPARATOR	500 GPM W/ INTEGRAL LIFT STATION	$ 100,000	$ -	$ 116,100	$ 216,100
16.12	SANITARY SEWER		$ -	$ 22,200	$ 96,900	$ 119,100
16.13	SANITARY LIFT STATION	PACKAGED TYPE COMPLETE WITH PUMPS, 100,000 GPD	$ 150,000	$ -	$ 49,200	$ 199,200
16.14	EROSION & SEDIMENT CONTROL		$ -	$ 12,400	$ 20,400	$ 32,800
16.15	CONSTRUCTION LAYDOWN AREA	ALLOWANCE FOR 10 ACRES, DOES NOT INCLUDE LAND ACQUISITION, IF REQUIRED	$ -	$ 700,000	$ 828,000	$ 1,528,000

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16.16	CRAFT PARKING	DOES NOT INCLUDE LAND ACQUISITION, IF REQUIRED. ALLOWANCE FOR 20,000 SY INCLUDES: 6" BASE COURSE 10 OZ/SY GEOTEXTILE 12" SUBGRADE PREP	$ -	$ 180,000	$ 414,200	$ 594,200
16.17	CONTRACTOR OFFICES (AREA)	DOES NOT INCLUDE LAND ACQUISITION, IF REQUIRED. ALLOWANCE FOR 5,000 SY AREA (TRAILERS BY CONTRACTORS) INCLUDES: 6" BASE COURSE 10 OZ/SY GEOTEXTILE 12" SUBGRADE PREP	$ -	$ 45,000	$ 103,600	$ 148,600
90.0	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS		$ 574,500	$ 3,053,300	$ 5,431,900	$ 9,059,700
	SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS		$ 28,700	$ 778,600	$ 1,954,200	$ 2,761,600
	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	SITE IMPROVEMENTS - CIVIL WORK	$ 603,200	$ 3,831,900	$ 7,386,100	$ 11,821,300
17.0	BOP ITEMS					
17.1	PIPE INSULATION		$ -	$ 34,000	$ 106,000	$ 140,000
17.2	HEAT TRACING		$ -	$ 175,600	$ 248,500	$ 424,100
17.3	TOUCH UP PAINT (INCLUDES PAINTING CS PIPE)		$ -	$ 170,900	$ 655,800	$ 826,700
17.4	HOISTS & TROLLEYS		$ 150,000	$ 175,000	$ 204,400	$ 529,400
17.5	MISC AUX STEEL FOR PIPE SUPPORTS		$ -	$ 122,500	$ 510,600	$ 633,100

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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		$ -	$ 300,000	$ 245,300	$ 545,300
90.0	SUBTOTAL - EQUIPMENT, MATERIAL AND LABOR COSTS		$ 180,000	$ 993,500	$ 2,020,900	$ 3,194,400
	SUBTOTAL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS		$ 9,000	$ 253,343	$ 776,879	$ 1,039,221
	TOTAL DIRECT & CONSTRUCTION INDIRECT COST	BOP ITEMS	$ 189,000	$ 1,246,800	$ 2,797,800	$ 4,233,600
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					

Sargent & Lundy, LLC

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

Estimate No.:	30727B
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
19.1	ARSENIC, ASBESTOS , LEAD ABATEMENT	ALLOWANCE PROVIDED BY AEP	$ -	$ -	$ -	$ 750,000
99.0	OVERALL - EQUIPMENT, MATERIAL AND LABOR COSTS		$ 91,871,500	$ 43,660,500	$ 127,343,400	$ 281,225,400
	OVERALL - OTHER DIRECT & CONSTRUCTION INDIRECT COSTS		$ 5,205,600	$ 10,995,700	$ 47,087,000	$ 63,288,300
	OVERALL TOTAL DIRECT & CONSTRUCTION INDIRECT COST		$ 97,077,100	$ 54,656,200	$ 174,430,400	$ 344,513,700
	OVERALL PROJECT INDIRECT COSTS					
	ENGINEERING, PROCUREMENT, & PROJECT SERVICES					$ 25,000,000
	CONSTRUCTION MANAGEMENT					$ 10,335,400
	S-U / COMMISSIONING					$ 3,445,100
	CRAFT START-UP SUPPORT					$ 1,500,500
	INITIAL FILLS					$ 1,033,500
	OPERATOR & TRAINING MANUALS					$ 300,000
	SUBCONTRACTORS (NOISE & DUCTWORK CONSULTANT, GEOTECHNICAL INVESTIGATION)					$ 400,000
	OWNERS COST	BY AEP				$ -
	TOTAL PROJECT DIRECT AND INDIRECT COSTS					$ 386,528,200
	SPARE PARTS FOR THE OEM & THE BOP EQUIPMENT					$ 1,262,000
	SPARE PARTS FOR THE OEM EQUIPMENT	0.80				$ 782,440
	SPARE PARTS FOR THE BOP EQUIPMENT	0.50				$ 479,560
	CONTINGENCY	14.6				$ 56,485,500
	ESCALATION					$ 33,591,600

Sargent & Lundy, LLC

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

Estimate No.:	30727B
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
	EQUIPMENT					$ 10,130,900
	MATERIAL					$ 3,922,500
	LABOR					$ 15,745,600
	INDIRECTS					$ 3,792,600
	INTEREST DURING CONSTRUCTION (AFUDC)	BY AEP				
	TOTAL PROJECT COST					$ 477,867,300
	REFERENCE COSTS:					
A	ESP DEMOLITION					$ 832,300
B	REMOVE BOOSTER AIR FANS					$ 111,000

EXHIBIT 1-7
O&M Cost Estimate Summary

Exhibit 1-7. O&M Cost Estimate Summary

Fuel	WFGD				DFGD			
	1.7	3.0	4.5	7.5	1.7 w/o ESP	3.0 w/o ESP	1.7 w/ ESP	3.0 w/ ESP
Fixed O&M ($/year)								
Operating Labor	1,248,000	1,248,000	1,248,000	1,248,000	832,000	832,000	832,000	832,000
Maintenance Material	2,412,000	2,590,000	2,763,000	2,950,000	2,076,000	2,136,000	2,076,000	2,136,000
Maintenance Labor	1,608,000	1,727,000	1,842,000	1,967,000	1,384,000	1,424,000	1,384,000	1,424,000
Total Fixed O&M ($/year)	**5,268,000**	**5,565,000**	**5,853,000**	**6,165,000**	**4,292,000**	**4,392,000**	**4,292,000**	**4,392,000**
Variable O&M ($/year)								
Reagent Cost	2,534,000	4,729,000	6,618,000	9,940,000	8,601,000	19,605,000	9,924,000	23,281,000
Activated Carbon	NA	NA	NA	NA	2,344,000	2,319,000	2,267,000	2,243,000
FGD Byproduct Disposal Cost	1,290,000	2,528,000	3,604,000	5,408,000	4,148,000	5,612,000	1,793,000	3,817,000
Makeup Water Cost	685,000	650,000	618,000	626,000	509,000	521,000	464,000	482,000
Wastewater Treatment Chemicals	299,000	169,000	31,000	12,000	NA	NA	NA	NA
Bags and Cages Replacement	NA	NA	NA	NA	651,000	651,000	651,000	651,000
Total Variable O&M excluding Auxiliary Power ($/year)	**4,808,000**	**8,076,000**	**10,871,000**	**15,986,000**	**16,253,000**	**28,708,000**	**15,099,000**	**30,474,000**
Auxiliary Power at Full Load (MW)								
Overall Draft (Furnace to Stack)	26	26	26	26	23	23	27	27
FGD Draft Only	8	8	9	10	8	8	8	8
FGD Equipment Load	7	10	11	18	4	5	4	5
Existing ESP	4	4	4	4	0	0	4	4
WESP	3	3	3	3	NA	NA	NA	NA
Total Auxiliary Power at Full Load (MW)	**40**	**43**	**44**	**51**	**27**	**28**	**35**	**36**

Note: NA = Not Applicable

Exhibit 1-7. O&M Cost Estimate Summary

Fuel	IAQCS (Phase One)				IAQCS (Phase Two)			
	1.7 w/o ESP	**3.0 w/o ESP**	**4.5 w/o ESP**	**7.5 w/o ESP**	**1.7 w/o ESP**	**3.0 w/o ESP**	**4.5 w/o ESP**	**7.5 w/o ESP**
Fixed O&M ($/year)								
Operating Labor	832,000	832,000	NA	NA	1,664,000	1,664,000	1,664,000	1,664,000
Maintenance Material	2,076,000	2,136,000	NA	NA	4,039,000	4,117,000	4,191,000	4,272,000
Maintenance Labor	1,384,000	1,424,000	NA	NA	2,693,000	2,744,000	2,795,000	2,849,000
Total Fixed O&M ($/year)	**4,292,000**	**4,392,000**	**NA**	**NA**	**8,396,000**	**8,525,000**	**8,650,000**	**8,785,000**
Variable O&M ($/year)								
Limestone Reagent Cost	NA	NA	NA	NA	2,376,000	4,558,000	6,442,000	9,685,000
Lime Reagent Cost	8,601,000	19,605,000	NA	NA	661,000	1,225,000	1,713,000	2,574,000
Activated Carbon	2,344,000	2,319,000	NA	NA	2,344,000	2,319,000	2,315,000	2,293,000
WFGD Byproduct Disposal Cost	NA	NA	NA	NA	1,215,000	2,425,000	3,472,000	5,227,000
DFGD Byproduct Disposal Cost	4,148,000	5,612,000	NA	NA	2,732,000	2,553,000	2,426,000	2,670,000
Total Makeup Water Cost	509,000	521,000	NA	NA	746,000	752,000	763,000	780,000
Wastewater Treatment Chemicals	NA	NA	NA	NA	NA	NA	NA	NA
Bags and Cages Replacement	651,000	651,000	NA	NA	651,000	651,000	651,000	651,000
Total Variable O&M excluding Auxiliary Power ($/year)	**16,253,000**	**28,708,000**	**NA**	**NA**	**10,725,000**	**14,483,000**	**17,782,000**	**23,880,000**
Auxiliary Power at Full Load (MW)								
Overall Draft (Furnace to Stack)	23	23	NA	NA	29	29	29	29
IAQCS Draft Only	8	8	NA	NA	14	14	15	16
FGD Equipment Load	4	5	NA	NA	11	15	17	24
Existing ESP	0	0	NA	NA	0	0	0	0
WESP	NA	NA	NA	NA	NA	NA	NA	NA
Total Auxiliary Power at Full Load (MW)	**27**	**28**	**NA**	**NA**	**40**	**44**	**46**	**53**

Note: NA = Not Applicable

Exhibit 1-7. O&M Cost Estimate Summary

Fuel	IAQCS (Phase One)				IAQCS (Phase Two)			
	1.7 w/ ESP	3.0 w/ ESP	4.5 w/ ESP	7.5 w/ ESP	1.7 w/ ESP	3.0 w/ ESP	4.5 w/ ESP	7.5 w/ ESP
Fixed O&M ($/year)								
Operating Labor	832,000	832,000	NA	NA	1,664,000	1,664,000	1,664,000	1,664,000
Maintenance Material	2,076,000	2,136,000	NA	NA	4,039,000	4,117,000	4,191,000	4,272,000
Maintenance Labor	1,384,000	1,424,000	NA	NA	2,693,000	2,744,000	2,795,000	2,849,000
Total Fixed O&M ($/year)	**4,292,000**	**4,392,000**	**NA**	**NA**	**8,396,000**	**8,525,000**	**8,650,000**	**8,785,000**
Variable O&M ($/year)								
Limestone Reagent Cost	NA	NA	NA	NA	2,376,000	4,558,000	6,442,000	9,685,000
Lime Reagent Cost	9,924,000	23,281,000	NA	NA	661,000	1,225,000	1,713,000	2,574,000
Activated Carbon	2,267,000	2,243,000	NA	NA	2,267,000	2,243,000	2,239,000	2,218,000
WFGD Byproduct Disposal Cost	NA	NA	NA	NA	1,216,000	2,426,000	3,472,000	5,228,000
DFGD Byproduct Disposal Cost	1,793,000	3,817,000	NA	NA	182,000	245,000	300,000	420,000
Total Makeup Water Cost	464,000	482,000	NA	NA	701,000	709,000	721,000	737,000
Wastewater Treatment Chemicals	NA	NA	NA	NA	NA	NA	NA	NA
Bags and Cages Replacement	651,000	651,000	NA	NA	651,000	651,000	651,000	651,000
Total Variable O&M excluding Auxiliary Power ($/year)	**15,099,000**	**30,474,000**	**NA**	**NA**	**8,054,000**	**12,057,000**	**15,538,000**	**21,513,000**
Auxiliary Power at Full Load (MW)								
Overall Draft (Furnace to Stack)	27	27	NA	NA	34	34	34	34
IAQCS Draft Only	8	8	NA	NA	14	14	15	16
FGD Equipment Load	4	5	NA	NA	11	15	17	24
Existing ESP	4	4	NA	NA	4	4	4	4
WESP	NA	NA	NA	NA	NA	NA	NA	NA
Total Auxiliary Power at Full Load (MW)	**35**	**36**	**NA**	**NA**	**49**	**53**	**55**	**62**

Note: NA = Not Applicable

Exhibit 1-7. O&M Cost Estimate Summary

Fuel	NID							
	1.7 w/o ESP	**3.0 w/o ESP**	**4.5 w/o ESP**	**7.5 w/o ESP**	**1.7 w/ ESP**	**3.0 w/ ESP**	**4.5 w/ ESP**	**7.5 w/ ESP**
Fixed O&M ($/year)								
Operating Labor	1,040,000	1,040,000	1,040,000	1,040,000	1,040,000	1,040,000	1,040,000	1,040,000
Maintenance Material	2,284,000	2,350,000	2,416,000	2,548,000	2,284,000	2,350,000	2,416,000	2,548,000
Maintenance Labor	1,522,000	1,566,000	1,610,000	1,698,000	1,522,000	1,566,000	1,610,000	1,698,000
Total Fixed O&M ($/year)	**4,846,000**	**4,956,000**	**5,066,000**	**5,286,000**	**4,846,000**	**4,956,000**	**5,066,000**	**5,286,000**
Variable O&M ($/year)								
Reagent Cost	10,189,000	20,462,000	30,160,000	44,782,000	10,189,000	20,462,000	30,160,000	44,782,000
Activated Carbon	2,344,000	2,319,000	2,315,000	2,293,000	2,267,000	2,243,000	2,239,000	2,218,000
FGD Byproduct Disposal Cost	4,393,000	5,860,000	7,246,000	9,806,000	1,902,000	3,668,000	5,290,000	7,806,000
Makeup Water Cost	523,000	533,000	550,000	572,000	517,000	530,000	547,000	570,000
Wastewater Treatment Chemicals	NA	NA	NA	NA	NA	NA	NA	NA
Bags and Cages Replacement	690,000	690,000	690,000	690,000	690,000	690,000	690,000	690,000
Total Variable O&M excluding Auxiliary Power ($/year)	**18,139,000**	**29,864,000**	**40,961,000**	**58,143,000**	**15,565,000**	**27,593,000**	**38,926,000**	**56,066,000**
Auxiliary Power at Full Load (MW)								
Overall Draft (Furnace to Stack)	23	23	23	23	27	27	27	27
FGD Draft Only	10	10	10	10	10	10	10	10
FGD Equipment Load	4	5	6	6	4	5	6	6
Existing ESP	0	0	0	0	4	4	4	4
WESP	NA	NA	NA	NA	NA	NA	NA	NA
Total Auxiliary Power at Full Load (MW)	**27**	**28**	**29**	**29**	**35**	**36**	**37**	**37**

Note: NA = Not Applicable

EXHIBIT 1-8
WFGD Technology Comparison

EXHIBIT 1-8
WFGD TECHNOLOGY COMPARISON

WFGD		Est 2 - 1.7 lb SO2/Mmbtu	Est 3 - 3.0 lb SO2/Mmbtu	Base Est 1 4.5 lb SO2/Mmbtu	Est 4 - 7.5 lb SO2/Mmbtu	
Acc No.	Item Description	Total Projected Cost	Total Projected Cost	Total Projected Cost	Total Projected Cost	Remarks
1.0	ID FANS	$ 26,440,900	$ 26,440,900	$ 26,440,900	$ 26,440,900	
2.0	WET ESP	$ 117,374,500	$ 117,374,500	$ 117,374,500	$ 117,374,500	
3.0	NEW STACK	$ 31,480,000	$ 31,480,000	$ 31,480,000	$ 31,480,000	
4.0	LIMESTONE HANDLING SYSTEM	$ 28,133,900	$ 28,133,900	$ 28,133,900	$ 28,133,900	Limestone handling system costs are the same for all fuels because the equipment is assumed the same and operating durations will be adjusted as required.
5.0	REAGENT PREPARATION ISLAND	$ 42,835,000	$ 46,800,700	$ 49,957,700	$ 53,319,200	As fuel sulfur content increases more limestone is required and more byproduct is produced, therefore the reagent prep island costs and byproduct handling costs are increased
6.0	BYPRODUCT DEWATERING ISLAND	$ 36,804,600	$ 39,733,300	$ 42,234,800	$ 45,007,800	
7.0	ABSORBER ISLAND	$ 193,598,300	$ 194,696,700	$ 195,465,900	$ 196,426,200	As the fuel sulfur content increases the liquid-to-gas ratio increases thereby increasing the size of the recirculation system and slightly increasing the Absorber Island costs.
8.0	FGD WASTE WATER TREATMENT PLANT	$ 21,071,400	$ 21,071,400	$ 21,071,400	$ 21,071,400	
9.0	COMPRESSED AIR SYSTEM	$ 8,576,300	$ 8,576,300	$ 8,576,300	$ 8,576,300	
10.0	SERVICE WATER SYSTEM	$ 7,568,800	$ 7,568,800	$ 7,568,800	$ 7,568,800	
11.0	POTABLE WATER SYSTEM	$ 920,200	$ 920,200	$ 920,200	$ 920,200	
12.0	FGD SUBSTATION	$ 3,571,300	$ 3,571,300	$ 3,571,300	$ 3,571,300	
13.0	FGD DCS SYSTEM	$ 8,027,400	$ 8,027,400	$ 8,027,400	$ 8,027,400	
14.0	CEM SYSTEM	$ 2,110,000	$ 2,110,000	$ 2,110,000	$ 2,110,000	
15.0	RAIL INFRASTRUCTURE	$ 5,666,400	$ 5,666,400	$ 5,666,400	$ 5,666,400	
16.0	SITE IMPROVEMENTS - CIVIL WORK	$ 15,186,800	$ 15,186,800	$ 15,186,800	$ 15,186,800	
17.0	BOP ITEMS	$ 5,597,600	$ 5,611,200	$ 5,630,300	$ 5,658,600	Minor differences in BOP costs are due to increases in touchup painting that are a function of tons of structural steel in the estimate and the amount of equipment.
18.0	CAPITAL REPLACEMENTS - REMOVAL AND RELOCATION OF EXISTING EQUIPMENT AND INFRASTRUCTURE	$ 2,164,800	$ 2,164,800	$ 2,164,800	$ 2,164,800	
19.0	ARSENIC, ASBESTOS , LEAD ABATEMENT	$ 750,000	$ 750,000	$ 750,000	$ 750,000	
	ENGINEERING, PROC., & PROJ. SERVICES	$ 30,000,000	$ 30,000,000	$ 30,000,000	$ 30,000,000	
	CONSTRUCTION	$ 16,736,300	$ 16,976,500	$ 17,169,900	$ 17,383,600	
	S-U / COMMISSIONING	$ 5,578,800	$ 5,658,800	$ 5,723,300	$ 5,794,500	
	CRAFT START-UP SUPPORT	$ 2,598,200	$ 2,627,100	$ 2,649,200	$ 2,673,500	
	INITIAL FILLS	$ 1,673,600	$ 1,697,700	$ 1,717,000	$ 1,738,400	
	OPERATOR & TRAINING	$ 300,000	$ 300,000	$ 300,000	$ 300,000	
	SUBCONTRACTORS (NOISE &	$ 400,000	$ 400,000	$ 400,000	$ 400,000	
	SPARE PARTS FOR THE OEM & THE BOP EQUIPMENT	$ 1,866,100	$ 1,920,800	$ 1,514,500	$ 2,018,600	
	CONTINGENCY	$ 89,116,700	$ 90,572,700	$ 92,638,200	$ 92,439,700	
	ESCALATION	$ 55,376,200	$ 56,184,500	$ 56,795,700	$ 57,561,000	
	TOTAL PROJECT COST	$ 761,524,000	$ 772,222,600	$ 781,239,000	$ 789,763,700	

EXHIBIT 1-9
DFGD Technology Comparison

EXHIBIT 1-9
DFGD TECHNOLOGY COMPARISON

DFGD		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 1B N/ESP 3.0 LB SO2/MMBTU	
Acc. No.	Item Description	Total Projected Cost	Total Projected Cost	Total Projected Cost	Total Projected Cost	Remarks
1.0	ID FANS	$ 39,464,900	$ 39,464,900	$ 39,993,200	$ 39,993,200	The ID Fans without the ESP are larger (i.e. cost more) because they replace the existing Booster Fans.
2.0	FABRIC FILTERS	$ 50,537,000	$ 50,327,400	$ 51,430,600	$ 51,089,200	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.
3.0	NEW STACK	$ 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	$ 15,098,200	$ 20,825,300	$ 14,669,000	$ 19,433,000	
5.0	LIME SLAKER BUILDING	$ 15,748,400	$ 20,073,500	$ 15,225,000	$ 19,097,200	
6.0	BYPRODUCT WASTE & FLY ASH HANDLING SYSTEMS	$ 18,604,200	$ 19,341,800	$ 14,925,100	$ 16,090,800	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.
7.0	ABSORBER ISLAND	$ 163,274,700	$ 163,274,600	$ 163,274,700	$ 163,274,700	The absorber itself is sized on the actual flue gas flow rates which are roughly equivalent.
8.0	ACTIVATED CARBON INJECTION SYSTEM	$ 5,840,100	$ 5,840,100	$ 5,840,100	$ 5,840,100	
9.0	COMPRESSED AIR SYSTEM	$ 4,303,600	$ 4,303,600	$ 4,303,600	$ 4,303,600	
10.0	SERVICE WATER SYSTEM	$ 4,740,000	$ 4,740,000	$ 4,740,000	$ 4,740,000	
11.0	POTABLE WATER SYSTEM	$ 1,165,456	$ 1,165,456	$ 1,165,456	$ 1,165,456	
12.0	FGD SUBSTATION	$ 9,432,600	$ 9,432,600	$ 9,432,600	$ 9,432,600	
13.0	FGD DCS SYSTEM	$ 6,120,400	$ 6,120,400	$ 6,120,400	$ 6,120,400	
14.0	CEM SYSTEM	$ 2,110,000	$ 2,110,000	$ 2,110,000	$ 2,110,000	

EXHIBIT 1-9
DFGD TECHNOLOGY COMPARISON

DFGD		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 1B N/ESP 3.0 LB SO2/MMBTU	
Acc. No.	Item Description	Total Projected Cost	Total Projected Cost	Total Projected Cost	Total Projected Cost	Remarks
15.0	TRUCK & RAIL INFRASTRUCTURE	$ 5,646,500	$ 5,646,500	$ 5,646,500	$ 5,646,500	
16.0	SITE IMPROVEMENTS - CIVIL WORK	$ 11,615,000	$ 11,615,000	$ 11,615,000	$ [illegible]4,400	
17.0	BOP ITEMS	$ 4,260,400	$ 4,260,400	$ 4,260,400	$ 4,260,400	
18.0	CAPITAL REPLACEMENTS - REMOVAL AND RELOCATION OF EXISTING EQUIPMENT AND INFRASTRUCTURE	$ 2,149,200	$ 2,149,200	$ 2,110,200	$ 2,149,200	
19.0	ARSENIC, ASBESTOS ,	$ 750,000	$ 750,000	$ 750,000	$ 750,000	
	OVERALL PROJECT INDIRECT COSTS					
	ENGINEERING, PROCUREMENT, & PROJECT SERVICES	$ 25,000,000	$ 25,000,000	$ 25,000,000	$ 25,000,000	
	CONSTRUCTION	$ 11,353,800	$ 11,648,200	$ 11,256,400	$ 11,541,300	
	S-U / COMMISSIONING	$ 3,784,600	$ 3,882,700	$ 3,752,100	$ 3,847,100	
	CRAFT START-UP	$ 1,633,100	$ 1,654,800	$ 1,619,400	$ 1,638,400	
	INITIAL FILLS	$ 1,135,400	$ 1,164,800	$ 1,125,600	$ 1,154,100	
	OPERATOR & TRAINING	$ 300,000	$ 300,000	$ 300,000	$ 300,000	
	SUBCONTRACTORS	$ 400,000	$ 400,000	$ 400,000	$ 400,000	
	SPARE PARTS FOR THE OEM & THE BOP EQUIPMENT	$ 1,437,500	$ 1,534,500	$ 1,420,800	$ 1,508,300	
	CONTINGENCY	$ 64,314,800	$ 65,904,800	$ 64,026,600	$ 64,916,400	
	ESCALATION	$ 29,444,900	$ 30,441,900	$ 29,180,500	$ 30,079,800	
	TOTAL PROJECT COST	$ 517,264,900	$ 530,206,600	$ 513,293,300	$ 525,096,100	

EXHIBIT 1-10
IAQCS Technology Comparison

EXHIBIT 1-11
NID Technology Comparison

EXHIBIT 1-11
NID TECHNOLOGY COMPARISON

NID		EST - 2A ESP 1.7 LB SO_2/MMBTU	BASE EST - 1A ESP 3.0 LB SO_2/MMBTU	EST - 3A ESP 4.5 LB SO_2/MMBTU	EST - 4A ESP 7.5 LB SO_2/MMBTU	EST - 2B ESP 1.7 LB SO_2/MMBTU	BASE EST - 1B ESP 3.0 LB SO_2/MMBTU	EST - 3B ESP 4.5 LB SO_2/MMBTU	EST - 4B ESP 7.5 LB SO_2/MMBTU	
Acc. No.	Item Description	Total Projected Cost	Total Projected Cost	Total Projected Cost	Total Projected Cost	Total Projected Cost	Total Projected Cost	Total Projected Cost	Total Projected Cost	NOTES
1.0	ID FANS	$ 62,434,600	$ 61,273,600	$ 62,433,000	$ 62,434,600	$ 63,208,100	$ 63,208,100	$ 63,208,100	$ 63,208,100	1
2.0	NID MODULES	$175,284,900	$176,572,700	$182,900,500	$221,152,600	$ 167,877,400	$168,988,300	$175,470,800	$ 214,715,600	2
3.0	NEW STACK	$ 17,600,000	$ 17,600,000	$ 17,600,000	$ 17,600,000	$ 17,600,000	$ 17,600,000	$ 17,600,000	$ 17,600,000	
4.0	LIME HANDLING SYSTEM	$ 20,485,000	$ 24,678,900	$ 31,964,400	$ 39,185,400	$ 20,351,000	$ 24,471,500	$ 31,697,800	$ 39,174,900	3
5.0	LIME SLAKER BUILDING: NOT REQ'D FOR NID									
6.0	BYPRODUCT WASTE & FLY ASH HANDLING SYSTEMS	$ 13,358,200	$ 15,365,000	$ 16,154,800	$ 18,181,800	$ 11,125,100	$ 12,527,400	$ 13,303,100	$ 15,371,700	4
7.0	ABSORBER ISLAND: NOT REQ'D FOR NID									
8.0	ACTIVATED CARBON INJECTION	$ 5,822,000	$ 5,822,000	$ 5,822,000	$ 5,822,000	$ 5,822,000	$ 5,822,000	$ 5,822,000	$ 5,822,000	
9.0	COMPRESSED AIR SYSTEM	$ 4,798,600	$ 4,798,600	$ 4,794,000	$ 4,798,600	$ 4,798,600	$ 4,798,600	$ 4,798,600	$ 4,798,600	
10.0	SERVICE WATER SYSTEM	$ 4,014,700	$ 4,014,700	$ 4,014,700	$ 4,014,700	$ 4,014,700	$ 4,014,700	$ 4,014,700	$ 4,014,700	
11.0	POTABLE WATER SYSTEM	$ 1,030,200	$ 1,030,200	$ 1,030,200	$ 1,030,200	$ 1,030,200	$ 1,030,200	$ 1,030,200	$ 1,030,200	
12.0	FGD SUBSTATION	$ 9,402,400	$ 9,402,400	$ 9,408,200	$ 9,402,400	$ 9,402,400	$ 9,402,400	$ 9,402,400	$ 9,402,400	
13.0	FGD DCS SYSTEM	$ 5,940,100	$ 5,940,100	$ 5,940,100	$ 5,940,100	$ 5,940,100	$ 5,940,100	$ 5,940,100	$ 5,940,100	
14.0	CEM SYSTEM	$ 2,110,000	$ 2,110,000	$ 2,110,000	$ 2,110,000	$ 2,110,000	$ 2,110,000	$ 2,110,000	$ 2,110,000	
15.0	TRUCK & RAIL INFRASTRUCTURE	$ 5,646,500	$ 5,646,500	$ 5,646,500	$ 5,646,500	$ 5,646,500	$ 5,646,500	$ 5,646,500	$ 5,646,500	
16.0	SITE IMPROVEMENTS - CIVIL WORK	$ 11,821,300	$ 11,821,300	$ 11,814,800	$ 11,820,800	$ 11,821,300	$ 11,821,300	$ 11,821,300	$ 11,821,300	
17.0	BOP ITEMS	$ 4,271,800	$ 4,271,800	$ 4,253,600	$ 4,315,000	$ 4,233,600	$ 4,233,600	$ 4,233,600	$ 4,361,900	
18.0	CAPITAL REPLACEMENTS - REMOVAL AND RELOCATION OF EXISTING EQUIPMENT AND INFRASTRUCTURE	$ 2,149,200	$ 2,149,200	$ 2,149,200	$ 2,149,200	$ 2,149,200	$ 2,149,200	$ 2,149,200	$ 2,149,200	

EXHIBIT 1-11
NID TECHNOLOGY COMPARISON

NID		EST - 2A ESP 1.7 LB SO_2/MMBTU	BASE EST - 1A ESP 3.0 LB SO_2/MMBTU	EST - 3A ESP 4.5 LB SO_2/MMBTU	EST - 4A ESP 7.5 LB SO_2/MMBTU	EST - 2B ESP 1.7 LB SO_2/MMBTU	BASE EST - 1B ESP 3.0 LB SO_2/MMBTU	EST - 3B ESP 4.5 LB SO_2/MMBTU	EST - 4B ESP 7.5 LB SO_2/MMBTU	
Acc. No.	Item Description	Total Projected Cost	Total Projected Cost	Total Projected Cost	Total Projected Cost	Total Projected Cost	Total Projected Cost	Total Projected Cost	Total Projected Cost	NOTES
19.0	ARSENIC, ASBESTOS , LEAD ABATEMENT	$ 750,000	$ 750,000	$ 750,000	$ 750,000	$ 750,000	$ 750,000	$ 750,000	$ 750,000	
	OVERALL PROJECT									
	ENGINEERING, PROCUREMENT, & PROJECT SERVICES	$ 25,000,000	$ 25,000,000	$ 25,000,000	$ 25,000,000	$ 25,000,000	$ 25,000,000	$ 25,000,000	$ 25,000,000	
	CONSTRUCTION	$ 10,407,600	$ 10,597,400	$ 11,041,100	$ 12,490,600	$ 10,113,900	$ 10,335,400	$ 10,769,900	$ 12,237,500	
	S-U /	$ 3,469,200	$ 3,532,500	$ 3,680,400	$ 4,163,500	$ 3,371,300	$ 3,445,100	$ 3,590,000	$ 4,079,200	
	CRAFT START-UP	$ 1,548,600	$1,562,800	$ 1,600,200	$1,813,000	$ 1,489,500	$ 1,500,500	$ 1,539,000	$ 1,759,000	
	INITIAL FILLS	$ 1,040,800	$1,059,700	$ 1,104,100	$1,249,100	$ 1,011,400	$ 1,033,500	$ 1,077,000	$ 1,223,800	
	OPERATOR & TRAINING	$ 300,000	$ 300,000	$ 300,000	$ 300,000	$ 300,000	$ 300,000	$ 300,000	$ 300,000	
	SUBCONTRACTORS	$ 400,000	$ 400,000	$ 400,000	$ 400,000	$ 400,000	$ 400,000	$ 400,000	$ 400,000	
	SPARE PARTS FOR THE OEM & THE BOP EQUIPMENT	$ 1,179,000	$ 1,251,700	$ 1,378,800	$ 1,654,800	$ 1,195,200	$ 1,262,000	$ 1,388,300	$ 1,670,600	
	CONTINGENCY	$ 57,861,200	$ 58,551,800	$ 60,595,200	$ 67,660,600	$ 56,146,800	$ 56,485,500	$ 58,316,600	$ 65,662,300	
	ESCALATION	$ 33,671,700	$ 34,343,200	$ 35,940,300	$ 40,711,400	$ 32,894,800	$ 33,591,600	$ 35,090,700	$ 39,992,700	
	TOTAL PROJECT	$481,797,500	$489,846,100	$509,075,900	$571,797,900	$ 469,053,000	$477,867,300	$496,469,800	$ 560,242,100	

NOTES:

1) Acct. No. 1.0 - The ID Fans without the ESP are larger (i.e. cost more) because they replace the existing Booster Fans

2) additional modules are required. The ductwork costs for ESP Out are less as a result of shorter ductwork lengths. There is a closer tie-in location.

3) Acct No: 4.0 - As fuel sulfur levels increase more lime is required therefore the lime handling system costs are increased.

4) Acct. No. : 6.0 - With the ESP in service fly ash must be pulled from a cell for blending with FGD byproduct. Significant additional equipment and a silo will be added for fly ash blending. In fact even though the byproduct quantities are increased in the no ESP case, the costs for the ESP options are higher due to this equipment addition.The silo sizes with the ESP in service are significantly smaller than without the ESP. This is a result of the fly ash being removed in the ESP prior to the FF.