Department of Environmental Protection

Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

Colleen M. Castille
Secretary

April 28, 2005

Marsha B. Denton, C.F.E.
:e Operations Supervisor
am County Property Appraiser's Office
Office Box 1920
:ka, Florida 32178-1920

Seminole Electric Cooperative

· Mrs. Denton:

're reviewed the material attached to your letter of April 13, 2005, concerning Seminole tric Cooperative's Return of Pollution Control Devices including Steam Plant Chimney k Improvements (Partial Pollution Control), Seminole's December 2000 Report and the :rial provided by Burns and Roe, Inc. In my opinion most of the items of equipment listed in m Plant Chimney Stack Improvements qualify as pollution control equipment and are narily for the purpose of pollution control " and are eligible for assessment as pollution rol devices pursuant to §193.621, Florida Statutes. In my opinion several equipment gories may not comply with the "primarily for the purpose of pollution control" test. Items as:

3120902013E Stack Safety Net
3120904023B Access Platforms
3120904023C Access Platforms
3120904021A Access Platforms
3120904021B Access Platforms
316300015917 Articulating Dump Truck
316300015918 Articulating Dump Truck
316300016120 Front-End Loader
3163000161209 Ford 4X4 Flatbed
3120612121B Access Platforms

d additional explanation as why they should be eligible.

ıere are any questions on this determination, please contact me at (850) 245-8002.

Sincerely,

Hamilton S. Oven

Hamilton S. Oven, P.E.

PUTNAM COUNTY PROPERTY APPRAISER

P.O. BOX 1920 • 312 OAK STREET • PALATKA, FLORIDA 32178-1920
PALATKA: 386/329-0286 • FAX: 386/329-0447 • SUNCOM: 860-0286 • TOLL FREE: 1-800-826-1437
CRESCENT CITY: 386/698-4284 • INTERLACHEN: 386/684-3383
Website: www.putnam-fl.com/app • Email: appraiser@putnam-fl.com

LARRY PRITCHETT, C.F.A.
Property Appraiser

SHARON PRESTON, C.F.E.
Administrative Assistant

April 13, 2005

Mr. Hamilton Oven, P.E.
Department of Environmental Protection
Twin Towers Office Building
2600 Blair Stone Rd.
Tallahassee, FL 32399

RE: Seminole Electric

Dear Mr. Oven:

Enclosed you will find the Return of Pollution Control Devices for the above referenced account in our county.

Would you please review this information and advise me as to what qualifies for assessment as pollution control devices under Section 193.621, Florida Statutes. If you need any additional information, let me know. Thank you for your assistance.

Sincerely,

Marsha Denton

(Mrs.) Marsha B. Denton, C.F.E.
Office Operations Supervisor

DR-492
R. 08/83

Return of Pollution Control Devices For Ad Valorem Tax Purposes

Florida Statutes Chapter 193.621

To the Property Appraiser Honorable William L. Pritchett, Jr.

Putnam County, Florida, as of January 1, 2005

Return is hereby made for the assessment of the following described property under Florida Statutes as pollution control devices.

Description of Property

See attached reports and descriptions. Pollution Control Facilities include those items installed and those in spare parts inventory.

Description of Facility

Seminole Generating Station, a coal-fired electric power plant consisting of Units 1 and 2 and Common Facilities, with a total capacity of approximately 1300 megawatts, located 5 miles north of Palatka on U.S. Highway 17. NOTICE: Seminole Unit 2 is owned by PSEG Resources, Inc., Newark, NJ. As lessee, Seminole is responsible for filing returns and paying property taxes.

Name and address of owner:

SEMINOLE ELECTRIC COOPERATIVE, INC.
P.O. Box 272000
Tampa, FL 33688-2000
ATTN: Tax Accounting

The undersigned taxpayer hereby agrees to furnish such other reasonable information as the Appraiser may request in regard to the assessment requested herein.

Timothy D. Rogers
Taxpayer's Signature
Timothy D. Rogers
Director of Treasury Services

This form must be filed with the County Property Appraiser before April 1st.

ORIGINAL TO BE RETAINED BY PROPERTY APPRAISER

COPY TO BE GIVEN TO TAXPAYER

SEMINOLE ELECTRIC COOPERATIVE, INC.
PUTNAM COUNTY PROPERTY TAX REPORT
STEAM PLANT CHIMNEY STACK IMPROVEMENTS (PARTIAL POLLUTION CONTROL)
01-2005

CORP CODE / DET	LOCAT ITEM NUMBER	BOOK ACQ DATE	FULL DESCRIPTION	ORIGINAL INST. COST	POLL CTRL 45.29%	NON-POLL'N CONTROL
	COMFA 3120902013B	08-01-1986	CHIMNEY MODIFICATIONS	61,105.56	27,674.71	33,430.85
	** ACQ YEAR	1986		61,105.56	27,674.71	33,430.85
	COMFA 3120902013C	10-01-1987	CHIMNEY EVALUATION & INSTALL OF STACK DRAIN WASH	14,535.05	6,582.92	7,952.13
	COMFA 3120902013D	11-01-1987	AGITATOR FOR STACK	1,509.28	683.55	825.73
	** ACQ YEAR	1987		16,044.33	7,266.47	8,777.86
	COMFA 3120902013E	12-01-1989	COMMON FAC-STACK SAFETY NET	56,892.33	25,766.54	31,125.79
	** ACQ YEAR	1989		56,892.33	25,766.54	31,125.79
	COMFA 3120902013G	07-01-1999	COMMON FAC - CHIMNEY CONCRETE COL GUNITE REPR	571,211.35	258,701.62	312,509.73
	** ACQ YEAR	1999		571,211.35	258,701.62	312,509.73
	COMFA 3120904023B	03-01-2001	COMMON FAC - ACCESS PLATFORMS - 2000	79,547.19	36,026.92	43,520.27
	** ACQ YEAR	2001		79,547.19	36,026.92	43,520.27
	COMFA 3120904023C	02-01-2003	COMMON FAC - ACCESS PLATFORMS	45,961.72	20,816.06	25,145.66
	** ACQ YEAR	2003		45,961.72	20,816.06	25,145.66
	** LOCATION	COMFA		830,762.48	376,252.32	454,510.16
	UNIT1 3120904021A	05-01-1999	UNIT 1 - ACCESS PLATFORMS	61,055.45	27,652.01	33,403.44

SEMINOLE ELECTRIC COOPERATIVE, INC.
PUTNAM COUNTY PROPERTY TAX REPORT
STEAM PLANT CHIMNEY STACK IMPROVEMENTS (PARTIAL POLLUTION CONTROL)
01-2005

CORP
CODE

DET

LOCAT ITEM NUMBER	BOOK ACQ DATE	FULL DESCRIPTION	ORIGINAL INST. COST	POLL CTRL 45.29%	NON-POLL'N CONTROL
** ACQ YEAR	1999				
			61,055.45	27,652.01	33,403.44
UNIT1 3120904021B	02-01-2001	UNIT 1 - ACCESS PLATFORMS	47,191.52	21,373.04	25,818.48
** ACQ YEAR	2001				
			47,191.52	21,373.04	25,818.48
UNIT1 3120904021C	02-01-2003	UNIT 1 - ACCESS PLATFORMS	27,371.72	12,396.65	14,975.07
UNIT1 3120904021D	02-01-2003	UNIT 1 - ACCESS PLATFORMS	50,175.96	22,724.69	27,451.27
** ACQ YEAR	2003				
			77,547.68	35,121.34	42,426.34
** LOCATION	UNIT1				
			185,794.65	84,146.39	101,648.26
** CORP	DET				
			1016,557.13	460,398.71	556,158.42

PUTNAM COUNTY PROPERTY TAX REPORT
ORIGINAL COST OF POLLUTION CONTROL IMPROVEMENTS (INCLUDING MOBILE)
01-2005

CORP CODE / DET LOCAT	ITEM NUMBER	BOOK ACQ DATE	FULL DESCRIPTION	ORIGINAL INST. COST	PURCH / WORK ORDER NUMBER	STATE CATEG
COMFA	3120719153D	12-01-2000	COMMON FAC-ELECTRICAL/INSTRUM'N,DUAL MEDIA FILTERS	150,290.00	WO 35509	PC
COMFA	3120719163A	12-01-2000	COMMON FAC-IRON SOL'N RAILCAR UNLOADING TRACK PAN	24,383.00	WO 35509	PC
COMFA	3120719173A	12-01-2000	COMMON FAC-IRON SOL'N RAILCAR UNLOADING PLATFORM	53,754.00	WO 35509	PC
COMFA	3120719183A	12-01-2000	COMMON FAC - IRON SOLUTION DENSITY METER	16,746.00	WO 35509	PC
COMFA	3160101013C	12-01-2000	COMMON FAC-SERVICE WATER SUPPLY PIPING TO EPF (FT)	119,271.00	WO 35509	PC
COMFA	3160102013C	12-01-2000	COMMON FAC-SERVICE WATER PUMPS (300 GPM/200' TDH)	52,211.00	WO 35509	PC
COMFA	3160102013D	12-01-2000	COMMON FAC-FOUNDATIONS FOR SERVICE WATER PUMPS(CY)	25,511.00	WO 35509	PC
COMFA	3160102013E	12-01-2000	COMMON FAC - ELECTRICAL & INSTRUMENTATION	86,611.00	WO 35509	PC
COMFA	3160102013F	12-01-2000	COMMON FAC - PIPE SUPPORTS & STRUCTURAL STEEL	24,220.00	WO 35509	PC
COMFA	3160106013A	12-01-2000	COMMON FAC-REFURB'D SERVICE WATER TANK W/FOUND'N	71,531.00	WO 35509	PC
** ACQ YEAR		2000		10838,438.24		
COMFA	3120707133B	06-01-2001	COMMON FAC - CEDAR BAY FLY ASH MODIF (ADD'L COST)	7,400.00	WO 35499	PC
COMFA	3120718023B	04-01-2001	COMMON FAC - MODIFICATIONS TO LANDFILL AREA	43,367.93	WO 35335	PC
COMFA	3141208093A	03-01-2001	COMMON FAC - LIQUID SODIUM BROMIDE SYSTEM	51,594.86	WO 35548	PC
COMFA	3141310063A	03-01-2001	COMMON FAC - LIQUID SODIUM BROMIDE SYS	51,564.26	WO 35548	PC
COMFA	3160101013D	12-01-2001	COMMON FAC - NEW 8" SERVICE WATER LINE	87,250.06	WO 35566	PC
** ACQ YEAR		2001		241,177.11		
COMFA	3110401013B	09-01-2002	COMMON FAC - REPL LINING COAL PILE RUN-OFF POND	1,387.31	WO 35540	PC
COMFA	3110401013BA	09-01-2002	COMMON FAC - REPL LINING COAL PILE RUN-OFF POND	364,887.95	WO 35540	PC
COMFA	3111101093D	07-01-2002	COMMON FAC - REPL SUMP 37/38 DISCHARGE LINE	143,677.60	WO 35577	PC
COMFA	3111102113B	12-01-2002	COMMON FAC - PLANT WASTE TREATMENT PLC UPGRADE	214,824.39	WO 35568	PC
COMFA	3120616033B	04-01-2002	COMMON FAC-COMPRESSORS,FINAL PMT ON RADIAN CONTR'T	34,733.48	WO 35509	PC
COMFA	3120701073D	12-01-2002	COMMON FAC - GYPSUM PRODUCTION ENHANCEMENTS	186,049.15	WO 35557	PC
COMFA	3120705063B	08-01-2002	COMMON FAC - EPF AREA FILTRATE PUMPS	39,814.71	WO 35574	PC
COMFA	3120705113B	06-01-2002	COMMON FAC - EPF AREA FILTER FEED PUMPS	36,307.09	WO 35573	PC
COMFA	3120711043A	09-01-2002	COMMON FAC - LINING EPF POND NO. 1	188,072.93	WO 35540	PC
COMFA	3120802053C	12-01-2002	COMMON FAC - PLANT CONVEYOR BELT (LIMESTONE)	6,440.27	WO 35582	PC
COMFA	3120809053B	07-01-2002	COMMON FAC - REPL BC-5 LIMESTONE CONVEYOR BELT	23,252.75	WO 35563	PC
COMFA	316300016005	06-01-2002	DOZER, D6N	202,602.00	B0202 04985	PC
COMFA	316300016019	08-01-2002	SKID STEER LOADER CATERPILLAR - EPF AREA	23,480.00	B0207 05087	PC
** ACQ YEAR		2002		1465,529.63		
COMFA	3120702013B	06-01-2003	COMMON FAC - EPF POLYMER SYS REPL CF-102 & CF-103	113,811.49	WO 35581	PC
COMFA	3120707043D	12-01-2003	COMMON FAC - REPLACE V-141 DUST COLLECTOR	47,610.91	WO 35606	PC
COMFA	316300015917	12-01-2003	40-TON ARTICULATING DUMP TRUCK, VOLVO 40D	409,000.00	0306947	PC
COMFA	316300015918	12-01-2003	40-TON ARTICULATING DUMP TRUCK, VOLVO 40D	409,000.00	0306947	PC

SEMINOLE ELECTRIC COOPERATIVE, INC.
PUTNAM COUNTY PROPERTY TAX REPORT
ORIGINAL COST OF POLLUTION CONTROL IMPROVEMENTS (INCLUDING MOBILE)
01-2005

CORP CODE / DET LOCAT	ITEM NUMBER	BOOK ACQ DATE	FULL DESCRIPTION	ORIGINAL INST. COST	PURCH / WORK ORDER NUMBER	STATE CATEG
** ACQ YEAR		2003				
				979,422.40		
COMFA	3120718033A	12-01-2004	COMMON FAC - SUMP 1 W INTERCEPTOR DRAIN PIPE (LF)	314,880.56	WO 35589	PC
COMFA	3120718043A	12-01-2004	COMMON FAC - SUMP 1 W INTERCEPTOR COLLECTION SUMP	32,286.25	WO 35589	PC
COMFA	3120718053A	12-01-2004	COMMON FAC - SUMP 1 W INTERCEPTOR DISCHARGE PIPE	38,896.22	WO 35589	PC
COMFA	3120718063A	12-01-2004	COMMON FAC - SUMP 1 W INTERCEPTOR ELEC COMPONENTS	3,368.87	WO 35589	PC
COMFA	3120718073A	12-01-2004	COMMON FAC - SUMP 1 W INTERCEPTOR SUMP PUMP	3,368.87	WO 35589	PC
COMFA	3120718083A	12-01-2004	COMMON FAC - SUMP 2 AREA A DRAIN PIPE (LF)	247,634.01	WO 35589	PC
COMFA	3120718093A	12-01-2004	COMMON FAC - SUMP 2 AREA A COLLECTION SUMP	62,530.08	WO 35589	PC
COMFA	3120718103A	12-01-2004	COMMON FAC - SUMP 2 AREA A DISCHARGE PIPE	39,489.97	WO 35589	PC
COMFA	3120718113A	12-01-2004	COMMON FAC - SUMP 2 AREA A ELEC COMPONENTS	3,962.63	WO 35589	PC
COMFA	3120718123A	12-01-2004	COMMON FAC - SUMP 2 AREA A SUMP PUMP	3,962.61	WO 35589	PC
COMFA	3120718133A	12-01-2004	COMMON FAC - SUMP 3 AREA B DRAIN PIPE (LF)	249,784.55	WO 35589	PC
COMFA	3120718143A	12-01-2004	COMMON FAC - SUMP 3 AREA B COLLECTION SUMP	62,536.18	WO 35589	PC
COMFA	3120718153A	12-01-2004	COMMON FAC - SUMP 3 AREA B DISCHARGE PIPE	39,490.19	WO 35589	PC
COMFA	3120718163A	12-01-2004	COMMON FAC - SUMP 3 AREA B ELEC COMPONENTS	3,962.86	WO 35589	PC
COMFA	3120718173A	12-01-2004	COMMON FAC - SUMP 3 AREA B SUMP PUMP	3,962.85	WO 35589	PC
COMFA	3120718183A	12-01-2004	COMMON FAC - SUMP 4 AREA C DRAIN PIPE (LF)	269,794.26	WO 35589	PC
COMFA	3120718193A	12-01-2004	COMMON FAC - SUMP 4 AREA C COLLECTION SUMP	62,527.45	WO 35589	PC
COMFA	3120718203A	12-01-2004	COMMON FAC - SUMP 4 AREA C DISCHARGE PIPE	39,493.00	WO 35589	PC
COMFA	3120718213A	12-01-2004	COMMON FAC - SUMP 4 AREA C ELEC COMPONENTS	3,965.67	WO 35589	PC
COMFA	3120718223A	12-01-2004	COMMON FAC - SUMP 4 AREA C SUMP PUMP	3,965.66	WO 35589	PC
COMFA	3120718233A	12-01-2004	COMMON FAC - SUMP 5 AREA D DRAIN PIPE (LF)	248,248.67	WO 35589	PC
COMFA	3120718243A	12-01-2004	COMMON FAC - SUMP 5 AREA D COLLECTION SUMP	62,531.67	WO 35589	PC
COMFA	3120718253A	12-01-2004	COMMON FAC - SUMP 5 AREA D DISCHARGE PIPE	39,490.24	WO 35589	PC
COMFA	3120718263A	12-01-2004	COMMON FAC - SUMP 5 AREA D ELEC COMPONENTS	3,962.78	WO 35589	PC
COMFA	3120718273A	12-01-2004	COMMON FAC - SUMP 5 AREA D SUMP PUMP	3,963.13	WO 35589	PC
COMFA	3120718283A	12-01-2004	COMMON FAC - SUMP 6 E INTERCEPTOR DRAIN PIPE (LF)	301,819.36	WO 35589	PC
COMFA	3120718293A	12-01-2004	COMMON FAC - SUMP 6 E INTERCEPTOR COLLECTION SUMP	46,426.42	WO 35589	PC
COMFA	3120718303A	12-01-2004	COMMON FAC - SUMP 6 E INTERCEPTOR DISCHARGE PIPE	38,893.13	WO 35589	PC
COMFA	3120718313A	12-01-2004	COMMON FAC - SUMP 6 E INTERCEPTOR ELEC COMPONENTS	3,365.76	WO 35589	PC
COMFA	3120718323A	12-01-2004	COMMON FAC - SUMP 6 E INTERCEPTOR SUMP PUMP	3,365.76	WO 35589	PC
COMFA	3120718333A	12-01-2004	COMMON FAC - FABRIFORM - WEST DITCH (SQ YDS)	508,754.25	WO 35589	PC
COMFA	3120718343A	12-01-2004	COMMON FAC - MONITORING WELLS (6)	41,447.29	WO 35589	PC
COMFA	3120718353A	12-01-2004	COMMON FAC - MAIN ELECTRICAL FOR SUMPS 1-6	320,098.21	WO 35589	PC
COMFA	3120719123B	09-01-2004	COMMON FAC - FILTER PRESS 100FT/3 SIDE MTD, RECOND	172,295.81	WO 35626	PC
COMFA	3120719123C	12-01-2004	COMMON FAC - FILTER PRESS MIX TANK	41,197.21	WO 35626	PC
COMFA	316300016120	11-01-2004	FRONT-END LOADER, VOLVO L330E	494,500.00	0404326	PC
COMFA	316300016529	10-01-2004	2004 FORD 4X4 FLATBED WITH LUBE EQUIP	68,197.05	0403719	PC
** ACQ YEAR		2004				
				3888,419.48		

PUTNAM COUNTY PROPERTY TAX REPORT
ORIGINAL COST OF POLLUTION CONTROL IMPROVEMENTS (INCLUDING MOBILE)
01-2005

CORP CODE
DET

LOCAT	ITEM NUMBER	BOOK ACQ DATE	FULL DESCRIPTION	ORIGINAL INST. COST	PURCH / WORK ORDER NUMBER	STATE CATEG
** ACQ YEAR		2002		98,328.44		
UNIT1	3120301011B	02-01-2003	UNIT 1 - BLOWERS	132,123.08	WO 35570	PC
UNIT1	3120301021B	02-01-2003	UNIT 1 - BLOWER MOTORS	56,624.17	WO 35570	PC
UNIT1	3120603131B	09-01-2003	UNIT 1 - RECYCLE TANK COVERS (2)	185,679.67	WO 35576/594	PC
UNIT1	3120603131C	09-01-2003	UNIT 1 - ABSORBER RECYCLE TANK COVER STACK VENT	147,848.53	WO 35576	PC
UNIT1	3141201031B	12-01-2003	UNIT 1 - REPLACE COOLING TOWER FILL	2494,817.47	WO 35596	PC
UNIT1	3141201061B	12-01-2003	UNIT 1 - COOLING TOWER DIFFERENTIAL RINGS	115,379.19	WO 35578	PC
** ACQ YEAR		2003		3132,472.11		
UNIT1	3120501121B	02-01-2004	UNIT 1 - T/R 480V MOLDED CASE BRKR GRD FAULT	73,996.53	WO 35599	PC
UNIT1	3120603021B	06-01-2004	UNIT 1 - REPL MIST ELIM SPRAY HEADERS MOD 1A & 1B	140,279.83	WO 35617	PC
UNIT1	3120603051B	06-01-2004	UNIT 1 - REPL MIST ELIM SPRAY NOZZLES MOD 1A & 1B	2,862.85	WO 35617	PC
UNIT1	3120612121B	04-01-2004	UNIT 1 - ACCESS PLATFORMS	5,119.48	WO 35601	PC
UNIT1	3141201031C	10-01-2004	UNIT 1 - COOLING TOWER FILL- SUBS CHARGES	12,117.38	WO 35596	PC
** ACQ YEAR		2004		234,376.07		
** LOCATION		UNIT1		16044,733.97		
** CORP		DET		38285,488.44		

PUTNAM COUNTY PROPERTY TAX REPORT
ORIGINAL COST OF POLLUTION CONTROL IMPROVEMENTS (INCLUDING MOBILE)
01-2005

CORP CODE
LSD

LOCAT	ITEM NUMBER	BOOK ACQ DATE	FULL DESCRIPTION	ORIGINAL INST. COST	PURCH / WORK ORDER NUMBER	STATE CATEG
UNIT2	3120603022C	06-01-2002	LSD 02 SPARY WASH MODIF - VALVES, INST & CONTRLS	18,511.76	WO 35556	PC
UNIT2	3120603052B	04-01-2002	LSD 02 - U2 SPRAY WASH MODIFICATIONS (NOZZLES)	4,113.72	WO 35556	PC
UNIT2	3120902022D	04-01-2002	LSD 02 - CHIMNEY FLUE NOZZLE EXTENSION	25,000.00	WO 35527	PC
UNIT2	3141201022B	08-01-2002	LSD 02 - COAT COOLING TOWER COLUMNS	22,361.69	WO 35580	PC
** ACQ YEAR		2002		253,047.93		
UNIT2	31111101032C	11-01-2003	LSD 03 REPLACE SUMP PUMP	16,109.65	WO 35590	PC
UNIT2	3120603022D	03-01-2003	LSD 03 - SPRAY WASH MODIF, VALVES,INSTR & CONTROLS	16,243.28	WO 35587	PC
UNIT2	3120603022E	03-01-2003	LSD 03 - SPRAY WASH MODIF - HEADERS	160,628.04	WO 35587	PC
UNIT2	3120603032I	12-01-2003	LSD 03 - NEW MIST ELIMINATOR MODULES 2B & 2C	135,285.56	WO 35600	PC
UNIT2	3120603052C	03-01-2003	LSD 03 - SPRAY WASH MODIFICATIONS - NOZZLES	3,609.62	WO 35587	PC
** ACQ YEAR		2003		331,876.15		
UNIT2	3120501122B	02-01-2004	LSD 04 - T/R 480V MOLDED CASE BRKR GRD FAULT	73,996.52	WO 35599	PC
UNIT2	3120501122C	12-01-2004	LSD 04 - T/R MOLDED CASE BRKR GROUND FAULT	142,593.63	WO 35619	PC
UNIT2	3120603032J	03-01-2004	LSD 04 - NEW MIST ELIMNATOR MODULES 2B & 2C	145,000.00	WO 35600	PC
UNIT2	3120612122B	04-01-2004	LSD 04 - ACCESS PLATFORMS	5,119.48	WO 35601	PC
UNIT2	3141201032B	06-01-2004	LSD 04 - REPLACE COOLING TOWER FILL	2631,873.25	WO 35614	PC
** ACQ YEAR		2004		2998,582.88		
** LOCATION		UNIT2		15902,844.64		
** CORP		LSD		15902,844.64		

Report on Seminole Electric Cooperative, Inc.

Pollution Control Equipment in the

Flue Gas Desulfurization Oxidation System and

Waste Product Treatment System Modification Project

Seminole Generating Station Units 1 and 2

December 2000

In December, 2000, Seminole Electric Cooperative, Inc. completed modifications to the Seminole Plant flue gas desulfurization (FGD) systems for Units 1 and 2 which are used to remove sulfur dioxide from the flue gas of each unit. The modifications consisted of converting the chemical process within each unit from an unoxidized FGD system to an oxidized FGD system and modifying the FGD waste product treatment process to produce a usable by-product. Changing to an oxidized system reduces the maintenance and improves the operation of the SO2 removal system by reducing the amount of chemical scaling that occurs during the removal process. The reduced scaling will enable the plant to increase the removal efficiency of the chemical process without the potential of plugging the system. The new oxidized system produces a calcium sulfate material which, after proper washing and dewatering in the modified systems, can be used in the manufacturing of wallboard, the production of cement and in agriculture as a soil amendment. Waste material generated by the old unoxidized system was disposed of in the Seminole Plant's on-site landfill. Producing a usable by-product is in concert with the goals of the Florida Department of Environmental Regulation's pollution prevention policy program by reducing the amount of FGD waste material disposed of in the Seminole on-site landfill by over 500,000 tons per year.

The total cost of the modification was $16,677,392 and consisted of modifications to the FGD systems and waste product treatment system. The major components of the modification to the FGD systems to convert to an oxidized chemical process are:

1. Installation of an oxidation air system necessary for the conversion of the unoxidized material to an oxidized material.
2. Modifications to the ten FGD absorber modules to enable the oxidation reaction to occur.
3. Installation of two hydroclones in the limestone reagent system to produce a fine particle limestone slurry (the primary chemical reagent used to remove sulfur dioxide) which enhances the sulfur dioxide removal process.

The major components of the modification to the waste product treatment system are:

1. Modifications to two primary dewatering thickener tanks used to dewater the waste product to 60% solids.
2. Installation of a by-product washing system.
3. Modifications to the secondary dewatering system used to remove wash water and produce an 85-90% solids material.
4. Installation of a new treatment system to remove impurities from a wastewater stream prior to discharge to the St. Johns River.

All of the components listed above are integral parts of the modification to the FGD systems and waste product treatment system of both the Seminole units and are exclusively used for either the reduction of sulfur dioxide in the flue gas stream of each unit or the treatment of the by-product to avoid landfilling.

Therefore, I do hereby certify that all new equipment and modifications of existing equipment included in this Project qualify as pollution control facilities pursuant to Section 193.621, Florida Statutes, and that as such they are used primarily for pollution control purposes pursuant to Florida Department of Revenue Guidelines for Tax Assessors Chapter 62-8. Seminole performed all of the work under this Project pursuant to Department of Environmental Regulation Permit Number PA 78-10, as modified April 3, 2000, and Industrial Wastewater Facility Permit FL0036498-Major, issued January 7, 2000.

Kenneth L. Bachor, P. E.

31471

Florida License No.

A REPORT ON POLLUTION CONTROL EQUIPMENT PURSUANT TO SUBSECTION 193.621(1) FLORIDA STATUTES - PROPERTY TAX ASSESSMENT

Prepared For

Seminole Electric Cooperative, Inc.

by

Burns and Roe, Inc.

March 1985

Prepared by: J. Whipple
J. Whipple
Project Manager

Approved by: J. J. Byrnes
J. J. Byrnes
Vice President
P.E. (Florida #29313)

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1.0 INTRODUCTION

At the request of Seminole Electric Cooperative, Inc., Burns and Roe, Inc., the Engineer of the power plant facility Seminole Plant Units 1 and 2, has provided this report on the pollution control facilities associated with the plant. This report contains a detailed list of pollution control devices being utilized by the facility and descriptions of the function of each device as it relates to pollution control and production.

No cost estimates are provided in this report. Seminole is presenting costs for these items in a separate report which is based upon property cost accounting data provided previously by Burns and Roe.

The information contained in this report is correct to the best of Burns and Roe's knowledge.

2.0 FACILITY DESCRIPTION

2.1 General

Seminole Plant Units 1 and 2 is a electric power plant rated at approximately 2x600 MW and is located near the town of Palatka, Florida on the St. Johns River. The plant burns coal and is equipped with all of the pollution control facilities required by the Federal, State, and local laws and regulations. Each of the two 600 MW units has certain pollution control devices dedicated to that unit and in addition the two units share certain other common pollution control facilities.

2.2 Pollution Control Facilities

A list of the pollution control facilities is provided in Table 1. The categories listed comply with those designated by Seminole on Schedule I of the Tangible Personal Property Account List.

In compiling this list Burns and Roe relied upon the information contained in certain documents provided by Seminole. These documents are listed in the Appendix to this report. In particular we relied upon the NUS report for guidance.

Note that item 311-12 Sewage Treatment Plant does not appear in Table 1 although it is listed in Seminole's Schedule I. Our review of the NUS report and F.S. 1979 Section 193.621(4) Assessment of Pollution Control Devices caused us to make this deletion. Paragraph (4) of the statute reads as follows: "but shall not include any public or private domestic sewerage system or treatment works".

We note however, that the DER in their letter of 2-27-85 to Mr. Mahaffey included item 311-12 Sewage Treatment Plant. Burns and Roe is not in a position to question the DER about this statement. If Seminole can provide further information then Burns and Roe could re-examine its position. It is possible that the key word is "domestic" and that in this case the sewage treatment plant at a power plant is not "domestic".

TABLE 1

POLLUTION CONTROL EQUIPMENT LIST

311-04	Coal Handling Area
311-11	Waste Water Treatment Plant
312-02	Bottom Ash Removal System
312-03	Fly Ash System
312-05	Precipitator
312-06	Flue Gas Desulfurization* System
312-07	Flue Gas Desulfurization* Effluent Processing System
312-09	Stack
314-12	Circulating Water System
314-13	River Water System
311-11	Waste Water System Unit 2
312-02	Bottom Ash Removal Unit 2
312-03	Fly Ash System Unit 2
312-05	Precipitator Unit 2
312-06	Flue Gas Desulfurization Unit 2
312-09	Stack Unit 2
314-12	Circulating Water System Unit 2
314-13	River Water System Unit 2
311-22	Limestone Handling Area (runoff collection)
312-04	Coal Handling System (dust collection)
312-14	Boiler Makeup System (neutralization)
312-08	Limestone Handling System

Note* Desulfurization is the proper term for what appears to be a typographical error on Schedule I

3.0 FUNCTIONAL DESCRIPTIONS

3.1 General

The functional descriptions which follow apply to both Unit 1 and Unit 2. In cases such as Wastewater System (311-11), Coal and Limestone Runoff Collection (311-04-22), Limestone Handling (312-08), FGD Effluent Processing (312-07), and River Water System (314-13) the systems are common to both units.

3.2 311-04 and 311-22 -- Coal Handling Area and Limestone Handling Area Run-off Collection System

Rainwater runoff from the coal and limestone storage areas is collected and the impurities removed so that this water may be discharged to the St. Johns River in accordance with environmental regulations.

The coal storage area is provided with a fabric reinforced, synthetic rubber liner. The purpose of this liner is to prevent any coal handling area runoff including coal conveyor washdown from passing into the ground or draining to the river. The liner diverts the runoff to various retention sumps from which it is pumped to the wastewater treatment facility.

The limestone storage area also has sumps, ditches and catch basins to collect rainwater runoff. The collected water is pumped to the wastewater treatment facility.

3.3 311-11 Waste Water System

The primary function of the Waste Water System is to process collected plant waste streams and rainwater runoff to remove any impurities. This is done so that the treated water may be discharged to the St. Johns River in accordance with environmental regulations and permits. The waste streams collected and treated include:

- Rain water run-off from coal and limestone storage piles including coal conveyor washdown.
- Boiler blowdown (if it is not recycled).
- Demineralizer and condensate polisher regeneration.
- Plant low volume wastes from drains.
- Sanitary sewage waste from the plant island.

There are two primary waste water processing systems. The sanitary sewage generated at the plant island is treated at the Sewage Treatment System. All other waste water flows, except for the intermittent washes, are processed in the Waste Water Treatment System. The intermittent washes including the stack wash, the air preheater wash and the boiler fireside wash are processed on an as-required basis in the percolation pond. (It is expected these washes will be processed on a bi-yearly schedule). All three systems serve both units.

Plant low volume waste water will be collected by floor drains located throughout the plant. These drains will collect the water in the equalization/collection basin where it is neutralized and oil and grease removed. The effluent of the equalization/collection basin is pumped to the waste water treatment clarifier. The clarifier removes the suspended solids, copper, iron and emulsified oil and grease using a flocculation/sedimentation process.

The waste water collected in the equalization/collection basin is designed to remove suspended solids, oil, grease, copper and iron using a flocculation and sedimentation process. The waste water is pumped into a clarifier where chemicals and flocculation aids are added and the impurities in the water are removed.

The effluent from the waste water treatment facility is pumped to a waste water surge tank where it is released to the St. Johns River and is monitored and regulated in accordance with the plant's National Pollutant Discharge Elimination System (NPDES) permit and DER's Florida Water Quality Standards, Chapter 17.3.

3.4* 311-12 Sewage Treatment Plant

~~The sanitary sewage is treated in an activated sludge system with extended aeration. The process will aerate the activated sludge-mixture and clarify the aerated mixture in a two section clarifier. The system is designed to remove 90% of influent BOD_5 and suspended solids to meet the discharge requirements outlined in Florida Department Environmental Regulations (DER), Chapter 17.3 (1975).~~

3.5 312-02 Bottom Ash Removal System (Dewatering System)

Bottom ash is one of the waste materials used to stabilize sludge from the FGD (Flue Gas Desulfurization) effluent processing system for site disposal. Facilities used to process bottom ash for mixing with FGD sludge ~~are~~ (Bottom Ash Dewatering System) are considered to be a part of the FGD system.

Bottom ash and boiler slag falls into a water-filled bin at the bottom of the boiler. A grinder in the bin reduces the chunks to small particles which are transported by water sluicing. This slurry is pumped to large dewatering bins where the ash is allowed to settle. After the water is drained off and recycled the moist ash is removed from the bins and trucked to the FGD effluent treatment faiclity for combination with FGD sludge.

The bottom ash dewatering system consists of the dewatering bin, the settling tank, the surge tank, and the settling/surge tank return pumps. The drained water is recycled for use to avoid the need for additional river water makeup and to avoid the necessity of discharging water from the system.

3.6 312-03 Fly Ash System

Fly ash resulting from the burning of coal will be removed from the flue gas with the use of electrostatic precipitators located downstream of the air heaters. The high collection efficient (99.6 percent) of the precipitators will maintain fly ash emissions below the Federal standards not to exceed 0.03 pounds of particulate per million BTU heat input and a 20 percent plume/opacity.

Flue gas is generated by the combustion of coal in the boiler. Upon leaving the boiler, the flue gas is hot and laden with fly ash. Some of this heat is recovered in the air preheaters. The flue gas stream is ducted from the discharge of the air heaters to the precipitators, where the fly ash is removed. The induced draft fans pull the cleaned flue gas from the precipitator and push it through the flue gas scrubber modules to the stack where it is discharged to teh atmosphere.

Fly ash is removed from the precipitator hoppers by a pressurized pneumatic conveying system. Fly ash will be introduced to the fly ash conveyor piping from the hoppers via air-lock pressure feeders. Blowers supply pressurized air to change the air-lock feeders and pneumatically transport the dry fly ash from each collection point to the fly ash silo located 2500 feet from the precipitators in the FGD effluent treatment facility area.

3.7 312-04 Coal Handling System (Dust Collection)

As coal is unloaded from the railroad cars, conveyed to temporary storage, reclaimed from storage and conveyed to the boiler, coal dust and particulates are introduced into the atmosphere. Air pollution control regulations require that a system of filters and collection devices be installed to minimize the fugitive dust released to the environment.

The coal handling system is shared by Units No. 1 and 2 except for the silo loading points. Therefore, all collection points prior to silo loading are included in the Unit 1 Dust Collection System. The dust collectors for each Unit's silo loading points are included in the respective Unit's system.

Dust emissions are controlled with high efficiency bag filters. These filters are provided at several centralized locations throughout the conveying system to collect coal dust generated while moving and transferring the coal. Each of the 3 bag filters has a fan to draw air from the collection point, through the hood and ducting and into the bag filter. Each bag filter services from 8 to 12 collection points. the recovered coal dust is returned to the coal stream.

3.8 312-05 Electrostatic Precipitator

An electrostatic precipitator removes fly ash particles from the flue gas by applying four fundamental steps: (1) electrical charging of suspended fly ash particles, (2) collection of the charged particle in an electric field, (3) removal of the precipitated ash from the collecting field (electrodes) and (4) disposal. The main components of the electrostatic precipitator required to accomplish these four steps are: The discharge electrode system, the collector electrode system, the rapping system and the dust hoppers. Other important components include the gas distribution system and the precipitator shell.

The discharge electrode system consists of an assembly of wires mounted in a rectangular, tubular frame in the gas stream and suspended from insulators. These wires are connected to the negative pole of the high-voltage rectifier equipment and produce a high-voltage direct-current corona. This charges the suspended fly ash particles. The particles, under the influence of the strong electrical field, then migrate to the collecting electrodes (positive polarity).

The collector electrode system consists of an assembly of plates on which the dust is precipitated. The collecting plates and discharge electrodes are alternately spaced and provide both charging and collection of particcles in a single stage.

The removal of the precipitated particles from the collection plates is performed by a system of impact rappers. The rappers strike the plates setting up oscillations taht shake the collected material loose. It then falls into the dust hoppers. The dust hoppers store the collected ash for removal from the precipitator prior to transfer to the fly ash silo that feeds into the sludge mixing pug mill.

The precipitator includes inlet and outlet gas distribution systems to permit uniform distribution of the gas through the precipitator. Gas distribution devices include perforated plates and turning vanes as required.

The precipitator shell is constructed of reinforced steel plate. Insulation and lagging is applied to maintain internal temperatures.

3.9 312-06 Flue Gas Desulfurization (FGD) System

Seminole has installed a wet-scrubbing system for each unit designed to keep sulfur dioxide emissions below the State and Federal standards. There are several functionally related and subordinate systems required for the operation of the FGD system. These subordinate systems are shared by each unit's FGD System and include: (1) Limestone Handling and Preparation System and (2) FGD Effluent Processing System.

The FGD system consists of five parallel absorber modules to treat the flue gas from one coal-fired steam generating boiler. At "design" conditions, four modules are in operation and the fifth is an installed spare. Each module consists of a spray tower absorber, recycle tank, hydroclone system, recycle pumping system, insolation dampers, and other associated equipment.

The flue gas enters this system at the outlet of the induced draft fans via a header duct system common to all modules. The gs is then split into two streams. The first is a startup bypass, sized for 30% of the total gas flow, which is not used during normal operation; the second stream is the absorber feed.

The gas to be scrubbed passes through the isolation damper located at the inlet duct of the absorber. The internal walls of this duct are continuously sprayed with jets of process slurry in the vicinity of the absorber inlet to prevent the build-up of any solids that might form at the wet/dry interface. Partial quenching of the gas occurs in this inlet section.

The gas then enters the body of the absorber where quenching to the saturation temperatures is completed. The gas travels upwards and contacts a continuous downward curtain of process slurry spray produced by multiple spray banks. The slurry is an aqueous suspension of calcium sulfite, calcium sulfate, unreacted calcium carbonate, inert material, fly ash, and various dissolved species. The action of the gas and liquid interface extracts the sulfur dioxide from the gas and transfers it into the liquid phase where it partially reacts with dissolved calcium carbonate to form calcium sulfite. Five spray banks are provided, each fed by

its own, dedicated, slurry recycle pump. Four spray banks are needed to provide the maximum specified (secondary) efficiency (90%); three spray banks are needed to provide the primary specified effiency (86%). The fifth spray bank is an installed spare.

After leaving the absorber, the cleaned gas is discharged to the stack. Since this system does not include reheat, the saturated gases are expected to condense moisture on the innter surfaces of the absorber outlet ductwork and the stack.

The waste slurry, which continuously overflows from a baffled section of the recycle tank, flows over a constant level weir to the waste slurry sump from which it is pumped to the FGD effluent processing system. The reclaimed water (supernate) is returned from the dewatering system collected in a supernate storage surge tank, blended with the various makeup water, and is distributed to the various parts of the process.

3.10 312-07 FGD Effluent Processing System

The FGD effluent processing system takes thickened sludge laden with SO_2 products and combines it with bottom ash, fly ash, central waste dewatered sludge and lime to create a cement-like material for on-site disposal. This final product is a stabilized material with low permeability and is environmentally acceptable as a landfill material. Mobile equipment (trucks, dozers and earth moving equipment) are required to place the material in the landfill.

The FGD effluent disposal system is located near the landfill area necessitating the transportation of constituents to that central point. This requires several different transport systems including bottom ash trucking, fly ash pipeline, FGD sludge pipeline, lime rail delivery and thickened central waste dewatered sludge trucking.

The FGD effluent disposal system includes dewatering and process mixing equipment, storage bins and associated feed equipment for the constituents, conveyor equipment for the movement of materials within the system limits, related instrumentation and control equipment, and the constituent transportation systems mentioned above. The system receives the FGD sludge from the FGD absorber modules and dewaters it using thickeners and vacuum filters. The dewatered sludge is mixed with fly ash and a lime additive in a pug mill. This mixture is trucked to the landfill area where it is used to encapsulate the bottom ash and central waste dewatered sludge to form a stabilized landfill.

3.11 312-08 Limestone Handling System

Facilities to unload, crush, store, convey and prepare limestone for use in the absorbers are included in this system. The limestone handling system includes an unloading hopper, conveyors, crushers, a portal scraper, covered active storage, and weigh scales. The preparation system includes limestone ball mills, slurry tanks and pumps, and a limestone classifier.

Limestone from the Ocala limestone formation is unloaded from trucks into an unloading hopper and conveyed to a limestone crusher and then into a covered active storage pile. A portal scraper reclaims the limestone from teh active pile onto conveyors which transport the limestone to a surge bin. From the surge bin, the limestone is fed into the ball mills where it is pulverized and ground to a size to pass 80% through a 100 mesh. The limestone is pulverized in a ball mill in a closed loop wet grinding facility. FGD supernate water is used in this grinding operation to prepare a 35 weight percent limestone slurry which is stored in the limestone slurry storage tank. Limestone is added to the process at the recycle tank in response to changes in pH. A recirculating feed loop is provided to prevent solids deposition in the feed lines.

3.12 312-09 Stack

The combustion of coal produces stack gases and ash. The majority of the ash is removed by other systems previously described.

The purpose of the stack is to discharge the products of combustion at an elevation sufficiently above grade to avoid plume impact on plant components and operating staff and to enhance dispersion of the pollutant constituents of the flue gas (SO_2, NO_x, particulates).

The Seminole plant has a single concrete chimney with two independent, self supporting brick liners. The stack is 2.5 times the height of the steam generator to ensure sufficient dispersion of gases. As the FGD system is a wet scrubber type, the flue gas is saturated and condenses moisture on the stack liner. This moisture is highly acidic so the liner is constructed of acid resistant brick and mortar. The liners are wider than for a conventional chimney to create a lower gas velocity. This prevents the acidic droplets from being blown out of the stack and allows them to drop to the bottom. This condensate is collected and recycled into the FGD system.

3.13 312-14 Boiler Make-up System (Neutralization System)

The equipment which chemically treats water for boiler make-up produce various liquid waste by-products. These liquids are too acidic or caustic to be discharged and so must be neutralized first.

A neutralization system has been provided at the local collection basin for demineralization and condensate polisher regeneration waste streams. This system is required to neutralize the highly acidic and caustic wastes produced in the regeneration cycle before the waste is pumped to the equalization/collection basin.

Once the pH of these wastes is neutralized it can be treated as described in section 3.2. The neutralization system consists of a lined basin, piping, pumps, and chemical injection equipment.

3.14 314-12 Circulating Water System

The cooling tower system will minimize the release of warm water (thermal pollution) to the St. Johns River.

The heat gained in the circulating water from the condensation of steam in the condenser will be dissipated to the atmosphere through the cooling tower and a negligible amount of heat will be released to the water.

Cooling water is used to remove heat from the exhaust section of the turbine generators. Water is continuously circulated through the condenser to the cooling towers by vertical pumps located in a concrete structure adjacent to the cooling tower. A system of large diameter piping connects the cooling tower, the pump structure and the turbine condenser. Water lost from the cooling loop by blowdown, drift and evaporation is replaced with makeup water supplied from the St. Johns River.

3.15 314-13 River Water System

Seminole Units 1 and 2 share a common river water system for circulating water makeup including river water pumps, pump house structure and ancillary equipment. Each unit has a separate 24 inch water makeup pipe to the respective cooling tower. Equipment in the cooling loop is identical for each unit.

The river water makeup to the cooling tower is pumped from the river to the cooling tower without treatment. The water quality of the circulating water is controlled by chemical injection and blowdown. The chemical injection system includes chlorination for bacteria control and acid injection for pH control. The blowdown controls the concentration of suspended and dissolved solids and is monitored for release to the river. The blowdown is piped to the surge tank. (The surge tank is discussed in the Waste Water Treatment section of this report).

Fresh river water makeup to the cooling towers is required to replace evaporation losses and to maintain proper system water chemistry by replacement of system blowdown.