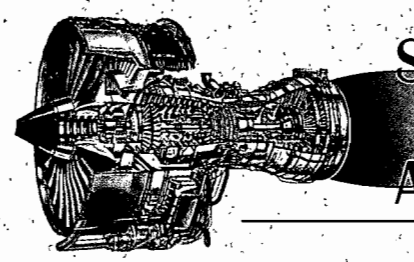


Sacramento Cogeneration Authority
P.O. Box 15830, Sacramento, CA 95852-1830 · 916/732-5218
Procter & Gamble Cogeneration Project

SCA 94-046

April 7, 1994

Mr. B.B. Blevins
California Energy Commission
1516 Ninth Street
Sacramento, CA 95814
Attn: Docket Unit

MINOR CHANGE IN USE OF INLET AIR CHILLER, REVISED SITE ARRANGEMENT, AND CORRESPONDENCE TO THE CENTRAL VALLEY REGIONAL WATER QUALITY CONTROL BOARD REGARDING HARDNESS AND TDS LEVELS FOR THE PROPOSED PROCTER AND GAMBLE COGENERATION PROJECT (DOCKET NO. 93-AFC-2)

Dear Mr. Blevins:

Enclosed please find twelve copies of the environmental analysis of the minor change from an evaporative cooling system to a steam absorption chiller for the simple cycle turbine generator, a revised site arrangement figure, and a copy of correspondence to the Central Valley Regional Water Quality Control Board (CVRWQCB) regarding wastewater hardness and TDS levels.

The simple cycle combustion turbine (SCCTG) originally filed in the AFC was a stand alone unit. A recent cost analysis suggested that this unit was unreasonable from a cost perspective. The SCCTG that SCA now proposes to use is fully integrated with the combined cycle auxiliary systems. Inlet air chilling will be accomplished with a steam absorption chiller rather than with an evaporative cooling system. The use of a steam absorption inlet chiller will result in a greater requirement for heat rejection. The physical size of the cooling tower will be increased to avoid increasing the fan horsepower requirements and impacting the combined cycle electrical load. The circulating water pipe size and pump flow will be increased to avoid increasing the circulating water pump horsepower requirements. Air system capacity for the SCCTG will now be provided by the combined cycle's compressed air system.

As a result of this minor change, the cooling tower is estimated to be one foot higher and eighteen feet longer. The circulating water piping will be installed below grade. The elimination of the evaporative cooling system will remove the system's blowdown from the water balance. Enclosed is an environmental impact analysis of the proposed change in inlet air chilling.

A revised project site arrangement (Figure 3.3-1) is also enclosed. The figure reflects the following changes submitted to the CEC to date:

1) the increased size of the cooling tower and simple cycle CTG chiller building,

2) the deletion of the standby generator and the addition of a secondary power feed transformer,

3) the revised ammonia storage area including a horizontal ammonia storage tank, and

4) the incorporation of handicap parking in the existing visitor and plant parking areas.

Please note that the secondary power feed will be from a 12KV distribution line in the area. The secondary feed, consisting of a 4160 volt feed to plant 4KV bus and approximately 2 MVA capacity will provide a black start capability for combined cycle and be used for construction power. Also enclosed is a copy of the March 17 correspondence sent to the CVRWQCB regarding project wastewater hardness and TDS levels.

If you have any questions regarding this information, please telephone me at (916) 732-6540.

Sincerely,

Diana Parker

Diana Parker DEL
Environmental Specialist

Enclosures

cc: Ron Simms, Walsh Construction
Rich Chapman, B&V

SACRAMENTO COGENERATION AUTHORITY
PROCTER & GAMBLE COGENERATION PROJECT

ENVIRONMENTAL IMPACTS OF
USE OF INLET AIR CHILLER FOR THE SIMPLE CYCLE UNIT

The Application For Certification (AFC) filed for the Procter & Gamble Cogeneration Project included a simple cycle combustion turbine unit using inlet air evaporative cooling to boost its performance during warm weather. Upon further consideration, the Sacramento Cogeneration Authority (SCA) has decided that use of a steam absorption chiller to cool the inlet air for the simple cycle combustion turbine generator (SCCTG) would be more advantageous. (The inlet air to the combined cycle combustion turbine generator is chilled by steam absorption chiller. Therefore, the utilization of a steam absorption chiller for the SCCTG will result in the SCCTG being similar to the combined cycle.)

The principal physical effects of incorporating a steam absorption chiller for the SCCTG will be the use of a slightly larger cooling tower to reject the additional heating load of the SCCTG chiller. The cooling tower will be about 18 feet longer and about 1 foot higher than the one originally proposed for a total of 168 feet long and 47 feet high. The circulating water flow will increase by about 2,400 gallons per minute (gpm) for a total of 48,850 gpm. However, the fans and motors sizes will not be increased. A revised site arrangement reflecting the incorporation of a steam absorption chiller for the SCCTG is attached.

The following paragraphs consider whether the incorporation of a steam absorption chiller for the SCCTG would result in any incremental environmental impacts not already discussed in the AFC. The SCA believes that such incremental environmental impacts are negligible.

Air Quality. The use of a steam absorption chiller for the SCCTG, rather than evaporative cooler, will have no effect on the maximum predicted air quality impacts discussed in the AFC. The use of the chiller does not change the project's maximum impacts because they were predicted to occur under SCCTG operating conditions of 48 F compressor inlet temperature (after inlet air cooling). Since the use of steam absorption chilling instead of evaporative cooling will not change the inlet air temperature for this worst-case impact scenario, the resulting maximum air quality impacts will remain the same as previously predicted.

It should be noted that for particulates, the maximum impacts were predicted to occur under SCCTG operating conditions of 115 F compressor inlet temperature (evaporative cooler off). Because the use of steam absorption chilling instead of evaporative cooling will not change the inlet air temperature for this worst-case particulate impact scenario (inlet cooling off), the resulting maximum particulate impacts will remain the same as previously predicted.

The 2,400 gpm increase in circulating water flow will result in a 5.17 percent (0.048 lb/hr) increase in PM10 drift emissions from the cooling tower. The cooling tower drift represents only 10 percent of the facility's total PM10 emission. However, the Sacramento Metropolitan Air Quality Management District will require the equipment to meet the BACT of .006%. Therefore, the resulting air quality impacts will be negligible.

Geology and Soils. Regardless of the method of inlet air cooling, the entire site will be disturbed during construction and then covered with gravel during operation of the cogeneration facility. Therefore, there will be no additional impacts to geology or soils attributable to the use of steam absorption chillers.

Water Resources. The substitution of a steam absorption chiller for the SCCTG in lieu of an evaporative cooler will result in a slight increase of cooling tower blowdown, but will not change the constituents/concentrations of the cooling tower blowdown. However, this increased discharge will not cause any significant additional water quality impacts.

Biological Resources. Regardless of the method of inlet air cooling, the entire site will be disturbed during construction and then covered with gravel or concrete during operation of the cogeneration facility. Therefore, there will be no additional impacts to biological resources attributable to a SCCTG with steam absorption chilling.

Transportation. The change in SCCTG inlet air cooling system will not significantly effect the number of workers or material deliveries during construction or operation. Therefore, there will be no additional effects on transportation caused by a SCCTG with steam absorption chilling.

Land Use. Existing and proposed land uses will not be affected by a SCCTG with steam absorption chilling since the existing/proposed land uses should not be affected by any of the project changes resulting from the switch to steam absorption chillers (e.g., the slightly larger cooling tower, slightly increased cooling tower blowdown, etc.).

Socioeconomics. There will be no additional socioeconomic effects from a SCCTG

Socioeconomics. There will be no additional socioeconomic effects from a SCCTG with steam absorption chilling since the change will not significantly affect the number of workers or construction payroll.

Cultural and Paleontological Resources. Regardless of the method of inlet air cooling, the entire site will be disturbed during construction and then covered with gravel or concrete during operation of the cogeneration facility. Therefore, there will be no impacts to cultural or paleontological resources attributable to a SCCTG with steam absorption chilling.

Aesthetics/Visual Resources. The larger cooling tower will be perceptible to nearby viewers in the immediate area. The chiller building to the simple cycle unit will be screened by other project structures from virtually all viewsheds.

Therefore, there will be negligible changes in the overall appearance of the cogeneration facility from the key observation points (KOPs) depicted in the AFC. This is because of their distances from the site and screening provided by other project structures.

The increased circulating water flow rate will increase the water vapor emitted from the cooling tower and would cause a slight increase in plume visibility. However, any such increases would be very minor considering that the percentage increase in circulating water flows is small and that previously modeled plume impacts were minor.

Noise. The incorporation of a steam absorption chiller for SCCTG will not significantly change noise levels from the cogeneration facility. The larger cooling tower will have slightly higher noise levels due to falling water, but the fan/motor noise levels will not change. The increase in falling water noise will not result in a significant change in noise impacts from the project.

Waste Management. The incorporation of a steam absorption chill for the SCCTG will not result in any change to the amounts or types of solid wastes generated by the cogeneration facility.

Public Health/Hazardous Material Handling. The incorporation of a steam absorption chiller for the SCCTG will not result in any significant increase in the emissions of any hazardous air pollutant or in the use of any hazardous materials.

Worker Safety. The incorporation of a steam absorption chiller will not pose any significant increased risk to worker safety during construction or operation of the cogeneration facility.

Sacramento Cogeneration Authority
P.O. Box 15830, Sacramento, CA 95852-1830 · 916/732-5218
Procter & Gamble Cogeneration Project

94-029

March 17, 1994

Mr. Joseph Henao
Water Quality Control Engineer
California Regional Water Quality
Control Board
Central Valley Region
3443 Routier Road, Suite A
Sacramento, CA 95827

TDS AND HARDNESS LEVELS FOR THE NPDES PERMIT APPLICATION FOR THE PROPOSED PROCTER AND GAMBLE COGENERATION PROJECT

Dear Mr. Henao:

Please be advised that the following are the estimated maximum daily and average daily Total Dissolved Solids and hardness concentrations for the overall project wastestream.

Maximum Daily Value
TDS 2,691 mg/l
Hardness 445 mg/l as CaCO3

Average Daily Value
TDS 2,487 mg/l
Hardness 270 mg/l as CaCO3.

Attached are the estimated maximum daily and average daily flows, Total Dissolved Solids concentrations, and mass of dissolved solids for each of the plant wastewater streams.

I look forward to receiving your letter addressing the completeness of our application. If there is additional information that we can provide or if there are issues that need to be addressed, please do not hesitate to telephone me at 732-6540. Thank you.

With Regards,

Diana Parker
Environmental Specialist

Attachment

cc: Wayne Pierson, CVRWQCB
Ron Simms, Walsh Construction
Rich Chapman, Black & Veatch
Steve Boggs, Dept. of Fish & Game
Glen Del Sarto, Sacramento County
Dept. of Public Works
Terry Paxton, Sacramento City
Dept. of Utilities

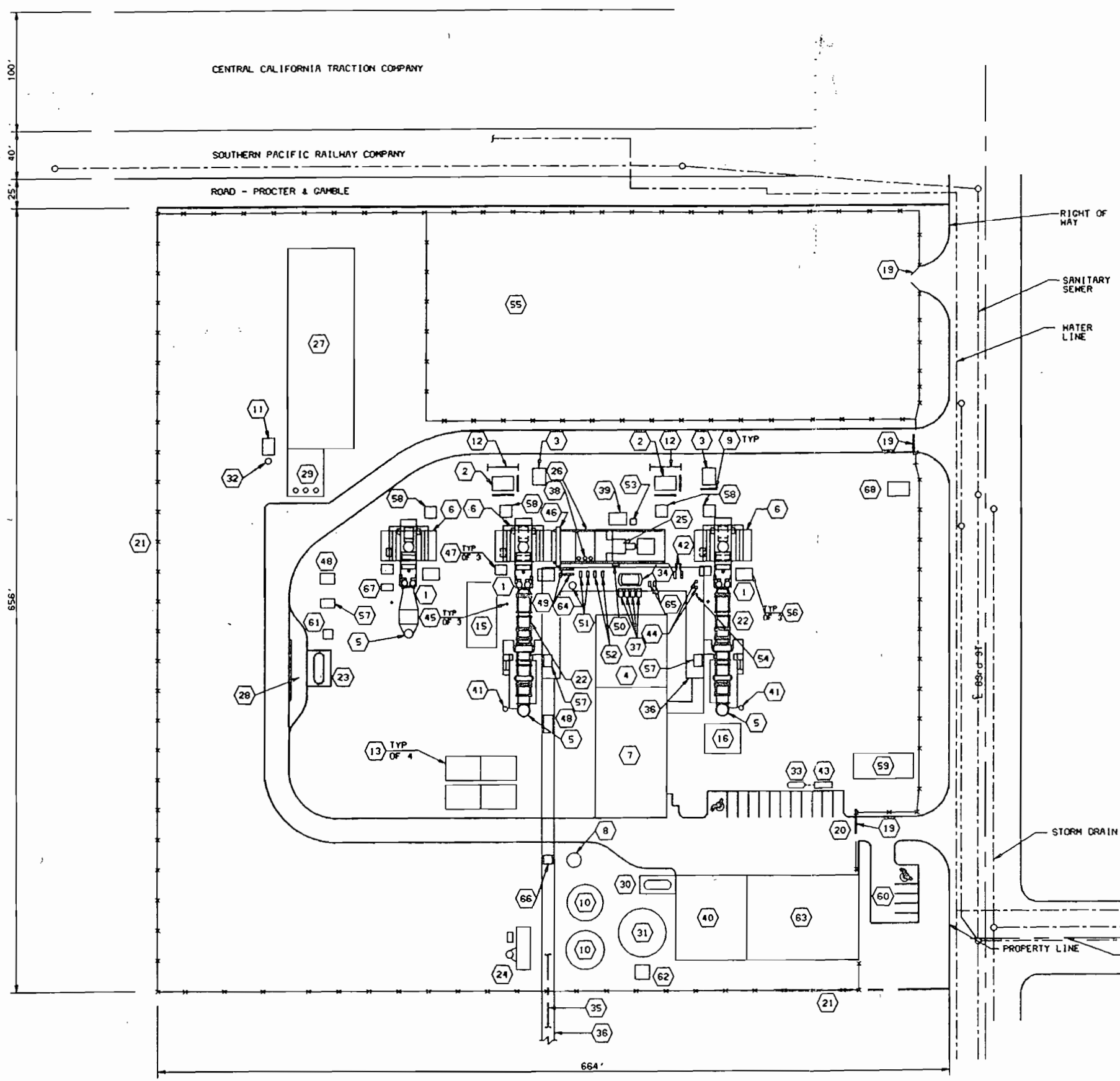
bcc: J. Glaubitz
J. Larsen
L. Maier
S. Strachan
C. Taylor
Chron File
Corp File

Average Daily Values

Stream	Flow, gpd	Total Dissolved Solids, mg/l	Mass of Dissolved Solids, kg
002A - HRSG Blowdown	14,400	0	0
002B - Cooling Tower Blowdown	86,400	1,212	396
002C - Neutralization Facility Effluent	64,800	6,311	1,548
002D - Plant Equipment Drains	43,200	130	21
002 - Wastewater Collection	208,800	2,487	1,965

Maximum Daily Values

Stream	Flow, gpd	Total Dissolved Solids, mg/l	Mass of Dissolved Solids, kg
002A - HRSG Blowdown	14,400	0	0
002B - Cooling Tower Blowdown	144,000	1,454	792
002C - Neutralization Facility Effluent	89,280	7,573	2,559
002D - Plant Equipment Drains	86,400	156	51
002 - Wastewater Collection	334,080	2,691	3,402



LEGEND

1. COMBUSTION TURBINE (3)
2. GENERATOR TRANSFORMER (2)
3. AUXILIARY TRANSFORMER (2)
4. CHILLER BUILDING
5. STACK (3)
6. INLET FILTER (3)
7. CONTROL/ADMIN BUILDING
8. CONDENSATE STORAGE TANK
9. TRANSFORMER FIREWALL (5)
10. DEMINERALIZED WATER STORAGE TANK (2)
11. CIRC WATER CHEMICAL FEED
12. COMBINATION TAKEOFF TOWER AND DISCONNECT SWITCH (2)
13. GAS COMPRESSORS (4)
14. NOT USED
15. SIMPLE CYCLE CHILLER BUILDING
16. CYCLE CHEMICAL FEED
17. NOT USED
18. NOT USED
19. GATE (3)
20. PAVED SITE ACCESS ROAD
21. SITE FENCE
22. HEAT RECOVERY STEAM GENERATOR (2)
23. AMMONIA STORAGE TANK
24. AUXILIARY BOILER
25. STEAM TURBINE
26. CONDENSER
27. COOLING TOWER
28. AMMONIA UNLOADING AREA
29. CIRCULATING WATER PUMP STRUCTURE
30. ACID STORAGE TANK (1)
31. NEUTRALIZATION TANK
32. SODIUM HYPOCHLORITE TANK
33. OIL/WATER SEPARATOR
34. DEAERATOR
35. STEAM LINE TO PROCTER & GAMBLE
36. PIPE RACK
37. BOILER FEED PUMPS (4)
38. CONDENSATE PUMPS (3)
39. TURBINE LUBE OIL UNIT
40. WATER TREATMENT BUILDING
41. BOILER BLOWDOWN TANK (2)
42. AIR COMPRESSORS (2)
43. SANITARY DISCHARGE FLOWMETER AND SAMPLE STATION
44. DESICCANT AIR DRYERS (2)
45. INLET GAS SCRUBBERS (3)
46. ST MAINTENANCE CRANE
47. NOX WATER INJECTION SKID (3)
48. CT WASH SKID (2)
49. AUX COOLING WATER HEAT EXCHANGERS (2)
50. CONDENSER AIR EJECTOR
51. CLOSED CYCLE COOLING WATER PUMPS (2)
52. CONDENSER VACUUM PUMPS (2)
53. LUBE OIL CONDITIONER
54. AIR RECEIVER
55. OWNER'S SUBSTATION
56. AUXILIARY SKID (3)
57. AMMONIA FLOW CONTROL SKID (3)
58. GENERATOR BREAKER ENCLOSURE (4)
59. GAS METER STATION
60. VISITOR PARKING
61. AMMONIA TRANSFER PUMPS
62. NEUTRALIZATION TANK PUMPS
63. WAREHOUSE AND MAINTENANCE SHOP BUILDING
64. CLOSED COOLING WATER HEAD TANK
65. AUX BOILER FEED PUMPS (2)
66. CONDENSATE MAKEUP PUMPS
67. SIMPLE CYCLE CT LUBE OIL COOLER
68. SECONDARY POWER SUPPLY TRANSFORMER

N

50' 25' 0 50' 100'

1"=50'

NOT TO BE USED FOR CONSTRUCTION

DATE OF ISSUE _____

NO	DATE	REVISIONS AND RECORD OF ISSUE	BY
D	4-6-94	RELOCATED SECONDARY POWER TRANSFORMER	CHI
C	3-23-94	GENERAL REVISIONS FOR AFC	APP
B	9-9-93	ISSUED FOR PRELIMINARY AFC REVIEW	FLK
A	9-3-93	ISSUED FOR PRELIMINARY AFC REVIEW	

I HEREBY CERTIFY THAT THIS DOCUMENT WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY REGISTERED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF CALIFORNIA

SIGNED _____

DATE _____ REG NO. _____

BLACK & VEATCH

ENGINEER VBD DRAWN JMD

CHECKED DATE

SACRAMENTO COGENERATION AUTHORITY
PROCTER & GAMBLE COGENERATION PROJECT

SITE ARRANGEMENT

PROJECT 23933-CSTU-S1010

DRAWING NUMBER

REV D

CODE

AREA

FIGURE 3.3-1

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PLOT SCALE: 1=50

STATE OF CALIFORNIA

State Resources Conservation
and Development Commission

In the matter of:	)	Docket No. 93-AFC-2
	)	
Application for Certification	)	PROOF OF SERVICE
of the Sacramento Cogeneration	)	(rev. 12/3/93)
Authority's Procter & Gamble	)	
Cogeneration Project	)	
	)	

PROOF OF SERVICE

I, Evangeline Parchamento, declare that on April 7, 1994, I deposited copies of the attached Minor change in use of inlet air chiller, revised site arrangement and correspondence to the Central Valley Regional Water Quality Control Board regarding hardness and TDS levels for the proposed Procter & Gamble cogeneration project (Docket No. 93-AFC-02) in the United States mail at Sacramento, California, with first class postage thereon fully prepaid and addressed to the following:

APPLICANT

Ms. Susan Strachan, Manager
Projects Permitting & Licensing
SMUD
Box 15830
Sacramento, CA 95852-1830

Steve Cohn
Senior Attorney
SMUD
P.O. Box 15830
Sacramento, CA 95852-1830

INTERESTED AGENCIES

Richard Johnson
Division Chief
Sacramento Metro AQMD
8411 Jackson Road
Sacramento, CA 95826

Ray Menebroker, Chief Project
Assessment Branch
Stationary Source Division
California Air Resources Board
P. O. Box 2815
Sacramento, CA 95814

Ed Schnabel
Sacramento Metropolitan Water District
5331 Walnut Avenue
Sacramento, CA 95841

CALIFORNIA ENERGY COMMISSION
(Docket Unit - 12 copies required)

Docket Unit, MS-4
1516 Ninth Street
Sacramento, CA 95814

I declare under penalty of perjury that the foregoing is true and correct.

Evangeline P. Parchamento