0000089533

NEW APPLICATION

BEFORE THE
POWER PLANT AND TRANSMISSION LINE SITING COMMITTEE

2000 JUL 14 P 3:02

AZ CORP COMMISSION
DOCUMENT CONTROL

ORIGINAL

In the matter of the Application of Salt River Project, or their assignee(s), in conformance with the requirements of Arizona Revised Statutes § 40-360.03 and 40-360.06, for a Certificate of Environmental Compatibility authorizing the construction of natural gas-fired, combined cycle generating facilities and associated intra-plant transmission lines, and switchyard in Gilbert, Arizona located near and southeast of the intersection of Val Vista Drive and Warner Road.	DOCKET NO. L-00000B-00-0105 Case No. L-00000B-00-0105

APPLICATION FOR A CERTIFICATE OF ENVIRONMENTAL COMPATIBILITY

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INTRODUCTION

INTRODUCTION

Salt River Project Agricultural Improvement and Power District ("SRP" or the "Applicant") is applying for a Certificate of Environmental Compatibility (CEC) to expand its Santan Generating Station in Gilbert, Arizona. SRP proposes to add 825 megawatts (MWs) of new capacity in the form of three new advanced technology combined cycle generating units. Construction is scheduled to begin approximately December 1, 2003 with an expected in-service date in 2005. Construction and the in-service dates may occur earlier depending on equipment availability and resource needs.

Project Need

The new facilities at Santan are necessary to meet the needs of the record-setting growth in the metropolitan area and particularly in the East Valley. Over the past five years the number of SRP electric customers has increased by 16 percent. Last fiscal year alone SRP welcomed more than 27,000 new customers to its service territory. SRP's customer growth is expected to continue at a similar pace over the coming years. This is particularly true in the Southeast Valley where a majority of the population growth is occurring. SRP anticipates that during the next 10 years SRP's greatest growth will occur in Gilbert, Mesa, Chandler, Tempe, and Ahwatukee/Phoenix.

The new facilities are also needed to maintain and improve the reliability of the electric system. Proper system planning dictates a mix of local and remote generation. Local generation is necessary to maintain voltage levels and provide resources in the event of an outage of a system component. Yet, no new local generation has been built in the East Valley since the mid-1970s. The Santan expansion will partially address this element of system operation.

The new facilities will also address transmission system constraints. Because of the growth, the existing transmission system is near or at its full capacity. This means either that additional power must be produced locally, or that new transmission lines (off site) must be built into the load centers. The Santan Expansion Project (SEP) will not require any new transmission (off site). The result will be to avoid the need for some new transmission (off site) and delay the need for other transmission (off site).

Facilities Design

The proposed new facilities will consist of three new advanced combined cycle generating units with a combined net output of 825 MW. The unit configuration is comprised of a natural gas fired combustion turbine generator exhausting to a heat recovery steam generator, which produces steam for use in an associated steam turbine. Steam from the steam turbine will be condensed in a surface condenser. Heat rejection from the condenser will be via a forced draft, wet cooling tower, and closed loop cooling system. The facilities will be designed to operate in base load mode or cyclic duty mode (to follow power requirements). In addition, SEP includes

associated intra-plant transmission connections to the existing 230 kilovolt (kV) switchyard. The facilities will be located on the site of the existing Santan Generating Station, in the Town of Gilbert, which is property owned by SRP. The location of SRP's proposed SEP is shown on Figure 1.

The water supply for the cooling water associated with the new facilities will come from the Eastern Canal. If an emergency situation occurs or during canal dry-up periods, additional water can be supplied by four existing SRP groundwater wells.

The proposed new facility will be designed and operated to ensure environmental compliance. Key commitments include but are not limited to:

- An improvement in air quality as a result of retrofits to the existing units at Santan and offsets obtained in the local area of the proposed expansion.
- Low to indiscernible impacts on noise to the surrounding communities and businesses based on facilities location, design, and operation.
- Use of renewable water resources and reuse of waste water.
- Location and configuration of proposed buildings and architectural and landscape treatments that reduce visibility, and contrast of the proposed facilities.

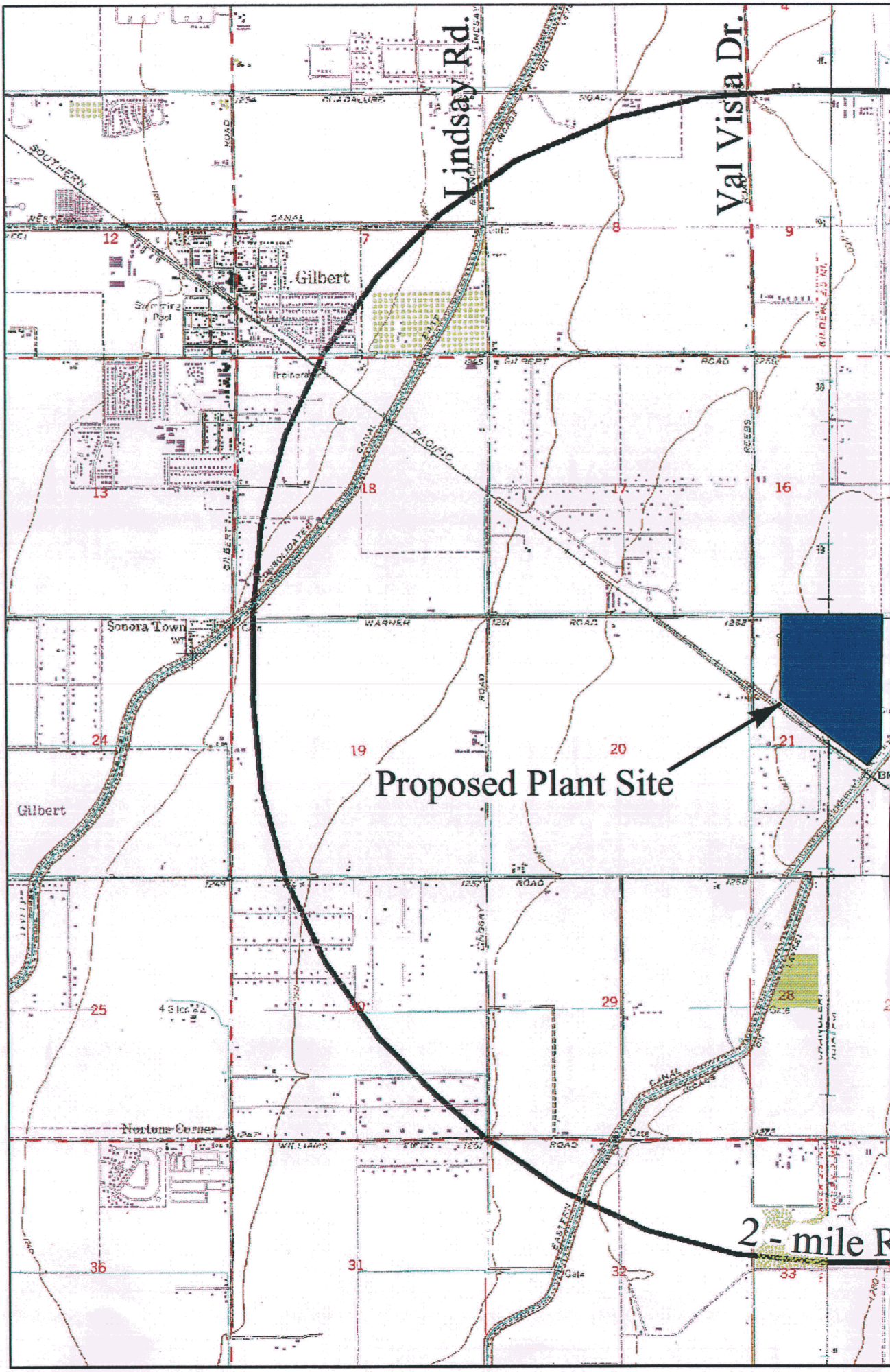
Community Integration

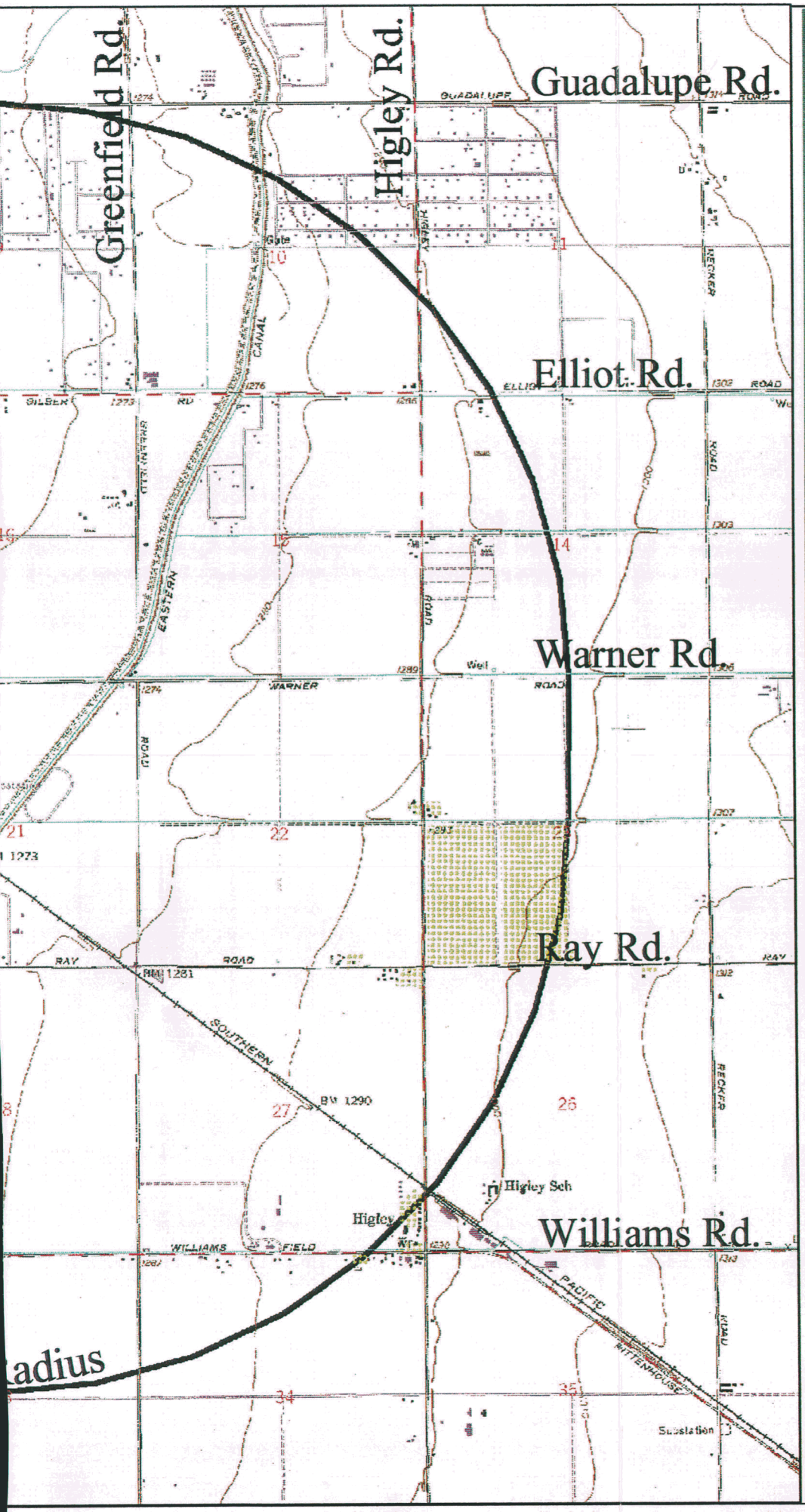
As a prelude to this application SRP conducted an extensive public notification and involvement process. The process included the formation of a Community Working Group (CWG), which included representatives of the community, Town of Gilbert, and local business interests. Through the CWG process the Town of Gilbert and SRP entered into an intergovernmental agreement (Exhibit H-1). In the intergovernmental agreement, SRP and Town of Gilbert agreed to certain cooperative actions with respect to the expansion of the Santan site. SRP also agreed to certain major mitigation and enhancement measures above and beyond general design and operation specifications. SRP has committed to these measures in order to further integrate existing and planned facilities with the surrounding community (see Tables G-1 and G-2). This has resulted in a project that is consistent with and complementary to the Gilbert General Plan. Cooperation with the community and Town of Gilbert regarding additional mitigation and enhancement measures and refinements to these measures is ongoing.

Economic Benefits

The SEP will strengthen Gilbert's tax base through the payment of sales and property taxes. This will result in a larger share of school taxes being paid by SRP, shifting a portion of the tax burden from homeowners and other businesses in Gilbert.

FIGURE 1
LOCATION MAP


Lindsay Rd.
Val Vista Dr.
Gilbert
Sonora Town
Gilbert
Norton's Corner
Proposed Plant Site
2 - mile R



LOCATION MAP

Figure 1

Sources:
U.S. Geological Survey
1:24,000 Scale
Digital Line Databases
Chandler,AZ. 1952 Revised 1981
Higley,AZ. 1956 Revised 1981

N
W E
S

1,000 500 0 1,000 2,000 3,000
Feet

SANTAN
EXPANSION PROJECT

Map Produced by EPG, Inc.
m:/projects/srp/santan/maps/site.mxd/July 13, 2000

The property taxes also will provide new revenues for other local government services including the Town of Gilbert, Maricopa County, the County Equalization for School Aid, Maricopa County Community College District, and other special taxing districts (i.e., hospital, library, fire) in Gilbert.

SRP believes that the proposed SEP is environmentally compatible based on the information contained in this document. In accordance with the factors considered by the Power Plant and Transmission Line Siting Committee (Siting Committee), as defined in ARS § 40-360.06, plans to construct the new facilities should be found suitable for issuance of a CEC.

APPLICATION

APPLICATION FOR A CERTIFICATE OF ENVIRONMENTAL COMPATIBILITY

APPLICATION FOR A CERTIFICATE OF ENVIRONMENTAL COMPATIBILITY

1. *Name and address of the applicant:*

   Salt River Project Agricultural Improvement and Power District
   1521 North Project Drive
   Tempe, Arizona 85281-1298

   All or a portion of the project may be assigned to other entities.

2. *Name, address, and telephone number of a representative of the application who has access to technical knowledge and background information concerning this application, and who will be available to answer questions or furnish additional information.*

   Mr. Randall G. Dietrich
   Manager, Resource Development
   c/o SRP
   P. O. Box 52025, POB 007
   Phoenix, AZ 85072-2025
   (602) 236-3822

3. *State each date on which applicant has filed a ten-year plan in compliance with ARS §40-360.02, and designate each such filing in which the facilities for which this application is made were described. If they have not been described in a ten-year plan, state the reasons therefore.*

   Recent legislation has eliminated the need to file a ten-year plan for the contemplated construction of generation facilities.

4. *Description of the proposed facilities:*

   SRP proposes to expand its existing Santan generating facilities. SRP requests CEC authority to expand the generating facilities up to the extent described below, but requests that it be given flexibility to expand in a phased-in approach, as may be dictated by load growth and demand, and availability of equipment.

4.1 With respect to an electric generating plant:

4.1.1 Type of Generating Facilities:

The SEP will have a combined net output of 825 MWs, base loaded. The SEP will be designed to operate in base load mode or cyclic duty mode (to follow power requirements).

The SEP will have three basic components:

A. three combustion (gas) turbine generators (CTs)
B. three multiple pressure heat recovery steam generators (HRSGs)
C. associated steam turbine generator(s) (STG)

The SEP will be located within the Town of Gilbert, and the Santan Generating Station site owned by SRP. SRP's proposed plant site location is shown on Figure 1.

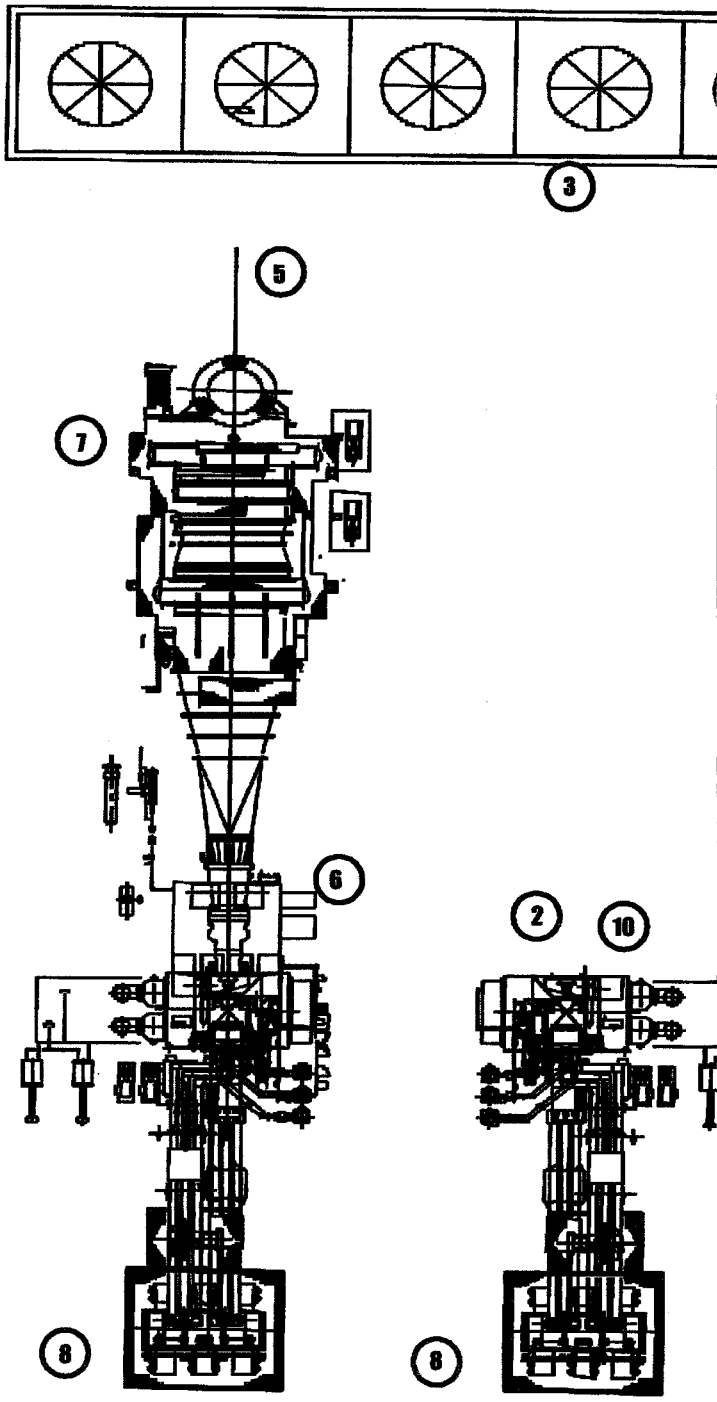
In addition to a typical combined cycle plant facility layout, shown in Figure 2, supporting infrastructure will include new vehicular access, water supply system, natural gas supply lines, and switchyard connections lines. It is anticipated that the natural gas line will be connected to the El Paso Natural Gas (EPNG) pipeline 2214 located at Price Road and the Western Canal.

SRP requests flexibility on the configuration of the steam turbine generation portion of the system. Depending on equipment availability and operational needs, SRP may install one, two, or three steam turbines and associated generators, producing either a three-on-one, two-on-one and one-on-one, or three one-on-one configurations. This approach will give flexibility to potential phase-in of facilities and operational flexibility based on future local generation needs. The configuration of the steam turbine(s) will not affect the nominal plant output, the basic footprint of the other facilities (Figure 3), or environmental impacts of the project.

Each unit will be a natural gas-fired, advanced technology combustion turbine (CT) in a combined-cycle arrangement. The technical details of the generating facility components are described in Section 4.1.2 below. There will be no back-up fuel (distillate oil) source.

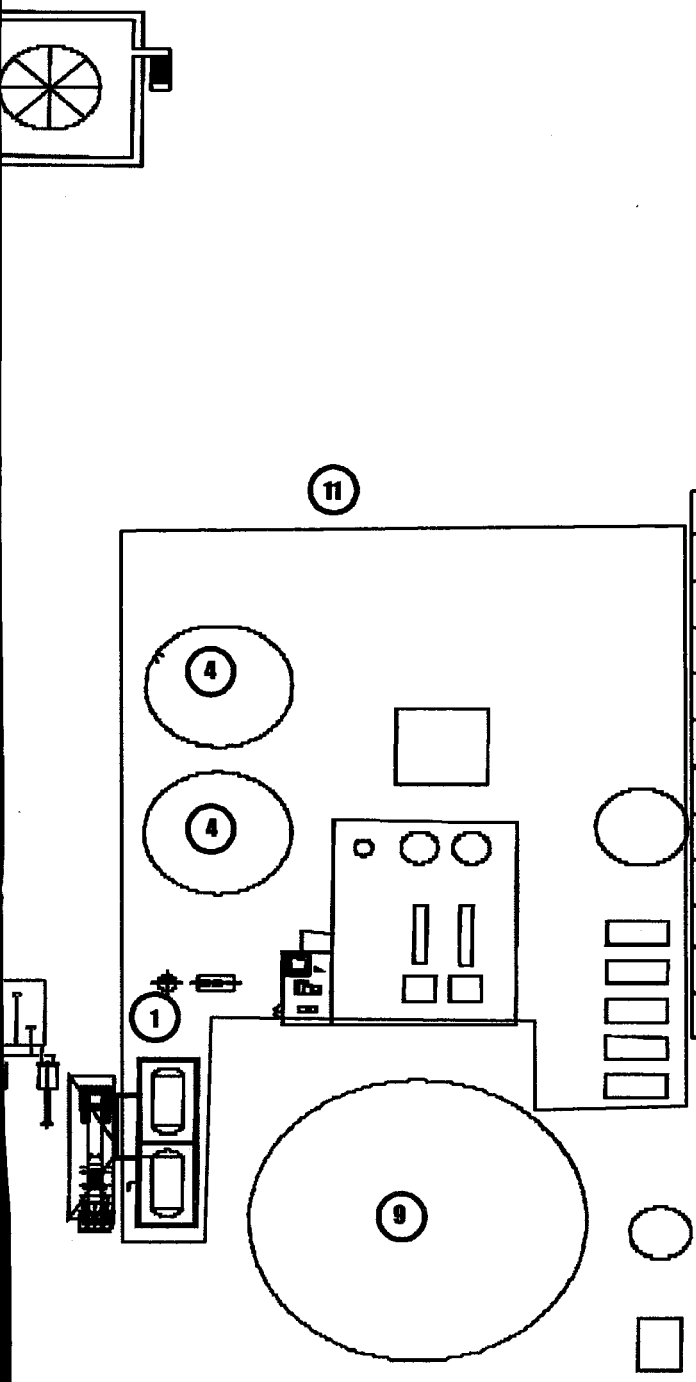
The CTs will burn natural gas and utilize emissions control equipment. This equipment will reduce nitrogen oxide (NO_x) and carbon monoxide (CO) emissions and will ensure compliance with air quality regulations (see Exhibit B-4 for more information).

FIGURE 2
TYPICAL COMBINED CYCLE PLANT FACILITY LAYOUT


3
5
7
6
2
10
8
8

TYPICAL COMBINED CYCLE PLANT FACILITY LAYOUT

Figure 2



ITEM	DESCRIPTION
1	WATER TREATMENT CHEMICAL TANKS
2	CONDENSER
3	COOLING TOWER
4	DEMINERALIZATION WATER TANK
5	EXHAUST STACK
6	GAS TURBINE GENERATOR
7	HEAT RECOVERY STEAM GENERATOR
8	MAIN STEP-UP TRANSFORMER
9	PROCESS WATER/FIRE WATER STORAGE TANK
10	STEAM TURBINE GENERATOR
11	WATER TREATMENT AREA

0 100 200

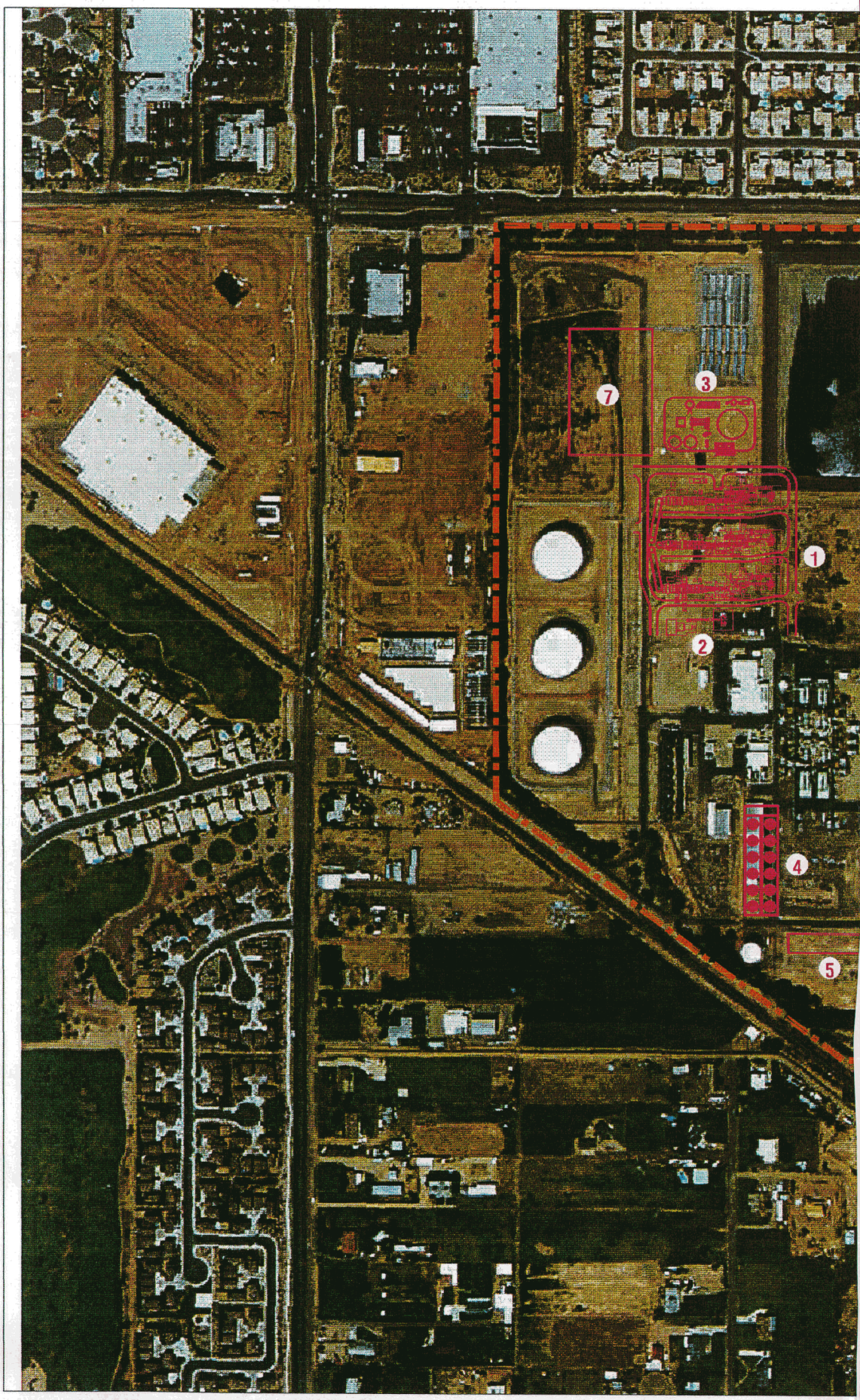
Scale In Feet

SANTAN

JULY 13, 2000

m:/projects/srp/santan/plots/out/cec/figure2.pdf

FIGURE 3
PROJECT SITE


7
3
1
2
4
5

PROJECT SITE

Figure 3

Legend

- Project Site
- Preliminary Project Location
- 1 Heat Recovery Steam Generators
- 2 Steam Turbine Generator
- 3 Water Treatment Area
- 4 Cooling Tower
- 5 Warehouse
- 6 Holding Pond
- 7 Storm Water Retention

DRAFT

N
W E
S

0 100 200 400

SCALE IN FEET

SANTAN
EXPANSION PROJECT

Map Produced by EPG, Inc.

DRAFT: July 13, 2000

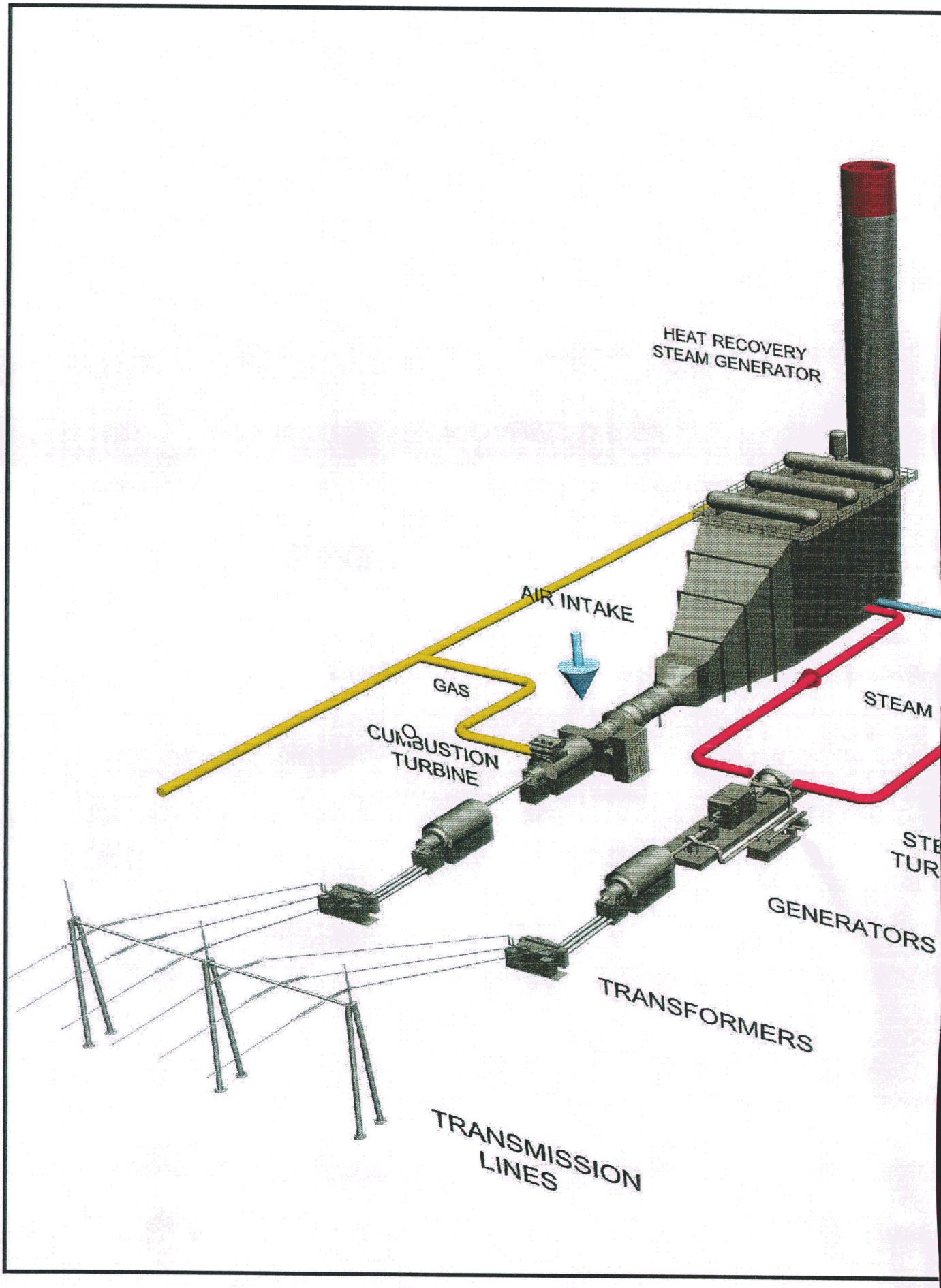
In a combined cycle configuration (Figure 4), a CT serves two functions. It produces electric power through a directly connected electric generator and supplies hot gases to a dedicated HRSG. The heat in the CT exhaust gas transfers energy to produce steam as it passes through the HRSG. The steam generated in the HRSG is sent to a condensing steam turbine and generator that produces additional electricity. The steam turbine exhaust steam is water cooled via a condenser served by a wet mechanical draft cooling tower.

For the CT, ambient air is drawn into the combustion turbine compressor section through the silencing, air filtration, and evaporative or fogging cooling system where it is compressed to approximately 14 atmospheres. The compressed air is then mixed and burned with the gas in combustors to produce the hot gases that expand through the turbine sections. When a CT and steam turbine are used in a combined cycle, the overall cycle efficiency is improved because the excess energy of the CT exhaust is recovered in the HRSG. The steam generated in the HRSG is piped to the steam turbine(s). The steam drives the steam turbine(s) and discharges to the condenser(s). The steam turbine equipment produces electrical power through its directly connected generator(s). A portion of the steam from the HRSG can also be sent to the CT to augment the mass of the combustion air and increase the power output.

Plant exhaust gas emissions are controlled by dry low NO_x combustors, the use of selective catalytic reduction (SCR) systems for additional NO_x control. CO reduction will be performed by the use of CO catalytic converter systems. The steam will be condensed in a wet surface condenser. The condenser is a water-cooled, horizontal surface design, close coupled to the axial or downward exhaust from the steam turbine. The condensed steam (condensate) is recirculated through the cycle by the condensate and boiler feedwater systems. A mechanical draft wet cooling tower will provide the cooling water source.

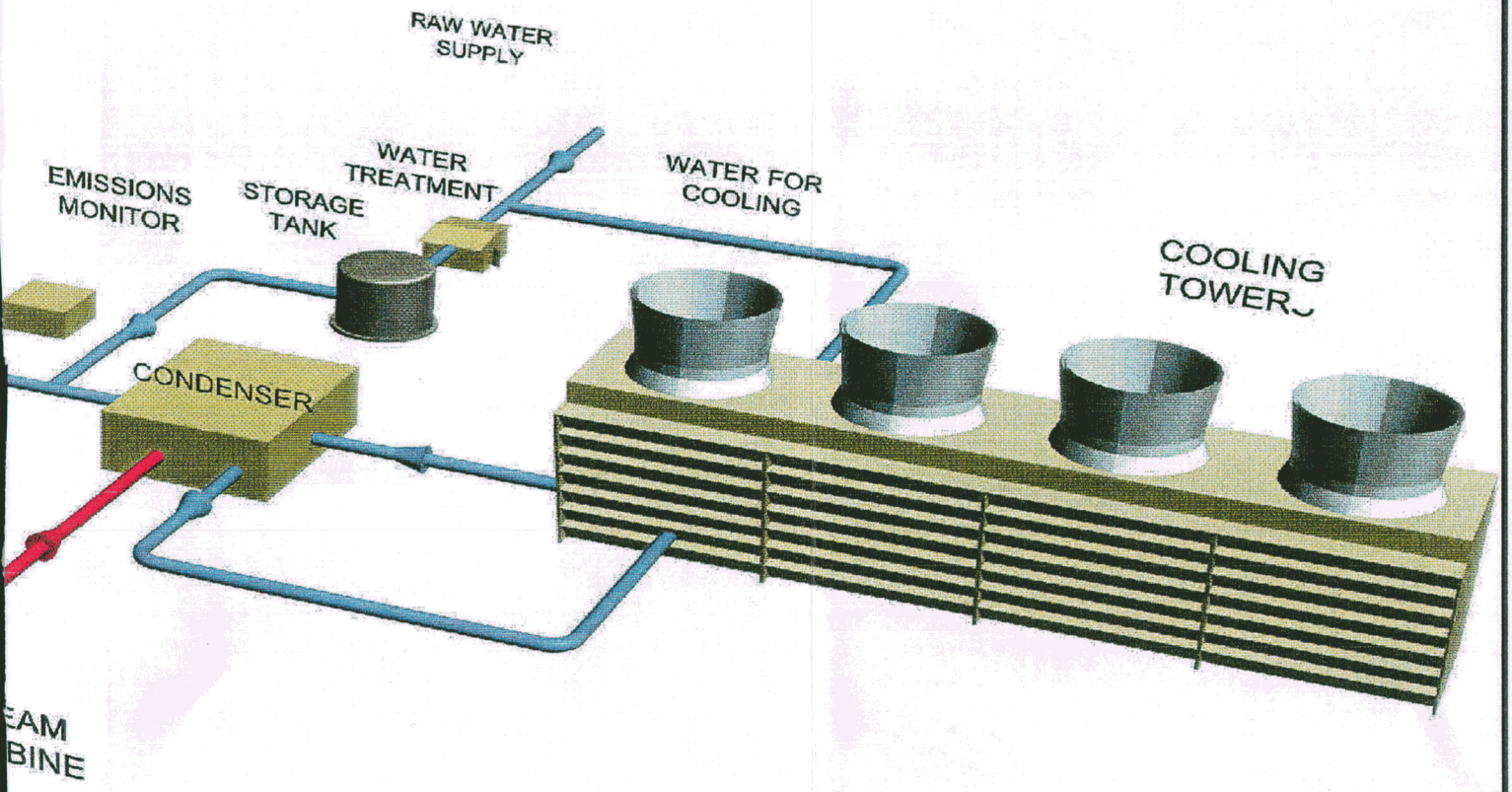
Supplemental duct firing is part of the plant design to increase the CT exhaust gas temperature by burning natural gas in the HRSG duct. A burner grid (natural gas only) located in the duct between the CT exhaust manifold and the HRSG housing accomplishes duct firing. The higher temperature gas produces more high-pressure steam, thereby increasing the power output of the plant. A typical application of supplemental duct firing is during high ambient temperature conditions when additional heat is needed to maintain adequate steam flow from the HRSG to the steam turbine.

FIGURE 4
TYPICAL COMBINED CYCLE PLANT CONFIGURATION


HEAT RECOVERY
STEAM GENERATOR
AIR INTAKE
GAS
COMBUSTION
TURBINE
STEAM
GENERATORS
TRANSFORMERS
TRANSMISSION
LINES

TYPICAL COMBINED CYCLE PLANT CONFIGURATION

Figure 4



SANTAN EXPANSION PROJECT

JULY 13, 2000

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The use of catalysts in the exhaust gas steam is required to reduce NO_x and CO emissions from the plant. The catalytic oxidation will also reduce Volatile Organic Carbons (VOCs). SCR reduces the emissions of NO_x to the environment utilizing aqueous ammonia in the presence of a catalyst. The level of NO_x reduction is anticipated to be as high as 90 percent. SCR technology involves the insertion of a catalyst and associated structures and transitions into the HRSG and the addition of aqueous ammonia injection equipment and storage. The HRSG substantially removes the remaining heat in the gas and exhausts the residual through the stacks. The stacks contain continuous emission monitors (CEMs) to ensure air emission standards are not exceeded.

Figure 5 contains different viewpoints of the plant model.

4.1.2 Number and size of proposed units:

The SEP includes the following major components and systems as listed and described below:

A. site improvements, foundations, buildings, and structures

B. three natural gas-fired CTs with dry low NO_x combustors, air inlet silencers, evaporative or fogging type air coolers, and three direct coupled generators

C. three HRSGs with supplemental natural gas duct firing and catalyst oxidation systems to control NO_x, CO, and VOC emissions

D. three 150-foot HRSG exhaust stacks

E. depending upon the final configuration up to three steam turbines, generators, and water-cooled condensers

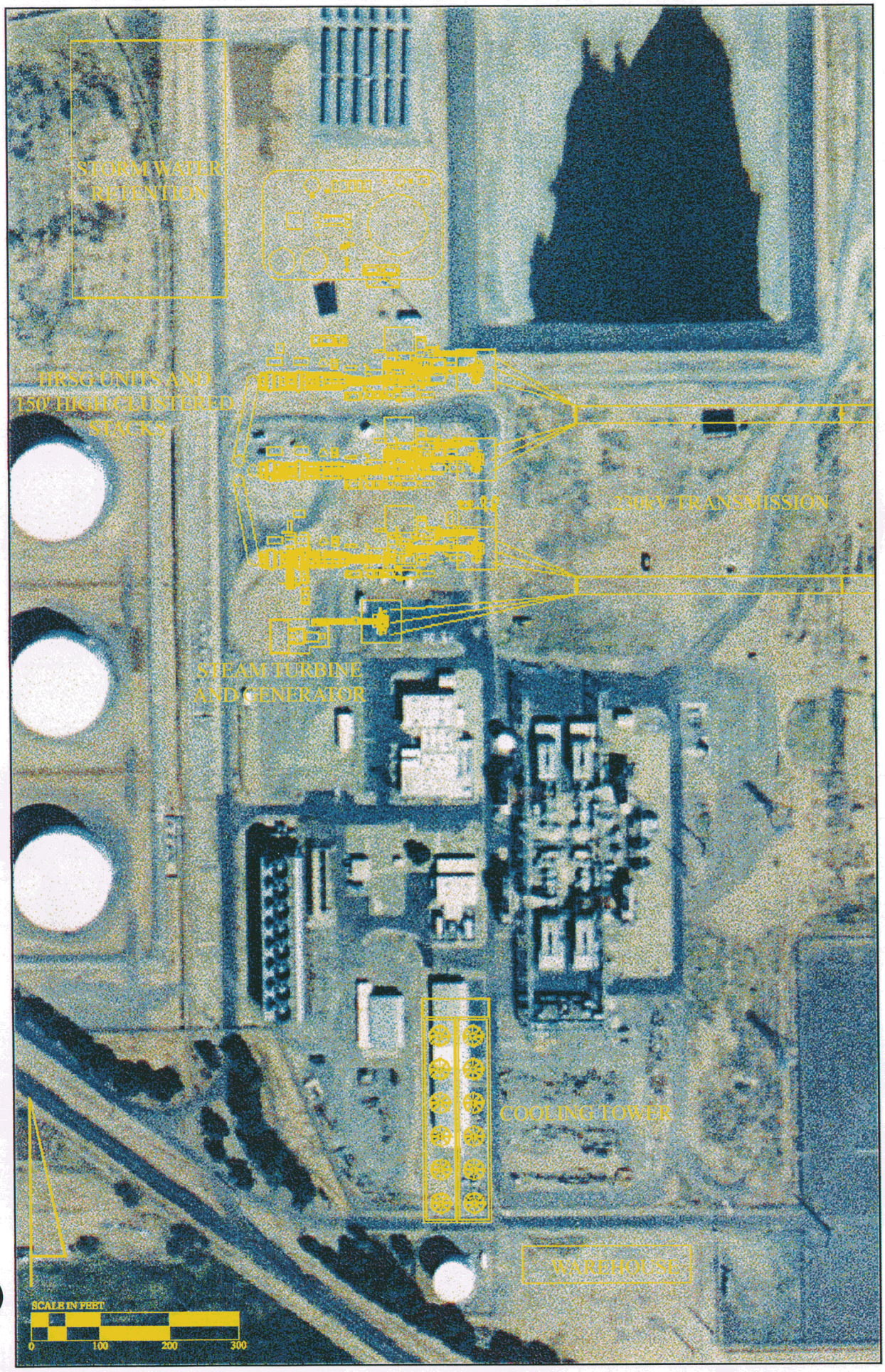
F. one mechanical draft cooling tower

G. raw and waste water treatment facilities

H. natural gas handling and treatment facilities

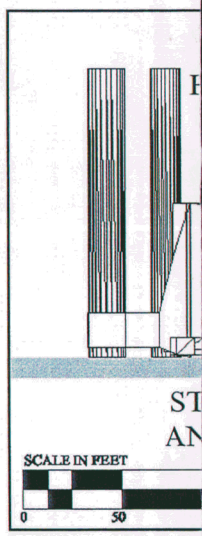
I. connection to transmission grid

FIGURE 5
PLANT MODELS



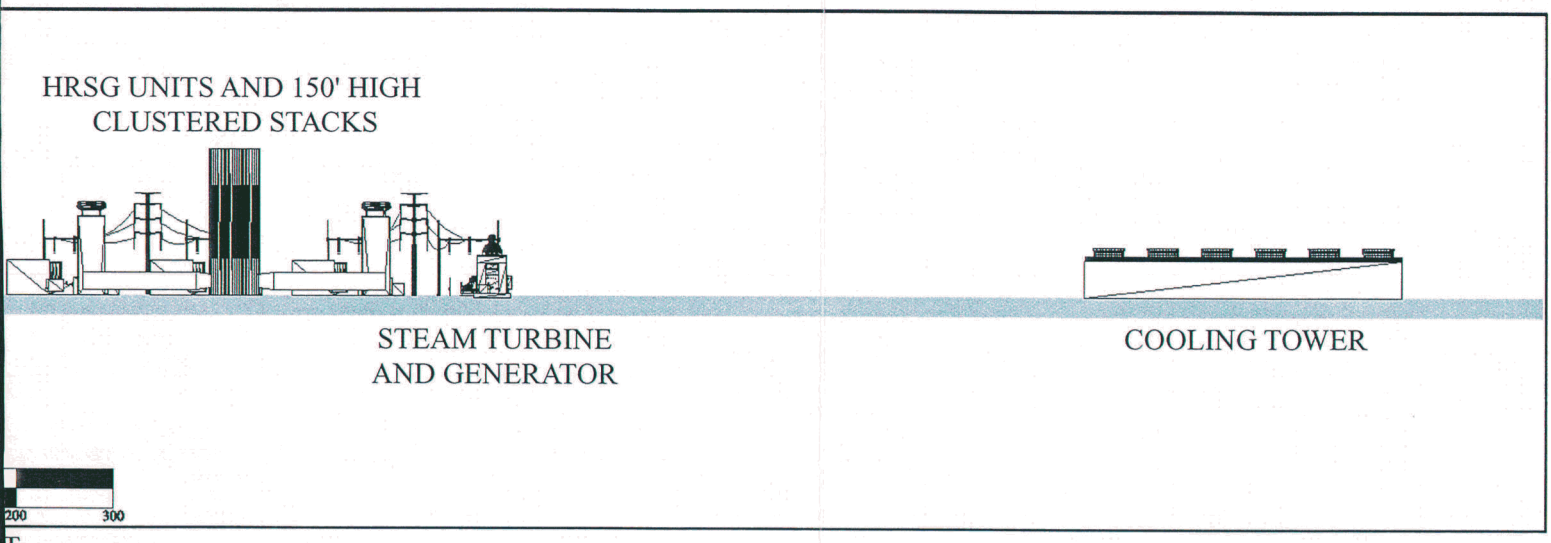
PLAN VIEW

LOOKING EAS

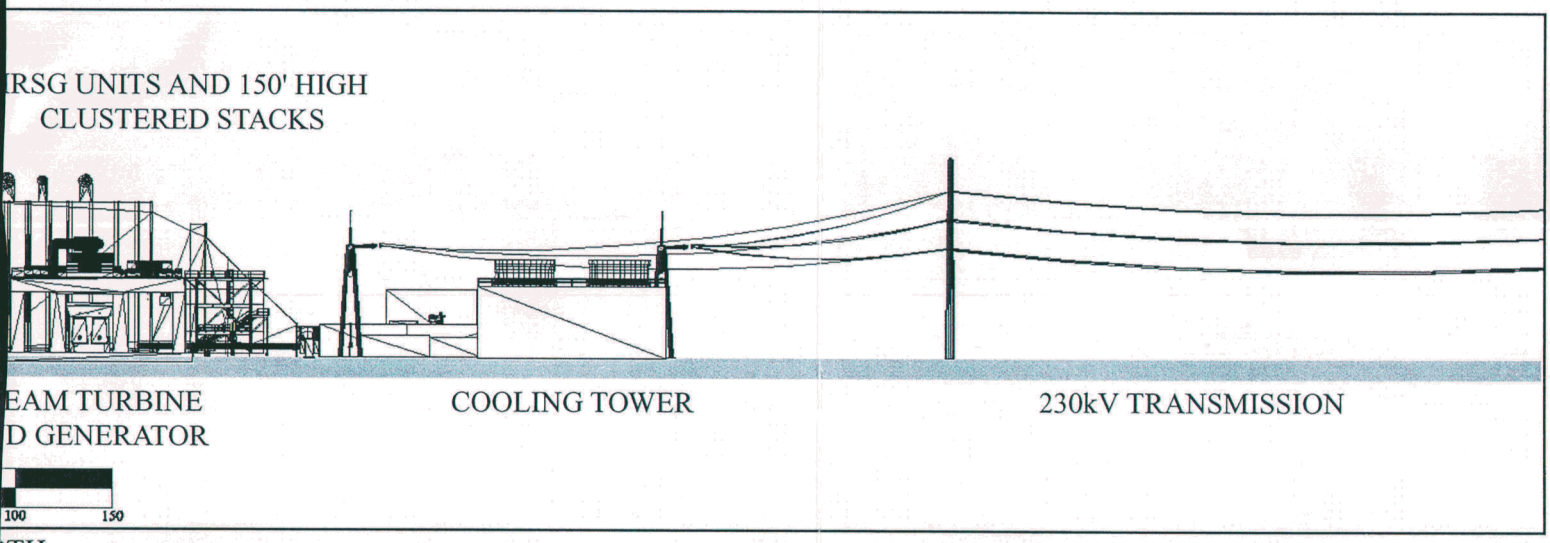


LOOKING NOR

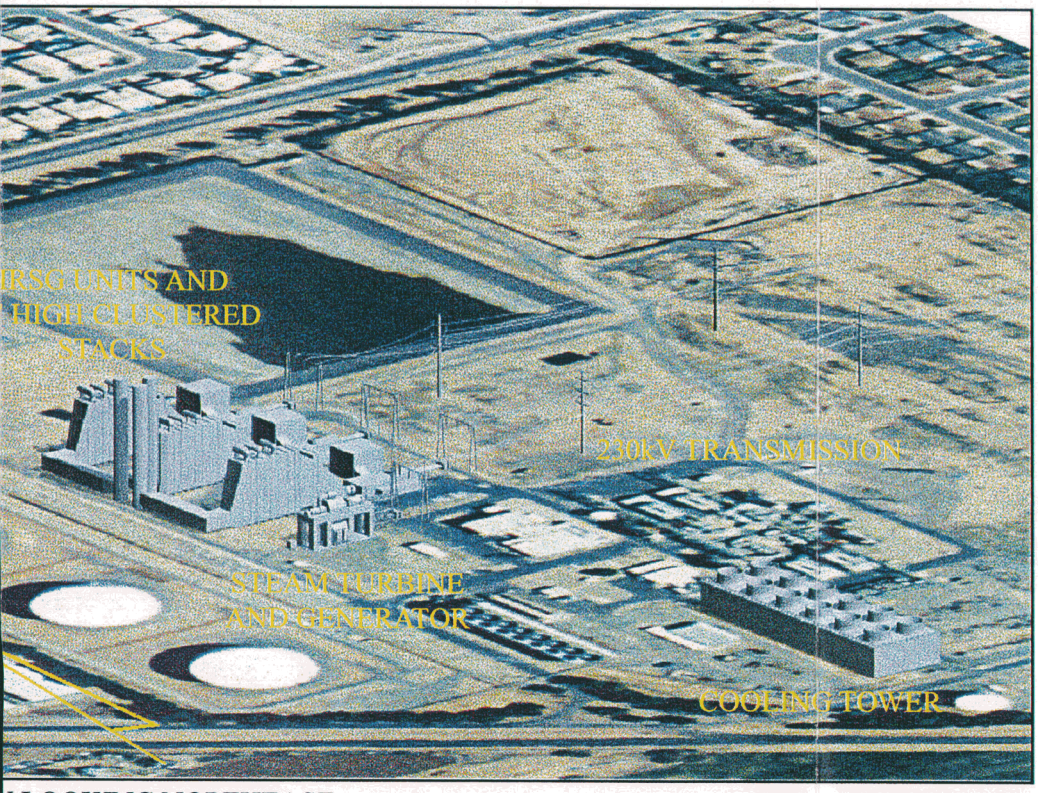
OBLIQUE VIEW



T



RTH



V LOOKING NORTHEAST

PLANT MODEL
Figure 5

SANTAN
EXPANSION PROJECT

DRAFT: July 12, 2000

Following are descriptions of each major component and system listed above.

A. Site improvements, foundations, buildings, and structures:

For construction purposes, access to the site will be on an existing road from Warner Road, approximately 0.3 mile east of Val Vista Drive, on the south side. This intersection will be modified if required by the Town of Gilbert. All site roads will be paved or conditioned to comply with emissions standards.

The site area will be graded and drained to route site run-off to a retention basin(s). The discharge from the retention basin(s) will comply with state and federal standards. Final landscaping will be coordinated with the Town of Gilbert.

All on-site bulk storage of water and chemicals will meet containment (berm or wall) requirements. Various chemicals are used for conditioning of raw and waste water, condensate and feedwater, circulating water, and emissions controls.

B. Three natural gas CTs with dry low NO_x combustors, air inlet silencers, evaporative or fogging type air coolers, and three direct coupled generators:

The three CTs will burn natural gas. The mixed gas and air are compressed and ignited, which expands through the CT, turning the CT, which turns the direct-coupled generator. Air inlet silencers will provide noise abatement. The evaporative or fogging type air coolers provide additional cycle efficiency gains as the power generation increases when the inlet air temperature is lowered. CT performance is dependent on ambient conditions (temperature, humidity, and barometric pressure), fuel source, and draft system losses (ductwork, emission controls, and stack height).

To further increase the cycle efficiency, especially during peak power demand periods, steam from the HRSGs will augment the mass flow through the CT, which increases the power output.

Each gas turbine generator will produce approximately 175 MWs (gross).

Auxiliary systems will be installed to support the CTs and generators. These systems include lubrication, air filtration, fire protection, noise attenuation, gas delivery, instrumentation/control, compressed air, and lighting.

C. Three heat recovery steam generators with supplemental natural gas duct firing and catalyst oxidation systems to control NO_x, CO, and VOC emissions:

The HRSG consists of duct work, steam drums, piping, condensate preheater, three steam pressure zones (low, intermediate, and high), catalytic oxidation

equipment (for NO_x, CO, and VOC), and an exhaust stack. The condensate is heated by the CT exhaust gas, then passes through a series of heat exchange piping arrangements, which results in steam at a temperature and pressure needed for efficient use in the steam turbine. The steam is piped to the steam turbine, which is directly coupled to a generator, generating additional electricity.

To optimize the performance of the catalytic oxidation equipment, which is temperature dependent, each catalytic unit will be specifically placed within the HRSG. The duct burner grid will be upstream of the catalytic oxidation equipment to ensure stack emission requirements are maintained. The HRSGs are located outdoors, each on independent foundations, and separated to ensure maintenance access is adequate.

D. Three 150-foot HRSG exhaust stacks:
The stacks will be immediately adjacent to the HRSGs, and will be 150 feet in height. CEMs will be placed in the stacks to monitor unit emissions. External platforms will be required to access the CEMS for testing and maintenance.

E. Depending upon the final configuration up to three steam turbines, generators, and water-cooled condensers:
Steam is piped from the HRSG to the steam turbine(s), which turns the turbine(s) and direct-coupled generator(s). The generator(s) will produce approximately 300 MW in total. Steam turbine exhaust will be directed to a condenser(s), which is cooled by circulating water from the cooling tower.

The steam turbine and generator package includes supportive systems for lubrication, shaft sealing, and control. Cooling media for the generator cooling and lubrication systems will be from the circulating water system.

F. One mechanical draft cooling tower:
The cooling tower will provide cooling water to the condenser(s) (for cooling of the steam exhausted by the steam turbine(s)) and various smaller heat exchangers (lubricating oil, generator hydrogen, compressed air, etc.). The cooling tower will incorporate drift minimization equipment to reduce water losses and fogging conditions.

G. Raw and waste water treatment facilities:
Raw water will be provided from the Eastern Canal. During canal dry up, approximately 4 to 6 weeks per year when supply is not available from the Eastern Canal, four existing wells (two on site and two off site) owned and operated by SRP will provide raw water. These wells also will be used as emergency back-up water sources.

Raw water is treated for use in the cooling tower. The cooling tower evaporation process is the primary consumption of site water. This water is also processed by a reverse osmosis system, which provides pure water for steam cycle operation and the closed bearing (lubricating oil) cooling water system.

Waste water sources are from the cooling tower blow down, raw water treatment (filtering, conditioning, and/or softening) system, demineralizer regeneration effluent, HRSG blow down, roof and floor drains, and rainfall run-off. Treated waste water may be discharged to the circulating water system, to minimize raw water makeup. Cooling tower blow down will be approximately three cycles of concentration. All remaining waste water will be monitored and discharged into the Eastern Canal, SRP laterals, or the Gila Drain for irrigation use in compliance with all federal and state requirements. Potable water and sewage disposal will be tied to the Town of Gilbert systems.

The fire water source will be either from the Town of Gilbert or a separate fire protection system will be installed to meet all fire protection standards. If a separate fire water protection system is required, raw water will be used.

The site drainage plan will include grading and paving to direct rainwater and spills to a retention basin(s). The retained water will be monitored according to the regulations and discharged if water discharge requirements are met.

H. Natural gas handling and treatment facilities:

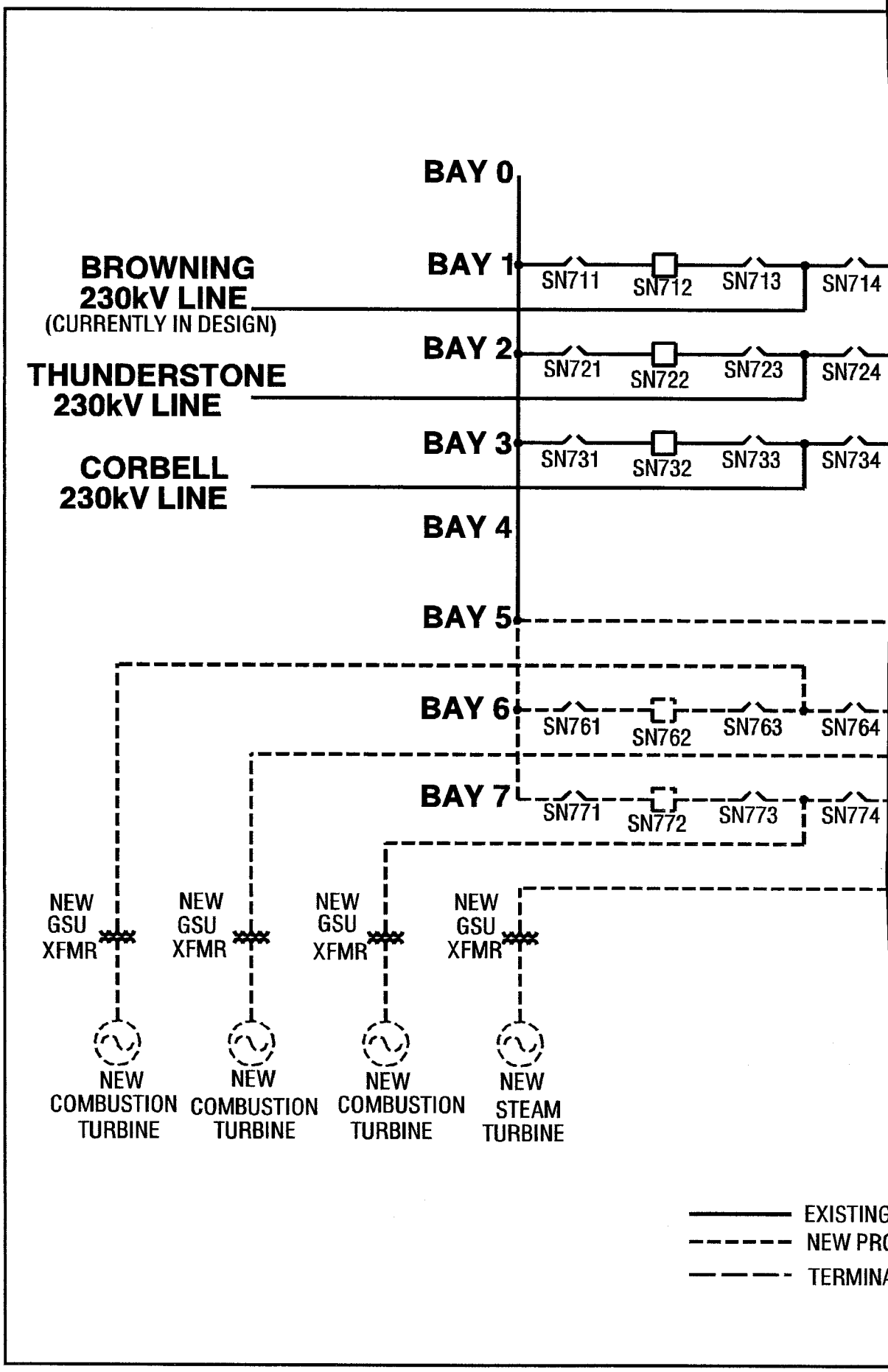
The natural gas handling and treatment facilities will transfer low sulfur, pipeline quality gas from the EPNG system to the plant site. Except for gas pressure reduction, metering, filtration, and heating, all gas distribution lines to and within the plant will be underground. Filtration and heating are required to ensure proper CT dry low NO_x combustor operation.

I. Connection to transmission grid:

Each of the proposed generators will be connected to the existing 230kV switchyard on the Santan property. Short sections of 230kV transmission lines will be necessary to provide these connections from the generator step-up transformers to the existing 230kV switchyard. Figure 6 illustrates these necessary connections. No new off-site transmission poles or lines will be required for the SEP.

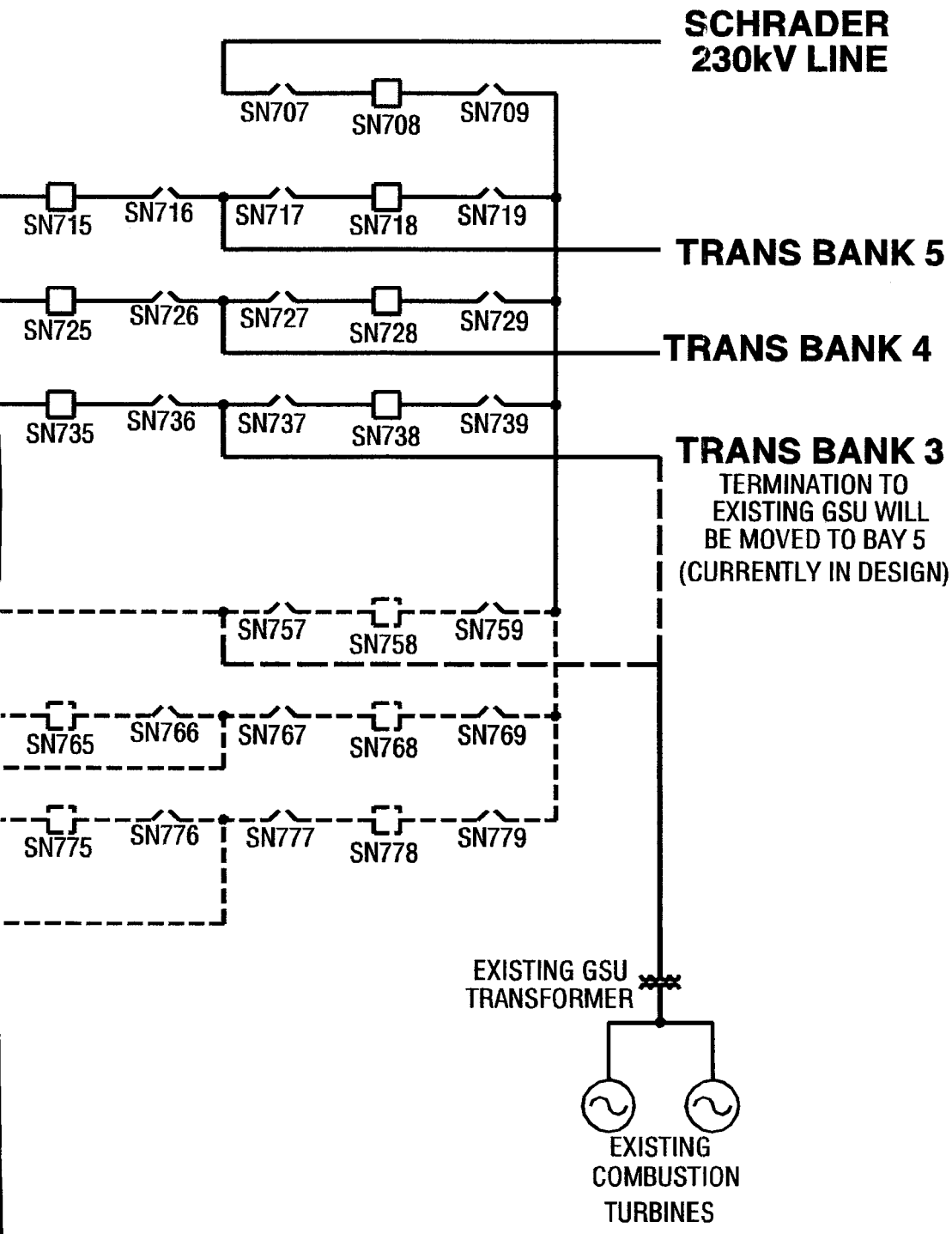
The balance of the electrical plant system will be 4.16kV, energized from the low side of the new main step-up transformers. All plant electrical systems will be fed from the 4.16kV system, and stepped down to feed various motor control centers, back up (125 VDC) systems, and other loads. Start-up power

FIGURE 6
ELECTRICAL CONNECTION TO 230kV SYSTEM


BAY 0
BAY 1
BAY 2
BAY 3
BAY 4
BAY 5
BAY 6
BAY 7
BROWNING 230kV LINE
(CURRENTLY IN DESIGN)
THUNDERSTONE 230kV LINE
CORBELL 230kV LINE
SN711
SN712
SN713
SN714
SN721
SN722
SN723
SN724
SN731
SN732
SN733
SN734
SN761
SN762
SN763
SN764
SN771
SN772
SN773
SN774
NEW GSU XFMR
NEW GSU XFMR
NEW GSU XFMR
NEW GSU XFMR
NEW COMBUSTION TURBINE
NEW COMBUSTION TURBINE
NEW COMBUSTION TURBINE
NEW STEAM TURBINE
EXISTING
NEW PRO
TERMINA

ELECTRICAL CONNECTION TO 230kV SYSTEM

Figure 6



EQUIPMENT
POSED EQUIPMENT
TION CHANGE

SANTAN EXPANSION PROJECT

Map Produced by EPG, Inc.

m:/srp/santan/arnls/figure6.aml/July 13, 2000

will be backfed from the 230kV system, through the new main step-up transformers, to the in-plant 4.16kV system (no black start capabilities; no diesel generator back-up or start-up system).

Critical circuits, such as control power, field instruments, CEMs, etc., have automatic alternative power sources from separately supplied motor control centers. The alternative power sources include an uninterruptible power source and batteries.

4.1.3 The source and type of fuel to be utilized, including a proximate analysis of fossil fuels:

The SEP will use low sulfur, pipeline quality, natural gas transported by EPNG. It is anticipated that a new gas pipeline to the site will be connected to EPNG line 2214 near Price Road and the Western Canal in Tempe.

A typical monthly analysis of the natural gas that will be used is shown below. The values are provided by EPNG, Meter 30031 - Guadalupe, August 14, 1999:

	Normalized Percent	
	Jan. 1, 1999	June 1, 1999
Carbon Dioxide	0.510	1.620
Nitrogen	1.780	0.170
Methane	94.390	97.120
Ethane	2.820	1.020
Propane	0.330	0.060
Iso. Butane	0.040	0.000
Normal Butane	0.060	0.010
Iso. Pentane	0.020	0.000
Normal Pentane	0.020	0.000
Hexanes +	0.030	0.000
BTU	1,022	1,005
Specific Gravity	0.587	0.577

4.1.4 Amount of fuel to be utilized daily, monthly, and yearly:

Assuming the SEP is base loaded, with steam augmentation and HRSG duct burners in service, for the entire year, and at the Higher Heating Value (HHV) of the natural gas provided by EPNG, the SEP could consume approximately 147,000 MMBtu (million British thermal units) of gas per day; 4,410,000 MMBtu of gas per month; and 53,655,000 MMBtu of gas per year. At a 60 percent capacity factor, the annual usage would be 32,193,000 MMBtu. The fuel use will vary with system load requirements, CT operation, actual hours of duct burner use, steam augmentation, and number of start-up/shutdown events. The SEP

annual capacity factor for the operational life of the plant is expected to be approximately 60 percent, with a range of 45 to 85 percent.

4.1.5 Type of cooling to be utilized and the source of any water to be utilized:

A. Type of Cooling:
A cooling tower will be used to cool circulating water. This water will also provide cooling to various smaller heat exchangers (lubricating, hydrogen, compressed air, etc.). The CT inlet air system will be cooled via evaporative media or fogging type sprays.

B. Source of any Water to be Utilized:
The circulating water system make up will be from the raw water treatment system, which receives water from the Eastern Canal, or four existing SRP owned wells (during canal dry up and emergency conditions).

4.1.6 Proposed height of stacks and number of stacks, if any:

The SEP will have three stacks, each one 150 feet high.

4.1.7 Date for scheduled start-up and firm operation of each unit and date construction must commence in order to meet schedules:

It is currently anticipated that all SEP units will be constructed and started simultaneously. Currently start dates are projected as follows, but these dates may be moved forward or backward as system conditions dictate.

Start of construction:	December 2003
Start up:	January 2005
Firm operation:	May 2005

A. Project Construction
An engineer, procure, construct (EPC) contract will be awarded to build the SEP. The Engineering, Procurement, and Construction (EPC) award is anticipated to occur approximately April 2003, with mobilization to the site in December 2003. Shortly after April 2003, the SRP or EPC contractor will place long lead-time orders. In support of the December 2003 mobilization date, site archaeology and related site preparation work will begin January 2003.

During the construction period, the construction work force will peak at approximately 375 construction employees. The peak is anticipated to occur from April to September 2004.

During construction, existing SRP land will be used for construction parking, over-the-road truck and railroad deliveries to the laydown area, and temporary construction and work site management trailers. Site access will be off Warner Road, approximately 0.3 mile east of Val Vista Drive, on the south side. Construction water will be drawn from the Eastern Canal for approximately four months. Construction power will be fed from the existing Santan Generating Station or from the nearby existing Santan 69kV or 230kV switchyards.

B. Project Operation

The SEP is designed for base load and cyclic (load following) duty. Load swings are expected several times daily. It is anticipated the plant will operate full load throughout the summer months. The level of generation will be determined primarily by market factors, daily wholesale energy prices, including transmission availability into the Phoenix metropolitan area.

The plant should be operated annually for a total of 450 to 600 combustion turbine starts, which results in 150 to 200 starts per year for each CT. The plant operational life annual capacity factor should be approximately 60 percent. The plant will employ between 22 and 25 new people. Some maintenance and overhaul functions may be out-sourced.

Anticipated operational modes (based on a three-on-one configuration) are:

- Annual Average Operation: Base load at average ambient conditions, 16 hours.
- Part Load: 70 percent CT load at average ambient conditions, 24-hour basis.
- Summer Operation: Base load at 97.5 percent maximum ambient/fired + steam injection (augmentation).
- Winter Operation: Base load at 2.5 percent minimum ambient conditions.
- Normal Operation: All three CTs are operating without steam injection, the HRSGs are unfired, and the steam turbine is in operation.
- Peak Operation: All three CTs are operating with steam injection, the HRSGs are fired, and the steam turbine is in operation.

- Standby Operation: One CT is operating without steam injection, the HRSG is unfired, and the steam turbine is in operation. The remaining two CTs and HRSGs are in hot standby for quick start-up.

- Start-up from Standby Operation: The first standby CT and HRSG must be able to start-up and reach full load steady state operation in 120 minutes. The second standby CT and HRSG must be able to start-up and reach full load steady state operation in 120 minutes.

- CT Trip: In the event of a CT trip, steam from the HRSG will be vented or dumped into the condenser. Operation of the remaining CTs and HRSGs units and steam turbine will remain unaffected.

- CT Out-of-Service: Operation of the remaining CTs and HRSGs and the steam turbine will remain unaffected if one or two CTs and HRSGs are taken out of service.

- Steam Turbine Trip: In the event of a steam turbine trip, steam from the HRSGs will be dumped to the condenser. All of the CTs and HRSGs will remain in service. Once the problem is corrected, the steam turbine will be brought back into service without removing the CTs or HRSGs from operation.

- CT Part Load Operation: The plant will be designed so that the CTs may be operated from 50 percent to 100 percent load.

4.1.8 To the extent available, the estimated costs of the proposed facilities and site, stated separately:

The estimated cost of the proposed SEP facility (including the natural gas pipeline) is between $410 and $430 million. The SEP site estimated cost is approximately $40 million (including water, land, and electrical interconnect).

4.1.9 Legal description of the proposed site:

The SEP will be located in the NW ¼ and that portion of Farm Unit "C" which lies in the north half of the SW ¼ of Section 21, Township 1 South, Range 6 East of the Gila and Salt River Base and Meridian, Maricopa County, Arizona. The SEP is located in the Town of Gilbert, Arizona, approximately 3.8 miles south of US 60 (Superstition Freeway) and approximately 0.1 mile east of Val Vista Drive.

4.2 Description of the proposed transmission lines:

No additional off-site transmission is proposed as a part of the SEP. SEP will include on-site transmission structures as needed to connect the new units to the existing 230kV switchyard. The proposed structures are double circuit 230kV dulled steel poles averaging 105 feet in height.

5. *Jurisdictions:*

5.1 Areas of jurisdiction (as defined in ARS § 40-360) affected by this site:

The existing plant and expansion area are located within the Town of Gilbert and Maricopa County. SRP owns the property and intends to expand within the existing property boundary.

5.2 Designation of proposed sites or routes, if any, which are contrary to the zoning ordinances or master plans of affected areas of jurisdiction:

The SEP is consistent with local zoning and master plans.

6. *Description of the environmental studies the applicant has performed.*

SRP has retained various consultants to conduct studies and assist with the permit application process in several areas. Exhibits B through I contain the results of these studies.

An evaluation of the existing plant site included land use, air quality, water resources, visual resources, biological resources, cultural resources, and noise effects. Potential environmental effects of implementation of the project also were assessed.

A combination of collecting existing environmental data including literature, maps, and other agency data and contacts with appropriate agencies and organizations were conducted. In addition, resource specialists conducted field studies of the plant site and vicinity.

Analysis of the potential environmental effects included the comparison of environmental conditions with the proposed project and existing environment. SRP will implement mitigation measures, where appropriate, to minimize or eliminate impacts. Such measures will include the net reduction of emissions in the plant vicinity with the construction of the new plant. In addition, noise abatement measures will be implemented to maintain noise levels in the surrounding area at the current levels.

Study results indicate that there will be no significant direct, indirect, or cumulative impacts on land use, cultural resources, biological resources, including any species of special concern,

air quality, ground or surface water quality, earth resources, socioeconomics, or noise at the project site.

In addition to the various studies conducted, SRP and a consultant have implemented a comprehensive public involvement program (see Exhibit B-1). The purpose of this program is to engage the public within the surrounding areas, Town of Gilbert, and other interested parties in the planning process. Their input allows SRP to identify the potential issues and concerns and address them while developing the project. Key elements of the program are the formation of a CWG, public open houses, meetings with homeowners and homeowners' associations, mailings to all surrounding addresses within 2½ miles, and media releases. Tools to inform the public and receive information have included newsletters, public open houses, a telephone voice message information line, a project website, comment forms, and SRP billing inserts. The CWG is composed of representatives from local subdivisions, school administrators, Town of Gilbert, and the Roosevelt Water Conservation District.

Through the planning process, environmental analysis, and public input (including the CWG), mitigation and enhancements were identified. The mitigation and enhancement measures were formalized in an intergovernmental agreement (IGA) between SRP and the Town of Gilbert.

In summary, the applicant affirms, upon a comprehensive environmental analysis, that the project and its site are environmentally compatible, and respectfully requests the Siting Committee to approve a CEC for the project at the existing Santan power plant site.

SALT RIVER PROJECT

By: Randall Dietrich

Randall Dietrich
Manager, Resource Development

Authorized Representative
On Behalf of Salt River Project

Original and 25 copies of the foregoing hand delivered and filed with the Director of Utilities, Arizona Corporation Commission

this 14th day of July, 2000.

Exhibit A

EXHIBIT A
LOCATION AND LAND USE MAPS

EXHIBIT A
LOCATION AND LAND USE MAPS

As stated in Arizona Corporation Commission Rules of Practice R-14-3-219:

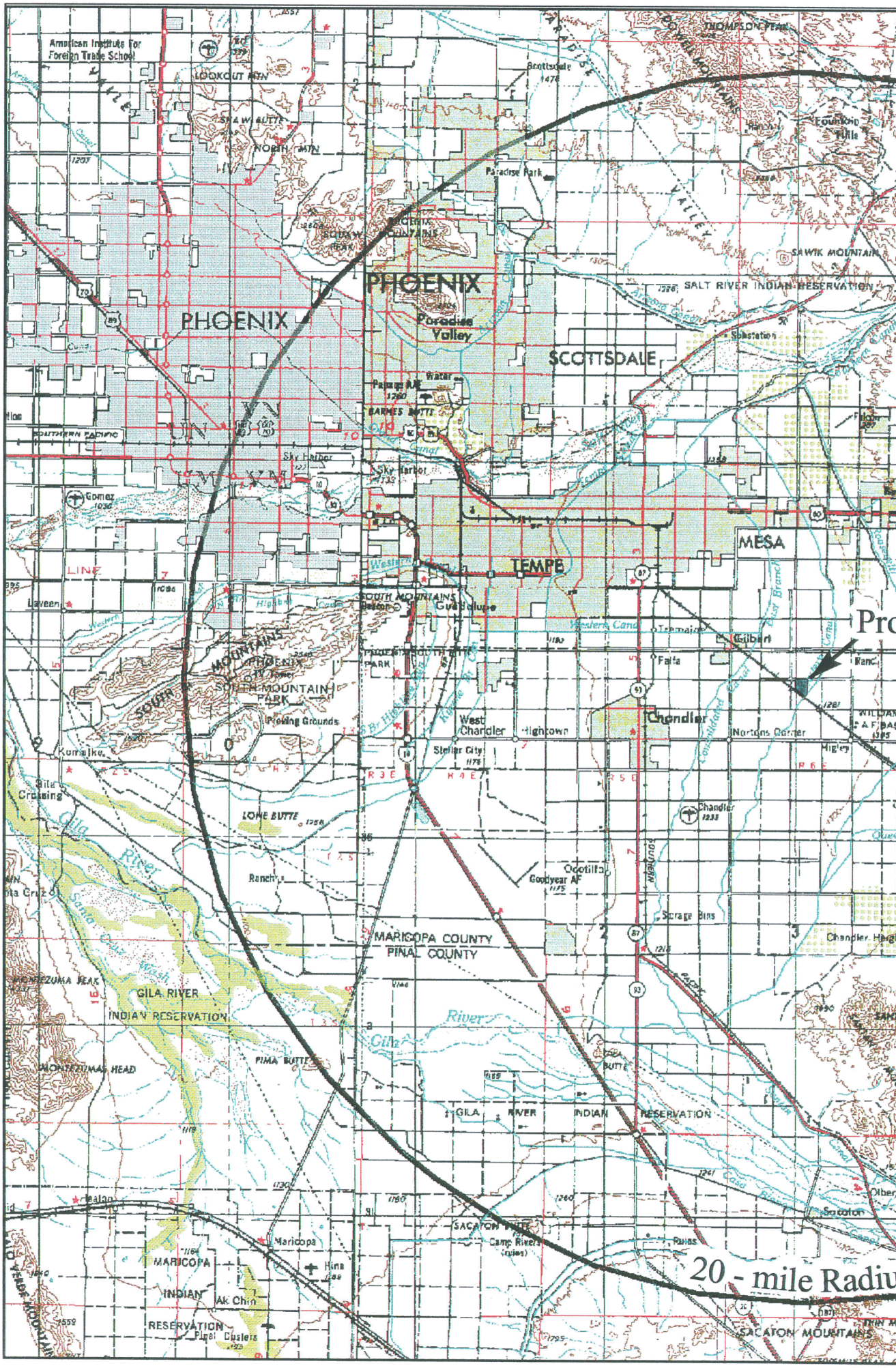
"Where commercially available, a topographic map, 1:250,000 scale, showing the proposed plant site and the adjacent area within twenty (20) miles thereof. If application is made for alternative plant sites, all sites may be shown on the same map, if practicable, designated by applicant's order of preference."

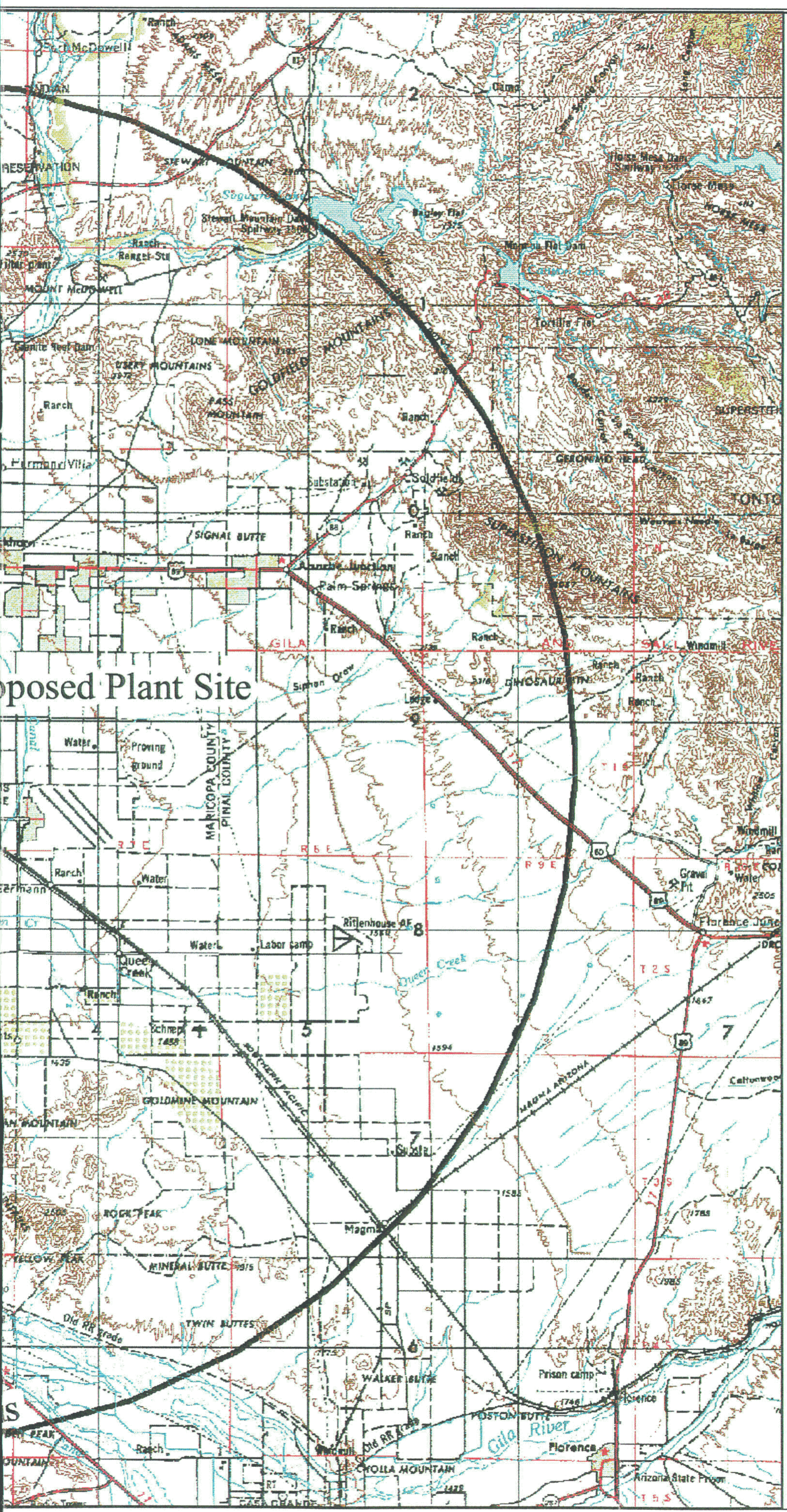
"Where commercially available, a topographic map, 1:62,500 scale, of each proposed plant site, showing the area within two (2) miles thereof. The general land use plan within this area shall be shown on the map, which shall also show the areas of jurisdiction affected and any boundaries between such areas of jurisdiction. If the general land use plan is uniform throughout the area depicted, it may be described in the legend in lieu of an overlay."

The following maps are included as exhibits:

- Figure A-1 – Project Location
- Figure A-2 – Jurisdiction
- Figure A-3 – Existing Land Use
- Figure A-4 – Planned Land Use

FIGURE A-1
PROJECT LOCATION


American Institute for Foreign Trade School
LOOKOUT MTN
SHAW BUTTE
NORTH MTN
Scottsdale
Paradise Park
PHOENIX MOUNTAINS
SQUAW PEAK
PHOENIX
Paradise Valley
SCOTTSDALE
SAWIK MOUNTAIN
SALT RIVER INDIAN RESERVATION
Substation
Water
BARNES BUTTE
SOUTHERN PACIFIC
Sky Harbor
Gomez
MESA
TEMPE
Laveen
SOUTH MOUNTAINS
Guadalupe
Tremaine
Gilbert
Falfa
SOUTH MOUNTAIN PARK
Proving Grounds
West Chandler
Hightown
Chandler
Nortons Corner
Higley
Komalko
Stellar City
Gila Crossing
LONE BUTTE
Chandler
Ocotillo
Goodyear AF
Ranch
Scrage Bins
MARICOPA COUNTY
PINAL COUNTY
Gila River
Santa Cruz Wash
MONTEZUMA PEAK
GILA RIVER
INDIAN RESERVATION
PIMA BUTTE
MONTEZUMAS HEAD
GILA RIVER INDIAN RESERVATION
Maricopa
MARICOPA
INDIAN
Ak Chin
RESERVATION
Pinal Clusters
SACATON MOUNTAINS
Sacaton
Pima
Pro
20 - mile Radiu



PROJECT LOCATION

Figure A-1

Sources:
U.S. Geological Survey
1:250,000 Scale
Digital Line Databases
Phoenix,AZ. 1954 Revised 1969
Mesa,AZ. 1954 Revised 1969

N
W E
S

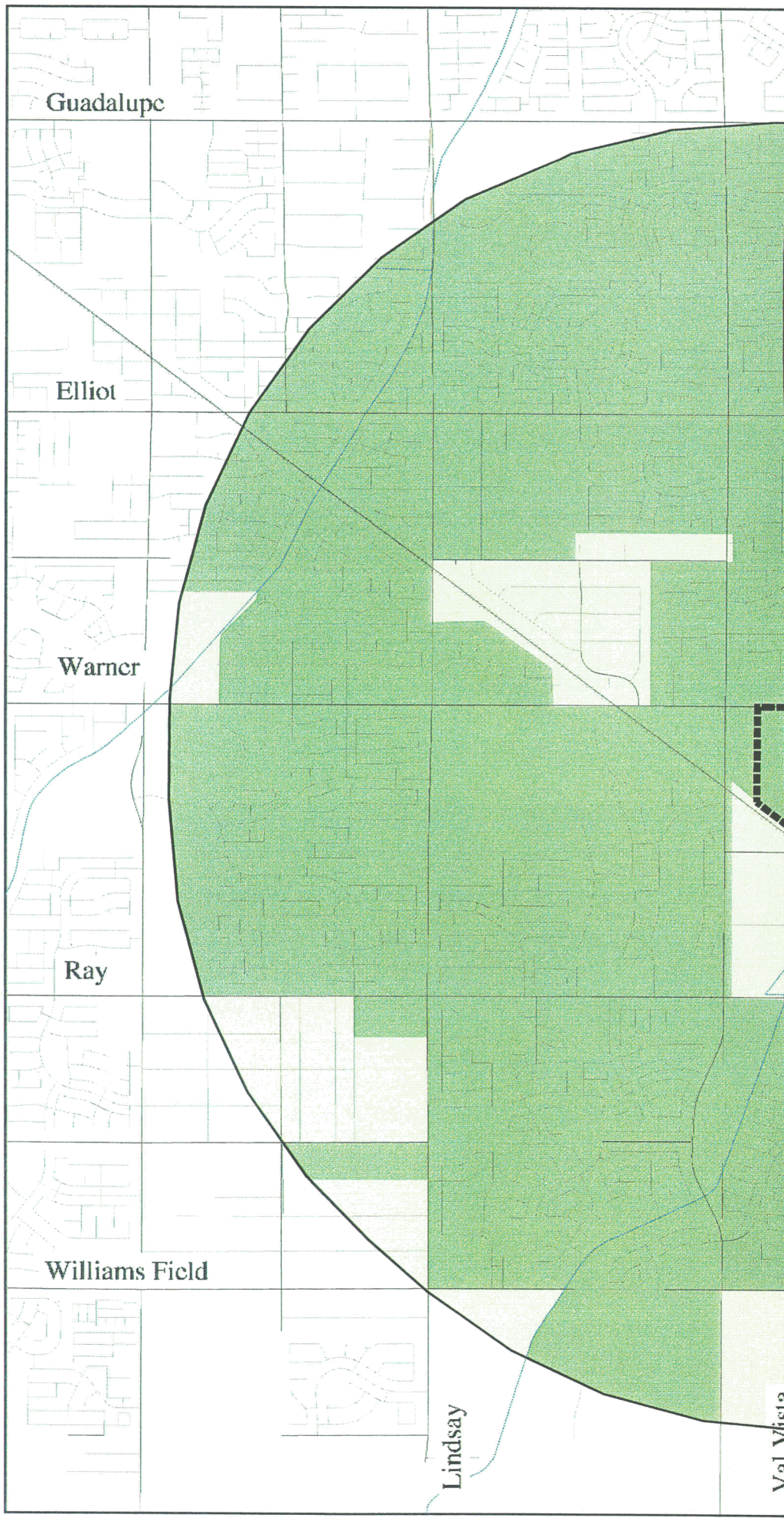
2 1 0 2 4 6

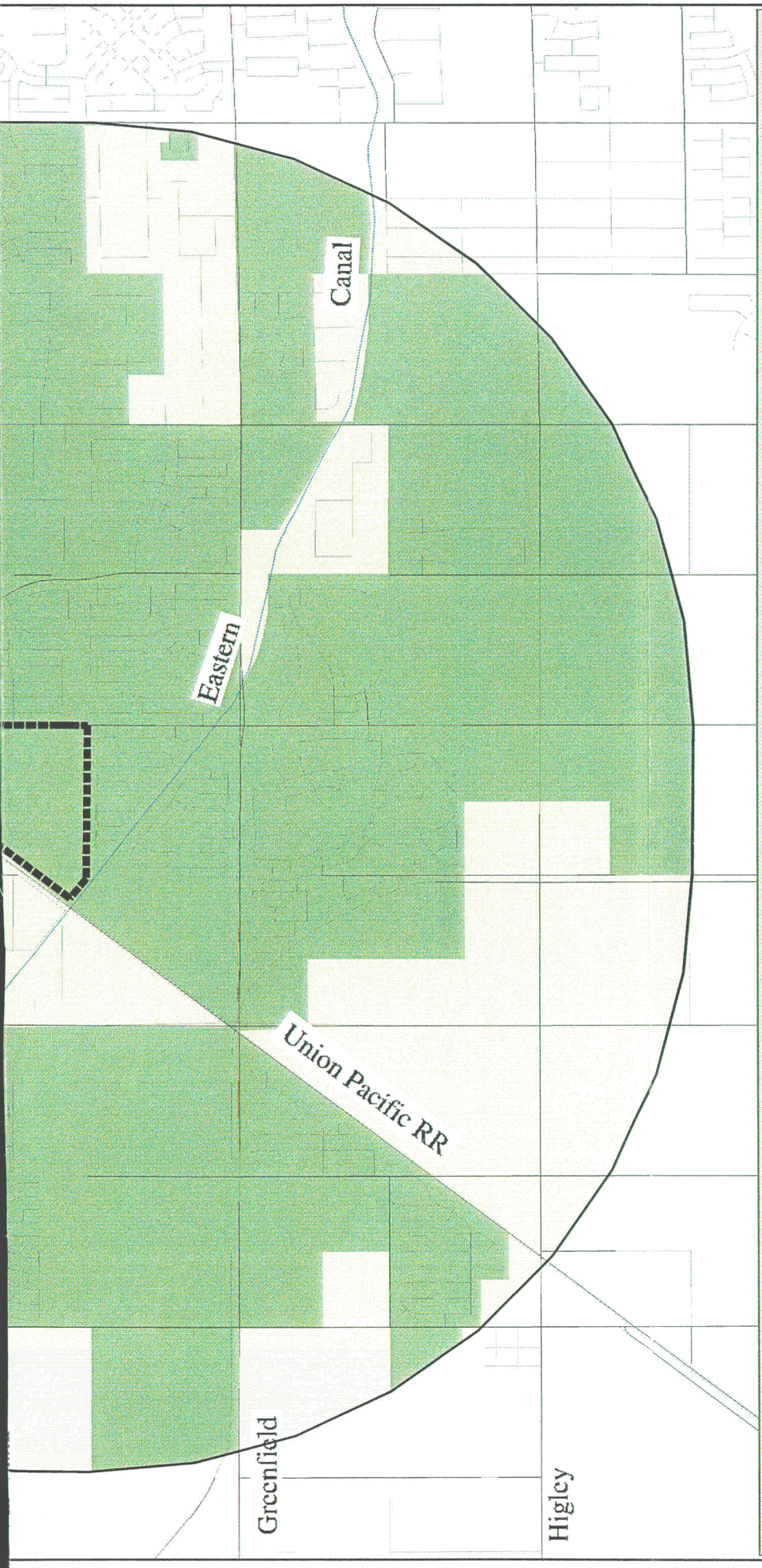
Miles

SANTAN
EXPANSION PROJECT

Map Produced by EPG, Inc.

FIGURE A-2
JURISDICTION


Guadalupe
Elliot
Warner
Ray
Williams Field
Lindsay



JURISDICTION

Figure A-2

Resource Inventory

- Gilbert
- Maricopa County

General Reference Features

- Project Site
- Primary Transportation Routes
- Secondary Transportation Routes
- Railroad
- Canals

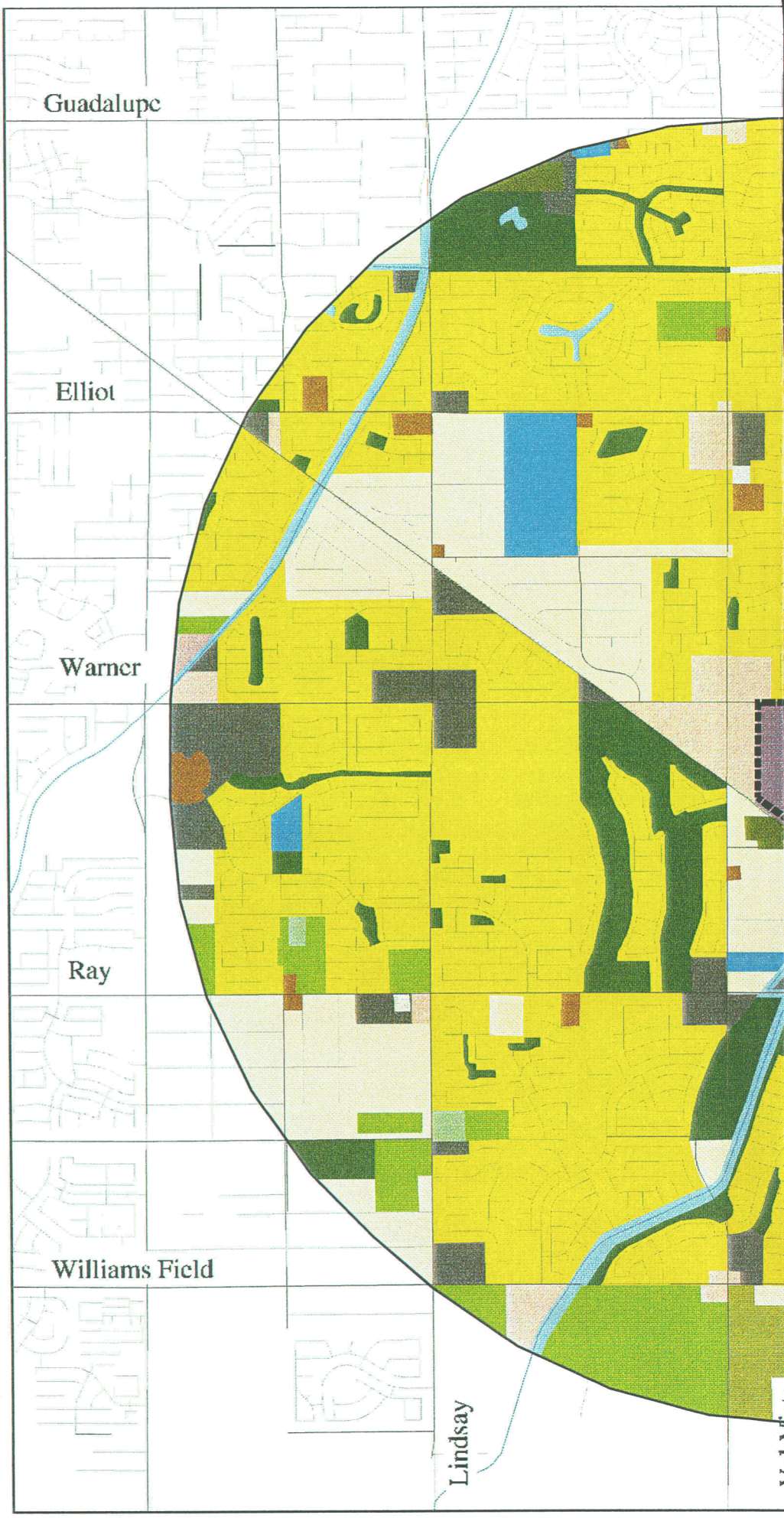
0 1/4 1/2 1

Scale in Miles

SANTAN
EXPANSION PROJECT

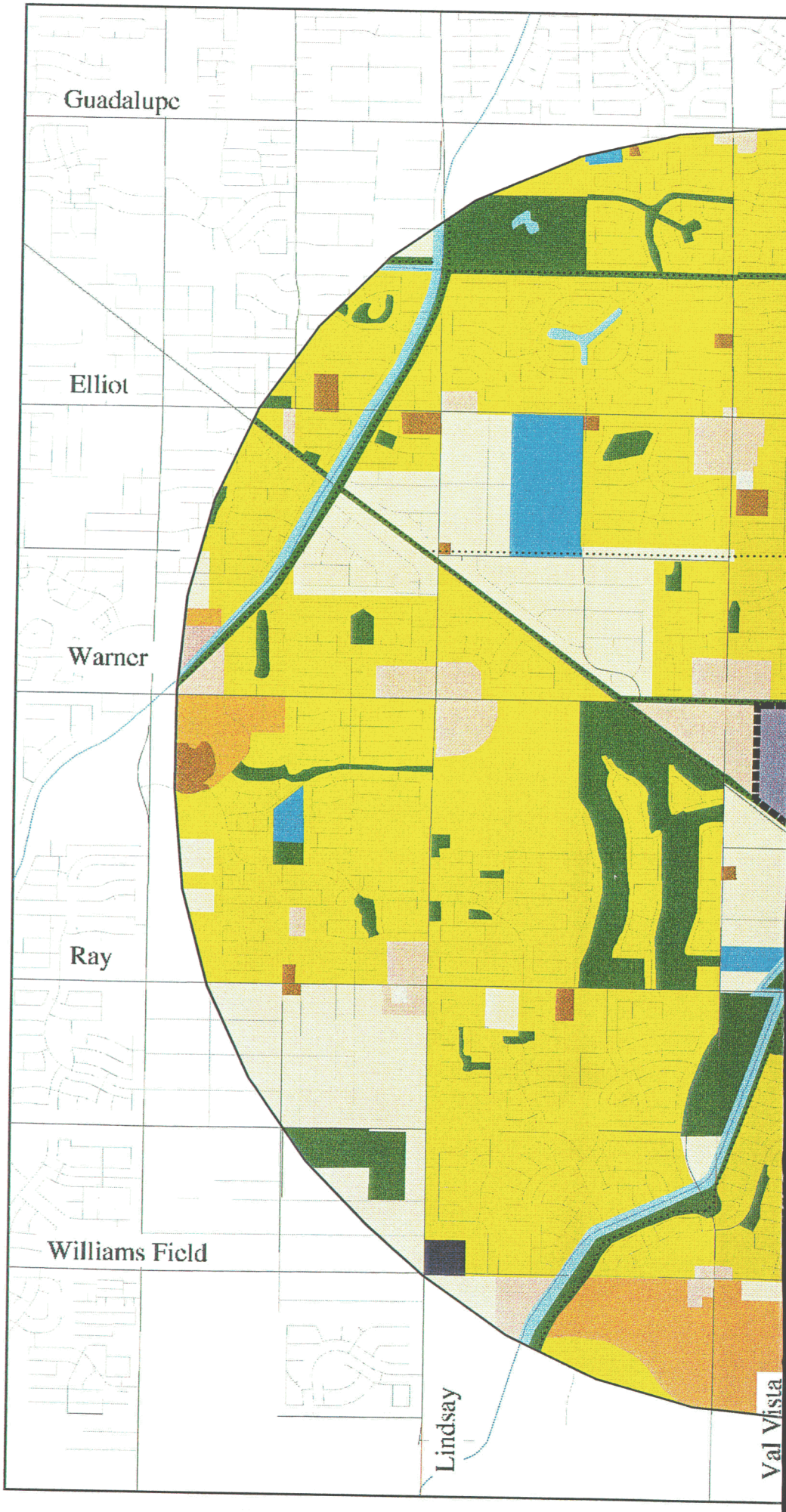
Map Produced by EPG, Inc.

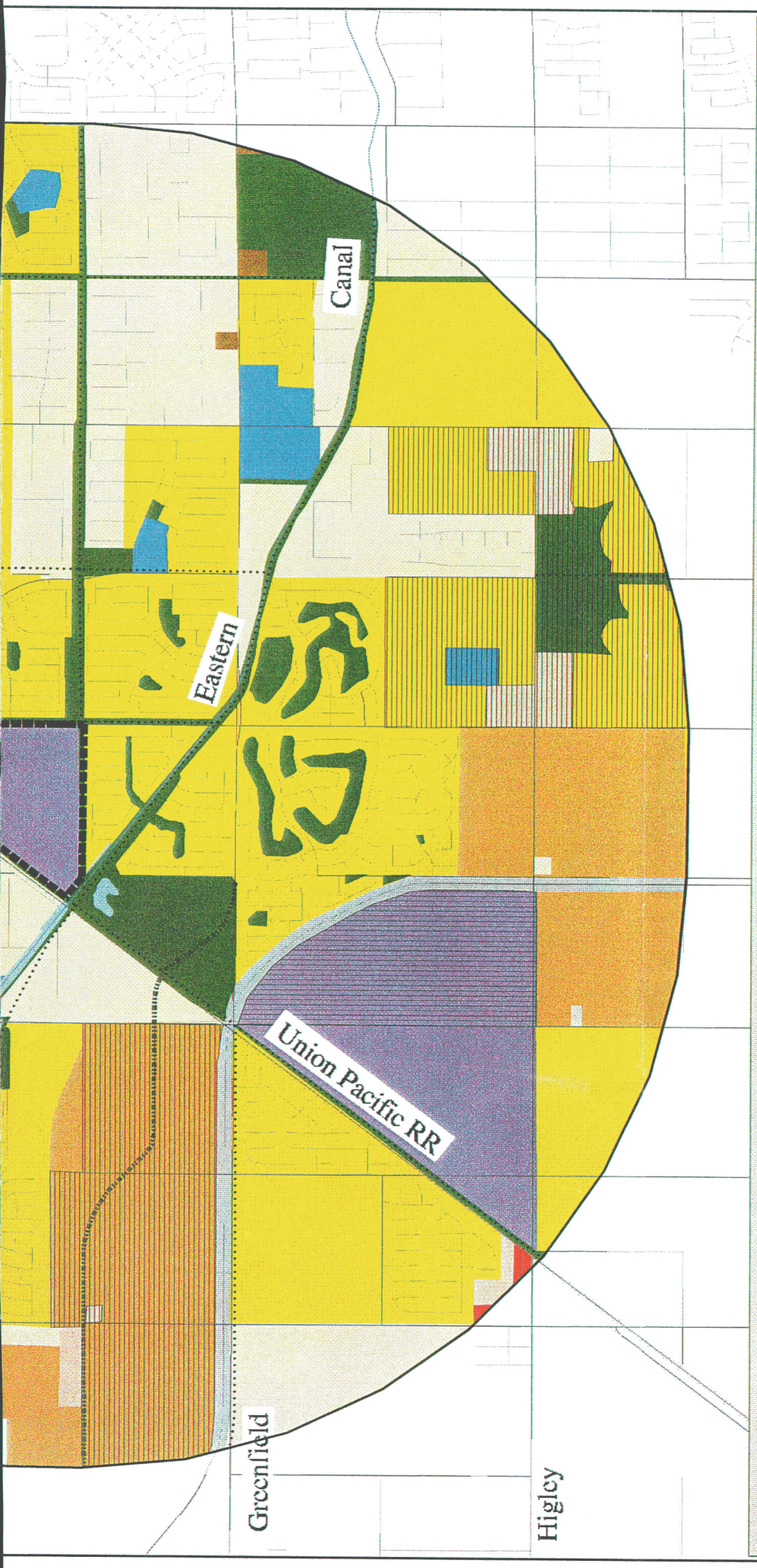
FIGURE A-3
EXISTING LAND USE


Guadalupe
Elliot
Warner
Ray
Williams Field
Lindsay

EXISTING LAND USE
Figure A-3
Resource Inventory
Residential Low Density
Residential Medium Density
Commercial Retail
Commercial Business Park/Office
Industrial
Light Industrial
Utilities
Public/Quasi-Public
School/Educational Facilities
Irrigated Farmland
Stockyard/Dairy Feedlot
Orchard
Farm Complex
Lakes/Canals
Golf Course/Open Space/Greenbelt/Recreation
Vacant/Undeveloped
General Reference Features
Project Site
Primary Transportation Routes
Secondary Transportation Routes
Railroad
Canals
0
1/4
1/2
1
Scale in Miles
SANTAN
EXPANSION PROJECT
Map Produced by EPG, Inc.
Canal
Eastern
Union Pacific RR
Greenfield
Higley

FIGURE A-4
PLANNED LAND USE


Guadalupe
Elliot
Warner
Ray
Williams Field
Lindsay
Val Vista



PLANNED LAND USE

Figure A-4

Resource Inventory

- Residential Low Density
- Residential Medium Density
- Commercial Retail
- Commercial Business Park/Office
- Multi-Use Commercial
- Multi-Use Employment
- Community Commercial
- Utilities
- Public/Quasi-Public
- School/Educational Facilities
- Lakes/Canals
- Golf Course/Open Space/Greenbelt/Recreation
- Transportation
- Planned Final Approval
- Planned Concept Stage

- Proposed Trail Linkages
- Realigned Greenfield Road

General Reference Features

- Project Site
- Primary Transportation Routes
- Secondary Transportation Routes
- Railroad
- Canals

0 1/4 1/2 1

Scale in Miles

SANTAN
EXPANSION PROJECT

Map Produced by EPG, Inc.
m:/projects/gps/santan/landuse/gmb/newfutur.aml July 13, 2000

Exhibit B

EXHIBIT B
ENVIRONMENTAL REPORTS

EXHIBIT B
ENVIRONMENTAL REPORTS

As stated in Arizona Corporation Commission Rules of Practice R-14-3-219:

"Attach any environmental studies which applicant has made or obtained in connection with the proposed site(s) or route(s). If an environmental report has been prepared for any federal agency or if a federal agency has prepared an environmental statement pursuant to Section 102 of the National Environmental Policy Act, a copy shall be included as part of this exhibit."

- Exhibit B-1 - Planning Process Overview
- Exhibit B-2 - Land Use
- Exhibit B-3 - Water and Waste Water
- Exhibit B-4 - Air Quality

SRP and its consultants began the environmental studies for the proposed SEP in the fall of 1999. An overview of the overall planning process and participants for this project is provided in Exhibit B-1. The environmental studies completed are described in this exhibit and include land use (Exhibit B-2), water and waste water (Exhibit B-3), and air quality (Exhibit B-4). Studies regarding biological and visual resources and recreation also were completed for this project and are discussed in Exhibits C, D, E, and F.

EXHIBIT B-1
PLANNING PROCESS

EXHIBIT B-1
PLANNING PROCESS OVERVIEW

A comprehensive planning process has been implemented for the proposed project including environmental studies and a public involvement program. Figure B-1 on the following page illustrates this overall process and the integration of environmental, public, and technical aspects during the development of this project. Environmental Planning Group, Inc. (EPG) worked with SRP and the public to facilitate the planning process.

The process began in the fall of 1999 and is ongoing with efforts now focused on mitigation and enhancement measures (see Tasks 5 and 7 on Figure B-1). A CWG was formed and public open houses were held within the study area. Other activities associated with the public involvement program include newsletters, website, telephone information line, and presentations to the city and local neighborhoods. Details on the public involvement process are provided in Exhibit J – Special Factors.

The overall intent of the planning process was to integrate the proposed project with the community and Town of Gilbert plans. Attention was given not only to potential impacts directly associated with SEP, but also to issues or concerns separate from the project that were raised. SRP's intent in addressing these concerns is to have the proposed project be the catalyst for providing enhancements to the community that will further integrate the site into the immediate vicinity and the local and regional areas (now and into the future). Figure B-2 provides an illustration of the specific tasks conducted for this process.

As indicated in Figure B-2, issues raised during the process, both directly related and unrelated to the proposed project, were continually evaluated and have been carried forward in a detailed analysis. Where appropriate, they have been addressed in the development of various mitigation and enhancement measures, some of which are illustrated in Exhibit G. As shown in Figure B-1, the CWG and representatives from the Town of Gilbert continue to be involved in this process offering suggestions and ideas for mitigation and enhancement plans.

FIGURE B-1
PLANNING PROCESS

SRP

- Provide documentation of alternatives evaluation
- Provide preliminary project description
- Provide project need statement
- Provide aerial photos
- Provide description of air, noise, and water

- Identify engineering alternatives
- Review inventory maps
- Prepare inventory for air, noise, and water
- Review environmental issues
- Provide engineering and economic data for each alternative
- Approve agency contacts

- Refine project description
- Complete assessment and mitigation plan for air, noise, and water
- Review assessment and mitigation planning approach and results

- Review and approve mitigation and enhancement measures
- Finalize IGA elements w/legal counsel

- Update pro environme
- Review co
- Develop in

EPG

Task 1 – Issue Identification
- Prepare base maps
- Review alternatives evaluation
- Identify study issues and questions

Task 2 – Inventory
- Field verify land use and visual data (2 miles)
- Review air, noise, and water inventory

Task 3 – Assessment
- Develop impact assessment criteria
- Conduct impact assessment
- Review air, noise, and water assessment results
- Elimination of on-site options (if appropriate)

Task 4 – Mitigation Planning
- Develop mitigation alternatives
- Develop mitigation and enhancement measures

Task 5 – Al Co
- Update env information
- Review co alternative
- Provide pu environme selection p
- Review pr criteria

Public Participation (SRP with EPG)

- Conduct briefings and interviews
  - elected officials
  - key contacts
- Establish community working group (CWG)
- Conduct CWG meeting #1
  - review roles, schedule, project description, inventory results, purpose and need, and study approach
  - identify issues
- Prepare newsletter #1
- Media coordination plan
- Establish information line and mailing list
- Establish website

- Conduct public open house #1
  - present purpose and need and project description
  - review inventory results
  - review environmental issues results
  - review assessment and mitigation approach
- Community and agency liaison
- Media coordination
- Monitor information line

- Conduct CWG meeting #2, 3, 4
  - identify data gaps and sources for resource inventory
  - review assessment results
  - review criteria
- Mitigation process
- Community and agency liaison
- Media coordination
- Monitor information line

- Conduct CWG meeting #5
  - review mitigation and enhancement measures
- Community and agency liaison
- Media coordination
- Monitor information line
- Establish intergovernmental agreement w/Town of Gilbert

- Conduct C
  - review al
- Open hous
- Conduct pu
  - review si
  - review c
- Communit
- Media coo
- Monitor in
- Establish C
- Conduct C meetings #

PLANNING PRO

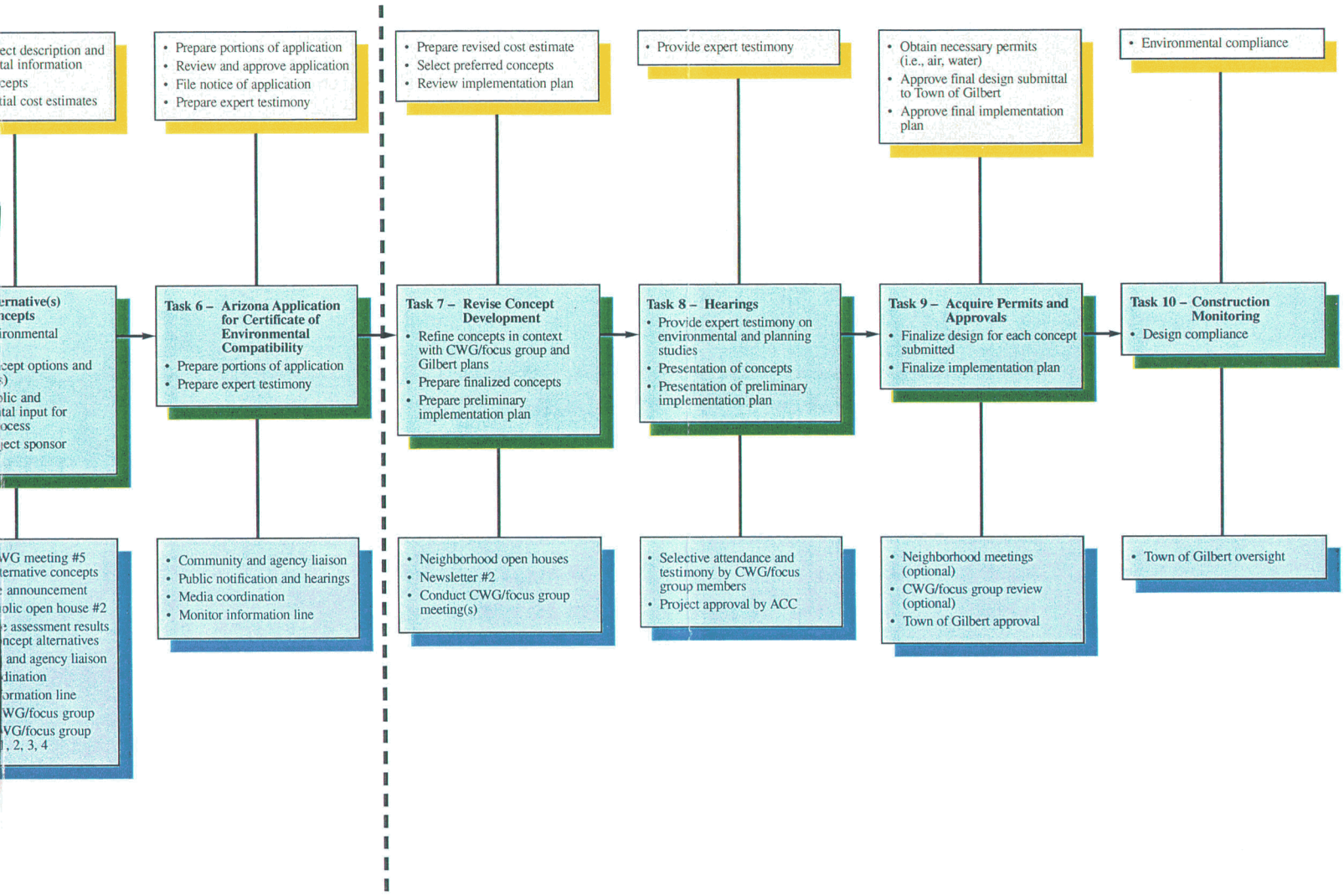


Figure B-1

OCESS

SANTAN
EXPANSION PROJECT

July 12, 2000

FIGURE B-2
IMPACT ASSESSMENT AND MITIGATION PLANNING PROCESS

TASK 1
Issues Identification

PROJECT DESCRIPTION

- Existing - No action
- Proposed expansion, including existing facilities

COMMITTED MITIGATION

- Best technologies

IDENTIFY ISSUES AND AREAS OF INFLUENCE

TASK 2
Inventory

ENVIRONMENTAL RESOURCES

Determine what could be affected

- **Human environment**
  - existing and planned land use
  - recreation
  - visual
  - noise
  - socioeconomics
- **Natural resources**
  - biology
  - water
  - air quality
- **Cultural resources**
  - archaeological
  - historic

TASK 3
Impact Assessment

IMPACT TYPES

Determine how the plant would affect each resource

- **Short term (temporary)**
  - construction
- **Long term (permanent)**
  - operation and maintenance

IMPACT LOCATIONS

Determine where the effect would occur

- **Site**
  - cultural
  - biological
- **Site and local**
  - existing/planned land use
  - noise
- **Site, local, regional**
  - air
  - water
  - recreation
  - visual
  - socioeconomics

INITIAL IMPACTS

- Determine degree to which environment would be affected

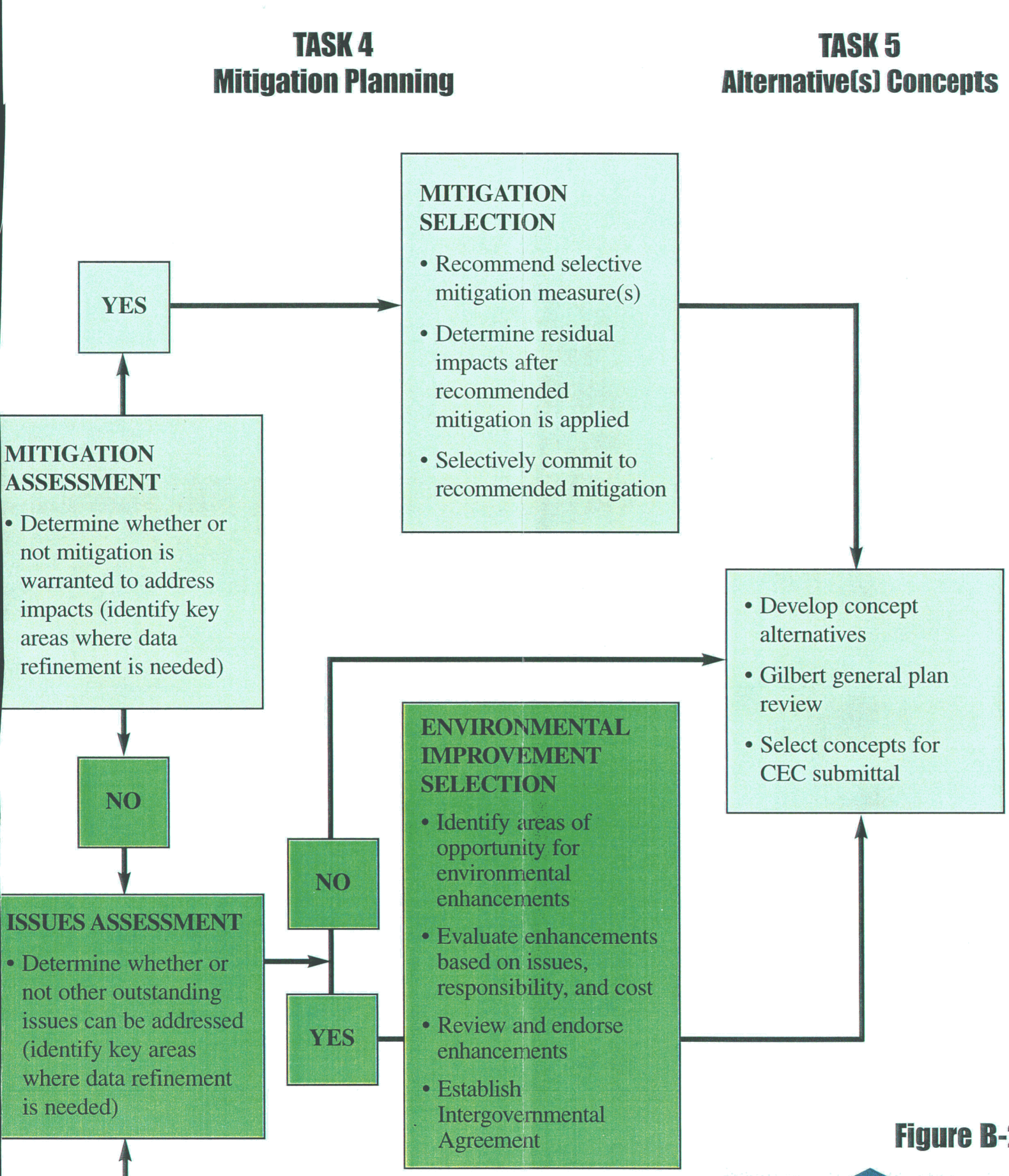


Figure B-2

July 12, 2000

Impact Assessment and Mitigation Planning Process

SANTAN EXPANSION PROJECT

EXHIBIT B-2
LAND USE

EXHIBIT B-2
LAND USE

INTRODUCTION

The land use study characterizes existing and future land uses, identifies potential impacts associated with planned facilities, and presents mitigation measures and enhancements for the proposed SEP. Following is a description of:

- study methods
- land jurisdiction
- existing land use
- future land use
- impact assessment
- mitigation measures
- enhancements

Study Methods

Land use information was collected within a 2-mile radius of the proposed SEP site. Inventoried data were gathered through aerial photograph interpretation, field verification, and review of existing maps and plans. Information was mapped at a scale of 1:24,000. Impacts to existing and future land use were evaluated for the site, local, and regional area. The site area is defined as the area within the existing Santan Generating Station property. The local area includes those locations immediately adjacent to the site where land use(s) could be directly affected by the proposed SEP. The regional area extends beyond the local area to address outlying land use(s) within a 2-mile zone as required for the CEC application. For the planned land use study, the Gilbert General Plan was used to characterize future land use.

Land Jurisdiction

The site, as well as the majority of the local and regional areas, are located in the Town of Gilbert, with portions of Maricopa County land also present. Figure A-2 illustrates jurisdictions in the study area.

Existing Land Use

Following is a characterization of existing land use on site and within the local and regional areas.

Site

The expansion project site is situated on land owned by SRP within the existing Santan Generating Station property. The majority of proposed project facilities are planned for location immediately north of the existing plant on vacant lands with the exception of the cooling tower that will displace an existing warehouse. Existing facilities on site include the Santan generating plant, a cooling tower, fuel storage tanks, switchyards, a solar generating facility, storage and staging yards, evaporation pond, and support facilities. The SEP will occupy approximately 20 acres of property within the approximately 120 acres of the existing site. The Santan site is immediately bordered by Warner Road to the north, a commercial area on the west, a residential area on the east, and the Union Pacific Railroad corridor and Eastern Canal on the south. Access to the existing site is currently from the west off Val Vista Drive and along the railroad corridor.

Local

The local area includes a mix of residential, commercial, and open space use. Medium-density residential lands are located in the immediate vicinity to the north and east. These areas are characterized by 4 to 8 dwelling units per acre. Low-density residential areas (3 or fewer dwelling units per acre) including rural residences, and horse properties are located across the Union Pacific Railroad corridor to the south of the site.

A concentration of commercial retail development occurs in the local area immediately west of the site and along Val Vista Drive and Warner Road, north of the Union Pacific Railroad corridor. Portions of this area are currently under construction immediately west of the site.

The southwestern side of the proposed SEP site is bordered by the Union Pacific Railroad corridor. The Eastern Canal is adjacent to a small portion of the southeastern border of the proposed SEP site. Crossroads Park lies on the opposite (east) side of the canal immediately to the southeast.

Regional

The majority of the regional area (see Figure A-3) is comprised of medium-density residential land use with scattered low-density residential areas and agricultural lands. Farmlands, dairy feedlots, orchards, and farm complexes are located primarily south and east of the site. Small commercial retail areas along major roadways are also present. Other regional users include but are not limited to office complexes, light industrial areas, and vacant lands. Public/quasi-public areas include churches, city government buildings, and schools.

The existing regional transportation system includes major arterial roads located approximately every mile and the Union Pacific Railroad corridor that extends to the northwest and southeast. Recreation uses include parks, community open space areas, Western Skies Golf Course, Rodeo

Park Plaza, and trail corridors. Major electrical utilities in the area include scattered substations and two extra high voltage transmission corridors. One corridor runs north from the proposed expansion site and beyond the study area and the second runs east and west between Guadalupe and Elliot roads.

Planned Land Use

Planned land uses were identified through review of the Gilbert General Plan and contact with the town planning department. The Gilbert General Plan identifies the present industrial use at the Santan site as a multi-use employment land use. This land use designation allows for multiple uses, including industrial. This plan also indicates that a majority of the changes to land use will most likely occur in vacant areas and on farmlands (including dairy feedlots, orchards, and farm complexes). The areas that are currently farmland are concentrated to the east and south of the project site. According to the Gilbert General Plan, this area is planned for commercial, and medium-density residential land uses that would be accessed by the planned Santan freeway. In addition, a large multi-use employment (including industrial) area has been identified along the Union Pacific Railroad corridor to the southeast of the Santan site. Other parcels of undeveloped land occur throughout the study area and are generally planned for residential and commercial land uses (see Exhibit A-4).

As outlined in the Gilbert General Plan, the intent of multi-use commercial areas is to provide for high intensity uses with a retail commercial emphasis. These areas may include commercial, high-density residential, hotels/motels, and offices. The multi-use employment designation provides for high intensity uses with an employment emphasis and can include commercial, high-density residential, hotel/motel, office, and industrial uses.

Impact Assessment

Impacts to existing and planned land use include displacement of or restrictions to an existing land use or site incompatibility with future plans. Impacts were studied and evaluated for either short- or long-term impacts. Short-term impacts are those that would occur during construction of the proposed expansion project while long-term impacts are those that would remain after the construction of the project was complete, and for the life of the project.

The proposed expansion project is located on the property of an existing, operational power generating facility owned by SRP. Activities associated with the construction, operation, and maintenance of proposed facilities would all be located on the current site and would be compatible with existing facilities on site. Therefore, no long-term impacts were identified for existing land use as a result of the project. The proposed expansion site is within a multi-use employment area (allows for industrial) according to the Gilbert General Plan; therefore, the proposed expansion would not conflict with future land use plans.

During the construction of the proposed SEP, access to the site would have to be increased to accommodate construction-related activities and both Warner Road and Val Vista Drive would see a short-term increase in traffic due to construction vehicles. An additional temporary entrance to the site would be built on Warner Road. After construction, the Warner Road entrance would be removed or use minimized and most site traffic would continue to enter from Val Vista Drive.

Traffic along the Union Pacific Railroad tracks would also increase temporarily during construction, as 25 to 30 additional railcar deliveries are needed for materials. This railcar traffic could potentially disrupt traffic along major arterial roads during the construction period.

Mitigation Measures

In addition, to further relieve short-term impacts based on construction, a phasing and scheduling plan will be developed and implemented for the project. It is anticipated that the number of railcar deliveries required during the 18-month construction schedule will have minimal impacts to road traffic; however, railcar delivery schedules will be coordinated to the extent possible.

Enhancements

As a part of the planning process, interested community members and other members of the public were asked to share concerns or issues they might have regarding both the planned and existing facilities on site (see Exhibit B-1, Planning Process Overview). These concerns and issues were evaluated and preliminary enhancement measures have been developed to address concerns. In addition, elements of the Gilbert General Plan also were reviewed in order to integrate the proposed SEP with the Town's vision regarding current conditions and future plans. Proposed enhancements, while not necessary to address impacts associated with new facilities, are additional measures SRP would implement on the existing property and in the local area to further integrate the plant site with the community and address long-range plans for the Town.

Community issues associated with land use centered primarily on air, visual, and noise effects (Exhibits B-4, E, and I). However, additional issues and areas for community improvement that were identified by the CWG or public included (1) the widening of Warner Road; (2) access to the existing plant site off of Val Vista Drive; (3) the crossing of the Eastern Canal on Ray Road to allow for road widening that would accommodate increased traffic; and (4) the extension of a north to south pedestrian/equestrian trail system (on site) to interconnect with the existing and planned regional trail system. Specific land use enhancements or improvements that have been agreed upon and committed to by SRP as a part of the IGA include the following.

- Improvements to Warner Road including but not limited to improving the south half of Warner Road including the construction of sidewalks, a median, and street lighting facilities and installation of landscaping on the north side of Warner Road.

- Improvements to the east half of Val Vista Drive near the entrance of the Santan Generating Station property.

- Reroute the Eastern Canal near Val Vista Drive and Ray Road.

- Design and develop a horseback/hiking trail on the eastern edge of its property, as well as crossing lights and trailheads at both the north and south end of the trail. At the south end, a bridge over the Eastern Canal into Crossroads Park shall be constructed.

The design concepts associated with these enhancements are illustrated in Exhibit G (as appropriate). Recreational enhancements associated with the development of open space and trails are described in detail in Exhibit F.

REFERENCES

Gilbert, City of. May 24, 1994. Town of Gilbert General Plan Update.

Town of Gilbert Planning Department. January 14, 2000. Submitted Plans of Development.

EXHIBIT B-3
WATER AND WASTE WATER

EXHIBIT B-3
WATER AND WASTE WATER

The SEP is projected to require from 3,700 gallons per minute (gpm) to 5,800 gpm of raw water during normal operations. On an annual basis, water consumption through the evaporation from the cooling tower is projected to be approximately 4,220 acre feet. Approximately 1,400 gpm or 2,250 acre feet annually, will be discharged from the cooling water system. This discharge is referred to as blow down. The total diversion water requirement will be 6,440 acre feet annually.

WATER SUPPLY OPTIONS

Background

There are a variety of water supplies that are available to meet the water needs at SEP. Before discussing those, however, it is important to understand the components of SRP's water storage, transmission, and distribution system. SRP was the nation's first multi-use Reclamation Project and has been delivering water to its shareholders since 1903. Its water service area covers approximately 248,000 acres in the central Phoenix metropolitan area. The water transmission and distribution system consists of 131 miles of canals, 1,250 miles of laterals, 250 groundwater wells, and 6 surface water reservoirs with a total water storage capacity exceeding 2.3 million acre feet. In an average year, approximately 1.0 million acre feet of water is delivered to meet agricultural, municipal, residential, and industrial water demands within SRP's water service area. At the present time, nearly 80 percent of the lands within SRP are urbanized. In 1990, the CAP/SRP Interconnect Facility (CSIF) was completed, enabling the distribution of Central Arizona Project (CAP) water through SRP canals and laterals. One of these canals, the Eastern Canal, is located just to the east of the boundary of the SEP site and has been selected as the primary diversion location for the delivery of raw water to SEP.

There are three potential sources of water that could serve SEP:

- surface water from the Salt and Verde rivers from the Town of Gilbert
- excess Colorado River Water from the Town of Gilbert or another supplier
- groundwater

Surface Water

Surface water from the Salt and Verde rivers would be made available via the Town of Gilbert's current water delivery contract with SRP.

Colorado River Water

With respect to CAP water, there are three ways by which SRP could obtain CAP water for use at SEP. All of these options utilize CAP water that currently goes unused in the State of Arizona.

- from Gilbert either by exchange, direct delivery or via recharge and recovery
- lease or purchase of CAP water for direct delivery
- purchase and recovery of CAP recharge credits for direct delivery or exchange

Groundwater

Direct groundwater could be used from four existing wells located on or near the SEP site. This option is only being considered for back-up and emergency water supplies and is intended to be a small component of the overall water demand.

At some point in the future, reclaimed water from Gilbert's waste water treatment plant may be available as a water supply for SEP. An existing tap along the north side of the property will be maintained to utilize a supply of reclaimed water if it becomes available.

WATER DELIVERIES AND USE

Raw water will be delivered via SRP's Eastern Canal to the SEP site. During periods of canal dry up (approximately 4 to 6 weeks per year), when supply and discharge are not allowed from or into the Eastern Canal, the wells will provide raw water directly to the plant. These wells will also be used as emergency back-up water sources.

Raw water is treated (conditioned and softened) for use in the cooling tower. The cooling tower evaporation process is the primary consumption of site water. This water is also processed by a reverse osmosis system, which provides pure water for steam cycle operation and the closed bearing (lubricating oil) cooling water system.

Potable water and sewage disposal is expected to be provided by the Town of Gilbert. The fire water source also will be from the Town of Gilbert or a separate fire protection system will be installed to meet all fire protection standards. If a separate fire water protection system is required, treated raw water will be used.

WASTE WATER DISPOSAL ALTERNATIVES

Waste water sources are from the cooling tower blow down, raw water treatment (conditioning and softening) system, demineralizer regeneration effluent, HRSG blow down, roof and floor drains, and rainfall runoff. Treated waste water may be discharged to the circulating water system, to minimize raw water makeup. Cooling tower blow down will be approximately three

cycles of concentration. Waste water will be monitored and discharged to the Eastern Canal or SRP laterals in the area for agricultural use, or to the Gila Drain. When agricultural demands are low, or during maintenance conditions (e.g., dry up, emergencies), the discharge will be directed to the Gila Drain. This drain collects agricultural tailwater and storm water from SRP shareholder lands. The drain flows south through the Gila River Indian Community and eventually to the Gila River. The Gila River Indian Community utilizes these flows to irrigate a golf course and leased agricultural lands. The discharge water will comply with all federal and state discharge requirements.

INTERGOVERNMENTAL AGREEMENT

As a part of ongoing discussions, as outlined in the IGA, SRP and the Town of Gilbert will continue to negotiate further agreements as noted below.

Cooling Water

The Town of Gilbert and SRP will work cooperatively to obtain a supply of cooling water for the plant. Any such agreements may include but not be limited to the following water supplies:

- Surface water available in the Town's domestic water service account.
- CAP water allocated to or leased by the Town.
- Recharge credits earned by the Town in SRP's Groundwater Savings Facility.
- Reclaimed water owned by the Town.

EXHIBIT B-4
AIR QUALITY

AIR QUALITY IMPACT ANALYSIS
SANTAN EXPANSION PROJECT
825 MW NATURAL GAS-FIRED COMBINED CYCLE FACILITY
GILBERT, ARIZONA

FOR
SALT RIVER PROJECT

D&M Job No. 01009-093-007
July 13, 2000

AIR QUALITY IMPACT ANALYSIS
SANTAN EXPANSION PROJECT
825 MW NATURAL GAS-FIRED COMBINED CYCLE FACILITY
GILBERT, ARIZONA

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1 INTRODUCTION

Salt River Project (herein referred to as SRP) is proposing an expansion project at the existing Santan Generating Station located in Gilbert (Maricopa County), Arizona (Refer to Figure 1-1). This expansion project is considered a modification to an existing major stationary source. The expansion project will involve the construction and operation of new equipment capable of generating approximately 825 megawatts (MW) of additional electrical power. This new equipment will consist of three (3) combined cycle electric generating systems and miscellaneous support equipment (i.e., emergency generator, emergency fire water pump, auxiliary boiler and mechanical draft cooling tower). A more detailed discussion of the proposed expansion project and associated equipment is provided in Section 2.0.

The proposed expansion project will result in emissions of the following types and quantities of regulated air pollutants:

- Oxides of Nitrogen (NO_x) ≈ 269.3 tons/year;
- Carbon Monoxide (CO) ≈ 417.7 tons/year;
- Particulate Matter less than 10 microns in aerodynamic diameter (PM_{10}) ≈ 244.7 tons/year;
- Sulfur Dioxide (SO_2) ≈ 15.9 tons/year;
- Volatile Organic Compounds (VOCs) ≈ 104.7 tons/year; and
- Hazardous Air Pollutants (HAPs) <25 tons/year (aggregate), and <10 tons/year (individual)

The above quantities represent a worst case scenario for emissions from the proposed expansion project. The worst case scenario represents a large number of combustion turbine start ups and zero hours off line during the year considered for study purposes. SRP expects that over the life of the proposed generating units the actual annual project operation and associated emissions will be lower than these values.

Since the proposed expansion project will have the potential to emit air pollutants in quantities (tons/year) that would surpass regulatory threshold levels, a permit must be obtained from the appropriate regulatory agency prior to initiation of any onsite construction at the new plant. The level of potential air pollutant emissions, along with the air quality status of the site area will dictate the level of permitting required. Areas classified as nonattainment (not meeting USEPA air quality standards) require more rigorous and complex requirements, while attainment areas require less rigorous requirements.

Maricopa County, as of the date of this application, is classified as a serious nonattainment area for the air pollutants PM_{10}, CO and ozone (O_3). Since industrial facilities do not emit O_3, USEPA regulates emissions of VOCs, which are considered potential precursors to the formation of O_3. In addition, based on past studies performed for O_3, USEPA has concluded that emissions of NO_x, may also chemically react in the atmosphere to form O_3. Subsequently, in O_3 nonattainment areas,

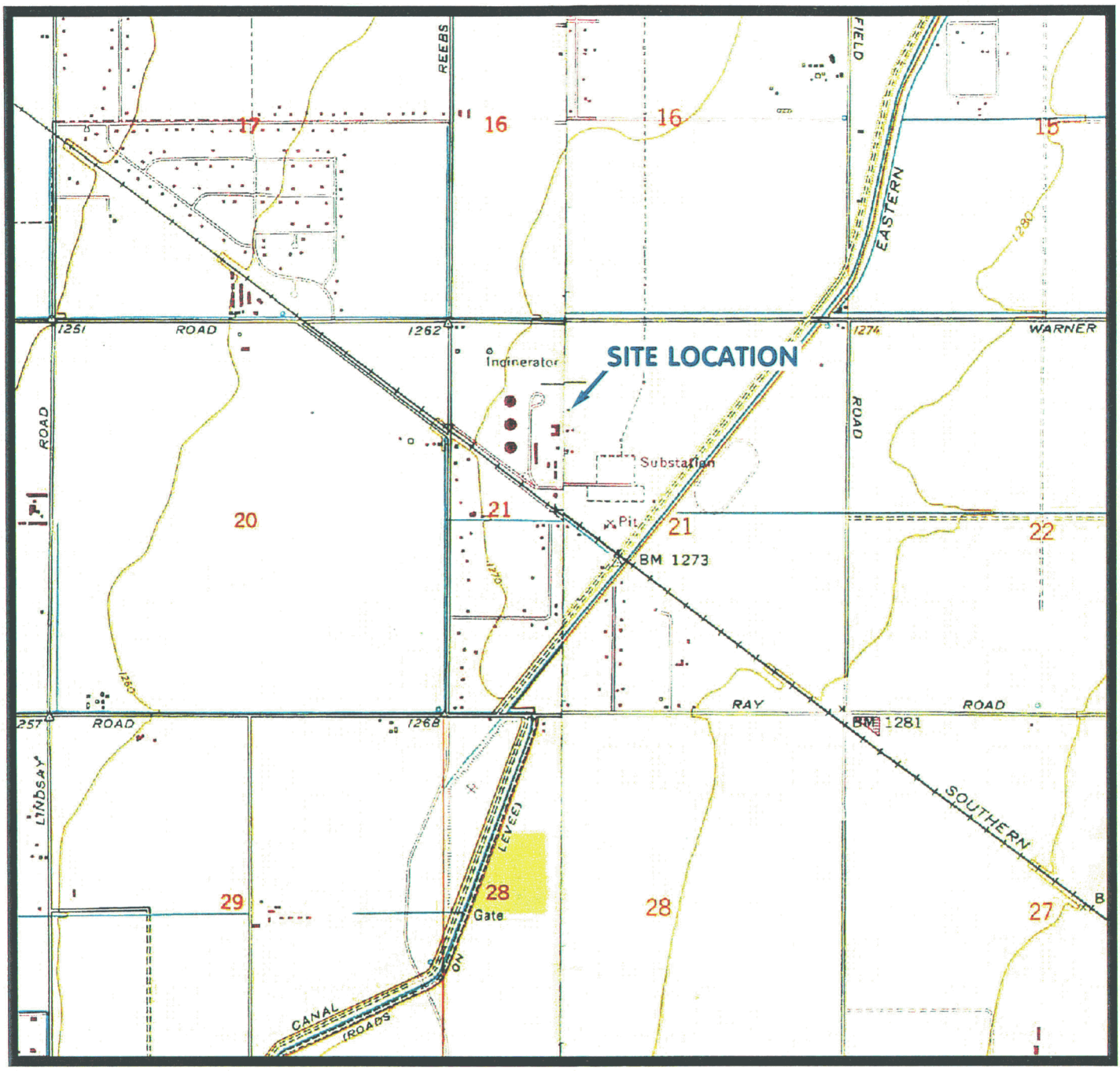
emissions of NO_x may also be treated the same as emissions of VOCs. Thus, depending on the potential level NO_x emissions, a source emitting this air pollutant may also be subject to the more stringent nonattainment permitting requirements. This county is also designated as attainment for the air pollutants nitrogen dioxide (NO_2) and sulfur dioxide (SO_2).

Based on the above air pollutant emission estimates, the proposed expansion project is subject to the following federal and state regulations for construction of new and modified major stationary sources:

- Nonattainment Area New Source Review (NANSR) for emissions of NO_x, CO, PM_{10}, and VOCs. Since emissions of NO_x may also participate in the potential formation of ozone, the regulatory agency has concluded that these emissions should be subject to the same regulatory requirements imposed upon VOC sources in an ozone nonattainment area. Thus, for purposes of this air permit application, emissions of NO_x resulting from the proposed expansion project are subject to the requirements outlined for major stationary sources in nonattainment and attainment areas (i.e., PSD review); and
- Prevention of Significant Deterioration (PSD) regulations for emissions of NO_x. Emissions of SO_2 have been estimated to be less than the significant emission rate (40 tons/year) which triggers applicability of the PSD regulations.

This report constitutes a detailed analysis of the air quality impacts associated with the construction and operations of the proposed 825 MW expansion project at SRP's existing Santan Generating Station. The natural gas combined cycle expansion project will comply with all applicable Arizona, Maricopa County and federal air pollution control regulations, including the Prevention of Significant Deterioration (PSD) regulations, Nonattainment Area New Source Review (NANSR) requirements, New Source Performance Standards (NSPS) and Federal Acid Rain Provisions.

As part of the licensing process, the applicant is required to receive an Air Quality Control Permit from the Maricopa County Environmental Services Department (MCESD). MCESD has been delegated authority by USEPA for Prevention of Significant Deterioration, Nonattainment Area New Source Review (NANSR), and Title V Operational Permits requirements, as well as the primary authority for air permit approvals for new and modified sources.



SCALE: 1:24 000

1 1/2 0 1 MILE

1000 0 1000 2000 3000 4000 5000 6000 7000 FEET

1 .5 0 1 KILOMETER

NORTH

MAP REFERENCE:

PORTION OF U.S.G.S. QUADRANGLE MAP
7 ½ MINUTE SERIES (TOPOGRAPHIC)
CHANDLER, ARIZONA 1952;
PHOTOREVISED 1981 and
HIGLEY, ARIZONA 1956;
PHOTOREVISED 1981

QUADRANGLE LOCATION

SALT RIVER PROJECT
SANTAN GENERATING STATION

FIGURE 1-1
SITE LOCATION MAP

DATE: MAY 18, 2000	
JOB NO.: 01009-093-007	
DRAWN BY: MAR	CHK'D BY: SAF
SCALE: AS SHOWN	

URS
Dames & Moore
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ROLLING MEADOWS, ILLINOIS 60008
PHONE: 847.228.0707
FAX: 847.228.1115

2 DESCRIPTION OF THE PROPOSED EXPANSION PROJECT

2.1 CONFIGURATION OF THE PROPOSED EXPANSION PROJECT AT THE EXISTING SANTAN GENERATING STATION

The proposed expansion project will occur at the existing SRP Santan Generating Station, which is located in Gilbert, (Maricopa County) Arizona (refer to Figure 1-1). The proposed project will occupy approximately 20 acres of land within the Santan site. As shown in Figure 2-1, the proposed project will be located on the western side of the Santan site, just northeast of the existing plant operations.

The proposed equipment, as laid out in Figure 2-2, will involve construction of the following building structures and support functions:

Building Structures:

- Continuous Emission Monitoring Building;
- Electrical Building; and
- Firewater Pump House

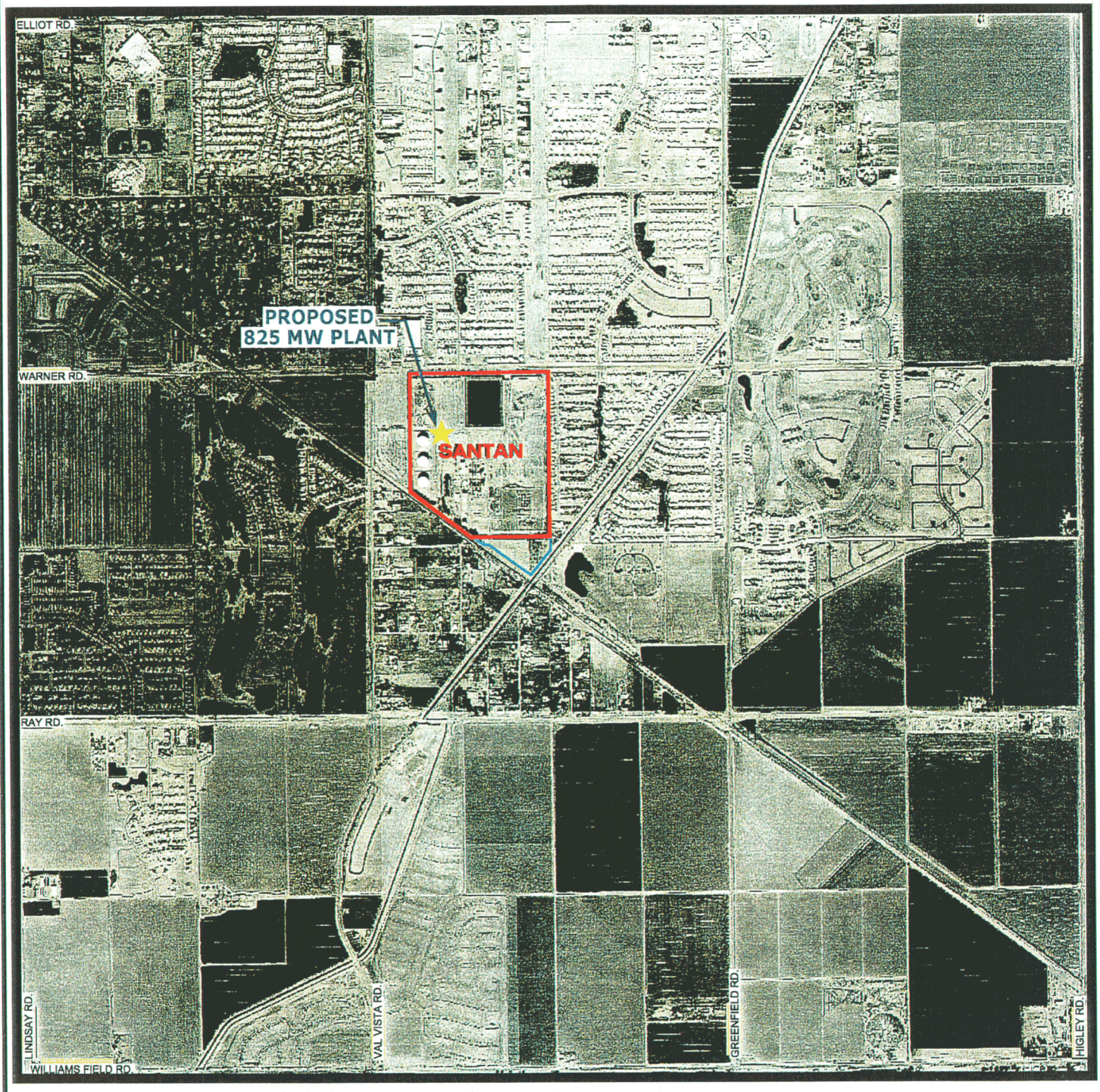
Support Functions

- Acid/Caustic Regeneration Skid;
- Instrument Air Skid;
- Lube Oil Storage Skid;
- Water Treatment Area; and
- Cooling Water Support System (i.e., Chemical Feed Area, Demineralized Water Tank/Trailer, Neutralization Tank, Raw Water Tank).

The above-identified building structure and support functions will have the potential to generate negligible quantities of air pollutants.

To generate, as well as to support the generation of electrical power, the proposed project will be equipped with the following equipment. Refer to Figure 2-3 for a process flow diagram of the electrical power generation process.

- Three Natural Gas Fired Combined Cycle Systems [Stationary Combustion Turbines, Stationary Steam Turbines and Heat Recovery Steam Generators (HRSG)];
- Natural Gas Fired Auxiliary Boiler;
- One Diesel Fired Emergency Fire Water Pump;



NORTH

SCALE:

0 1/2 1 MILE

1000 0 1000 2000 3000 FEET

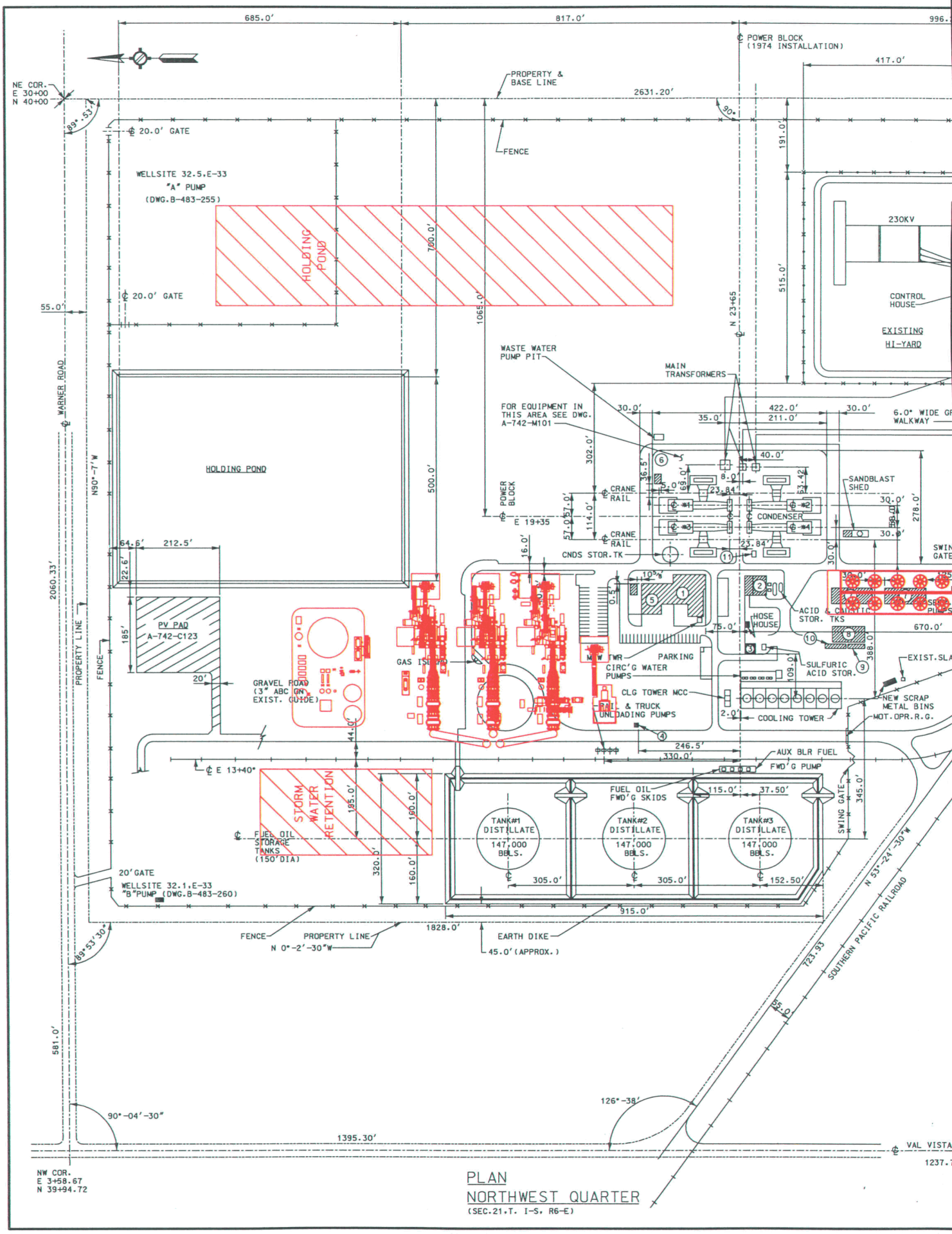
0 1/2 1 KILOMETER

SALT RIVER PROJECT
SANTAN GENERATING STATION

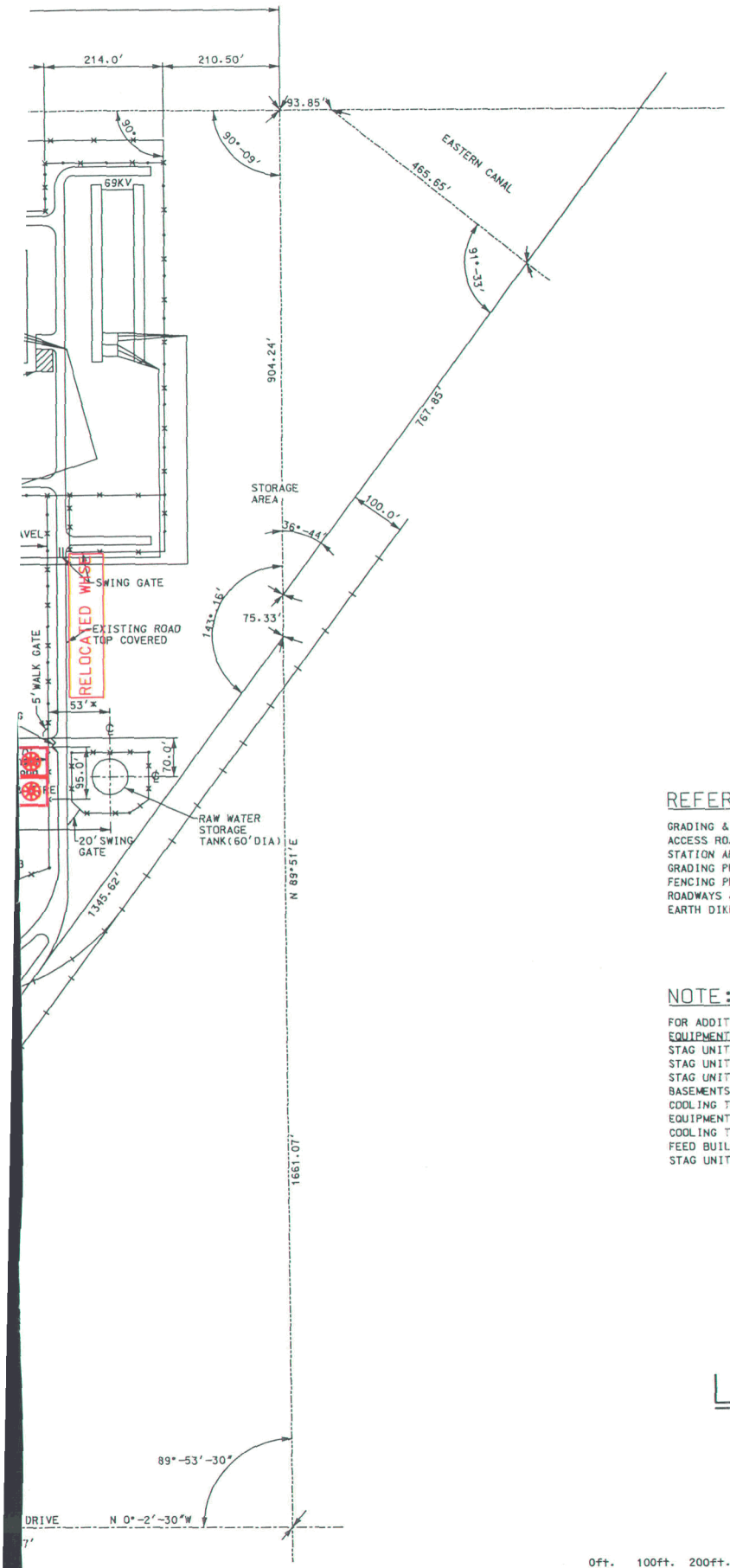
FIGURE 2-1
LOCATION OF THE PROPOSED EXPANSION PROJECT WITHIN THE SANTAN SITE

DATE: JUNE 20, 2000	
JOB NO.: 01009-093-007	
DRAWN BY: MAR	CHK'D BY: JJD
SCALE: AS SHOWN	

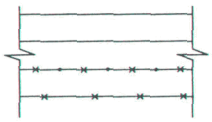
URS
Dames & Moore
1701 GOLF ROAD, SUITE 1000
ROLLING MEADOWS, ILLINOIS 60008
PHONE: 847.228.0707
FAX: 847.228.1115



PLAN
NORTHWEST QUARTER
(SEC.21,T. I-S, R6-E)



LEGEND



PAVED (BLUE)
EXIST. OR PAVED (GREEN)

EXISTING FENCE

NEW FENCE

BUILDING IDENTIFICATION

1. ADMINISTRATION BLDG.
2. EQUIPMENT BLDG.& BATTERY RM.
3. COOLING TOWER CHEM. FEED BLDG.
4. FUEL OIL SAMPLE BLDG.
5. COMBUSTIBLES STORAGE BLDG.
6. BOTTLE GAS (H_2& CO_2)STORAGE BLDG.
7. WAREHOUSE (40'X100' METAL BLDG.)
8. SHED
9. UTILITY BLDG.
10. BOILER PIPE STORAGE BLDG.
11. AUX. BOILER

REFERENCE DWGS.

GRADING & DRAINAGE PLAN_____BECHTEL__A-362-31 BLDG 5 & 6 FDN.__B-744-392
ACCESS ROAD_____BECHTEL__A-362-38
STATION ARRANGEMENT PRESENT__BECHTEL__A-361-205
GRADING PLAN_____G.E.CO.__A-742-C100
FENCING PLAN_____G.E.CO.__A-742-C102
ROADWAYS & R.R. SPUR_____G.E.CO.__A-742-C104
EARTH DIKE_____G.E.CO.__A-742-S162

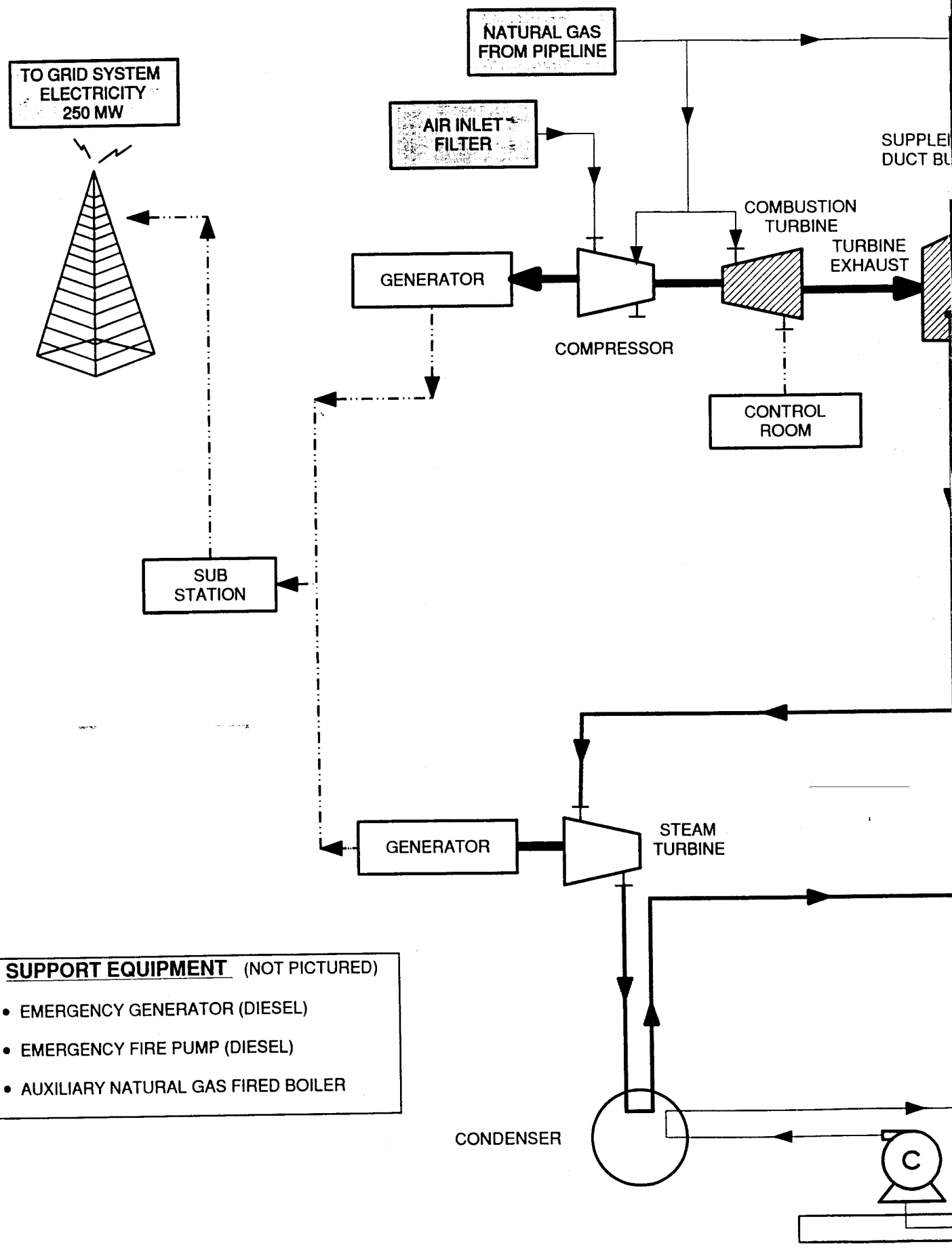
NOTE:

FOR ADDITIONAL EQUIPMENT LOCATIONS REFER TO THE FOLLOWING DRAWINGS:
EQUIPMENT ARRANGEMENT PLANS:
STAG UNIT 1_____A-742-M102
STAG UNIT 2_____A-742-M103
STAG UNIT 3_____A-742-M104
BASEMENTS_____A-742-M105
COOLING TOWER_____A-742-M108
EQUIPMENT BUILDING_____A-742-M110
COOLING TOWER CHEMICAL
FEED BUILDING_____A-742-M112
STAG UNIT 4_____A-742-M233

LAYOUT OF PROPOSED POWER PLANT

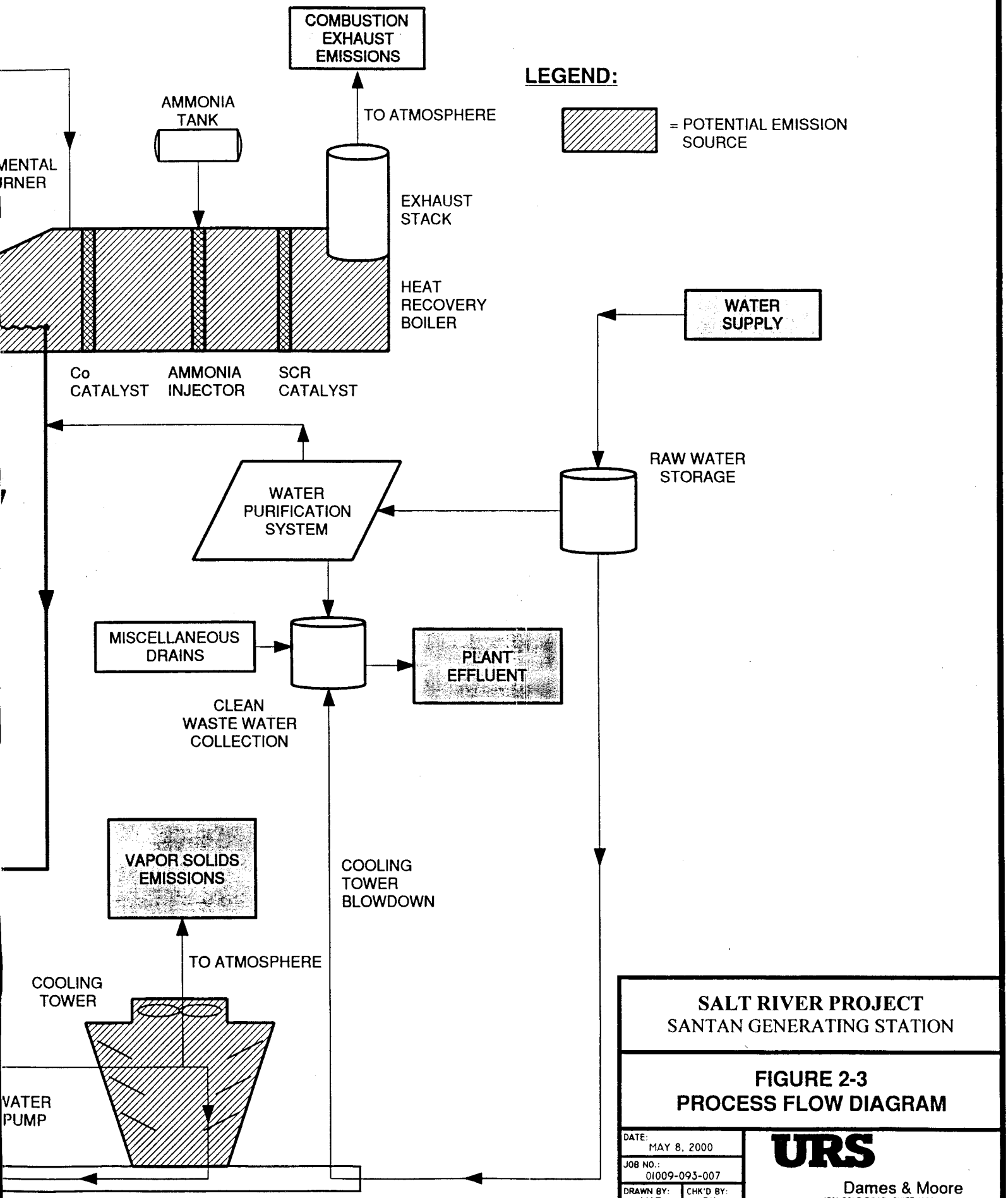
0ft. 100ft. 200ft. 300ft.
FOR REFERENCE

FIGURE 2-2



SUPPORT EQUIPMENT (NOT PICTURED)

- EMERGENCY GENERATOR (DIESEL)
- EMERGENCY FIRE PUMP (DIESEL)
- AUXILIARY NATURAL GAS FIRED BOILER



SALT RIVER PROJECT
SANTAN GENERATING STATION

FIGURE 2-3
PROCESS FLOW DIAGRAM

DATE: MAY 8, 2000	
JOB NO.: 01009-093-007	
DRAWN BY: MAR	CHK'D BY: DK
SCALE: NOT TO SCALE	

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- One Diesel Fired Emergency Generator; and
- One Mechanical Draft Cooling Tower (part of the water cooling system).

Provided below is a brief description of each piece of equipment, along with a discussion on the equipment's potential to emit air pollutants.

2.1.1 Proposed Natural Gas Fired Stationary Combustion Turbine

The proposed expansion project will involve the installation of three combined cycle combustion systems. These systems will consist of a natural gas fired combustion turbine and a heat recovery steam generator equipped with a natural gas fired duct burner (referred to as a supplemental duct burner). Specifications associated with this equipment are noted below.

- Turbine Type: General Electric
- Supplemental Duct Burner: 150 MMBtu/hr
- Combustion Turbine Electrical Output (system): Gross Power 175 MWs (excludes the steam turbine)
- Combustion Turbine Heat Input (three systems): 1,713 MMBtu/hour (LHV), 1,900 MMBtu (HHV)
- Fuel: Pipeline natural gas

Since these combined cycle systems will be combusting natural gas, considered to be the cleanest fossil fuel, air pollutants in the form of combustion by-products will be generated. To control these air pollutants, the systems will incorporate the following air pollution control devices.

Control Device	Air Pollutant	Proposed Control Efficiency	Maximum Controlled Emission Concentration (ppmvd)
Selective Catalytic Reduction	NO_x	90	2.5 @ 15% O_2 (1-hour average)
Oxidation Catalyst	CO	90	3.9 @ 15% O_2 (1-hour average)
Oxidation Catalyst	VOC	20	2.7 @ 15% O_2(1-hour average)

Estimated air pollutant emission rates for the controlled combined cycle systems are provided in Section 2.3. Each system will be equipped with a 150-foot exhaust stack.

2.1.2 Natural Gas Fired Auxiliary Boiler

To support the combined cycle systems, the proposed project will also include a natural gas fired auxiliary boiler. The purpose of the auxiliary boiler is to heat the combined cycle systems to shorten the startup duration. This boiler is anticipated to operate primarily when the combined cycle systems are idle or in startup mode. This boiler will have a designed heat input rate of 99 MMBtu/hour and will be equipped with a single exhaust stack (anticipated to be 135 feet above grade).

Since the boiler will combust natural gas, it will have the potential to emit air pollutants. Estimated air pollutant emission rates for this boiler are presented in Section 2.3.

2.1.3 Diesel Fired Emergency Fire Water Pump and Generator

To further support the proposed expansion project, a 310 horsepower diesel fired emergency fire water pump and 335 horsepower emergency diesel fired generator will be installed. This equipment will be used only during emergency situations to operate the station's fire pumps or to generate site electrical power. This equipment will be operated (typically a few hours) on a monthly basis to maintain the integrity and operational readiness of the equipment.

Minimal amounts of air pollutants will be generated during the burning of diesel fuel in this equipment. Each device will be equipped with its own exhaust stack. Refer to Section 2.3 for estimated air pollutant emission rates associated with this emergency equipment

2.1.4 Cooling Tower

As shown in Figures 2-2 and 2-3, a cooling tower will be used to cool water associated with the combined cycle's steam generating system. Due to the nature of this type of equipment, total dissolved solids contained in the cooling water may be emitted in the form of particulates. Refer to Section 2.3 for a discussion on air pollutant emission estimates. The proposed cooling tower will have a water circulation rate of 230,000 gallons per minute and a total dissolved solid content of 3,000 mg/l and liquid drift of 0.0005% which will be achieved through the use of state-of-the-art mist eliminators. Refer to Section 2.3 for a discussion on air pollutants emission estimates.

2.1.5 Steam Generator

To generate additional electrical power at the proposed plant, a steam turbine will be installed. This turbine will receive steam from the HRSGs and will have the capability of generating approximately 300 MW (gross) of additional electrical power. Since this turbine will use steam, no air pollutants will be generated from this device.

2.1.6 Existing Santan Station

The proposed expansion project will be located within property owned by SRP near the existing Santan Generating Station. Construction and operation of the proposed equipment is not anticipated to affect operation of the Santan Generating Station. This generating station is in compliance with all county, state, and federal air regulations.

2.2 PROPOSED AIR POLLUTION CONTROL EQUIPMENT

In order to minimize the potential air pollutant emissions associated with the proposed expansion project, air pollution control devices are being proposed for installation on the combined cycle systems. In addition, to minimize airborne particulates from the mechanical draft cooling tower, state-of-the-art mist eliminators will be installed. Due to the nature of the support equipment, no air pollution control devices are being proposed for those pieces of equipment. However, these devices

(emergency generator, emergency fire water pump and auxiliary boiler) will be designed to combust natural gas (auxiliary boiler) and small quantities of diesel fuel (emergency equipment). In addition, the support equipment will be operated sporadically throughout the year. A detailed discussion on the selection of the appropriate control devices is provided in Sections 4 and 5.

To control NO_x emissions from the combined cycle systems, a selective catalytic reduction system (SCR) will be installed in the HRSG, downstream of the supplemental duct burner. In addition, the combustion turbine will be equipped with a dry low NO_x combustor. The dry low NO_x combustor is designed to maintain the mixture of fuel and air near the lean flammability limit of the mixture. By doing this, emissions of NO_x can be reduced. Further reduction of the NO_x emissions will be achieved from the SCR device. This device selectively reduces NO_x by injecting water diluted ammonia into the exhaust gas stream upstream of a catalyst. NO_x, ammonia, and oxygen react on the surface of the catalyst to form molecular nitrogen and water. Further discussion of these NO_x control devices are provided in Section 4 and 5. The combined devices (dry low NO_x combustor and SCR) will be at least 90% efficient at reducing NO_x emissions. The combination of these control devices is considered a reliable technique for achieving the lowest achievable NOx emission rate from the combined cycle systems.

To control CO emissions from the combined cycle systems, an oxidation catalyst is being proposed for installation downstream of the supplemental duct burner. The oxidation catalyst is used to oxidize CO at lower temperatures. The addition of a catalyst to the basic thermal oxidation process accelerates the rate of oxidation by absorbing oxygen and CO in the flue gas on to the catalyst surface. The collected constituents react with the catalyst to form CO_2 and H_2O. Further discussion of the oxidization catalyst is provided in Section 4 and 5. This catalyst is anticipated to reduce CO emissions by 90%. This catalyst will also be capable of reducing VOC emissions by approximately 20%. The oxidation catalyst is also considered the best technique for achieving the lowest CO emission rates from a combined cycle combustion system.

The installation of a dry low NOx combustor, SCR, and oxidation catalyst are considered state-of-the-art control technologies for combined cycle electric generating systems. These control technologies will be discussed in detail in Section 4.0.

2.3 EMISSION ESTIMATES

Because the proposed expansion project's combined cycle electric generating equipment and support equipment will be designed to combust natural gas and diesel fuel, this equipment will have the potential to generate air contaminant emissions. The primary air contaminants will be oxides of nitrogen (NO_x), carbon monoxide (CO), sulfur dioxide (SO_2), particulate matter (PM) and volatile organic compounds (VOC). For purposes of this application, emissions of particulate matter with an aerodynamic diameter of 10 microns or less (PM_{10}) have been assumed to be identical to emissions of PM. Table 2-1 provides a summary of potential emissions of primary air contaminants associated with the proposed SRP power plant expansion project. A second table (2-1a) provides a summary of potential emissions including startup emissions. A discussion on how startup emissions were quantified is provided later in this section.

Table 1
Salt River Project
Proposed Expansion Project
Existing Santan Generating Station
Total Project Potential Emission Estimates

Emission Unit Description	VOC Tons/Year	PM/PM10 Tons/Year	NOx Tons/Year	CO Tons/Year	SO_2 Tons/Year
Three Combined Cycle Systems	82.8	236.5	231.3	216.8	15.8
Auxiliary Boiler	0.25	0.59	4.34	3.98	0.17
Emergency Generator	0.02	0.01	0.2	0.04	0.003
Emergency Fire Pump	0.015	0.013	0.18	0.039	0.002
Mechanical Draft Cooling Tower	-	7.6	-	-	-
Total	**83.1**	**244.7**	**236.0**	**220.9**	**15.9**
Major Source Threshold / Significant Levels (PSD)	-	-	100 / 40	-	100 / 40
Major Source Threshold (NANSR)	50	70	50	50	-
PSD/NANSR Review Required*	***y***	***y***	***y***	***y***	***n***

* Note: Y=yes, N=no

Tab[illegible]a
Salt River Project
Proposed Expansion Project
Existing Santan Generating Station
Total Project Potential Emission Estimates (Including Startup Emissions)

Emission Unit Description	VOC Tons/Year	PM/PM10 Tons/Year	NOx Tons/Year	CO Tons/Year	SO_2 Tons/Year
Three Combined Cycle Systems	104.4	236.5	264.5	413.6	15.8
Auxiliary Boiler	0.25	0.59	4.34	3.98	0.17
Emergency Generator	0.02	0.01	0.19	0.04	0.00
Emergency Fire Pump	0.015	0.013	0.18	0.039	0.002
Mechanical Draft Cooling Tower	-	7.6	-	-	-
Total	**104.7**	**244.7**	**269.3**	**417.7**	**15.9**
Major Source Threshold / Significant Levels (PSD)	-	-	100 / 40	-	100 / 40
Major Source Threshold (NANSR)	50	70	50	50	-
PSD/NANSR Review Required*	***y***	***y***	***y***	***y***	***n***

* Note: Y=yes, N=no

Emission of hazardous air pollutants (HAPs), as regulated under Section 112(b) of the Clean Air Act, may also be generated during the combustion of natural gas or diesel fuel. However, these emission rates are anticipated to be insignificant.

As discussed in Section 2.2, the proposed expansion project will involve the installation and operation of the following equipment:

- Three (1) natural gas fired combustion turbines and supplemental fired duct burner (combined cycle systems);
- One (1) natural gas fired auxiliary boiler;
- One (1) diesel fuel fired emergency fire water pump;
- One (1) diesel fuel fired emergency generator; and
- One (1) mechanical draft cooling tower.

To estimate air contaminant emission rates from this equipment, vendor data, "AP-42" emission factors, and/or regulatory derived emission factors were used in conjunction with the equipment design rating, hours of operation, and control device removal efficiency.

Table 2-2 contains a summary of the estimated emissions for the combined cycle systems under various operating scenarios. A second Table 2-2a provides a summary of estimated emissions for three combined cycle systems including startup emissions. These emission estimates are based on technical input from the turbine manufacturer. It is important to note that the emission rates provided in these tables incorporate a control efficiency of 90% for emission of NOx, 90% for CO emissions and 20% for emissions of VOC. The removal efficiencies are associated with the installation of a selective catalytic reduction system and oxidation catalyst on the combined cycle systems.

For purposes of estimating annual Potential to Emit (PTE) emission rates (tons/year), Case 4 was selected as representing worst case conditions. The following worst-case load condition and annual temperature was selected:

- Base load with duct firing and an ambient temperature of 76 ^{o}F for 8,760 hours per year (refer to Table 2-2). This condition was selected because it best represents a maximum output that could be achieved for an entire year. The emission rates provided in Table 2-2 reflect the highest rates provided by the equipment vendor.

The equipment associated with the proposed project is anticipated to generate most of its electrical power during warm days during the summer, when air-conditioning loads lead to peak power demands. The mass emissions during warm ambient conditions are lower than those anticipated for cold conditions. This is because of the greater mass flow through the turbine when the inlet

Table 2-2
Salt Ri[illegible]oject
Proposed E[illegible]n Project
Existing Santan [illegible]erating Station
Summary of Emissions (Various Operating Conditions - 3 Combined Cycle Systems)
Potential to Emit (8,760 hrs/yr)

	Operating Conditions	Gross Power MW (1 Combined Cycle System)	Heat Input MMBtu/Hr - LHV (1 Combined Cycle System)	Hours of Operation	Duct Burner (yes or no)	NOx		CO		SO_2		VOC		PM/PM_{10}	
						lbs/hr	tons/year*	lbs/hr	tons/year*	lbs/hr**	tons/year*	lbs/hr	tons/year*	lbs/hr	tons/year*
Case 1	Winter Baseload	185	1,697	8,760	no	48.9	214.182	29.7	130.086	3.3	14.45	8.1	35.478	40.2	176.08
Case 2	Annual Average, Baseload	172	1,598	8,760	no	46.2	202.356	28.2	123.516	3	13.14	7.8	34.164	37.8	165.56
Case 3	Summer Peak, Baseload	160	1,514	8,760	no	43.8	191.844	26.7	116.946	3	13.14	7.5	32.85	35.7	156.37
Case 4	Annual Average, Supplementary Fired/Power Aug	190	1,713	8,760	yes	52.8	231.264	49.5	216.81	3.6	15.77	18.9	82.782	54.0	236.52
Case 5	Summer Peak, Supplementary Fired/Power Aug	178	1,622	8,760	yes	50.1	219.438	47.7	208.926	3.3	14.45	18.9	82.782	39.9	174.76
Case 6	Winter Partload	129	1,271	8,760	no	36.9	161.622	22.5	98.55	2.4	10.51	12	52.56	32.1	140.60
Case 7	Annual Average, Partload	115	1,173	8,760	no	33.9	148.482	20.7	90.666	2.1	9.20	11.1	48.618	30.3	132.71
Case 8	Summer Peak, Partload	101	1,082	8,760	no	31.2	136.656	18.9	82.782	2.1	9.20	10.2	44.676	28.2	123.52

* Calculation method: lbs/hr (vendor specifications) x 8,760 hrs/yr x 1/2000 = tons/yr
Emission estimates are controlled rates

Rate selected to represent tons/year for regulatory applicability.
Rate selected to represent worst case short term emissions (lbs/hr).

Table 2-2A
Salt [illegible] Project
Proposed Expansion Project [illegible] ing Santan Generating Station
Summary of Emissions (Various Operating Conditions - 3 Combined Cycle Systems with Startup Emissions)
Potential to Emit (8,760 hrs/yr)

			NOx		CO		SO_2		VOC		PM/PM_{10}	
	Operating Conditions	Hours of Operation	lbs/hr	tons/year*	lbs/hr	tons/year*	lbs/hr*	tons/year*	lbs/hr	tons/year*	lbs/hr	tons/year*
Case 1	Winter Baseload	8,760	48.9	214.2	29.7	130.1	3.3	14.5	8.1	35.5	40.2	176.1
Case 2	Annual Average, Baseload	8,760	46.2	202.4	28.2	123.5	3	13.1	7.8	34.2	37.8	165.6
Case 3	Summer Peak, Baseload	8,760	43.8	191.8	26.7	116.9	3	13.14	7.5	32.9	35.7	156.4
Case 4	Annual Average, Supplementary Fired/Power Aug	8,085	52.8	213.4	49.5	200.1	3.6	14.6	18.9	76.4	54	218.3
Case 4	Startup	675	514.5	51.1	2261	213.5	3.6	1.2	279.9	27.975	54	18.2
Case 4	Total	8,760	567.3	264.5	2330	413.6	7.2	15.8	298.8	104.4	108	236.5
Case 5	Summer Peak, Supplementary Fired/Power Aug	8,760	50.1	219.4	47.7	208.9	3.3	14.5	18.9	82.8	39.9	174.8
Case 6	Winter Partload	8,760	36.9	161.6	22.5	98.6	2.4	10.5	12	52.6	32.1	140.6
Case 7	Annual Average, Partload	8,760	33.9	148.5	20.7	90.7	2.1	9.2	11.1	48.6	30.3	132.7
Case 8	Summer Peak, Partload	8,760	31.2	136.7	18.9	82.8	2.1	9.2	10.2	44.7	28.2	123.5

* Calculation method (All Cases except 4): lbs/hr (vendor specifications) x 8,760 hrs/yr x 1/2000 = tons/yr
All emission estimates for the combined cycle systems (excluding startup conditions) are controlled rates.
Startup emissions will be identical for all cases. Emission estimates for Case 4 have been included since they reflect worst case emissions estimates.
Startup emissions based on a worst case condition (Refer to Table 2-3). Each cold, warm and hot startup has a duration 2 hours, 1.5 hours and 1.0 hours, respectively.

Rate selected to represent tons/year for regulatory applicability.
Rate selected to represent worst case short term emissions (lbs/hr).

Table 2-3
Salt River Project
Proposed Expansion Project - Existing Santan Generating Station
Summary of Startup Emission Estimates

Proposed Expansion Project - Summary of Emissions Per Turbine Unit Start

	Cold Start			Warm Start			Hot Start
Parameter	1st Hour (lb/hr)	2nd Hour (lb/hr)	**Cold Start (lb)**	1st Hour (lb/hr)	2nd Hour (lb/hr)	**Total per Warm Start (lb)**	**Total per Hot Start (lb)**
NOx	146.1	162	**308.1**	55.6	171.5	**227.1**	**146.1**
CO	760.2	9.9	**770.1**	704.9	10.5	**715.4**	**710.5**
VOC	93.3	2.6	**95.9**	91.5	2.8	**94.3**	**92.9**
PM/PM10	18.0	18.0	**36.0**	9.0	18.0	**27.0**	**18.0**
SO2	1.2	1.2	**2.4**	0.6	1.2	**1.8**	**1.2**
Startup Duration			**2.0 hrs**			**1.5 hrs**	**1.0 hrs**

NOx, CO and VOC emissions are based on turbine vendor startup emissions data.
PM/PM10 and SO2 emission rates are based on turbine vendor performance Case 4 - Annual Average.
Hot Start = turbine is shutdown overnight (approximately 8 hrs of shutdown)
Warm Start = turbine is shut down over the weekend (approx. 8-48 hrs of shutdown)
or indefinite turbine shutdown if auxiliary boiler is in operation
Cold Start = turbine is shut down for longer than 48 hrs (without auxiliary boiler to keep it warm)

Summary of Proposed Annual Startup Emission Scenarios - Turbine Unit Starts

	Units	Startup Case #1	Startup Case #2	Startup Case #3	Startup Case #4	Expected Startup Case
Total Turbine Starts	starts/yr	450	600	550	550	458
Cold	starts/yr	150	0	0	90	26
Warm	starts/yr	150	150	250	60	14
Hot	starts/yr	150	450	300	405	113
Total Startup Hours	Hrs	675	675	675	675	556
NOx Total	tons/yr	**51.1**	49.9	50.3	50.3	13.8
Cold	tons/yr	23.1	0.0	0.0	13.9	4.0
Warm	tons/yr	17.0	17.0	28.4	6.8	1.6
Hot	tons/yr	11.0	32.9	21.9	29.6	8.3
CO Total	tons/yr	164.7	**213.5**	196.0	200.0	55.0
Cold	tons/yr	57.8	0.0	0.0	34.7	9.9
Warm	tons/yr	53.7	53.7	89.4	21.5	4.9
Hot	tons/yr	53.3	159.9	106.6	143.9	40.3
VOC Total	tons/yr	21.2	**28.0**	25.7	26.0	7.1
Cold	tons/yr	7.2	0.0	0.0	4.3	1.2
Warm	tons/yr	7.1	7.1	11.8	2.8	0.6
Hot	tons/yr	7.0	20.9	13.9	18.8	5.3
PM/PM10 Total	tons/yr	6.1	6.1	6.1	6.1	1.7
Cold	tons/yr	2.7	0.0	0.0	1.6	0.5
Warm	tons/yr	2.0	2.0	3.4	0.8	0.2
Hot	tons/yr	1.4	4.1	2.7	3.6	1.0
SO2 Total	tons/yr	0.4	0.4	0.4	0.4	0.1
Cold	tons/yr	0.2	0.0	0.0	0.1	0.0
Warm	tons/yr	0.1	0.1	0.2	0.1	0.0
Hot	tons/yr	0.1	0.3	0.2	0.2	0.1

Maximum "worst case" annual startup emissions for each pollutant are highlighted.

combustion air is coldest. Refer to Table 2-2 for emission rates that may occur at various load conditions and ambient temperatures.

It is also important to note that each combined cycle system will be equipped with a supplemental natural gas fired duct burner. This burner will be operated during certain conditions to provide additional steam to the steam turbine. This will result in additional electrical power output from the expansion project during peak conditions. As shown in Table 2-2, the duct burner operation has been reflected in Case 4.

Based on the demand for electrical power, the proposed combined cycle systems may not operate continuously throughout the year. Subsequently, it has been determined that the combined cycle systems could be started under one of the three following operation scenarios. These are discussed below:

Cold Start — This type of start is associated with a combined cycle system that has been inactive for an extended period of time (typically greater than 8 hours). During this start-up condition, it takes the system approximately 2 hours to reach its normal operating mode.

Hot Start — This type of start is associated with a combined cycle system that has been inactive overnight (typically less than 8 hours). During this startup condition, it takes the system approximately 1 hour to reach its normal operating mode.

Warm Start — This type of start is associated with a combined cycle system that has been kept warm with the auxiliary boiler. During this startup condition it takes the system approximately 1.5 hours to reach its normal operating mode.

SRP has evaluated the potential use of the combined cycle system and has concluded that the following startup conditions or scenarios could occur at the proposed plant.

Scenario	No. of Cold Starts	No. of Warm Starts	No. of Hot Starts
Operating Scenario #1	150	150	150
Operating Scenario #2	0	150	450
Operating Scenario #3	0	250	300
Operating Scenario #4	90	60	405

Based on the above scenarios, it was determined that startup conditions could occur between 450 and 600 times per year.

To determine emissions of NO_x, CO and VOC emissions that may occur during the various startup conditions, SRP evaluated historical data. Based on this historical data, SRP was able to quantify what level of NO_x, CO and VOC emissions that may occur during cold, warm and hot startup

scenarios. Table 2-3 provides emission estimates for each of the four operating scenarios for various startup conditions during a given year. As shown in Table 2-3, the maximum lbs of NO_x emissions from the combined cycle systems would be from scenario #1 (150 cold, warm and hot startups, respectively). For emissions of CO and VOC, the maximum operating scenario that would generate the greatest emission rates would be scenario #2 (150 warm startups and 450 hot startups).

To account for these startup emissions, in the expansion project's potential emissions, the emissions estimates for the combined cycle systems under normal conditions were adjusted (maximum hours of operation of 8,760 were reduced accordingly to account for the startup conditions). The combined emissions rates are provided in Table 2-2a.

To estimate air pollutant emission rates from the support equipment, "AP-42" emission factors and/or vendor data were used in conjunction with the equipment design rating and hours of operation. Since the emergency equipment is designed to operate during emergency conditions or for a short period of time during each month, potential emission estimates were based on a specific number of operating hours. These operating hours are provided below:

- Emergency Generator — 37.5 Hours per year and 1 hour for each day of operation;
- Emergency Fire Water Pump — 37.5 Hours per year and 1 hour for each day of operation; and
- Auxiliary Boiler – 1,200 hours per year and 24 hours for each day of operation.

Refer to Tables 2-4, 2-5, 2-6, and 2-7 for emission rates associated with the auxiliary boiler, emergency generator, emergency fire water pump, and cooling tower, respectively. The cooling tower is designed to operate in combination with the combined cycle systems. No restriction on hours was incorporated into the emissions estimates for the cooling tower.

Tables 2-1 and 2-1a provide a summary of potential air pollutants on a ton per year from the proposed expansion project. This table also provides the emission rate (ton/year) threshold that triggers applicability of NANSR and PSD. The requirements associated with triggering these regulatory programs, along with the proposed expansion projects status of compliance with federal, state, and county regulations, are outlined in Sections 4 and 5.

In addition to the generation of the air pollutants discussed above, the proposed expansion project may generate insignificant levels of hazardous air pollutants. To determine the types of hazardous air pollutants that could be emitted, databases developed by USEPA and some state agencies (i.e., California Air Resource Board – CARB) were reviewed for the availability of emissions factors for these types of pollutants.

Using the emission factors deemed appropriate, hazardous air pollutant emission rates were estimated for the combined cycle system and support equipment. Table 2-8 summarizes the hazardous air pollutant emission rates estimated for the combined cycle systems, while Tables 2-9 and 2-10 provide estimates for the support equipment. As shown in Table 2-11 potential hazardous

Tab[illegible]4
Salt River Project
Proposed Expansion Project - Existing Santan Generating Station
Auxiliary Boiler Potential Emission Estimates

Air Pollutant	Emission Factor (lb/MMBtu)	Heat Input (MMBtu/hour)	Annual Hours Of Operation	Annual Emissions (lbs/year)	Annual Emissions (TPY)
NO_X	0.073	99	1200	8672.4	4.34
CO	0.067	99	1200	7959.6	3.98
VOC	0.0042	99	1200	499.0	0.25
PM_{10}	0.010	99	1200	1188.0	0.59
SO2	0.0028	99	1200	332.6	0.17

Maximum Design Heat Input Rate
(MMBtu/hr) = 99

Notes:
Annual Emissions are based on 1200 hours of operation and vendor supplied emissions data.
lb/MMBtu = pounds per million Btu of natural gas
MMBtu/hour = million Btu of natural gtas per hour
SO2 emission factor based on 1 grain of sulfur per 100 standard cubic feet of natural gas.

Example Calculation:

Emission Factor(lbs/MMBtu) x Heat Input (MMBtu/Hour) x 1200 hours/year x 1 ton/2000 lbs= Annual emissions (lbs/year)

Table 2-5
Salt River Project
Proposed Expansion Project - Existing Santan Generating Station
Emergency Generator Potential Emission Estimates

Air Pollutant	Emission Factor (lb/hp-hr)	Hourly Emissions (lb/hour)	Hours Of Operation	Annual Emissions (TPY)
NO_x *	0.031	10.39	37.5	0.19
CO *	0.00668	2.24	37.5	0.04
TOC (VOC) *	0.00251	0.84	37.5	0.02
PM *	0.0022	0.74	37.5	0.01
SO_2	-	0.14	37.5	0.003

Maximum Design Rate in Horsepower = 335

Notes:
Annual Emissions are based on 37.5 hours of operation.
* AP-42 emission factor (Table 3.3-1, 10/96).
Generator fires diesel fuel with a sulfur content of 0.05 percent.
It is assumed that TOC = VOC.

Sample Calculation:

NOx (tons/year) = 0.031 lb/hp-hr * 335 hp * 37.5 hrs/year * 1 ton/2000 lbs = 0.19 tons/year

SO_2 Sample Calculation and Basis for Estimate:

SO_2 (tons/year) = 20 gal/hr * 7.05 lbs/gal * 0.05/100 (sulfur fraction) * 2 lb SO_2/lb S * 75 hrs/year * 1 ton/2000 lbs = 0.01 tons/year

Generator fuel usage (gal/hr): 20
Diesel fuel density (lbs/gal): 7.05

Table 2-6
Salt River Project
Proposed Expansion Project - Existing Santan Generating Station
Emergency Fire Water Pump Potential Emission Estimates

Air Pollutant	Emission Factor (lb/hp-hr)	Hourly Emissions (lb/hour)	Hours Of Operation	Annual Emissions (TPY)
NO_x *	0.031	9.61	37.5	0.180
CO *	0.00668	2.07	37.5	0.039
TOC (VOC) *	0.00251	0.78	37.5	0.015
PM *	0.0022	0.68	37.5	0.013
SO_2	-	0.13	37.5	0.002

Maximum Design Rate in Horsepower = 310

Notes:
Annual Emissions are based on 37.5 hours of operation.
* AP-42 emission factor (Table 3.3-1, 10/96).
Fire pump fires diesel fuel with a sulfur content of 0.05 percent.
It is assumed that TOC = VOC.

Sample Calculation:

NOx (tons/year) = 0.031 lb/hp-hr * 310 hp * 37.5 hrs/year * 1 ton/2000 lbs = 0.18 tons/year

SO2 Sample Calculation and Basis for Estimate:

SO2 (tons/year)=18 gal/hr * 7.05 lbs/gal * 0.05/100 (sulfur fraction) * 2 lb SO2/lb S * 37.5 hrs/year * 1 ton/2000 lbs=0.002 tons/year

Pump fuel usage (gal/hr): 18
Diesel fuel density (lbs/gal): 7.05

Table 7
Salt River Project
Proposed Expansion Project - Existing Santan Generating Station
Cooling Tower - Potential Emission Estimates

Air Pollutant	Circ Water Flow (gpm)	Drift (gpm)	TDS (lbs/gallon)	PM emissions (lbs/minute)	Hourly Emissions (lb/hour)	Annual Emissions (TPY)
PM	230000	1.15	0.025	0.0288	1.725	7.6

Annual emissions are based on 8760 hours of operation.
Guarantee of 0.0005% liquid drift of the circulation. (230,000 gpm X 0.0005% = 1.15 gallon per minute drift)
TDS equals 3000 mg/liter. This equates to 3000 mg/liter X 3.785/1 liters/gallon X g/1000 mg X lb/454 g or 0.025 pounds per gallon.

air pollutant emission rates for the proposed expansion project are below the major source threshold developed by USEPA. The threshold levels developed by USEPA for defining a source as a major stationary source of hazardous air pollutants are 10 tons per year of an individual pollutant and 25 tons per year as an aggregate. USEPA has identified 188 chemicals that are considered hazardous air pollutants. These pollutants are listed under Section 112(b) of the Clean Air Act.

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Proposed Expansion Project - E[illegible]ng Santan Generating Station
Hazardous Air Pollutant Emission Factors(CATEF Means) for Three Combined Cycle Systems

POLLUTANT	HAP (Yes/No)	EMISSION FACTOR (lbs/MMBtu)	EMISSION FACTOR SOURCE	EMISSION FACTOR (lbs/MMBtu)	EMISSION FACTOR SOURCE	EMISSION FACTOR SELECTED (lbs/MMBtu)	ESTIMATED UNCONTROLLED EMISSIONS (tons/year)	ESTIMATED CONTROLLED EMISSIONS (tons/year)
1,3-Butadiene	Yes	4.314E-07	AP-42 Stat. Gas Turb. (5/98 draft), Table 3.1-3	1.245E-07	CATEF- Nat Gas Turbines w/SCR, Mean Em Fctr	4.314E-07	0.010	0.008
2-Chloronaphthalene	Yes	2.667E-10	CATEF- Nat Gas Turbines w/SCR, Mean Em Fctr			2.667E-10	0.00001	0.00000
2-Methylnaphthalene	Yes	5.186E-09	CATEF- Nat Gas Turbines w/SCR, Mean Em Fctr			5.186E-09	0.0001	0.0001
Acenaphthene	Yes	1.863E-08	CATEF- Nat Gas Turbines w/SCR, Mean Em Fctr			1.863E-08	0.0004	0.000
Acenaphthylene	Yes	1.441E-08	CATEF- Nat Gas Turbines w/SCR, Mean Em Fctr			1.441E-08	0.0003	0.000
Acetaldehyde	Yes	7.843E-05	AP-42 Stat. Gas Turb. (5/98 draft), Table 3.1-3	6.725E-05	CATEF- Nat Gas Turbines w/SCR, Mean Em Fctr	7.843E-05	1.765	1.412
Acrolein	Yes	7.745E-06	AP-42 Stat. Gas Turb. (5/98 draft), Table 3.1-3	2.324E-05	CATEF- Nat Gas Turbines w/SCR, Mean Em Fctr	2.324E-05	0.523	0.418
Anthracene	Yes	3.314E-08	CATEF- Nat Gas Turbines w/SCR, Mean Em Fctr			3.314E-08	0.001	0.001
Arsenic	Yes	4.804E-08	AP-42 Stat. Gas Turb. (5/98 draft), Table 3.1-4			4.804E-08	0.001	0.001
Benzene	Yes	1.373E-04	AP-42 Stat. Gas Turb. (5/98 draft), Table 3.1-3	1.333E-05	CATEF- Nat Gas Turbines w/SCR, Mean Em Fctr	1.373E-04	3.089	2.472
Benzo(a)anthracene	Yes	2.216E-08	CATEF- Nat Gas Turbines w/SCR, Mean Em Fctr			2.216E-08	0.0005	0.000
Benzo(a)pyrene	Yes	1.363E-08	CATEF- Nat Gas Turbines w/SCR, Mean Em Fctr			1.363E-08	0.0003	0.000
Benzo(b)fluoranthene	Yes	1.108E-08	CATEF- Nat Gas Turbines w/SCR, Mean Em Fctr			1.108E-08	0.0002	0.000
Benzo(e)pyrene	Yes	5.333E-10	CATEF- Nat Gas Turbines w/SCR, Mean Em Fctr			5.333E-10	0.00001	0.00001
Benzo(g,h,i)perylene	Yes	1.343E-08	CATEF- Nat Gas Turbines w/SCR, Mean Em Fctr			1.343E-08	0.0003	0.000
Benzo(k)fluoranthene	Yes	1.078E-08	CATEF- Nat Gas Turbines w/SCR, Mean Em Fctr			1.078E-08	0.0002	0.000
Cadmium	Yes	8.235E-07	AP-42 Stat. Gas Turb. (5/98 draft), Table 3.1-4			8.235E-07	0.019	0.019
Chromium VI	Yes	1.275E-06	AP-42 Stat. Gas Turb. (5/98 draft), Table 3.1-4			1.275E-06	0.029	0.029
Chrysene	Yes	2.471E-08	CATEF- Nat Gas Turbines w/SCR, Mean Em Fctr			2.471E-08	0.001	0.000
Dibenz(a,h)anthracene	Yes	2.304E-08	CATEF- Nat Gas Turbines w/SCR, Mean Em Fctr			2.304E-08	0.001	0.000
Ethylbenzene	Yes	2.353E-05	AP-42 Stat. Gas Turb. (5/98 draft), Table 3.1-3	1.755E-05	CATEF- Nat Gas Turbines w/SCR, Mean Em Fctr	2.353E-05	0.530	0.424
Fluoranthene	Yes	4.235E-08	CATEF- Nat Gas Turbines w/SCR, Mean Em Fctr			4.235E-08	0.001	0.001
Fluorene	Yes	5.686E-08	CATEF- Nat Gas Turbines w/SCR, Mean Em Fctr			5.686E-08	0.001	0.001
Formaldehyde	Yes	3.333E-03	AP-42 Stat. Gas Turb. (5/98 draft), Table 3.1-3	1.078E-04	CATEF- Nat Gas Turbines w/SCR, Mean Em Fctr	1.078E-04	2.427	1.942
Hexane	Yes	2.539E-04	CATEF- Nat Gas Turbines w/SCR, Mean Em Fctr			2.539E-04	5.715	4.572
Indeno(1,2,3-cd)pyrene	Yes	2.304E-08	CATEF- Nat Gas Turbines w/SCR, Mean Em Fctr			2.304E-08	0.001	0.000
Lead	Yes	1.569E-05	AP-42 Stat. Gas Turb. (5/98 draft), Table 3.1-4			1.569E-05	0.353	0.353
Manganese	Yes	1.569E-06	AP-42 Stat. Gas Turb. (5/98 draft), Table 3.1-4			1.569E-06	0.035	0.035
Mercury	Yes	4.314E-07	AP-42 Stat. Gas Turb. (5/98 draft), Table 3.1-4			4.314E-07	0.010	0.010
Naphthalene	Yes	1.373E-04	AP-42 Stat. Gas Turb. (5/98 draft), Table 3.1-3	1.627E-06	CATEF- Nat Gas Turbines w/SCR, Mean Em Fctr	1.373E-04	3.089	2.472
N-nitrosodimethylamine	Yes	2.255E-07	AP-42 Stat. Gas Turb. (5/98 draft), Table 3.1-3			2.255E-07	0.005	0.004
N-nitrosomorpholine	Yes	2.255E-07	AP-42 Stat. Gas Turb. (5/98 draft), Table 3.1-3			2.255E-07	0.005	0.004
Perylene	Yes	6.863E-10	CATEF- Nat Gas Turbines w/SCR, Mean Em Fctr			6.863E-10	0.00002	0.00001
Phenanthrene	Yes	3.069E-07	CATEF- Nat Gas Turbines w/SCR, Mean Em Fctr			3.069E-07	0.007	0.006
Polycyclic Aromatic Hydrocarbon	Yes	1.765E-04	AP-42 Stat. Gas Turb. (5/98 draft), Table 3.1-3			1.765E-04	3.972	3.178
Propylene	No	7.559E-04	CATEF- Nat Gas Turbines w/SCR, Mean Em Fctr			7.559E-04	-	-
Propylene Oxide	Yes	2.843E-05	AP-42 Stat. Gas Turb. (5/98 draft), Table 3.1-3	4.686E-05	CATEF- Nat Gas Turbines w/SCR, Mean Em Fctr	4.686E-05	1.055	0.844
Pyrene	Yes	2.716E-08	CATEF- Nat Gas Turbines w/SCR, Mean Em Fctr			2.716E-08	0.001	0.000
Toluene	Yes	1.275E-04	AP-42 Stat. Gas Turb. (5/98 draft), Table 3.1-3	6.961E-05	CATEF- Nat Gas Turbines w/SCR, Mean Em Fctr	1.275E-04	2.869	2.295
Trimethylamine	Yes	1.667E-07	AP-42 Stat. Gas Turb. (5/98 draft), Table 3.1-3			1.667E-07	0.004	0.003
Xylene	Yes	2.647E-05	AP-42 Stat. Gas Turb. (5/98 draft), Table 3.1-3	2.559E-05	CATEF- Nat Gas Turbines w/SCR, Mean Em Fctr	2.647E-05	0.596	0.477
								21.0

Controlled emissions are 20 percent VOC control from the oxidation catalyst.
Note: The formaldehyde emission factor from AP-42 presented above is not applicable to this installation because the emissions factor is based upon tests from much smaller, less efficient turbines.
Therefore, the CATEF emission factor was selected.
LHV Heat Input of one CT (MMBtu/hr) = 1713

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Proposed Expansion Project - Existing Santan Generating Station
Hazardous Air Pollutant Emission Factors (CATEF Means) for Three Duct Burners

POLLUTANT	HAP (Yes/No)	EMISSION FACTOR (lbs/MMBtu)	EMISSION FACTOR SOURCE	EMISSION FACTOR (lbs/MMBtu)	EMISSION FACTOR SOURCE	EMISSION FACTOR SELECTED (lbs/MMBtu)	ESTIMATED UNCONTROLLED EMISSIONS (tons/year)	CONTROLLED EMISSIONS (tons/year)
2-Methylnaphthalene	Yes	2.353E-08	AP-42 Nat. Gas Comb. (7/98), Table 1.4-3			2.353E-08	4.388E-05	3.511E-05
3-Methylchloranthrene	Yes	1.765E-09	AP-42 Nat. Gas Comb. (7/98), Table 1.4-3			1.765E-09	3.291E-06	2.633E-06
7,12-Dimethylbenz(a)anthracene	Yes	1.569E-08	AP-42 Nat. Gas Comb. (7/98), Table 1.4-3			1.569E-08	2.926E-05	2.341E-05
Acenaphthene	Yes	1.765E-09	AP-42 Nat. Gas Comb. (7/98), Table 1.4-3			1.765E-09	3.291E-06	2.633E-06
Acenaphthylene	Yes	1.765E-09	AP-42 Nat. Gas Comb. (7/98), Table 1.4-3			1.765E-09	3.291E-06	2.633E-06
Acetaldehyde	Yes	8.696E-06	CATEF- Nat Gas Boiler w/no controls, Mean Em Fctr			8.696E-06	1.622E-02	1.298E-02
Anthracene	Yes	2.353E-09	AP-42 Nat. Gas Comb. (7/98), Table 1.4-3			2.353E-09	4.388E-06	3.511E-06
Arsenic	Yes	1.961E-07	AP-42 Nat. Gas Comb. (7/98), Table 1.4-4			1.961E-07	3.657E-04	2.926E-04
Barium	No	4.314E-06	AP-42 Nat. Gas Comb. (7/98), Table 1.4-4			4.314E-06	-	-
Benz(a)anthracene	Yes	1.765E-09	AP-42 Nat. Gas Comb. (7/98), Table 1.4-3			1.765E-09	3.291E-06	2.633E-06
Benz(a)pyrene	Yes	1.176E-09	AP-42 Nat. Gas Comb. (7/98), Table 1.4-3			1.176E-09	2.194E-06	1.755E-06
Benzaldehyde	No	1.608E-05	CATEF- Nat Gas Boiler w/no controls, Mean Em Fctr			1.608E-05	-	-
Benzene	Yes	2.059E-06	AP-42 Nat. Gas Comb. (7/98), Table 1.4-3	4.225E-06	CATEF- Nat Gas Boiler w/no controls, Mean Em Fctr	4.225E-06	7.881E-03	6.305E-03
Benzo(b)fluoranthene	Yes	1.765E-09	AP-42 Nat. Gas Comb. (7/98), Table 1.4-3			1.765E-09	3.291E-06	2.633E-06
Benzo(g,h,i)perylene	Yes	1.176E-09	AP-42 Nat. Gas Comb. (7/98), Table 1.4-3			1.176E-09	2.194E-06	1.755E-06
Benzo(k)fluoranthene	Yes	1.765E-09	AP-42 Nat. Gas Comb. (7/98), Table 1.4-3			1.765E-09	3.291E-06	2.633E-06
Beryllium	Yes	1.176E-08	AP-42 Nat. Gas Comb. (7/98), Table 1.4-4			1.176E-08	2.194E-05	2.194E-05
Butane	No	2.059E-03	AP-42 Nat. Gas Comb. (7/98), Table 1.4-3			2.059E-03	-	-
Cadmium	Yes	1.078E-06	AP-42 Nat. Gas Comb. (7/98), Table 1.4-4			1.078E-06	2.011E-03	2.011E-03
Chromium	Yes	1.373E-06	AP-42 Nat. Gas Comb. (7/98), Table 1.4-4			1.373E-06	2.560E-03	2.560E-03
Chrysene	Yes	1.765E-09	AP-42 Nat. Gas Comb. (7/98), Table 1.4-3			1.765E-09	3.291E-06	2.633E-06
Cobalt	Yes	8.235E-08	AP-42 Nat. Gas Comb. (7/98), Table 1.4-4			8.235E-08	1.536E-04	1.536E-04
Copper	No	8.333E-07	AP-42 Nat. Gas Comb. (7/98), Table 1.4-4			8.333E-07	-	-
Dibenzo(a,h)anthracene	Yes	1.176E-09	AP-42 Nat. Gas Comb. (7/98), Table 1.4-3			1.176E-09	2.194E-06	1.755E-06
Dichlorobenzene	Yes	1.176E-06	AP-42 Nat. Gas Comb. (7/98), Table 1.4-3			1.176E-06	2.194E-03	1.755E-03
Ethane	No	3.039E-03	AP-42 Nat. Gas Comb. (7/98), Table 1.4-3			3.039E-03	-	-
Fluoranthene	Yes	2.941E-09	AP-42 Nat. Gas Comb. (7/98), Table 1.4-3			2.941E-09	5.486E-06	4.388E-06
Fluorene	Yes	2.745E-09	AP-42 Nat. Gas Comb. (7/98), Table 1.4-3			2.745E-09	5.120E-06	4.096E-06
Formaldehyde	Yes	7.353E-05	AP-42 Nat. Gas Comb. (7/98), Table 1.4-3	2.167E-04	CATEF- Nat Gas Boiler w/no controls, Mean Em Fctr	2.167E-04	4.041E-01	3.233E-01
Hexane	Yes	1.765E-03	AP-42 Nat. Gas Comb. (7/98), Table 1.4-3			1.765E-03	3.291E+00	2.633E+00
Indeno(1,2,3-cd)pyrene	Yes	1.765E-09	AP-42 Nat. Gas Comb. (7/98), Table 1.4-3			1.765E-09	3.291E-06	2.633E-06
Manganese	Yes	3.725E-07	AP-42 Nat. Gas Comb. (7/98), Table 1.4-4			3.725E-07	6.948E-04	6.948E-04
Mercury	Yes	2.549E-07	AP-42 Nat. Gas Comb. (7/98), Table 1.4-4			2.549E-07	4.754E-04	4.754E-04
Molybdenum	No	1.078E-06	AP-42 Nat. Gas Comb. (7/98), Table 1.4-4			1.078E-06	-	-
Naphthalene	Yes	5.980E-07	AP-42 Nat. Gas Comb. (7/98), Table 1.4-3			5.980E-07	1.115E-03	8.923E-04
Nickel	Yes	2.059E-06	AP-42 Nat. Gas Comb. (7/98), Table 1.4-4			2.059E-06	3.840E-03	3.840E-03
Pentane	No	2.549E-03	AP-42 Nat. Gas Comb. (7/98), Table 1.4-3			2.549E-03	-	-
Phenanathrene	Yes	1.667E-08	AP-42 Nat. Gas Comb. (7/98), Table 1.4-3			1.667E-08	3.108E-05	2.487E-05
Propane	No	1.569E-03	AP-42 Nat. Gas Comb. (7/98), Table 1.4-3			1.569E-03	-	-
Pyrene	Yes	4.902E-09	AP-42 Nat. Gas Comb. (7/98), Table 1.4-3			4.902E-09	9.143E-06	7.314E-06
Selenium	Yes	2.353E-08	AP-42 Nat. Gas Comb. (7/98), Table 1.4-4			2.353E-08	4.388E-05	4.388E-05
Toluene	Yes	3.333E-06	AP-42 Nat. Gas Comb. (7/98), Table 1.4-3			3.333E-06	6.217E-03	4.974E-03
Vanadium	No	2.255E-06	AP-42 Nat. Gas Comb. (7/98), Table 1.4-4			2.255E-06	-	-
Zinc	No	2.843E-05	AP-42 Nat. Gas Comb. (7/98), Table 1.4-4			2.843E-05	-	-
							3.7	3.0

Controlled emissions are 20 percent VOC control from the oxidation catalyst.
Emission estimates based on 8,760 hours of operation/year/duct burner.
LHV Heat Input of one Duct Burner (MMBtu/hour) = **141.94**

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Proposed Expansion Project - Existing Santan Generating Station
Hazardous Air Pollutant Emission Factors for the Auxiliary Boiler

POLLUTANT	HAP (Yes/No)	EMISSION FACTOR (lbs/MMBtu)	EMISSION FACTOR SOURCE	EMISSION FACTOR (lbs/MMBtu)	EMISSION FACTOR SOURCE	EMISSION FACTOR SELECTED (lbs/MMBtu)	ESTIMATED UNCONTROLLED EMISSIONS (tons/year)
2-Methylnaphthalene	Yes	2.353E-08	AP-42 Nat. Gas Comb. (7/98), Table 1.4-3			2.353E-08	**1.398E-06**
3-Methylchloranthrene	Yes	1.765E-09	AP-42 Nat. Gas Comb. (7/98), Table 1.4-3			1.765E-09	**1.048E-07**
7,12-Dimethylbenz(a)anthracene	Yes	1.569E-08	AP-42 Nat. Gas Comb. (7/98), Table 1.4-3			1.569E-08	**9.318E-07**
Acenaphthene	Yes	1.765E-09	AP-42 Nat. Gas Comb. (7/98), Table 1.4-3			1.765E-09	**1.048E-07**
Acenaphthylene	Yes	1.765E-09	AP-42 Nat. Gas Comb. (7/98), Table 1.4-3			1.765E-09	**1.048E-07**
Acetaldehyde	Yes	1.441E-05	CATEF- Nat Gas Boiler w/no controls, Max Em Fctr			1.441E-05	**8.561E-04**
Anthracene	Yes	2.353E-09	AP-42 Nat. Gas Comb. (7/98), Table 1.4-3			2.353E-09	**1.398E-07**
Arsenic	Yes	1.961E-07	AP-42 Nat. Gas Comb. (7/98), Table 1.4-4			1.961E-07	**1.165E-05**
Barium	No	4.314E-06	AP-42 Nat. Gas Comb. (7/98), Table 1.4-4			4.314E-06	-
Benz(a)anthracene	Yes	1.765E-09	AP-42 Nat. Gas Comb. (7/98), Table 1.4-3			1.765E-09	**1.048E-07**
Benz(a)pyrene	Yes	1.176E-09	AP-42 Nat. Gas Comb. (7/98), Table 1.4-3			1.176E-09	**6.988E-08**
Benzaldehyde	No	2.667E-05	CATEF- Nat Gas Boiler w/no controls, Max Em Fctr			2.667E-05	-
Benzene	Yes	2.059E-06	AP-42 Nat. Gas Comb. (7/98), Table 1.4-3	8.529E-06	CATEF- Nat Gas Boiler w/no controls, Max Em Fctr	8.529E-06	**5.066E-04**
Benzo(b)fluoranthene	Yes	1.765E-09	AP-42 Nat. Gas Comb. (7/98), Table 1.4-3			1.765E-09	**1.048E-07**
Benzo(g,h,i)perylene	Yes	1.176E-09	AP-42 Nat. Gas Comb. (7/98), Table 1.4-3			1.176E-09	**6.988E-08**
Benzo(k)fluoranthene	Yes	1.765E-09	AP-42 Nat. Gas Comb. (7/98), Table 1.4-3			1.765E-09	**1.048E-07**
Beryllium	Yes	1.176E-08	AP-42 Nat. Gas Comb. (7/98), Table 1.4-4			1.176E-08	**6.988E-07**
Butane	No	2.059E-03	AP-42 Nat. Gas Comb. (7/98), Table 1.4-3			2.059E-03	-
Cadmium	Yes	1.078E-06	AP-42 Nat. Gas Comb. (7/98), Table 1.4-4			1.078E-06	**6.406E-05**
Chromium	Yes	1.373E-06	AP-42 Nat. Gas Comb. (7/98), Table 1.4-4			1.373E-06	**8.153E-05**
Chrysene	Yes	1.765E-09	AP-42 Nat. Gas Comb. (7/98), Table 1.4-3			1.765E-09	**1.048E-07**
Cobalt	Yes	8.235E-08	AP-42 Nat. Gas Comb. (7/98), Table 1.4-4			8.235E-08	**4.892E-06**
Copper	No	8.333E-07	AP-42 Nat. Gas Comb. (7/98), Table 1.4-4			8.333E-07	-
Dibenzo(a,h)anthracene	Yes	1.176E-09	AP-42 Nat. Gas Comb. (7/98), Table 1.4-3			1.176E-09	**6.988E-08**
Dichlorobenzene	Yes	1.176E-06	AP-42 Nat. Gas Comb. (7/98), Table 1.4-3			1.176E-06	**6.988E-05**
Ethane	No	3.039E-03	AP-42 Nat. Gas Comb. (7/98), Table 1.4-3			3.039E-03	-
Fluoranthene	Yes	2.941E-09	AP-42 Nat. Gas Comb. (7/98), Table 1.4-3			2.941E-09	**1.747E-07**
Fluorene	Yes	2.745E-09	AP-42 Nat. Gas Comb. (7/98), Table 1.4-3			2.745E-09	**1.631E-07**
Formaldehyde	Yes	7.353E-05	AP-42 Nat. Gas Comb. (7/98), Table 1.4-3	2.167E-04	CATEF- Nat Gas Boiler w/no controls, Max Em Fctr	2.167E-04	**1.287E-02**
Hexane	Yes	1.765E-03	AP-42 Nat. Gas Comb. (7/98), Table 1.4-3			1.765E-03	**1.048E-01**
Indeno(1,2,3-cd)pyrene	Yes	1.765E-09	AP-42 Nat. Gas Comb. (7/98), Table 1.4-3			1.765E-09	**1.048E-07**
Manganese	Yes	3.725E-07	AP-42 Nat. Gas Comb. (7/98), Table 1.4-4			3.725E-07	**2.213E-05**
Mercury	Yes	2.549E-07	AP-42 Nat. Gas Comb. (7/98), Table 1.4-4			2.549E-07	**1.514E-05**
Molybdenum	No	1.078E-06	AP-42 Nat. Gas Comb. (7/98), Table 1.4-4			1.078E-06	-
Naphthalene	Yes	5.980E-07	AP-42 Nat. Gas Comb. (7/98), Table 1.4-3			5.980E-07	**3.552E-05**
Nickel	Yes	2.059E-06	AP-42 Nat. Gas Comb. (7/98), Table 1.4-4			2.059E-06	**1.223E-04**
Pentane	No	2.549E-03	AP-42 Nat. Gas Comb. (7/98), Table 1.4-3			2.549E-03	-
Phenanathrene	Yes	1.667E-08	AP-42 Nat. Gas Comb. (7/98), Table 1.4-3			1.667E-08	**9.900E-07**
Propane	No	1.569E-03	AP-42 Nat. Gas Comb. (7/98), Table 1.4-3			1.569E-03	-
Pyrene	Yes	4.902E-09	AP-42 Nat. Gas Comb. (7/98), Table 1.4-3			4.902E-09	**2.912E-07**
Selenium	Yes	2.353E-08	AP-42 Nat. Gas Comb. (7/98), Table 1.4-4			2.353E-08	**1.398E-06**
Toluene	Yes	3.333E-06	AP-42 Nat. Gas Comb. (7/98), Table 1.4-3			3.333E-06	**1.980E-04**
Vanadium	No	2.255E-06	AP-42 Nat. Gas Comb. (7/98), Table 1.4-4			2.255E-06	-
Zinc	No	2.843E-05	AP-42 Nat. Gas Comb. (7/98), Table 1.4-4			2.843E-05	-
							0.12

Emission estimates based on 1,350 hours of operation/year.
Heat Input of Auxiliary Boiler (MMBtu/hour) = **99**

Ta[illegible]0
Salt R[illegible]oject
Proposed Expansion Project - Existing Santan Generating Station
Hazardous Air Pollutant Emission Factors for the Emergency Generator and Emergency Fire Pump

POLLUTANT	HAP (Yes/No)	EMISSION FACTOR (lbs/MMBtu)	EMISSION FACTOR SOURCE	ESTIMATED UNCONTROLLED EMISSIONS FROM THE EMERGENCY GENERATOR (tons/year)	ESTIMATED UNCONTROLLED EMISSIONS FROM THE EMERGENCY FIRE WATER PUMP (tons/year)	TOTAL UNCONTROLLED EMISSIONS (tons/year)
1,3-Butadiene	Yes	3.910E-05	AP-42 Gasoline & Diesel Ind. Engines (10/96), Table 3.3-2	6.3E-07	5.8E-07	**1.2E-06**
Acenaphthene	Yes	1.420E-06	AP-42 Gasoline & Diesel Ind. Engines (10/96), Table 3.3-2	2.3E-08	2.1E-08	**4.4E-08**
Acenaphthylene	Yes	5.060E-06	AP-42 Gasoline & Diesel Ind. Engines (10/96), Table 3.3-2	8.1E-08	7.5E-08	**1.6E-07**
Acetaldehyde	Yes	7.670E-04	AP-42 Gasoline & Diesel Ind. Engines (10/96), Table 3.3-2	1.2E-05	1.1E-05	**2.4E-05**
Acrolein	Yes	9.250E-05	AP-42 Gasoline & Diesel Ind. Engines (10/96), Table 3.3-2	1.5E-06	1.4E-06	**2.8E-06**
Anthracene	Yes	1.870E-06	AP-42 Gasoline & Diesel Ind. Engines (10/96), Table 3.3-2	3.0E-08	2.8E-08	**5.8E-08**
Benzene	Yes	9.330E-04	AP-42 Gasoline & Diesel Ind. Engines (10/96), Table 3.3-2	1.5E-05	1.4E-05	**2.9E-05**
Benzo(a)anthracene	Yes	1.680E-06	AP-42 Gasoline & Diesel Ind. Engines (10/96), Table 3.3-2	2.7E-08	2.5E-08	**5.2E-08**
Benzo(a)pyrene	Yes	1.880E-07	AP-42 Gasoline & Diesel Ind. Engines (10/96), Table 3.3-2	3.0E-09	2.8E-09	**5.8E-09**
Benzo(b)fluoranthene	Yes	9.910E-08	AP-42 Gasoline & Diesel Ind. Engines (10/96), Table 3.3-2	1.6E-09	1.5E-09	**3.1E-09**
Benzo(g,h,i)perylene		4.890E-07	AP-42 Gasoline & Diesel Ind. Engines (10/96), Table 3.3-2	-	-	-
Benzo(k)fluoranthene	Yes	1.550E-07	AP-42 Gasoline & Diesel Ind. Engines (10/96), Table 3.3-2	2.5E-09	2.3E-09	**4.8E-09**
Chrysene	Yes	3.530E-07	AP-42 Gasoline & Diesel Ind. Engines (10/96), Table 3.3-2	5.6E-09	5.2E-09	**1.1E-08**
Dibenz(a,h)anthracene	Yes	5.830E-07	AP-42 Gasoline & Diesel Ind. Engines (10/96), Table 3.3-2	9.3E-09	8.6E-09	**1.8E-08**
Fluoranthene	Yes	7.610E-06	AP-42 Gasoline & Diesel Ind. Engines (10/96), Table 3.3-2	1.2E-07	1.1E-07	**2.3E-07**
Fluorene	Yes	2.920E-05	AP-42 Gasoline & Diesel Ind. Engines (10/96), Table 3.3-2	4.7E-07	4.3E-07	**9.0E-07**
Formaldehyde	Yes	1.180E-03	AP-42 Gasoline & Diesel Ind. Engines (10/96), Table 3.3-2	1.9E-05	1.7E-05	**3.6E-05**
Indeno(1,2,3-cd)pyrene	Yes	3.750E-07	AP-42 Gasoline & Diesel Ind. Engines (10/96), Table 3.3-2	6.0E-09	5.5E-09	**1.2E-08**
Naphthalene	Yes	8.480E-05	AP-42 Gasoline & Diesel Ind. Engines (10/96), Table 3.3-2	1.4E-06	1.3E-06	**2.6E-06**
Phenanthrene	Yes	2.940E-05	AP-42 Gasoline & Diesel Ind. Engines (10/96), Table 3.3-2	4.7E-07	4.3E-07	**9.1E-07**
Propylene	No	2.580E-03	AP-42 Gasoline & Diesel Ind. Engines (10/96), Table 3.3-2	-	-	-
Pyrene	Yes	4.780E-06	AP-42 Gasoline & Diesel Ind. Engines (10/96), Table 3.3-2	7.6E-08	7.1E-08	**1.5E-07**
Toluene	Yes	4.090E-04	AP-42 Gasoline & Diesel Ind. Engines (10/96), Table 3.3-2	6.5E-06	6.1E-06	**1.3E-05**
Total PAH		4.329E-03	AP-42 Gasoline & Diesel Ind. Engines (10/96), Table 3.3-2	-	-	-
Xylenes	Yes	2.850E-04	AP-42 Gasoline & Diesel Ind. Engines (10/96), Table 3.3-2	4.6E-06	4.2E-06	**8.8E-06**
						1.2E-04

Emission estimates based on 37.5 hours of operation/year for testing and emergency purposes for each piece of equipment.

Emergency Generator:
250 kW (250,000 Watts)
1 HP = 745.7 Watts
1 HP = 2,545 Btu/hr
Heat Input (MMBtu/hr)= **0.85**

Emergency Fire Water Pump:
310 HP
1 HP = 2,545 Btu/hr
Heat Input (MMBtu/hr)= **0.79**

Table 2-11
Salt River Project
Proposed Expansion Project - Existing Santan Generating Station
Hazardous Air Pollutant Emission Estimates - Facility Totals

POLLUTANT	COMBINED CYCLE SYSTEM* (TONS/YEAR)	DUCT BURNER* (TONS/YEAR)	AUXILIARY BOILER (TONS/YEAR)	EMERGENCY EQUIPMENT (TONS/YEAR)	TOTAL (TONS/YEAR)
1,3-Butadiene	7.77E-03	-	-	1.20E-06	7.77E-03
2-Chloronaphthalene	4.80E-06	-	-	-	4.80E-06
2-Methylnaphthalene	9.34E-05	3.51E-05	1.40E-06	-	1.30E-04
3-Methylchloranthene	-	2.63E-06	1.05E-07	-	2.74E-06
7,12-Dimethylbenz(a)anthracer	-	2.34E-05	9.32E-07	-	2.43E-05
Acenaphthene	3.35E-04	2.63E-06	1.05E-07	4.37E-08	3.38E-04
Acenaphthylene	2.60E-04	2.63E-06	1.05E-07	1.56E-07	2.62E-04
Acetaldehyde	1.41E+00	1.30E-02	8.56E-04	2.36E-05	1.43E+00
Acrolein	4.18E-01	-	-	2.85E-06	4.18E-01
Anthracene	5.97E-04	3.51E-06	1.40E-07	5.76E-08	6.00E-04
Arsenic	1.08E-03	2.93E-04	1.16E-05	-	1.39E-03
Benzene	2.47E+00	6.30E-03	5.07E-04	2.87E-05	2.48E+00
Benzo(a)anthracene	3.99E-04	2.63E-06	1.05E-07	5.17E-08	4.02E-04
Benzo(a)pyrene	2.45E-04	1.76E-06	6.99E-08	5.79E-09	2.47E-04
Benzo(b)fluoranthene	1.99E-04	2.63E-06	1.05E-07	3.05E-09	2.02E-04
Benzo(e)pyrene	9.60E-06	-	-	-	9.60E-06
Benzo(g,h,i)perylene	2.42E-04	1.76E-06	6.99E-08		2.44E-04
Benzo(k)fluoranthene	1.94E-04	2.63E-06	1.05E-07	4.77E-09	1.97E-04
Beryllium	-	2.19E-05	6.99E-07	-	2.26E-05
Cadmium	1.85E-02	2.01E-03	6.41E-05	-	2.06E-02
Chromium VI	2.87E-02	2.56E-03	8.15E-05	-	3.13E-02
Chrysene	4.45E-04	2.63E-06	1.05E-07	1.09E-08	4.48E-04
Cobalt	-	1.54E-04	4.89E-06	-	1.58E-04
Dibenz(a,h)anthracene	4.15E-04	1.76E-06	6.99E-08	-	4.17E-04
Dichlorobenzene	-	1.76E-03	6.99E-05	-	1.83E-03
Ethylbenzene	4.24E-01	-	-	-	4.24E-01
Fluoranthene	7.63E-04	4.39E-06	1.75E-07	2.34E-07	7.67E-04
Fluorene	1.02E-03	4.10E-06	1.63E-07	8.99E-07	1.03E-03
Formaldehyde	1.94E+00	3.23E-01	1.29E-02	3.63E-05	2.28E+00
Hexane	4.57E+00	2.63E+00	1.05E-01	-	7.31E+00
Indeno(1,2,3-cd)pyrene	4.15E-04	2.63E-06	1.05E-07	1.15E-08	4.18E-04
Lead	3.53E-01	-	-	-	3.53E-01
Manganese	3.53E-02	6.95E-04	2.21E-05	-	3.60E-02
Mercury	9.71E-03	4.75E-04	1.51E-05	-	1.02E-02
Naphthalene	2.47E+00	8.92E-04	3.55E-05	2.61E-06	2.47E+00
Nickel	-	3.84E-03	1.22E-04	-	3.96E-03
N-nitrosodimethylamine	4.06E-03	-	-	-	4.06E-03
N-nitrosomorpholine	4.06E-03	-	-	-	4.06E-03
Perylene	1.24E-05	-	-	-	1.24E-05
Phenanthrene	5.53E-03	2.49E-05	9.90E-07	9.05E-07	5.55E-03
Polycyclic Aromatic Hydrocarbon	3.18E+00	-	-	-	3.18E+00
Propylene	-	-	-	-	0.00E+00
Propylene Oxide	8.44E-01	-	-	-	8.44E-01
Pyrene	4.89E-04	7.31E-06	2.91E-07	1.47E-07	4.97E-04
Selenium	-	4.39E-05	1.40E-06	-	4.53E-05
Toluene	2.30E+00	4.97E-03	1.98E-04	1.26E-05	2.30E+00
Trimethylamine	3.00E-03	-	-	-	3.00E-03
Xylene	4.77E-01	-	-	8.78E-06	4.77E-01
				Grand Total	**24.10**

= Controlled Emission Estimate

3 SITE AREA CHARACTERISTICS

Site area characteristics that are related to defining the potential impact on ambient air quality from the proposed expansion project, include wind flow, rural/urban land use classification, topography, and current ambient air quality status.

3.1 WIND FLOW PATTERN

Measurements of surface wind flow from the Phoenix National Weather Service (NWS) station were considered as representative of the local meteorology for the proposed expansion project at the existing Santan Generating Station site. Annual wind roses for each year from 1994 through 1998 are presented in Figures 3-1 through 3-5, respectively. Figure 3-6 presents the cumulative annual wind rose based on the 5-year period. From this figure it can be seen that the prevailing wind direction is from the east and west, occurring approximately 15 percent of the time.

3.2 RURAL/URBAN LAND USE DESCRIPTION

An analysis technique was developed by Irwin (1979) to classify a site area as either rural or urban for purposes of using rural or urban dispersion coefficients. The classification can be based on either average heat flux, land use, or population density within a 3-kilometer radius from the proposed expansion project site. Of these, the USEPA has specified that land use is the most definitive criterion (USEPA, 1986). The rural/urban classification based on land use is as follows:

> Using the meteorological land use typing scheme (Table 3-1) established by Auer (1978), an urban classification of the site area requires more than 50 percent of the following land use types: heavy industrial (I1), light-moderate industrial (I2), commercial (C1), single-family compact residential (R2), and multi-family compact residential (R3). Otherwise, the site area is considered rural.

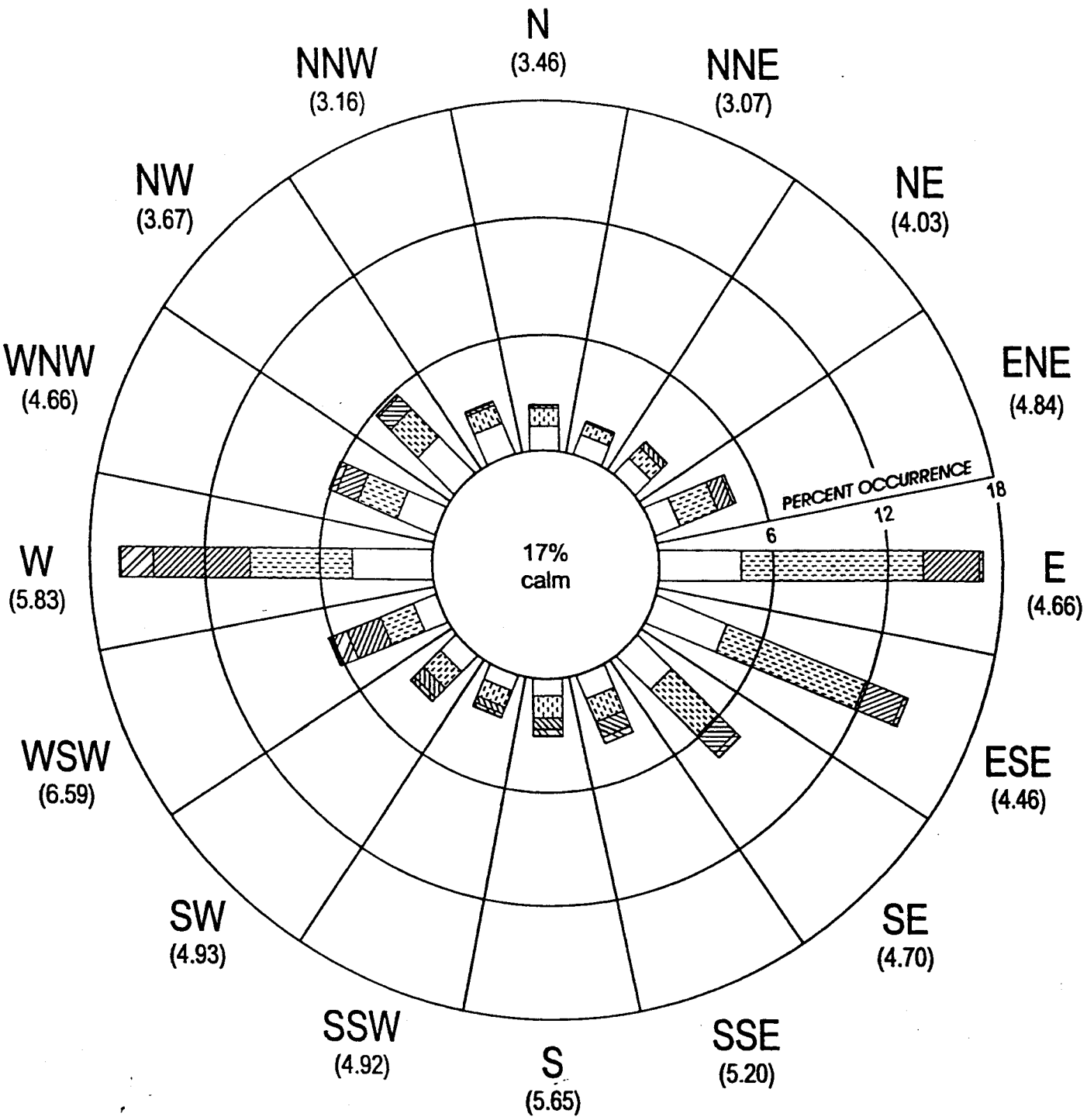
Using the land use typing scheme, urban land use types may comprise greater than 50 percent of the total area. Primarily, the area surrounding the Santan site is common residential (R1), metropolitan natural (A1), compact residential (R2), and commercial (C1). For purposes of this application, it has been assumed that the area surrounding the plant site meets the land use criteria for urban areas. Thus, the proposed expansion project site and surrounding area will be classified as urban, requiring the use of urban dispersion coefficients in the air quality impact analyses. Refer to Section 5.0 for a discussion of these analyses.

3.3 TOPOGRAPHY

The topography surrounding the Santan site can be described as generally flat with complex terrain several kilometers away in all directions (refer to figure 3-7). Because terrain has the potential to influence plume transport and dispersion, terrain elevations were considered in the air quality impact assessment (refer to Section 5.0).

3.4 AIR QUALITY STATUS

The Santan site is located in Maricopa County, Arizona which is currently designated as attaining the National Ambient Air Quality Standards (NAAQS) for NO_2, SO_2 and lead (Pb). The county is also designated as a serious nonattainment area for the air pollutants CO, PM_{10}, and O_3. This status indicates that historical measured air quality in Maricopa County has shown exceedance of the corresponding National Ambient Air Quality Standards (NAAQS) developed by the USEPA. It does not necessarily reflect the air quality currently being measured in this county. Air Quality within Maricopa County has been improving over the past three years. In fact, air quality monitoring stations within the vicinity of the Santan station did not show any exceedances of the NAAQS during calendar year 1999.



NUMBERS INDICATE SECTOR MEAN WIND SPEED
SECTORS ARE DIRECTIONS FROM WHICH THE WIND IS BLOWING

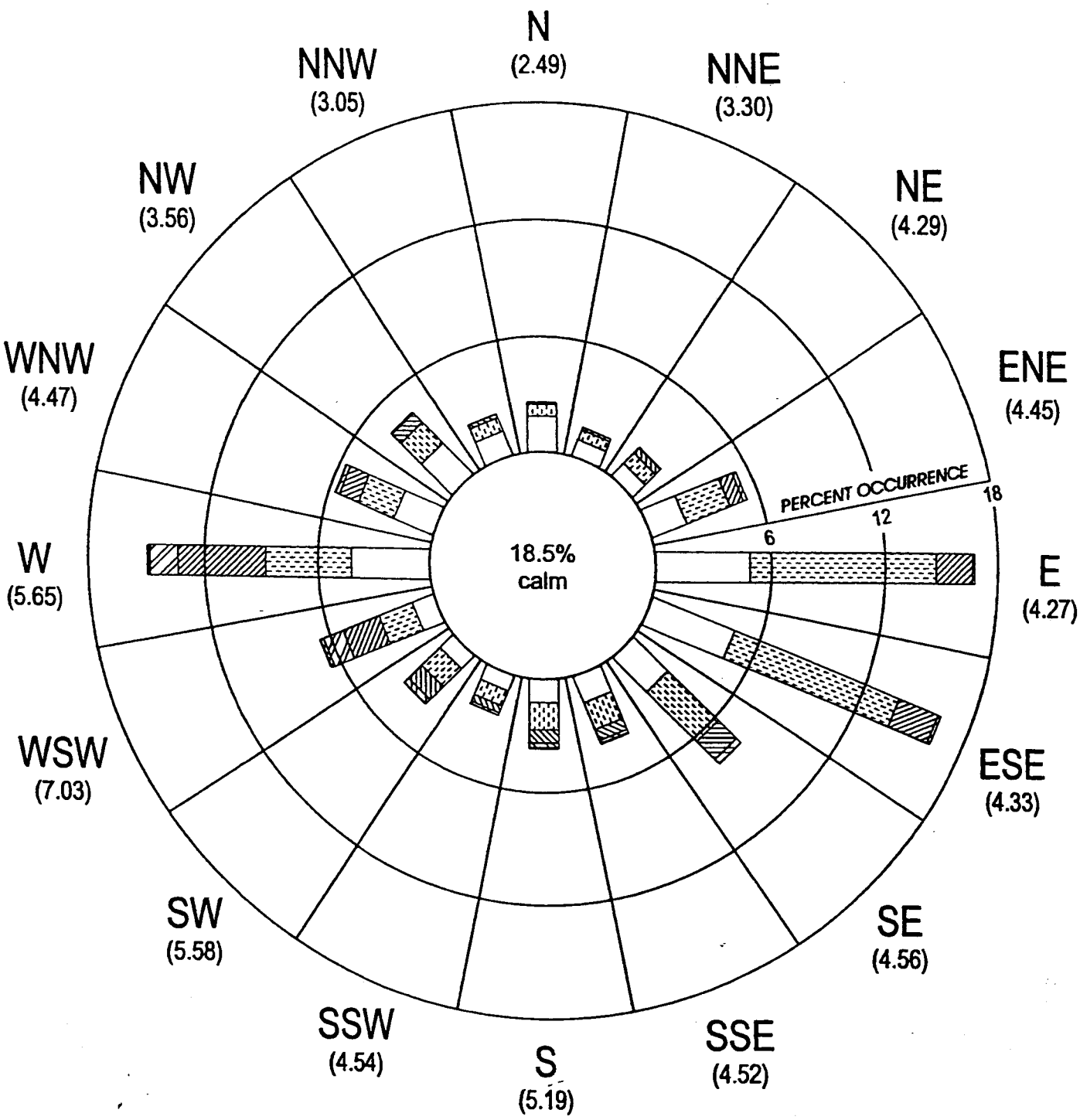
FIGURE 3-1

WIND SPEED RANGE (KNOTS)

- 0.0 - 3.0
- 4.0 - 6.0
- 7.0 - 10.0
- 11.0 - 16.0
- 17.0 - 21.0
- > 21.0

WIND FREQUENCY DISTRIBUTION
ANNUAL WIND ROSE
FOR 1994

HOURLY SURFACE WIND OBSERVATIONS
SKY HARBOR INTERNATIONAL AIRPORT
PHOENIX, ARIZONA



NUMBERS INDICATE SECTOR MEAN WIND SPEED
SECTORS ARE DIRECTIONS FROM WHICH THE WIND IS BLOWING

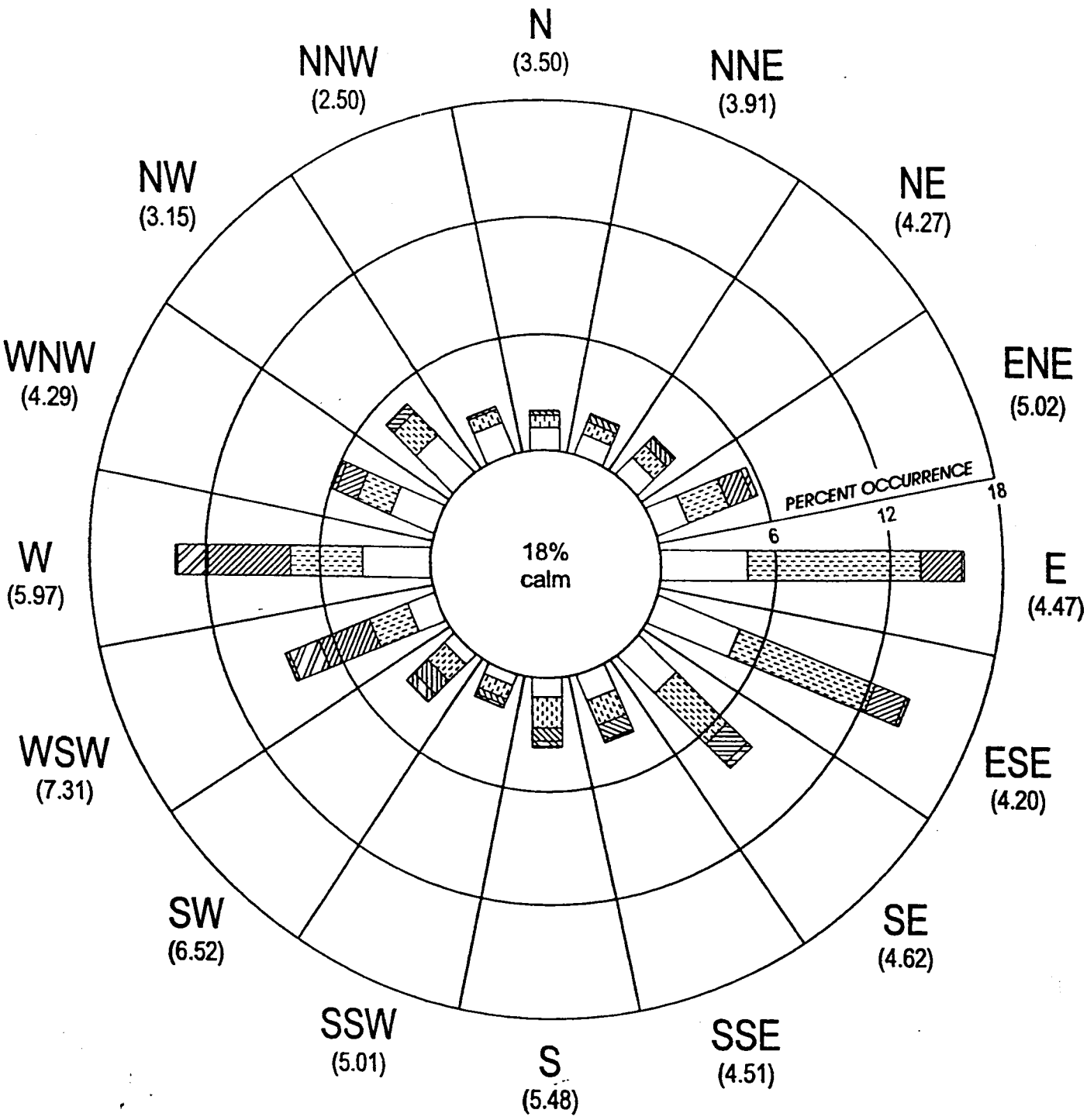
WIND SPEED RANGE (KNOTS)

- 0.0 - 3.0
- 4.0 - 6.0
- 7.0 - 10.0
- 11.0 - 16.0
- 17.0 - 21.0
- > 21.0

FIGURE 3-2

WIND FREQUENCY DISTRIBUTION
ANNUAL WIND ROSE
FOR 1995

HOURLY SURFACE WIND OBSERVATIONS
SKY HARBOR INTERNATIONAL AIRPORT
PHOENIX, ARIZONA



NUMBERS INDICATE SECTOR MEAN WIND SPEED
SECTORS ARE DIRECTIONS FROM WHICH THE WIND IS BLOWING

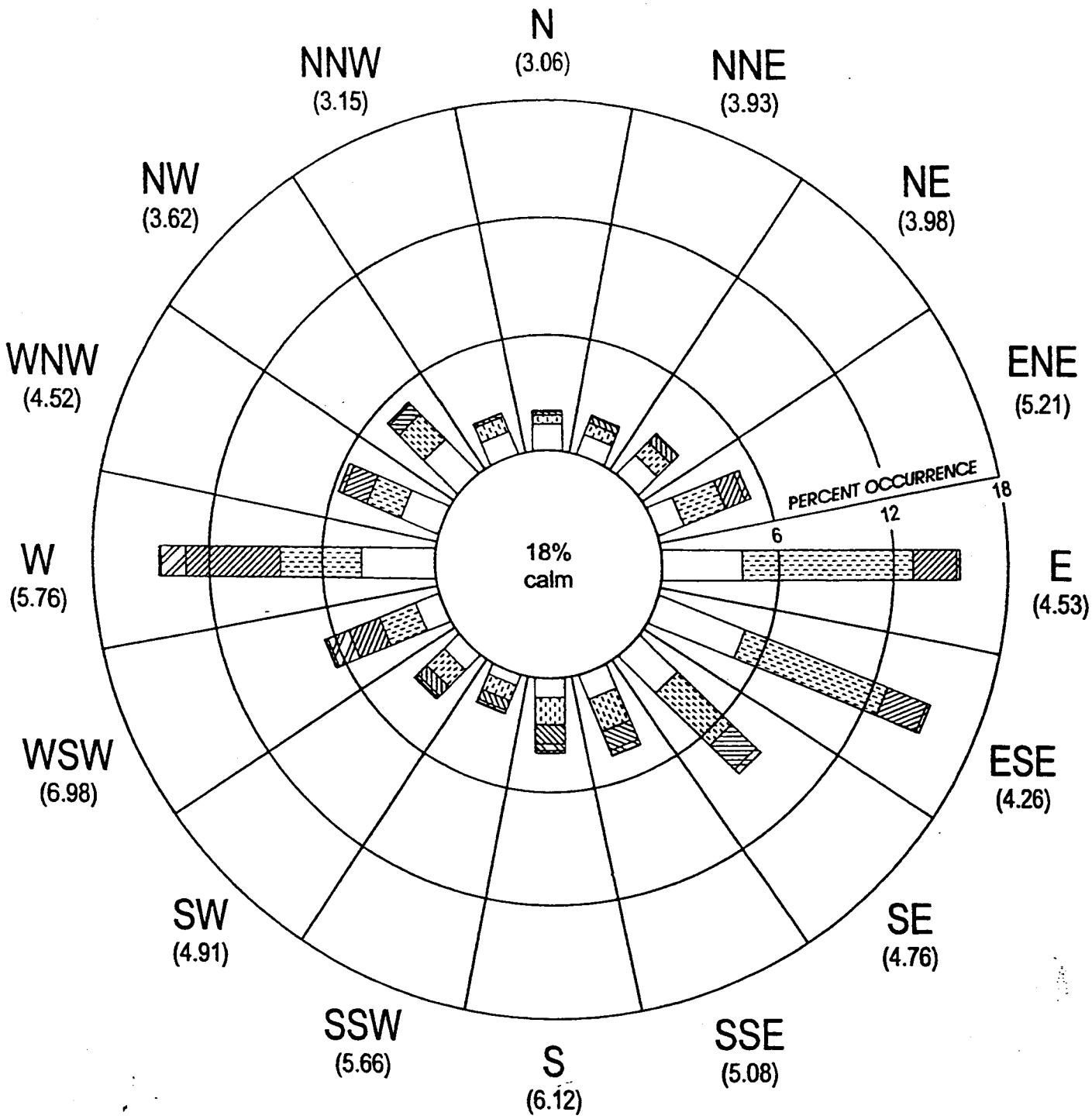
FIGURE 3-3

WIND SPEED RANGE (KNOTS)

- 0.0 - 3.0
- 4.0 - 6.0
- 7.0 - 10.0
- 11.0 - 16.0
- 17.0 - 21.0
- > 21.0

WIND FREQUENCY DISTRIBUTION
ANNUAL WIND ROSE
FOR 1996

HOURLY SURFACE WIND OBSERVATIONS
SKY HARBOR INTERNATIONAL AIRPORT
PHOENIX, ARIZONA



NUMBERS INDICATE SECTOR MEAN WIND SPEED
SECTORS ARE DIRECTIONS FROM WHICH THE WIND IS BLOWING

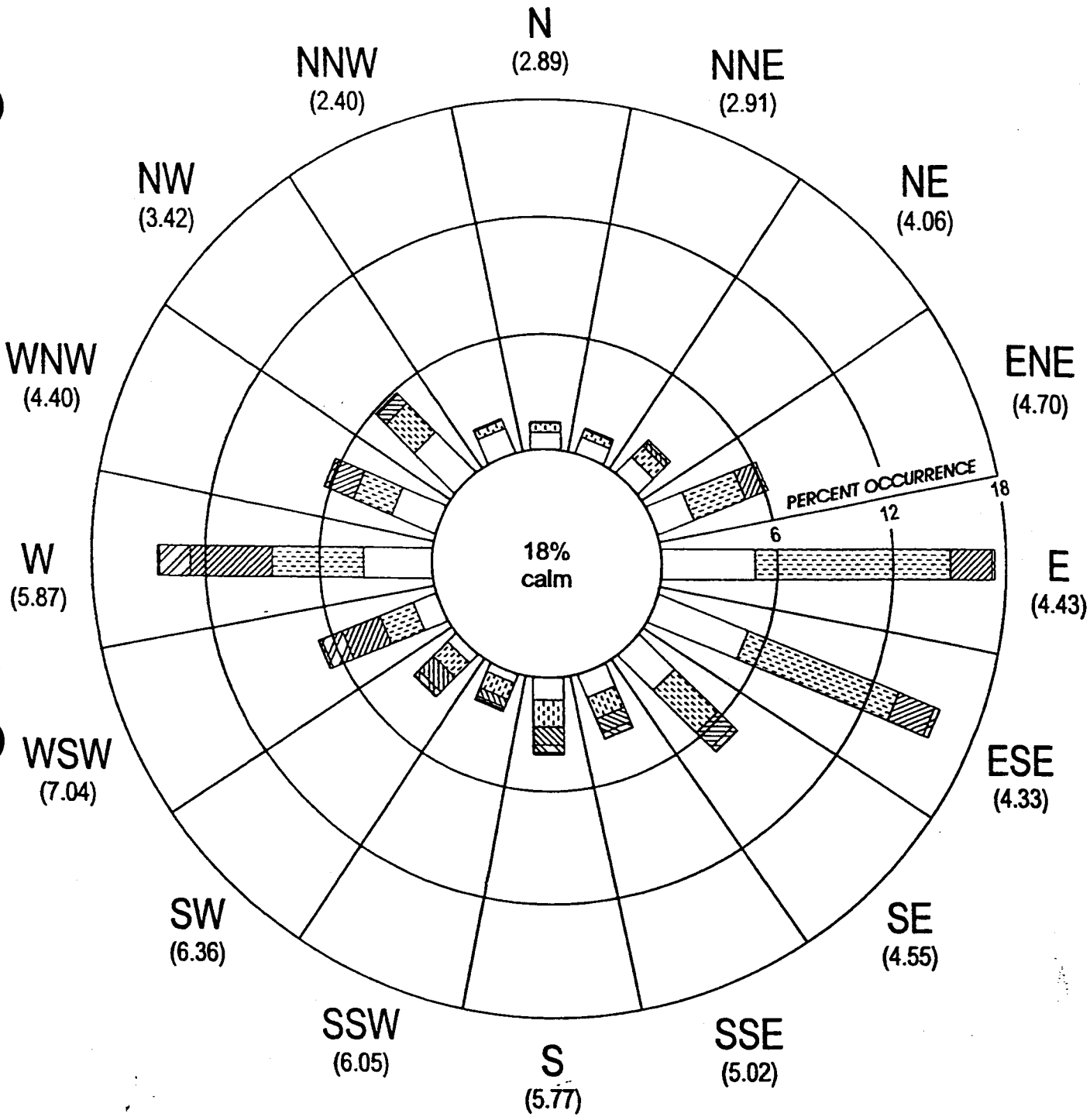
FIGURE 3-4

WIND SPEED RANGE (KNOTS)

- 0.0 - 3.0
- 4.0 - 6.0
- 7.0 - 10.0
- 11.0 - 16.0
- 17.0 - 21.0
- > 21.0

WIND FREQUENCY DISTRIBUTION
ANNUAL WIND ROSE
FOR 1997

HOURLY SURFACE WIND OBSERVATIONS
SKY HARBOR INTERNATIONAL AIRPORT
PHOENIX, ARIZONA



NUMBERS INDICATE SECTOR MEAN WIND SPEED
SECTORS ARE DIRECTIONS FROM WHICH THE WIND IS BLOWING

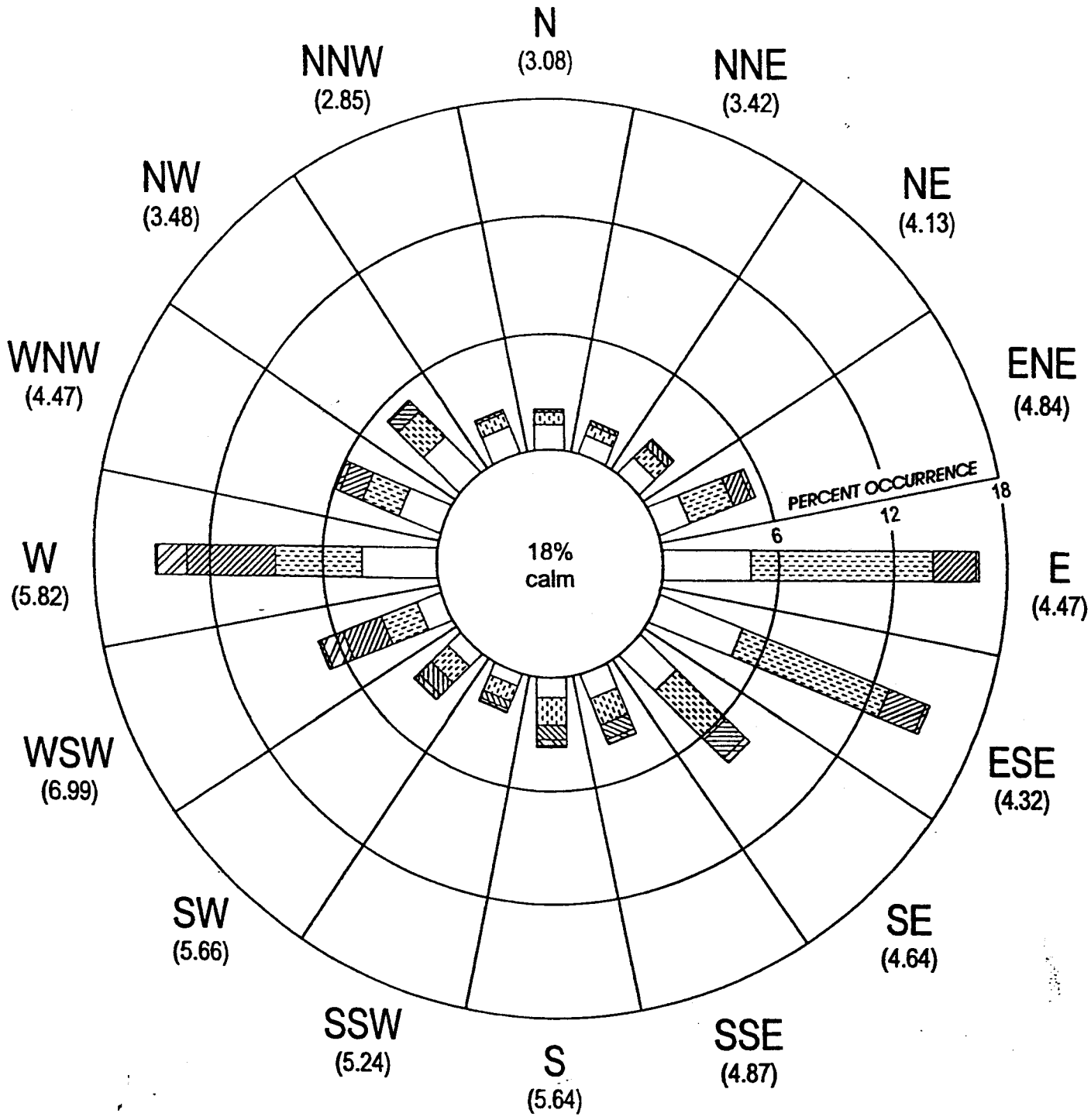
FIGURE 3-5

WIND SPEED RANGE (KNOTS)

- 0.0 - 3.0
- 4.0 - 6.0
- 7.0 - 10.0
- 11.0 - 16.0
- 17.0 - 21.0
- > 21.0

WIND FREQUENCY DISTRIBUTION
ANNUAL WIND ROSE
FOR 1998

HOURLY SURFACE WIND OBSERVATIONS
SKY HARBOR INTERNATIONAL AIRPORT
PHOENIX, ARIZONA



NUMBERS INDICATE SECTOR MEAN WIND SPEED
SECTORS ARE DIRECTIONS FROM WHICH THE WIND IS BLOWING

WIND SPEED RANGE (KNOTS)

- 0.0 - 3.0
- 4.0 - 6.0
- 7.0 - 10.0
- 11.0 - 16.0
- 17.0 - 21.0
- > 21.0

FIGURE 3-6

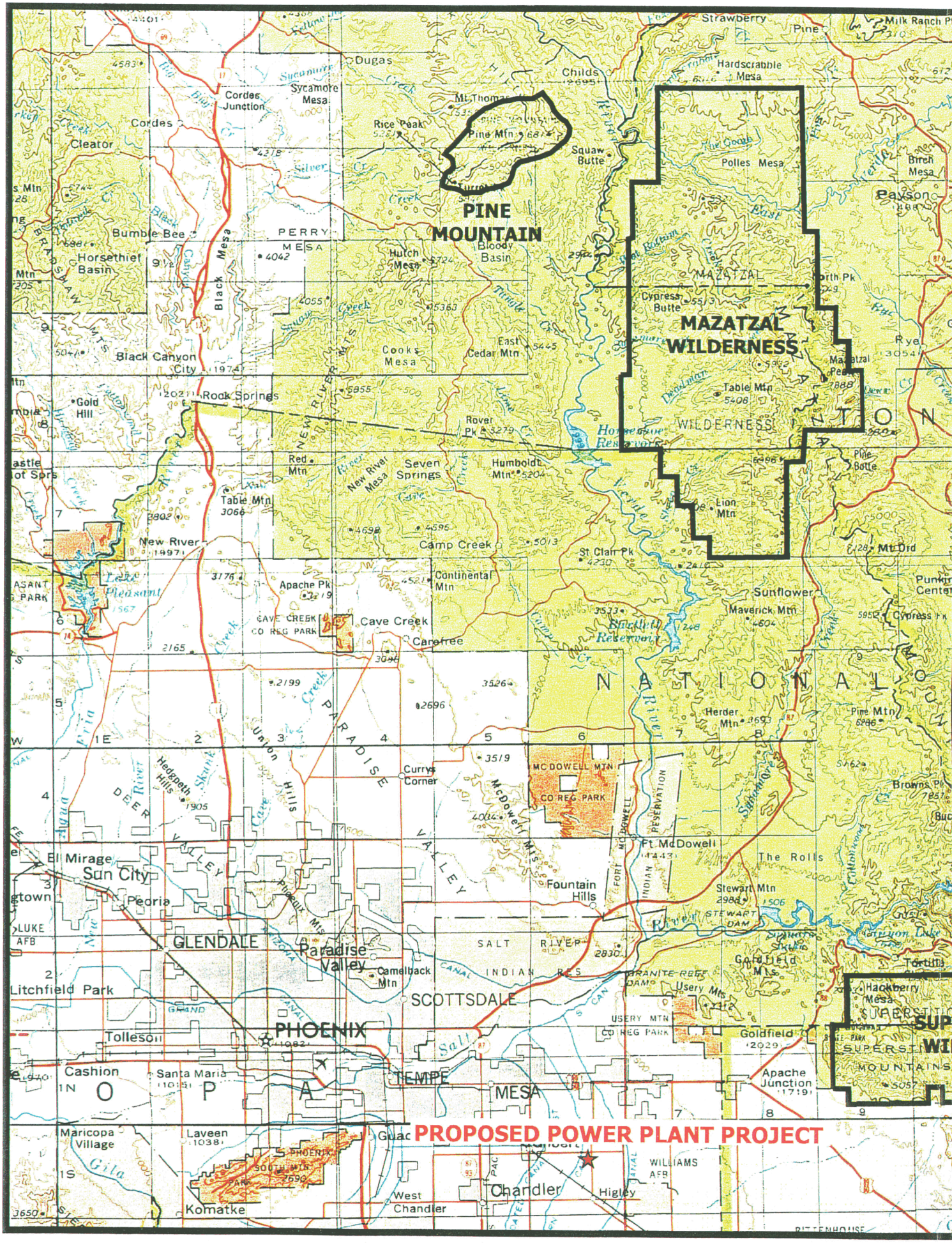
WIND FREQUENCY DISTRIBUTION
COMPOSITE ANNUAL WIND ROSE
FOR 1994 - 1998

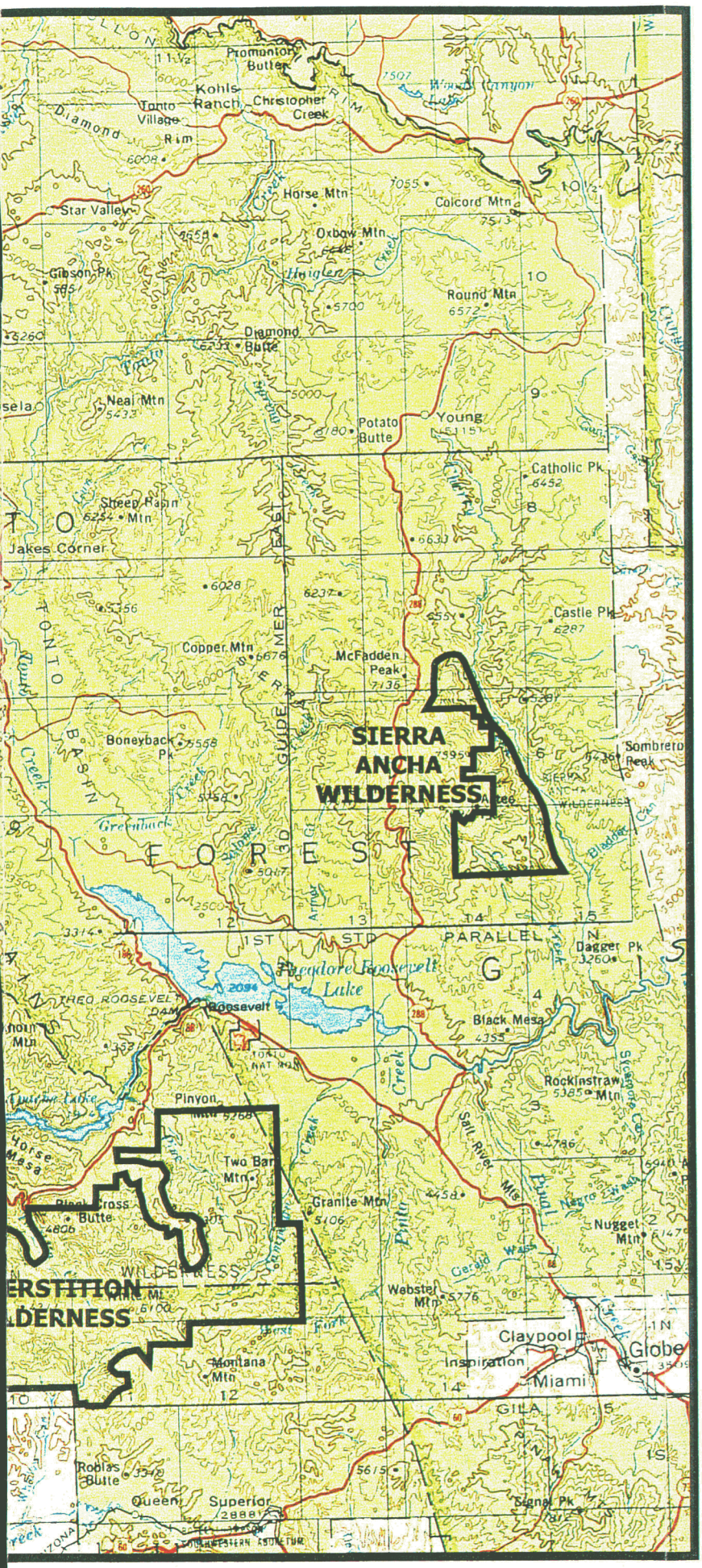
HOURLY SURFACE WIND OBSERVATIONS
SKY HARBOR INTERNATIONAL AIRPORT
PHOENIX, ARIZONA

TABLE 3-1

IDENTIFICATION AND CLASSIFICATION OF LAND USE TYPES

TYPE	USE AND STRUCTURES	VEGETATION
I1	**Heavy Industrial** Major chemical, steel and fabrication industries; generally 3-5 story buildings, flat roofs	Grass and tree growth extremely rare; <5% vegetation
I2	**Light-Moderate Industrial** Railyards, truck depots, warehouses, industrial parks, minor fabrications; generally 1-3 story buildings, flat roofs	Very limited grass, trees almost totally absent; <5% vegetation
C1	**Commercial** Office and apartment buildings, hotels; >10 story heights, flat roofs	Limited grass and trees; <15% vegetation
R1	**Common Residential** Single-family dwellings with normal easements; generally one story, pitched roof structures; frequent driveways	Abundant grass lawns and lightly to moderately wooded; >70% vegetation
R2	**Compact Residential** Single, some multiple, family dwellings with close spacing; generally <2 story, pitched roof structures; garages (via alley), no driveways	Limited lawn sizes and shade trees; <30% vegetation
R3	**Compact Residential** Old multi-family dwellings with close (<2 m) lateral separation; generally 2 story, flat roof structures; garages (via alley) and ash pits, no driveways	Limited lawn sizes, old established shade trees; <35% vegetation
R4	**Estate Residential** Expensive family dwellings on multi-acre tracts	Abundant grass lawns and lightly wooded; >80% vegetation
A1	**Metropolitan Natural** Major municipal, state, or federal parks, golf courses, cemeteries, campuses; occasional single-story structures	Nearly total grass and lightly wooded; >95% vegetation
A2	**Agricultural Rural**	Local crops (e.g., corn, soybeans); 95% vegetation
A3	**Undeveloped** Uncultivated, wasteland	Mostly wild grasses and weeds, lightly wooded; >90% vegetation
A4	**Undeveloped Rural**	Heavily wooded; 95% vegetation
A5	**Water Surface** Rivers, lakes	


PINE MOUNTAIN
MAZATZAL WILDERNESS
PROPOSED POWER PLANT PROJECT
Strawberry
Pine
Milk Ranch Pt
Hardscrabble Mesa
Dugas
Childs
Sycamore Mesa
Cordes Junction
Cordes
Cleator
Mt Thomas
Rice Peak
Pine Mtn
Squaw Butte
Polles Mesa
Birch Mesa
Payson
Bumble Bee
Horsethief Basin
PERRY MESA
Hutch Mesa
Bloody Basin
Black Mesa
MAZATZAL
Cypress Butte
Black Canyon City
Cook Mesa
East Cedar Mtn
Rye
Table Mtn
Gold Hill
Rock Springs
Rover Pk
WILDERNESS
Red Mtn
New River Mesa
Seven Springs
Humboldt Mtn
Pine Butte
Lion Mtn
Table Mtn
New River
Camp Creek
St Clair Pk
Mt Ord
Apache Pk
Continental Mtn
Sunflower
Maverick Mtn
CAVE CREEK CO REG PARK
Cave Creek
Carefree
NATIONAL
Herder Mtn
Pine Mtn
PARADISE
Currys Corner
MC DOWELL MTN CO REG PARK
Browns Pk
Hedgeth Hills
DEER VALLEY
Ft McDowell
The Rolls
El Mirage
Sun City
Peoria
Fountain Hills
Stewart Mtn
STEWART DAM
LUKE AFB
GLENDALE
Paradise Valley
SALT RIVER INDIAN RES
Camelback Mtn
Goldfield Mts
Litchfield Park
SCOTTSDALE
Usery Mtn
Hackberry Mesa
USERY MTN CO REG PARK
PHOENIX
Tolleson
Goldfield
Cashion
Santa Maria
TEMPE
MESA
Apache Junction
Maricopa Village
Laveen
Guac
WILLIAMS AFB
Chandler
Higley
West Chandler
Komatke



N
W E
S

SCALE 1:500,000

0 5 10 Mile

0 10 20 Kilometers

MAP REFERENCE:
U.S. DEPARTMENT OF THE
INTERIOR GEOLOGICAL SURVEY:
STATE OF ARIZONA
COMPILED 1972, REVISED 1981

SALT RIVER PROJECT
SANTAN GENERATING STATION

FIGURE 3-7
GENERAL TOPOGRAPHY SURROUNDING THE SITE LOCATION OF THE PROPOSED EXPANSION PROJECT

URS
Dames & Moore

4 FEDERAL/STATE REGULATORY REQUIREMENTS

This section discusses the pertinent federal and state/county air pollution control regulations that may be applicable to the proposed expansion project. These types of regulations typically include:

- Requirements to obtain a construction permit prior to commencing construction;
- Control technology evaluations;
- Air quality impact assessments;
- Emission limitations;
- Monitoring and testing requirements; and
- Recordkeeping and reporting requirements.

The following sections are intended to highlight federal, state, and county regulations that may be applicable to the proposed expansion project. Also included in these sections is a discussion on how the proposed plant will comply with these applicable regulations.

4.1 FEDERAL REQUIREMENTS

USEPA has developed regulations that are contained in the Code of Federal Regulations (CFR) that are designed to control air pollution. These regulations include permitting requirements for new or modified major stationary sources located in nonattainment and attainment areas. The requirements for major sources located in nonattainment areas is called Nonattainment Area New Source Review (NANSR) and is codified in Appendix S of 40 CFR Part 51. For attainment areas, the regulation that applies to major sources is called "Prevention of Significant Deterioration" and is contained in Section 52.21 of the CFR.

The permitting requirements associated with each program are discussed in the following subsections.

4.1.1 Nonattainment Area New Source Review (NANSR)

A new source will be subject to nonattainment area new source review requirements only if it will emit, or will have the potential to emit, in major amounts, any criteria pollutant for which the area has been designated nonattainment. For a source to be classified as having the potential to emit major amounts of air pollutants (typically referred to as a major stationary source) it must meet the criteria outlined below:

- A stationary source which emits or has the potential to emit 100 tons per year of the air pollutant for which the area is classified as nonattainment; or
- Lesser amount as established by USEPA for specific geographical areas.

The major source threshold for Maricopa County has been lowered to below 100 tons per year for each nonattainment area air pollutant. These lower thresholds are a result of Maricopa County being designated as a serious nonattainment area for O_3, CO and PM_{10}. Major source applicability thresholds of 50 tons/year has been established for VOC emissions (O_3 nonattainment) and CO emissions, while a 70 tons per year threshold has been established for emissions of PM_{10}.

Since the proposed project is classified as a modification to an existing major stationary source, the applicability of the NANSR regulations are based on the proposed projects emissions in comparison to the threshold levels referred to as the "Significant Emission Rates". These levels have been set at 25 tons/year for emissions of VOC, 50 tons/year for CO emissions and 15 tons/year for PM_{10} emissions. For applicability of the PSD regulations, the significant emission rates have been set at 40 tons/year for NO_x and SO_2 emissions.

The proposed expansion project will have the potential to emit VOCs (a precursor to the formation of O_3), CO and PM_{10} above these significant emission rates. As a consequence, the proposed project will be subject to NANSR for these pollutants. Recent changes to NANSR requirements have resulted in emissions of NO_x also being regulated as a precursor to the formation of O_3. Subsequently, the requirements associated with NANSR for O_3 now also apply to emissions of NO_x. The exclusion to these requirements is areas that receive a waiver, referred to as 182(f). Maricopa County has received this waiver, however the county regulatory agency does not recognize this waiver. Because of this, the agency has established an NANSR applicability level for NOx emissions at 25 tons/year. As a result, emissions of NO_x from the proposed project will be subject to both NANSR and PSD review. (Refer to discussion in Section 4.1.2). Emission of SO_2 will be below the 40 ton/year PSD applicability threshold.

The preconstruction review requirements for major stationary source or major modification located in areas designated nonattainment pursuant to Section 107 of the Act differ from the Prevention of Significant Deterioration (PSD) requirements. First, the emission control requirement for nonattainment areas, Lowest Achievable Emission Rate (LAER), is defined differently than the Best Available Control Technology (BACT) emissions control requirements. Second, the source must obtain emissions reduction (offsets) of the nonattainment pollutant from other sources which impact the same area as the proposed source. Third, the applicant must certify that all other sources owned by the applicant in the state are complying with all applicable requirements of the CAA, including all applicable requirements in the State Implementation Plan (SIP). Fourth, such sources impacting visibility in mandatory Class I Federal areas must be reviewed by the appropriate Federal Land Manager (FLM).

Further discussion of the NANSR requirements, are discussed in Section 4.0. This section also addresses the proposed plant's compliance status with each of the NANSR requirements.

4.1.2 PSD Review

The PSD regulations, amended by the U.S. Environmental Protection Agency (USEPA) on August 7, 1980 (45 FR 52675), specify that any major new stationary source or major expansion project to an

existing major source within an air quality attainment area must undergo PSD review. For new sources, the regulations (Maricopa County Rule 240, Section 308) apply to:

1. Any source type in any of 28 designated industrial source categories having potential emissions of 100 tons per year or more; or

2. Any other source having potential emissions of 250 tons per year or more of any pollutant regulated under the Clean Air Act.

"Potential emissions" are defined as the emissions of any pollutant at maximum design capacity (or less than maximum design capacity if specified as a permit condition), including the control efficiency of air pollution control equipment. For modifications of existing sources, the regulations apply if the existing source is major (as defined above) for any criteria pollutant and the modification project results in increased emissions of any criteria pollutant exceeding the significant emission limits presented in Table 4-1.

PSD review generally consists of:

1. A case-by-case Best Available Control Technology (BACT) demonstration, taking into account energy, environmental, and economic impacts as well as technical feasibility;

2. An ambient air quality impact analysis to determine whether the allowable emissions from the proposed expansion project, in conjunction with all other applicable emission increases or reductions, would cause or contribute to a violation of the applicable PSD increments and National Ambient Air Quality Standards (NAAQS) (refer to Table 4-1);

3. An ambient air quality monitoring program for up to one year;

4. An assessment of the direct and indirect effects of the proposed expansion project on general growth, soil, vegetation, and visibility; and

5. Public comment, including an opportunity for a public hearing.

An applicant may be exempt from the ambient air quality monitoring requirement if there are existing air quality monitoring data representative of the site, or if the impact from the proposed expansion project is less than the monitoring de minimis concentrations listed in Table 4-1.

Maricopa County is designated attainment for NO_2 and SO_2. Based on the estimated NO_x and SO_2 emission rates associated with the proposed expansion project, only emissions of NO_x will exceed the applicability threshold. As stated previously, the proposed expansion project is classified as a modification to an existing major stationary source. A detailed discussion of the proposed project's compliance status, with each PSD review requirement is provided in Section 5.0

TABLE 4-1

NATIONAL AMBIENT AIR QUALITY STANDARDS (NAAQS), PSD INCREMENTS, SIGNIFICANT EMISSION RATES, SIGNIFICANT IMPACT INCREMENTS, AND MONITORING DE MINIMIS CONCENTRATIONS

POLLUTANT	AVERAGING PERIOD	NAAQS (µg/m³)		PSD INCREMENTS (µg/m³)			SIGNIFICANT EMISSION RATES (tons/year)	SIGNIFICANT IMPACT INCREMENTS (µg/m³)	MONITORING DE MINIMIS CONCENTRATIONS (µg/m³)
		PRIMARY	SECONDARY	CLASS I	CLASS II	CLASS III			
Total Suspended Particulate Matter (TSP)	Annual	--	--	5[a]	19[a]	37[a]	25	1	--
	24-Hour	--	--	10[a,b]	37[a,b]	75[a,b]		5	10
Particulate Matter Less than 10 µm (PM_{10})	Annual	50	[c]	4	17	34	15	1	--
	24-Hour	150[b]	[c]	8[b]	30[b]	60[b]		5	10
Sulfur Dioxide	Annual	80	--	2	20	40	40	1	--
	24-Hour	365[b]	--	5[b]	91[b]	182[b]		5	13
	3-Hour	--	1300[b]	25[b]	512[b]	700[b]		25	--
Nitrogen Dioxide	Annual	100	[c]	2.5	25	50	40	1	14
Ozone	1-Hour	235[d]	[c]	--	--	--	40[e]	--	[f]
Carbon Monoxide	8-Hour	10,000[b]	[c]	--	--	--	100	500	575
	1-Hour	40,000[b]	[c]	--	--	--		2000	--
Lead	Calendar Quarter	1.5	[c]	--	--	--	0.6	--	0.1
Total Reduced Sulfur (TRS) Reduced Sulfur Compounds	1-Hour	--	--	--	--	--	10	--	10
Asbestos	--	--	--	--	--	--	0.007	--	--
Mercury	24-Hour	--	--	--	--	--	0.1	--	0.25
Beryllium	24-Hour	--	--	--	--	--	0.0004	--	0.001
Fluorides	24-Hour	--	--	--	--	--	3	--	0.25
Vinyl Chloride	24-Hour	--	--	--	--	--	1	--	15
Sulfuric Acid Mist	--	--	--	--	--	--	7	--	--
Hydrogen Sulfide	1-Hour	--	--	--	--	--	10	--	0.2

[a] TSP increment was replaced by PM_{10} increment effective June 3, 1994.
[b] Concentration not to be exceeded more than once per year.
[c] Same as primary NAAQS.
[d] Expected number of days in which one or more hourly ozone concentrations exceed this value must be greater than 1.
[e] Emissions of volatile organic compounds.
[f] Increase in volatile organic compounds of more than 100 tons/year.

[R:\AIRGRO~1\GENERAL\NAAQST1.TBL]

4.1.3 New Source Performance Standards (NSPS)

New Source Performance Standards (NSPS) have been developed by USEPA for specific source categories. These standards are codified in the CFR under Part 60 (40 CFR 60) based on the equipment to be installed. As part of the proposed expansion project, it appears that several of these standards may apply. Those that may apply are noted below:

- Subpart GG - "Standards of Performance for Stationary Gas Turbines";
- Subpart Db - "Standards of Performance for Industrial-Commercial-Institutional Steam Generating Units"; and
- Subpart Dc- "Standards of Performance for Small Industrial-Commercial-Institutional Steam Generating Units."

4.1.3.1 **Combustion Turbine**

The proposed combustion turbine will be subject to the New Source Performance Standard (NSPS) emission limitations for stationary gas turbines (Subpart GG of 40 CFR Part 60). This NSPS is applicable to all stationary gas turbines with heat input at peak load equal to or greater than 10.7 gigajoules per hour (Gj/hour) or approximately 10 MMBtu/hour. Subpart GG regulates both NO_x and SO_2 emissions.

The SO_2 requirement covers both the allowable sulfur in fuel (<0.8 percent by weight) and emission concentrations of SO_2 (<150 ppmv at 15% O_2 on a dry basis). The use of only pipeline quality natural gas (minimum sulfur content) in the gas turbine will easily meet the fuel requirement. The SO_2 in the exhaust gas from this fuel will be less than 1 ppmv at 15% O_2. Therefore, the SO_2 requirements of Subpart GG will be easily met.

The NSPS for NOx is expressed in terms of the following equation:

$$STD = (0.0075 * 14.4 / Y) + F$$

Where:

STD= Allowable NO_x emissions (percent by volume dry @ 15% O_2)
Y= Manufacturer's rated heat rate at rated load (kJ/w-hr) using the Lower Heating Value (LHV)
F= NO_x emission allowance for fuel bound nitrogen (typically 0 for natural gas)

The heat rate for the proposed combustion turbines is approximately 9,000 Btu/kW-hour (LHV) at average ambient conditions of 77 degrees Fahrenheit and a base load condition.

$$Y = (9{,}000 \text{ Btu/kW-hr}) * (1054.2 \text{ J/Btu}) * (\text{kw}/1000 \text{ w}) * (\text{kJ}/1000 \text{ J})$$
$$= 9.5 \text{ kJ/w-hr}$$

Therefore, the emission limitation based on Subpart GG will be:

STD=75 * (14.4/9.5) = 114 ppm @ 15% O_2

The combustion turbines, to be utilized in a combined cycle configuration as part of the proposed expansion project, will emit no more than 2.5 ppm @ 15% O_2. Therefore, this turbine will easily meet the Subpart GG nitrogen oxides emission limit of 114 ppm.

4.1.3.2 **Supplemental Duct Burner**

The supplemental duct burners associated with the three combined cycle HRSGs will be subject to the NSPS Subpart Db. This subpart applies to steam generating units that commence construction after June 19, 1984 and that have heat input capacity from fuels combusted greater than 100 MMBtu/year.

This subpart contains emission limitations for SO_2, PM and NO_x. It appears that the requirements for SO_2 and PM emissions are not applicable to units that combust natural gas.

The NO_x limitation requires duct burners in a combined cycle system burning natural gas to meet 0.2 lb/MMBtu. The proposed burners will achieve approximately 0.1 lb/MMBtu. Additional requirements stipulated in this subpart that may apply to the proposed HRSGs are as follows:

- Initial performance test using the nitrogen oxides and oxygen measurement procedures in 40 CFR Part 60, Appendix A, Method 20 (40 CFR 60.46b(f));
- Duct burners are not required to install or operate continuous monitoring systems to measure NO_x emissions (40 CFR 60.48b(h));
- Submit notification of the date of initial startup (40 CFR 60.49b(a));
- Submit to the administrator the performance test data from the initial performance test (40 CFR 60.49b(b));
- Record and maintain records on the amount of fuel combusted each day (40 CFR 60.49b(d));
- Submission of excess emission reports – quarterly (40 CFR 60.49b(h)).

4.1.3.3 **Auxiliary Natural Gas Fired Boiler**

Subpart Dc applies to each steam generator unit for which construction, modification or reconstruction is commenced after June 9, 1989 and that has a maximum design heat input capacity of 100 MMBtu/hour or less, but greater than or equal to 10 MMBtu/hour. The proposed auxiliary boiler will have a maximum design heat input rating of 99 MMBtu/hour. Thus, the proposed boiler appears to meet the applicability requirements for this subpart.

Emission standards contained within this subpart are for SO_2 and PM. Because the proposed boiler will be designed to only combust natural gas, this boiler should meet the emission standards of this

subpart. The proposed boiler may also be subject to the following reporting and recordkeeping requirements:

- Maintain records on the amount of fuel combusted each day [40 CFR Part 60.48c(g)]; and
- Maintain these records for a period of two years following the date of each record [40 CFR Part 60.48c(i)].

4.1.4 Application of Stack Height Regulations

The stack height regulations promulgated by USEPA on July 8, 1985 (50 FR 27892) established a stack height limitation to assure that stack height increases and other plume dispersion techniques would not be used in lieu of constant emission controls. These regulations apply to facilities that commenced construction after December 31, 1970, and to dispersion techniques implemented after that date. The regulations specify that Good Engineering Practice (GEP) stack height is the maximum creditable stack height that a source may use in establishing its applicable State Implementation Plan (SIP) emission limitation. For stacks uninfluenced by terrain features, the determination of a GEP stack height for a source is based on the following empirical equation:

$$H_g = H + 1.5l_b$$

where:

H_g =GEP stack height;
H =Height of the controlling structure on which the source is located, or nearby structure; and
l_b =Lesser dimension (height or width) of the controlling structure on which the source is located, or nearby structure.

Both the height and width of the structure are determined from the frontal area of the structure projected onto a plane perpendicular to the direction of the wind. The area in which a nearby structure can have a significant influence on a source is limited to five times the lesser dimension (height or width) of that structure, or within 0.5 mile (0.8 km) of the source, whichever is less. The methods for determining GEP stack height for various building configurations have been described in USEPA's technical support document (USEPA, 1985).

Since the heights of exhaust stacks associated with the proposed expansion project equipment will be less than the respective GEP stack heights, a dispersion model to account for aerodynamic plume downwash was necessary to perform the air quality impact analyses. Further, since some terrain elevations in the vicinity of the proposed expansion project may exceed stack top, a dispersion model which accounts for complex terrain was also incorporated.

The proposed building/equipment structures to be associated with the proposed expansion project are listed below. The ratio of the stack height to building height is a critical element for determining the likelihood of aerodynamic downwash forming in the vicinity of the individual exhaust stacks.

STRUCTURE	***HEIGHT (Feet Above Grade)***
Combustion Turbine Enclosure	30
Inlet Air filter	40
Inlet Air Duct	27
HRSG	99

4.1.5 Hazardous Air Pollutant Regulations

USEPA has developed National Emission Standards for Hazardous Air Pollutants (NESHAPS) for numerous source categories. However, the proposed expansion project will not involve categories proposed or promulgated as of the date of this application.

On December 15, 1996, the USEPA promulgated the final regulations implementing Section 112(g). This section addresses new and reconstructed major sources of hazardous air pollutants (HAPs). A primary requirement of this section is that those sources apply Maximum Achievable Control Technology (MACT) for control of HAPs. Section 112(g) is intended to address those sources for which USEPA has not established a source specific MACT standard until a sources specific MACT standard is developed. In this sense it is said that Section 112(g) is the "case-by-case" MACT standard.

The proposed project will have the potential to emit regulated HAPs in quantities less than 10 tons/year as an individual and 25 tons/year as an aggregate. Thus, the proposed expansion project should not trigger the requirements of 112(g).

4.1.6 Continuous Emissions Monitoring

Affected utility units are required by 40 CFR Part 75 to continuously monitor emissions of SO_2 and NO_x. In addition, EPA is requiring affected units to monitor emissions of carbon dioxide (CO_2) or oxygen (O_2), flow and opacity. Generally, this would require the installation of a continuous emission monitoring system (CEMS). The following is a summary of monitoring requirements and options:

- Gas-fired units are exempt from opacity monitoring.
- For SO_2, units burning natural gas may determine mass emissions by: (1) measuring heat input with a gas flowmeter and using a default emission rate; or (2) sampling and analyzing gas daily for sulfur and using the volume of gas combusted; or (3) using CEMs. SRP will select the appropriate option.
- Gas-fired base-loaded units must use NO_x CEMS. Gas-fired peaking units may estimate NO_x emissions by using site-specific emission correlations and periodic stack testing to verify continued representativeness of the correlations, or use NO_x CEMs. As a combined cycle unit, SRP proposes to determine NO_x emissions by using CEMs.

- For CO_2 or O_2, all units can use either a mass balance estimation or a CO_2 or O_2 CEM in order to estimate CO_2 emissions. SRP proposes to use a mass balance estimation.

4.1.7 Compliance Assurance Monitoring

Compliance Assurance Monitoring (CAM) (40 CFR Part 64) may be required for the proposed expansion project equipment since the systems will be equipped with an oxidation catalyst and selective catalytic reduction system. The monitoring requirements imposed by the Acid Rain regulations and New Source Performance Standards should satisfy the requirements of CAM.

4.1.8 Acid Rain Provisions

All utility generating units of greater than 25 MW are required to obtain a Phase II acid rain permit. These permits are generally incorporated into a facility's Title V Operating permit and are issued by the state (in this case, Maricopa County). In order to comply with the requirements of 40 CFR Part 72, the following course of action will be taken.

1. SRP will send a letter to USEPA identifying a Designated Representative, as per 40 CFR 72.20. The Project will also need to obtain an ORIS code from DOE/USEPA.

2. The Project will submit a Phase II acid rain application as soon as possible in order to allow Maricopa County sufficient time to issue the permit prior to start of operation.

Part 73 of the acid rain provisions establishes requirements related to sulfur dioxide allowance system. This includes:

- The allocation of sulfur dioxide emission allowances;
- The tracking, holding and transfer of allowances;
- The deduction of allowances for purposes of compliance; and
- Miscellaneous other requirements.

SRP is aware of the requirements to secure SO_2 allowances on an annual basis and will comply with the appropriate requirements.

Affected units are also required by 40 CFR Part75 to continuously monitor emissions of SO_2 and NO_x. In addition, USEPA is requiring affected units to monitor emissions of carbon dioxide and opacity. Generally, this would require the installation of a continuous emission monitoring system (CEMS). However, several exemptions exist in the regulations that apply to natural gas fired units.

- Gas-fired units are exempt from opacity monitoring (40 CFR 75.14(c));
- Gas-fired units can monitor SO_2 according to the protocol of Appendix D in lieu of an SO_2 CEM and flow monitor (40 CFR 75.11(d)(2)). Note: If the fuel is pipeline quality natural gas, an emission factor of 0.0023 lbs/MMBtu is used in combination with hourly metered gas usage.

- Gas-fired units can monitor CO_2 according to the protocol of Appendix G in lieu of a CO_2 CEM and flow monitor (Section 2.3 of Appendix G of 40 CFR 75). This protocol involves use of an emission factor in combination with calculated hourly heat input.
- Gas-fired units are not exempt from the NO_x CEM requirements.

SRP is aware of these requirements and will be developing the appropriate procedures to comply with the requirements of 40 CFR Part 73 and 75.

4.1.9 Title V Operating Permits

Title V operating permits, as mandated by the 1990 amendments of the Clean Air Act, serve as an "umbrella permit" that incorporates all applicable CAA requirements for each regulated source.

A source is required to file a Title V operating permit application if it is classified as a major stationary source. A major stationary source is defined as any source having the potential to emit greater than 100 tons/year of any criteria air pollutant. Lower thresholds have been established for nonattainment areas. In addition, any source that has the potential to emit greater than 10 tons per year of a HAP or 25 tons per year as an aggregate, would also be classified as a major source under the Title V program.

The proposed expansion project will have potential emissions that exceed the applicability threshold levels for the Title V program. SRP will be submitting to the MCESD an amendment to the plant's existing Title V application, along with the permit application to construct the proposed expansion project.

4.2 STATE/LOCAL REQUIREMENTS

Both the state of Arizona and the Maricopa County Environmental Services Department (MCESD) have air pollution control regulations. (Arizona Administrative Code and Maricopa County Air Pollution Control Regulations, respectively). These regulations contain requirements for permitting new and modified major sources, as well as emission limitations and standards.

The following subsections are intended to present regulations that contain emissions limitations and standards, and monitoring, recordkeeping or reporting requirements. Those regulations that contain general or administrative requirements have not been presented.

For purposes of this application, since Maricopa County is responsible for issuance of construction permits, the regulations herein discussed will focus on the Maricopa County air pollutant regulations.

4.2.1 Permit Requirements for New Major Sources and Major Modifications to Existing Major Sources

The Arizona Administrative Code (Article 4) and Maricopa County regulation (Regulation II, Rule 240) both contain specific requirements that must be addressed as part of a construction application for a major stationary source. These requirements are specifically defined for nonattainment and attainment areas.

The requirements stipulated in these regulations for major stationary sources in nonattainment and attainment areas are essentially identical to those described in Sections 3.1.1 and 3.1.2.

4.2.2 Rule 245 "Continuous Source Emission Monitoring"

This rule contains requirements to conduct continuous source emission monitoring for fossil fuel-fired generators. This rule shall not apply to any source that is subject to an NSPS. Since the HRSGs and auxiliary boiler will be subject to NSPS Subparts Db and Dc, respectively, this rule should not apply to the proposed expansion project.

4.2.3 Rule 270 "Performance Tests"

Rule 270 provides requirements for conducting performance tests. Section 401 requires the owner or operator to conduct performance tests within 60 days of achieving the capability to operate at its maximum production rate, but no later than 180 days after initial startup.

SRP is aware of this requirement and will conduct the appropriate performance tests within the timeframes established by MCESD personnel.

4.2.4 Rule 300 "Visible Emissions"

This rule is intended to limit the emissions of air contaminants into the ambient air by establishing standards for visible emissions and opacity. Section 301 states that "No persons shall discharge into the ambient air for any single source of emissions, any air contaminant other than uncombined water, in excess of 20% opacity." Specific exceptions to this limitation apply to startups, shutdowns, and emergencies.

SRP is proposing to conduct Method 9 testing on a periodic basis. A specific protocol will be developed by SRP.

4.2.5 Rule 310 "Fugitive Dust Sources"

Sources that generate fugitive dust, such as bulk material handling, equipment, earthmoving operations, haul trucks, etc., are regulated by this rule. The rule establishes an opacity limitation and the requirement to prepare a fugitive dust control plan.

The proposed expansion project should not include operations or activities (excluding initial construction activities) that are capable of generating fugitive dust.

4.2.6 Rule 311 "Particulate Matter from Process Industries"

The purpose of this rule is to limit the discharge of particulate matter into the atmosphere by establishing emission rates based on process weight. It appears that Section 304 "Limitations – Fuel Burning Equipment" may apply to the proposed expansion project. This section contains a specific PM limitation based on the heat input rating of the equipment.

The equation is as follows:

$$\text{PM Limitation} = 1.02Q^{0.769}$$

where:

Q = the heat output in million Btu/hour

The combined cycle systems and auxiliary boiler will be combusting natural gas. Combustion of this fuel will result in PM emission well below the limitation.

4.2.7 Rule 371 "Acid Rain"

Refer to Section 4.1.8 for a discussion of the applicable requirements established under the acid rain program.

4.3 SPECIAL REQUIREMENTS

In addition to the county, state, and federal air pollution requirements, the following requirements must also be met for the proposed SRP expansion project.

4.3.1 Rule 32 "Odors and Gaseous Emissions"

This rule states that no person shall emit into the ambient air any sulfur oxide or sulfuric acid in such manner and amounts as to result in ground level concentrations at any place beyond the premises on which the source is located exceeding those limits shown below.

Concentration of Sulfur Dioxide ($\mu g/m^3$)	Averaging Time
850	1 hour
250	24 hours
120	72 hours

Concentration of Sulfuric Acid and Sulfur Trioxide Expressed as Sulfuric Acid ($\mu g\ SO_4/m^3$)	Averaging Time
15	24 hours

Since the proposed equipment at the SRP generating station will combust natural gas, potential sulfur oxide emissions will easily comply with the established concentration levels. Refer to Section 5.0 for the results of the SO_2 air quality impact assessment.

4.3.2 Arizona Ambient Air Quality Guidelines (AAAQGs)

The Arizona Department of Health Services (ADHS) began developing health-based guidelines for contaminants in air during 1987. The ADHS has developed a list of chemicals with corresponding Arizona Ambient Air Quality Guidelines (AAAQGs). These guidelines are residential screening values that are designed to protect human health, including children. The AAAQGs are not intended to be used as standards. Rather, they are intended to provide health-based guidelines that may be useful in making environmental risk decisions.

The ADHS has established guidelines for three specific averaging periods: annual, 24-hour, and 1-hour. Each of the guidelines developed was based on health related studies performed by USEPA or OSHA.

The proposed expansion project will have the potential to emit the following constituents that have guideline concentrations established by the ADHS.

Chemical Name	1-Hour AAAQG ($\mu g/m^3$)	24-Hour AAAQG ($\mu g/m^3$)	Annual AAAQG ($\mu g/m^3$)
1,3-Butadiene	5.0E+00	1.3E+00	3.6E+00
2-Methylnaphthalene	—	—	—
3-Methylchloranthrene	—	—	—
Acrolein	6.3E+00	2.0E+00	—
Arsenic	6.0E-02	1.6E-02	2.3E-04
Benzene	1.7E+02	4.4E+01	1.2E-01

Chemical Name	1-Hour AAAQG ($\mu g/m^3$)	24-Hour AAAQG ($\mu g/m^3$)	Annual AAAQG ($\mu g/m^3$)
Benzo(a)anthracene	6.0E+00	1.6E+00	4.8E-03
Benzo(a)pyrene	6.7E-01	1.8E-01	4.8E-04
Beryllium	6.0E-02	1.6E-02	4.2E-04
Cadmium	7.7E-01	2.0E-01	5.6E-04
Chromium VI	1.7E-02	4.4E-03	1.2E-05
Dibenzo(a,h)anthracene	6.7E-01	1.8E-01	4.8E-04
1,2-Dichlorobenzene	9.0E+03	2.4E+03	—
1,4-Dichlorobenzene	2.0E+02	5.3E+01	1.5E-01
Ethylbenzene	4.5E+03	3.5E+03	—
Formaldehyde	2.5E+01	1.6E+01	7.6E-02
Hexane	15.9E+03	1.4E+03	—
Lead	NAAQS	NAAQS	—
Manganese	2.5E+01	7.9E+00	—
Mercury	1.5E+00	4.0E-01	—
Naphthalene	6.3E+02	4.0E+02	—
Nickel	4.5E-01	1.2E-01	2.1E-03
N-nitrosodimethylamine	9.9E-02	2.6E-02	7.1E-05
Propylene Oxide	3.7E+02	9.8E+01	2.7E-01
Selenium	6.0E+00	1.6E+00	—
Toluene	4.4E+03	3.0E+03	—
Xylene	15.9E+03	3.5E+03	—

As shown in Section 6, potential emissions of the above listed chemicals will not result in ambient concentration levels above the acceptable 1-hour, 24-hour, and annual AAAQGs.

5 NONATTAINMENT AREA PROVISIONS

Any person proposing to construct a new major stationary source in a nonattainment area where that source has the potential to emit significant levels of that pollutant for which the area is designated nonattainment must perform specialized analyses as part of an air permit application to construct.

These specialized analyses include the following:

- A demonstration that the proposed emission sources will meet the Lowest Achievable Emission Rate;
- Reduction in actual emissions (emission offsets) for each nonattainment area pollutant associated with the proposed source. This reduction in actual emissions should be at least 1.2 to 1 for VOC and NO_x emissions, and as necessary to show a net air quality benefit for emissions of CO and PM_{10};
- Conduct a net air quality benefit demonstration for each nonattainment area pollutant associated with the proposed source. USEPA Region IX has stated that due to the regional nature of emissions of VOCs and NO_x, a net air quality benefit will be achieved as long as the emission offset requirement is met. Thus, a net air quality demonstration is not required for emissions of VOC and NOx; and
- Demonstrate that the benefits of constructing the new source significantly outweigh the social and environmental costs imposed as a result of its location, construction, or modification.

The following section provides a discussion on how the proposed expansion project will comply with each specialized analysis identified above.

5.1 LOWEST ACHIEVABLE EMISSION RATE (LAER) DEMONSTRATION

LAER (Lowest Achievable Emission Rate) is defined as the most stringent emissions limitation contained in the State Implementation Plan (SIP) of any state for any such category of stationary source or the most stringent emissions limitation which is achieved in practice by such category of stationary source. LAER shall be demonstrated for a major new source or expansion project for all pollutants for which the area has been designated as nonattainment and for which that source is major.

The proposed expansion project will be classified as a major source for the following nonattainment area air pollutants:

- NOx;
- CO;
- VOC; and
- PM_{10}.

Subsequently, a LAER demonstration must be performed for each piece of equipment associated with the proposed expansion project that will have the potential to emit one or more of the air pollutants listed above. The primary or significant equipment associated with the proposed project will be three (3) combined cycle combustion systems and one (1) auxiliary boiler. For purposes of this air permit application, the LAER demonstration was limited to this equipment. The proposed expansion project will also incorporate support equipment. Since this equipment (i.e., emergency generator, emergency fire water pump and mechanical draft cooling tower) is used to meet a specialized need and air pollutant emissions from this equipment can be considered insignificant, a detailed LAER demonstration for this equipment was not performed.

LAER for these pieces of equipment are defined as follows:

- **Emergency Fire Water Pump** (310 hp) — This fire pump will be limited to the use of diesel fuel and 37.5 hours of operation/year. The following air pollutant emission rates have been estimated for this fire pump:

  NO_x = 0.180 tons/year
  CO = 0.039 tons/year
  PM_{10} = 0.013 tons/year
  VOC = 0.015 tons/year

- **Emergency Generator** (335 hp) — The generator will be limited to 37.5 hours of operation/year and will only use diesel fuel. The following air pollutant emission rates have been estimated for this generator:

  NO_x = 0.19 tons/year
  CO = 0.04 tons/year
  PM_{10} = 0.01 tons/year
  VOC = 0.02 tons/year

- **Cooling Tower** — The cooling tower will be designed to handle 230,000 gallons of cooling water /minute with a liquid drift of 0.0005% and a dissolved solids content of 3,000 milligrams per liter (mg/l). This cooling tower will be equipped with a state of the art mist collection system that will minimize liquid drift to 0.0005%. The inclusion of this collection system will limit potential PM_{10} emissions to less than eight (8) tons per year.

To perform the LAER demonstration for the combined cycle systems and auxiliary boiler, the following steps were followed:

1. Individual state regulations were reviewed to define emissions limitations that are promulgated for combined cycle systems and natural gas-fired boilers;

2. The USEPA BACT/LAER Clearinghouse and web pages developed for specific regulatory agencies were reviewed to identify recent permits issued for combined cycle combustion systems and auxiliary natural gas-fired boilers;

3. The information obtained under Steps 1 and 2 were evaluated to define the Lowest Achievable Emission Rate for combined cycle systems and auxiliary boilers;

4. Combustion techniques and/or control devices capable of achieving the lowest possible emission rates were defined for the combined cycle systems and auxiliary boiler; and

5. A combination of combustion techniques and/or control devices was selected by SRP for the combined cycle systems and auxiliary boiler in order to meet LAER.

For ease of review, the LAER demonstration has been broken down by air pollutant in the following subsections. Each subsection describes the following:

- How that air pollutant is formed;
- Types of techniques available to control or minimize the formation of that air pollutant;
- Air pollution control methods being proposed for the combined cycle systems and auxiliary boiler at the SRP expansion project; and
- What is considered LAER and how the proposed expansion project's combined cycle systems and auxiliary boiler will achieve these emission rates.

5.2 NO_X EMISSIONS

The proposed expansion project will be equipped with three natural gas fired combined cycle systems. These systems will each be capable of generating approximately 250 MW (net) of electrical output. These systems will consist of a natural gas fired combustion turbine and supplemental natural gas fired duct burner associated with the HRSG. The proposed auxiliary boiler will be used to provide steam during startup conditions and has a rated design heat input capacity of 99 MMBtu/hour. Because the proposed combined cycle systems and auxiliary boiler will be combusting natural gas, both will have the potential to generate NO_x emissions. NO_x collectively refers to the combustion products nitric oxide (NO) and nitrogen dioxide (NO_2). NO_x emissions from natural gas combustion originate in three primary ways: from fuel-bound nitrogen, as prompt NO_x, and as thermal NO_x. NO_x from fuel-bound nitrogen is important in some liquid and solid fuels, but is minimal in gaseous fuels. Fuel NO_x is formed from the nitrogen bound in the fuel of combustion. NO_x is created when the fuel molecule is oxidized, releasing the reactive nitrogen. Prompt NO_x is a component of thermal NO_x formed at the combustion flame front (promptly) from early reactions of fuel-derived nitrogen intermediaries and hydrocarbon radicals during combustion. Prompt NO_x is recognized to be a minor component of total NO_x and is independent of combustion temperature. The most abundant means of NO_x production, especially for internal combustion, is thermal-induced NO_x. Thermal NO_x is created by high temperatures in the presence of free oxygen. The proportion of thermally induced NO_x is even greater when combusting gaseous fuels.

Atmospheric conditions that affect NO_x emissions are humidity, temperature, and pressure. Atmospheric water vapor has a quenching effect; the energy required to heat the airborne water has a tendency to lower combustor temperatures. At low humidity, NO_x emissions increase with increasing temperature. At high humidity, the effect of temperature is varied; NO_x emissions decrease with increasing ambient temperature above 50 °F, and increase with increasing temperature within the range below 50 °F. Increased atmospheric pressure results in higher pressure and temperature levels within the combustor, so NO_x emissions increase.

There is a direct relationship between the power output level of a gas turbine, the firing temperature, and the combustor flame temperature. Gas turbines each have a base-rated power output level with corresponding NO_x emissions. At power outputs below base-rated power, flame temperatures are lower and thus NO_x emissions are lower. However at peak-power outputs, NO_x emissions are greater due to increased flame temperatures.

To reduce NO_x emissions from the combustion turbine and natural gas-fired duct burner, a combination of modifying the natural-gas combustor and add-on control devices are employed. The types of NO_x combustor modifications include:

- Diluent Injection- the injection of a small amount of water or steam via a nozzle into the immediate vicinity of the combustor burner flame. This type of combustion modification can control NO_x formation by approximately 50%;
- Dry Low-NO_x Combustor- this type of combustor minimizes the combustion temperature by providing a lean pre-mixed air/fuel mixture, where air and fuel are mixed before entering the combustor. A dry-low combustor can control NO_x formation by approximately 95%; and
- Catalytic Combustion- In catalytic combustion, a catalyst is used to promote oxidation of the inlet gas stream at lower temperatures than are required in standard thermal combustion. The catalyst bed is used to oxidize a lean air/fuel mixture within the combustor instead of burning it with a flame, as in a conventional combustor. The catalyst limits the temperature in the combustor and helps to stave off the production of thermal NO_x. Catalytic combustion can achieve NO_x emissions of about 3 ppmvd NO_x at 15 percent oxygen (approximately 98 percent control), as claimed by manufacturers.

The proposed combined cycle systems will be equipped with an HRSG to extract more energy from the hot exhaust gases leaving the gas turbine and create steam for use in other industrial processes or to turn a steam turbine to generate electricity. Feed water pumps send water through heat exchangers in the HRSG. The heat exchangers are generally large tubes made of conductive metals. Hot gases exchange heat energy with the water in the tubes before exiting through the stack. Duct burners can be used to increase the steam capacity of the HRSG. The duct burners are installed at the front of the HRSG to supply additional heat to the flue gas exiting the gas turbine. Because the duct burners are fuel-fired, they will produce NO_x emissions in addition to those from combustion in the gas turbine. The proposed HRSG system will be equipped with supplemental natural gas-fired duct burners.

To reduce NO_x formation from this duct burner, a low NO_x burner is typically employed. Low NO_x burners reduce NO_x by completing the combustion process in stages. Staged combustion can achieve lower NO_x emissions by dividing the combustion process into a number of stages where the air to fuel ratio is varied to reduce NO_x formation. This staging partially delays the combustion process and results in a cooler flame that suppresses thermal NO_x formation. After the initial combustion zone where the fuel is ignited, a pyrolytic zone is formed where the fuel is chemically broken down by heat from the flame. In the next stage, a fuel-rich (oxygen-lean) zone is formed which limits the formation of NO_x. The last stage consists of a burnout zone where completion of combustion occurs.

The configuration of combined-cycle expansion projects is such that the gas turbine and duct burner exhausts through a common stack. Therefore, NO_x emissions from the combined cycle systems can be further reduced with add-on controls. The types of add-on controls, or commonly called flue gas controls, that can be used on combined cycle systems are described below.

Selective Catalytic Reduction

Selective catalytic reduction (SCR) systems selectively reduce NO_x by injecting ammonia (NH_3) into the exhaust gas stream upstream of a catalyst. NO_x, ammonia, and oxygen react on the surface of the catalyst to from molecular nitrogen (N_2) and water. The primary chemical reactions are shown below:

$$4NO + 4NH_3 + O_2 \rightarrow 4N_2 + 6H_2O$$
$$2NO_2 + 4NH_3 + O_2 \rightarrow 3N_2 + 6H_2O$$

The catalyst, comprised of parallel plates or honeycomb structures, is installed in the form of rectangular modules, downstream of the gas turbine in simple-cycle configurations, and into the HRSG portion of the gas turbine downstream of the superheater in combined-cycle and cogeneration configurations.

In honeycomb-type catalysts, the size of the catalyst openings (i.e., pitch) is important. Smaller pitch equates to larger surface area, and thus greater NO_x removal efficiency due to maximizing of the surface area on which the reactions take place. At the other extreme, if catalyst openings are too small, potential for clogging from contaminants becomes an issue. The residence time of the exhaust gases in the presence of the catalyst must be sufficient for the reactions to take place. The longer the exposure time of the exhaust with the catalyst, the greater the NO_x removal is. Residence time is defined as the volume of the catalyst (e.g., ft^3) divided by the exhaust flow rate (ft^3/min). Space velocity is the inverse of residence time. Efficient NO_x removal is usually indicated by a space velocity of approximately 30,000 per hour.

The turbine exhaust gas must contain a minimum amount of oxygen and be within a particular temperature range in order for the selective catalytic reduction system to operate properly. The temperature range is dictated by the catalyst, which is typically made from noble metals, base metal oxides, or zeolite-based material. The typical temperature range for base-metal catalyst is 600 to

800°F. Keeping the exhaust gas temperature within this range is important. If the temperature drops below 600°F, the reaction efficiency becomes too low and increased amounts of NO_x and ammonia will be released out the stack. If the reaction temperature gets too high, the catalyst may begin to decompose. Turbine exhaust gas is generally in excess of 1000°F. HRSGs cool the exhaust gases before they reach the catalyst by extracting energy from the hot turbine exhaust gases and creating steam for use in other industrial processes or to turn a steam turbine. Selective catalytic reduction can typically achieve NO_x emission reductions in the range of about 80-95 percent.

Selective catalytic reduction uses ammonia as a reducing agent in controlling NO_x emissions from gas turbines. The portion of the unreacted ammonia passing through the catalyst and emitted from the stack is called ammonia slip.

SCONOx

The SCONOx system, developed by Goal Line Environmental Technologies, uses a catalyst to remove NO_x emissions by oxidizing NO to NO_2. The NO_x is absorbed onto the catalytic surface using a potassium carbonate (K_2CO_3) absorber coating. The potassium carbonate coating reacts with NO_2 to form potassium nitrites and nitrates that are deposited onto the catalyst surface. SCONOx does not use ammonia; therefore there are no ammonia emissions from this catalyst system. The reactions are shown below:

$$NO = 1/2\ O_2 \rightarrow NO_2$$
$$2NO_2 + K_2CO_3 \rightarrow CO_2 + KNO_2 + KNO_3$$

The optimal temperature window for operation of the SCONOx catalyst is from 280 to 700 °F. Operating data from Federal Cogeneration in Los Angeles County, California indicates SCONOx can achieve an emission level of 2.0 ppmvd NO_x at 15 percent oxygen (approximately 98.6 percent control).

When all of the potassium carbonate absorber coating has been converted to nitrogen compounds, NO_x can no longer be absorbed and the catalyst must be regenerated. Regeneration can be accomplished by passing a dilute hydrocarbon reducing gas across the surface of the catalyst in the absence of oxygen. Hydrogen in the gas reacts with the nitrites and nitrates to form water and molecular nitrogen. Carbon dioxide in the gas reacts with the potassium nitrite and nitrates to form potassium carbonate, which is the absorbing surface coating on the catalyst.

$$KNO_2 + KNO_3 + 4H_2 + CO_2 \rightarrow K_2CO_3 + 4H_2O_{(g)} + N_2$$

The regeneration gas is produced by reacting natural gas with oxygen from ambient air. A gas generator uses a two-stage process to produce hydrogen and carbon dioxide. In the first stage, natural gas and air are reacted across a partial oxidation catalyst to form carbon monoxide and hydrogen. Steam is added to the mixture and then passes across a low temperature shift catalyst,

forming carbon dioxide, and more hydrogen. The mixture is diluted to less than 4 percent hydrogen using steam.

The SCONOx catalyst is designed to be installed downstream of the gas turbine after the HRSG; whereas the selective catalytic reduction catalyst is installed within the HRSG in combined-cycle and cogeneration expansion project configurations.

It is important to note that the SCONOx system has been used effectively on smaller turbines (<100 MW). However, this system has not yet been shown to be effective on large units (>100 MW).

5.2.1 Proposed Expansion Project – Control of NO_x Emissions

SRP has conducted a comprehensive evaluation on the type of combustion equipment required to meet the electrical objectives of the proposed expansion project. Based on this evaluation, specific combustion systems and an auxiliary boiler have been selected. The following control techniques for reducing NO_x emissions have been selected for the proposed combined cycle systems and auxiliary boiler.

- Combined Cycle Systems – Dry low NO_x combustor for the turbines, low NO_x burner for the HRSG supplemental fired duct burners and selective catalytic reduction; and
- Auxiliary Boiler – Low NO_x burner

The installation of SCR has been selected based on its proven reliability and actual use in the power generation industry. SRP is reluctant to install the SCONOx system based on its limited use in this industry and lack of proven reliability. The SCONOx system has been limited to units with substantially less electrical output (MWs). SRP will continue to follow and evaluate operation of SCONOX on larger combustion units.

5.2.2 LAER Determination For NOx Emissions

As stated previously, several steps were followed to determine the Lowest Achievable Emission Rate (LAER). Table 5-1 presents a list of similar types of projects permitted across the United States. As shown in this table, LAER for NO_x emissions from existing combined cycle systems can be defined as follows:

- 2.0 parts per million volume density as 15% O_2 (3-hour average); and
- 2.5 parts per million volume density at 15% O_2 (1-hour average).

The combination of dry low NO_x combustor, low NO_x burner, and SCR for the proposed combined cycle systems will achieve the NO_x rates identified above. Thus, these rates are considered LAER for the proposed combined cycle systems.

Table 5-1
Salt River Project
Proposed Expansion Project - Existing Santan Generating Station
RLBC Database Information - Combined Cycle Turbines
NOx Emissions

RBLCID	FACILITY	CITY	LAST UPDATE	PROCESS	PROC TYPE	THRU PUT	THRUPUT UNIT	POLL.	PRIM EMISS	PRIME UNIT	CTRLDESC	PCT EFFIC	BASIS
	FINA	PORT ARTHUR	PENDING	COMBINED CYCLE UNIT WITH HEAT RECOVERY AND SUPPLEMENTAL DUCT BURNER FIRING		39.00	Mwe	NOX	15.0000		DRY LOW NOx CONTROL, FUEL GAS FIRED		
	FINA	PORT ARTHUR	PENDING	COMBINED CYCLE UNIT WITH HEAT RECOVERY AND SUPPLEMENTAL DUCT BURNER FIRING		39.00	Mwe	NOX	9.0000		SCR CATALYST CONTROL, FUEL GAS FIRED		
	UNION CARBIDE CORPORATION	SEADRIFT	PENDING	COMBINED CYCLE UNIT WITH HEAT RECOVERY AND SUPPLEMENTAL DUCT BURNER FIRING		39.00	MW	NOX	9.0000		DRY LOW NOx CONTROL		
	LUBBOCK POWER AND LIGHT	LUBBOCK	1/8/99	COMBINED CYCLE UNIT WITH HEAT RECOVERY AND SUPPLEMENTAL DUCT BURNER FIRING		44.00	MW	NOX	42.0000		SCR CATALYST CONTROL		
	PANDA ONETA POWER L.P.	ONETA	9/29/99	COMBINED CYCLE GAS TURBINES WITH SUPPLEMENTAL DUCT BURNERS		1000.00	MW	NOX	9.0000	PPMVD	DRY LOW NOx CONTROL		BACT
AL-0128	ALABAMA POWER COMPANY - THEODORE COGENERATION	THEODORE	6/23/99	TURBINE, WITH DUCT BURNER	15.004	170.00	MW	NO2	0.0130	LB/MMBTU	DLN COMBUSTOR IN CT, LNB IN DUCT BURNER, SCR	68.200	BACT-PSD
CT-0139	PDC EL PASO MILFORD LLC	MILFORD	6/17/99	TURBINE, COMBUSTION, ABB GT-24, #1 WITH 2 CHILLERS	15.004	1.97	MMCF/H	NOX	2.0000	PPMV @ 15% O2 GAS	SCR WITH AMMONIA INJECTION	0.000	LAER
CT-0140	PDC EL PASO MILFORD LLC	MILFORD	6/17/99	TURBINE, COMBUSTION, ABB GT-24E,#2 WITH 2 CHILLERS	15.004	1.97	MMCF/H	NOX	2.0000	PPMV @ 15% O2 GAS	SCR WITH AMMONIA INJECTION	0.000	LAER
CA-0855	CROCKETT COGENERATION - C&H SUGAR	CROCKETT	4/19/99	TRUBINE, GAS, GENERAL ELECTRIC MODEL PG7221(FA)	15.004	240.00	MW	NOX	5.0000	PPMVD @ 15% O2	DRY LOW-NOX COMBUSTERS AND A MITSUBISHI HEAVY INDUSTRIES AMERICAN SELECTIVE CATALYTIC REDUCTION CATALYST.	0.000	BACT-OTHER
CA-0863	SUNLAW COGEN. (FEDERAL COLD STORAGE COGENERATION)	VERNON	4/19/99	TURBINE, NATURAL GAS FIRED, COMBINED CYCLE AND COG	15.004	28.00	MW	NOX	186817	LB/YR	WATER INJECTION AND SCONOX (MOD 2) CATALYST SYSTEM IS INSTALLED AFTER THE HRSG.	,92.000	BACT-OTHER
CO-0037	COLORADO SPRINGS UTILITIES	FOUNTAIN	4/19/99	TURBINE, COMBINE, NATURAL GAS FIRED	15.004	30.00	MW EACH	NOX	15.0000	PPMVD ABOVE 70% LOAD	POLLUTION PREVENTION BUILT INTO EQUIPMENT.	0.000	BACT-PSD
MA-0021	MILLENNIUM POWER PARTNER, LP	CHARLTON	4/19/99	TURBINE, COMBUSTION, WESTINGHOUSE MODEL 501G	15.007	2534.00	MMBTU/H	NOX	0.0130	LB/MMBTU	DRY LOW-NOX COMBUSTION TECHNOLOGY IN CONJUNCTION WITH SCR ADD-ON NOX CONTROLS.	0.000	BACT-PSD
MA-0022	BERKSHIRE POWER DEVELOPMENT, INC.	AGAWAM	4/19/99	TURBINE, COMBUSTION, ABB GT24	15.007	1792.00	MMBTU/H	NOX	20.3000	LB/H	DRY LOW NOX COMBUSTION TECHNOLOGY WITH SCR ADD-ON NOX CONTROL.	0.000	BACT-PSD
MA-0022	BERKSHIRE POWER DEVELOPMENT, INC.	AGAWAM	4/19/99	ENGINES, CHILLER, NATURAL GAS-FIRED, TWO	15.004	23.40	MMBTU/H	NOX	0.7000	LB/H	DRY LOW NOX COMBUSTION TECHNOLOGY WITH SCR ADD-ON NOX CONTROL.	0.000	BACT-PSD
MA-0023	DIGHTON POWER ASSOCIATE, LP	DIGHTON	4/19/99	TURBINE, COMBUSTION, ABB GT11N2	15.004	1327.00	MMBTU/H	NOX	17.1200	LB/H	DRY LOW NOX COMBUSTION TECHNOLOGY WITH SCR ADD-ON NOX CONTROL.	0.000	BACT-PSD
ME-0016	GORHAM ENERGY LIMITED PARTNERSHIP	GORHAM	4/19/99	TURBINE, COMBINED CYCLE	15.007	800.00	MW TOTAL	NOX	2.5000	PPM @ 15% O2 (NAT G)	SELECTIVE CATALYTIC REDUCTION. EMISSION IS FROM EACH 300 MW SYSTEM.	0.000	LAER
ME-0018	WESTBROOK POWER LLC	WESTBROOK	4/19/99	TURBINE, COMBINED CYCLE, TWO	15.004	528.00	MW TOTAL	NOX	2.5000	PPM @15% O2	SELECTIVE CATALYTIC REDUCTION AND DRY LOW NOX BUR-NERS.	0.000	LAER
ME-0019	CHAMPION INTERNATL CORP. & CHAMP. CLEAN ENERGY	BUCKSPORT	4/19/99	TURBINE, COMBINED CYCLE, NATURAL GAS	15.004	175.00	MW	NOX	9.0000	PPMVD @15% O2 GAS	DRY LOW NOX BURNER 1 OPTION IS CONSIDERED FOR OIL AND IS SELECTED.	0.000	BACT-OTHER
ME-0020	CASCO RAY ENERGY CO	VEAZIE	4/19/99	TURBINE, COMBINED CYCLE, NATURAL GAS, TWO	15.004	170.00	MW EACH	NOX	3.5000	PPM @15% O2	SELECTIVE CATALYTIC REDUCTION	0.000	BACT-PSD
MI-0244	WYANDOTTE ENERGY	WYANDOTTE	4/19/99	TURBINE, COMBINED CYCLE, POWER PLANT	15.004	500.00	MW	NOX	4.5000	PPM	SCR	70.000	BACT
MN-0035	LSP - COTTAGE GROVE, L.P.	COTTAGE GROVE	4/19/99	GENERATOR, COMBUSTION TURBINE & DUCT BURNER	15.007	1988.00	MMBTU/H (CTG)	NOX	4.5000	PPMDV @15%O2 (NG)	SELECTIVE CATALYTIC REDUCTION (SCR) WITH A NOX CEM AND A NOX PEM.	0.000	BACT-PSD
FL-0116	SANTA ROSA ENERGY LLC	NORTHBROOK	4/16/99	TURBINE, COMBUSTION, NATURAL GAS	15.004	241.00	MW	NOX	9.8000	PPM@15% O2 DB ON	DRY LOW NOX BURNER	0.000	BACT-PSD
WA-0280	EEX POWER SYSTEMS, ENCOGEN NW COGENERATION PROJECT	BELLINGHAM	4/16/99	TURBINES, COMBINED CYCLE COGEN, GE FRAME 6	15.007	123.00	MW	NOX	7.0000	PPMDV@15%O2 NG	STEAM INJECTION AND SCR	85.000	BACT-PSD

Table 5-1
Salt Riv[illegible]ject
Proposed Expansion Project - Ex[illegible]g Santan Generating Station
RLBC Database Information - Combined Cycle Turbines
NOx Emissions

RBLCID	FACILITY	CITY	LAST UPDATE	PROCESS	PROC TYPE	THRU PUT	THRUPUT UNIT	POLL.	PRIM EMISS	PRIME UNIT	CTRLDESC	PCT EFFIC	BASIS
WA-0280	EEX POWER SYSTEMS, ENCOGEN NW COGENERATION PROJECT	BELLINGHAM	4/16/99	TURBINES, COMBINED CYCLE COGEN, GE FRAME 6	15.007	123.00	MW	SOX	100.000	LB/D NG		0.000	BACT-PSD
CA-0845	SACRAMENTO POWER AUTHORITY CAMPBELL SOUP	SACRAMENTO	4/13/99	TURBINE, GAS , COMBINED CYCLE, SIEMENS V84.2	15.004	1257.00	MMBTU/H	NOX	3.0000	PPMVD @ 15% O2	SELECTIVE CATALYTIC REDUCTION AND DRY LOW NOX COMBUSTION	0.000	BACT
CA-0846	CARSON ENERGY GROUP & CENTRAL VALLEY FINANCING AUT	ELK GROVE	4/13/99	TURBINE, GAS, COMBINED CYCLE, GE LM6000	15.004	450.00	MMBTU/H	NOX	5.0000	PPMVD @ 15% O2	SELECTIVE CATALYTIC REDUCTION AND WATER INJECTION ALSO HAS CARBON ABSORPTION SYSTEM IN DIGESTER TO REMOVE ORGANSILOXANES	0.000	BACT
AL-0126	MOBILE ENERGY LLC	MOBILE	4/9/99	TURBINE, GAS, COMBINED CYCLE	15.006	168.00	MW	NOX	0.0190	LB/MMBTU	SCR & DLN COMBUSTORS DURING GAS FIRING. STEAM/WATER INJECTION DURING OIL FIRING	0.000	BACT-PSD
WY-0039	TWO ELK GENERATION PARTNERS, LIMITED PARTNERSHIP	15 MILES SE OF WRIGHT	3/31/99	TURBINE, STATIONARY	15.004	33.30	MW	NOX	25.0000	PPM @ 15% O2	DRY LOW NOX BURNERS	40.000	BACT-PSD
ME-0015	ANDROSCOGGIN ENERGY LIMITED	JAY	3/17/99	GAS TURBINES, COGEN, W/DUCT BURNERS	15.007	675.00	MMBTU/H TURBINE	NOX	6.0000	PPM @ 15% O2 NG	LOW NOX BURNERS. LOW NOX COMBUSTORS. SCR DURING GAS FIRING ONLY.	85.000	BACT-PSD
ME-0015	ANDROSCOGGIN ENERGY LIMITED	JAY	3/17/99	GAS TURBINES, COGEN, W/DUCT BURNERS	15.007	675.00	MMBTU/H TURBINE	NOX	42.0000	PPM @ 15% O2 NG OIL	LOW NOX COMBUSTORS, LOW NOX BURNERS, WATER INJECTION DURING OIL FIRING.	85.000	BACT-PSD
NJ-0031	UNIVERSITY OF MEDICINE & DENTISTRY OF NEW JERSEY	NEWARK	2/17/99	COMBUSTION TURBINE COGENERATION UNITS, 3	15.004	56.00	MMBTU/H	NOX	0.1670	LB/MMBTU NAT.GAS		0.000	RACT
ME-0014	RUMFORD POWER ASSOCIATES	RUMFORD	2/10/99	TURBINE GENERATOR, COMBUSTION, NATURAL GAS	15.004	1906.00	MMBTU/H	NOX	3.5000	PPM @ 15% O2	SCR AMMONIA INJECTION SYSTEM AND CATALYTIC REACTORTO REDUCE NOX.	85.000	BACT-PSD
NM-0039	TNP TECHN, LLC (FORMERLY TX-NM POWER CO.)	LORDSBURG	2/10/99	GAS TURBINES	15.004	375.00	MMBTU/H	NOX	15.0000	PPM	WATER INJECTION FOLLOWED BY SELECTIVE CATALYTIC REDUCTION (SCR)	95.000	BACT-PSD
RI-0018	TIVERTON POWER ASSOCIATES	TIVERTON	2/8/99	COMBUSTION TURBINE, NATURAL GAS	15.004	265.00	MW	NO2	3.5000	PPM @ 15% O2	SCR	0.000	LAER
NJ-0030	HOFFMAN-LA ROCHE, NUTLEY COGEN FACILITY	NUTLEY	2/2/99	TURBINE, GM LM500	15.004	86.60	MMBTU/H	NOX	0.3400	LB/MMBTU		0.000	RACT
OR-0011	HERMISTON GENERATING CO.	HERMISTON	1/27/99	TURBINES, NATURAL GAS (2)	15.004	1696.00	MMBTU/H	NOX	4.5000	PPM @ 15% O2	SCR	82.000	BACT-PSD
CT-0130	BRIDGEPORT ENERGY, LLC	BRIDGEPORT	1/21/99	TURBINES, COMBUSTION MODEL V84.3A, 2 SIEMES	15.004	280.00	MW/HRSG PER TURBINE	NOX	6.0000	PPM NAT. GAS	DRY LOW NOX BURNER WITH SCR	80.000	BACT-PSD
LA-0113	BASF CORPORATION	GEISMAR	1/21/99	TURBINE, COGEN UNIT 2, GE FRAME 6	15.004	42.40	MW	NOX	8.0000	PPMV NAT. GAS	STEAM INJECTION AND SCR TO LIMIT NOX TO 8 PPM FOR NATURAL GAS AND 25 PPM FOR WASTE GAS (80% H2)	0.000	BACT-PSD
DE-0014	STAR ENTERPRISE	DELAWARE CITY	1/20/99	TURBINES, COMBINED CYCLE, 2	15.007	826.60	MMBTU/H	NOX	16.0000	PPM @ 15% O2 SYN GAS	NITROGEN INJECTION WHILE FIRING SYNGAS AND STEAM INJECTION WHILE FIRING LSDF	0.000	LAER
DE-0014	STAR ENTERPRISE	DELAWARE CITY	1/20/99	TURBINES, COMBINED CYCLE, 2	15.007	826.60	MMBTU/H	NOX	42.0000	PPM @ 15% O2, DIESEL	NITROGEN INJECTION WHILE FIRING SYNGAS AND STEAM INJECTION WHILE FIRING LSDF	0.000	LAER
LA-0112	AIR LIQUIDE AMERICA CORPORATION	GEISMAR	1/20/99	TURBINE GAS, GE, 7ME 7	15.004	966.00	MMBTU/H	NOX	9.0000	PPMV	DRY LOW NOX TO LIMIT NOX EMISSION TO 9PPMV	0.000	BACT-PSD
PA-0148	BLUE MOUNTAIN POWER, LP	RICHLAND	1/12/99	COMBUSTION TURBINE WITH HEAT RECOVERY BOILER	15.004	153.00	MW	NOX	4.0000	PPM @ 15% O2	DRY LNB WITH SCR WATER INJECTION IN PLACE WHEN FIRING OIL. OIL FIRING LIMITS SET TO 8.4 PPM @15% O2	84.000	LAER
AL-0120	GENERAL ELECTRIC PLASTICS	BURKVILLE	7/2/98	COMBINED CYCLE (TURBINE AND DUCT BURNER)	15.004	0.00		NO2	0.0700	LBS/MMBTU COMBINED	DRY LOW NOX BURNER ON TURBINE AND LOW NOX BURNER ON DUCT BURNER	0.000	BACT-PSD
CO-0024	PUBLIC SERVICE OF COLO.-FORT ST VRAIN	PLATTEVILLE	5/19/98	COMBINED CYCLE TURBINES (2), NATURAL	15.004	471.00	MW	NOX	15.0000	PPMVD, SMPL CY	DRY LOW NOX COMBUSTION SYSTEMS FOR TURBINES AND DUCT BURNERS	0.000	BACT-PSD
CO-0027	COLO. POWER PARTNERS-BRUSH COGEN FAC	BRUSH	5/19/98	COGEN TURBINES W/ DUCT BURNERS & BOILERS	15.004	385.00	MM BTU/HR	NOX	42.0000	PPM @ 15% O2	LOW NOX COMBUSTION RETROFIT AND WATER INJECTION	0.000	BACT-PSD

Table 5.1
Salt River Project
Proposed Expansion Project - Existing Santan Generating Station
RLBC Database Information - Combined Cycle Turbines
NOx Emissions

RBLCID	FACILITY	CITY	LAST UPDATE	PROCESS	PROC TYPE	THRU PUT	THRUPUT UNIT	POLL.	PRIM EMISS	PRIME UNIT	CTRLDESC	PCT EFFIC	BASIS
PR-0004	ECOELECTRICA, L.P.	PENUELAS	5/6/98	TURBINES, COMBINED-CYCLE COGENERATION	15.004	461.00	MW	NOX, GAS	60.0000	LB/HR	STEAM/WATER INJECTION AND SELECTIVE CATALYTIC REDUCTION (SCR).	72.000	BACT-PSD
PR-0004	ECOELECTRICA, L.P.	PENUELAS	5/6/98	TURBINES, COMBINED-CYCLE COGENERATION	15.004	461.00	MW	NOX, OIL	73.0000	LB/HR	STEAM/WATER INJECTION AND SELECTIVE CATALYTIC REDUCTION (SCR).	72.000	BACT-PSD
AL-0109	SOUTHERN NATURAL GAS	AUBURN	4/24/98	9160 HP GE MODEL M53002G NATURAL GAS FIRED TURBINE	15.004	9160.00	HP	NO2	53.0000	LB/HR		0.000	BACT-PSD
AL-0110	SOUTHERN NATURAL GAS	WARD	4/24/98	2-9160 HP GE MODEL MS3002G NATURAL GAS TURBINES	15.004	9160.00	HP	NO2	53.0000	LB/HR		0.000	BACT-PSD
AL-0115	ALABAMA POWER COMPANY	MCINTOSH	4/24/98	COMBUSTION TURBINE W/ DUCT BURNER (COMBINED CYCLE)	15.004	100.00	MW	NO2	15.0000	PPM	DRY LOW NOX BURNERS	0.000	BACT-PSD
CA-0793	TEMPO PLASTICS	VISALIA	4/23/98	GAS TURBINE COGENERATION UNIT	15.004	0.00		NOX	0.1000	LB/MMBTU	LOW-NOX COMBUSTOR	0.000	LAER
CA-0768	NORTHERN CALIFORNIA POWER AGENCY	LODI	3/16/98	GE FRAME 5 GAS TURBINE	15.004	325.00	MMBTU/HR	NOX	25.0000	PPMVD @ 15% O2	DRY LOW NOX BURNERS	0.000	LAER
PA-0149	BUCKNELL UNIVERSITY	LEWISBURG	11/30/97	NG FIRED TURBINE, SOLAR TAURUS T-7300S	15.004	5.00	MW	NOX	25.0000	PPMV@15 %O2	SOLONOX BURNER: LOW NOX BURNER	0.000	BACT-OTHER
NM-0031	LORDSBURG L.P.	LORDSBURG	9/29/97	TURBINE, NATURAL GAS-FIRED, ELEC. GEN.	15.004	100.00	MW	NO2	74.4000	LBS/HR	DRY LOW-NOX TECHNOLOGY WHICH ADOPTS STAGED OR SCHEDULED COMBUSTION.	80.000	BACT-PSD
OR-0010	PORTLAND GENERAL ELECTRIC CO.	BOARDMAN	8/6/97	TURBINES, NATURAL GAS (2)	15.004	1720.00	MMBTU	NOX	4.5000	PPM @ 15% O2	SCR	82.000	BACT-PSD
OR-0010	PORTLAND GENERAL ELECTRIC CO.	BOARDMAN	8/6/97	BOILERS, AUXILIARY, NATURAL GAS (2)	11.005	361.00	MMBTU	NOX	0.1000	LB/MMBTU	LOW NOX BURNER AND FLUE GAS RECIRCULATION	0.000	BACT-PSD
AL-0096	MEAD COATED BOARD, INC.	PHENIX CITY	5/31/97	COMBINED CYCLE TURBINE (25 MW)	15.004	568.00	MMBTU/HR	NOX	25.0000	PPMVD@ 15% O2 (GAS)	FUEL OIL SULFUR CONTENT <=0.05% BY WEIGHT DRY LOW NOX COMBUSTOR DESIGN FIRING GAS AND DRY LOW NOX COMBUSTOR WITH WATER INJECTION FIRING OIL	0.000	BACT-PSD
LA-0096	UNION CARBIDE CORPORATION	HAHNVILLE	5/31/97	GENERATOR, GAS TURBINE	15.004	1313.00	MM BTU/HR	NOX	25.0000	PPMV CORR. TO 15% O2	DRY LOW NOX COMBUSTOR	0.000	BACT-PSD
VA-0184	BERMUDA HUNDRED ENERGY LIMITED PARTNERSHIP	CHESTERFIELD	5/7/97	TURBINE, COMBUSTION	15.999	1175.00	MMBTU/H NAT. GAS	NOX	9.0000	PPM @ 15% O2	SCR, STEAM INJECTION	91.000	BACT-PSD
VA-0184	BERMUDA HUNDRED ENERGY LIMITED PARTNERSHIP	CHESTERFIELD	5/7/97	TURBINE, COMBUSTION	15.999	1117.00	MMBTU/H NO2 FUEL OIL	NOX	15.0000	PPM @ 15% O2	SCR, STEAM INJ.	91.000	BACT-PSD
VA-0184	BERMUDA HUNDRED ENERGY LIMITED PARTNERSHIP	CHESTERFIELD	5/7/97	TURBINE, COMBUSTION, 2	15.999	0.00		NOX	191.100	T/YR/UNIT		0.000	BACT-PSD
VA-0190	BEAR ISLAND PAPER COMPANY, L.P.	ASHLAND	5/7/97	TURBINE, COMBUSTION GAS	15.007	474.00	X10(6) BTU/HR N. GAS	NOX	9.0000	PPM	SELECTIVE CATALYTIC REDUCTION (SCR)	74.500	BACT-PSD
VA-0190	BEAR ISLAND PAPER COMPANY, L.P.	ASHLAND	5/7/97	TURBINE, COMBUSTION GAS	15.007	468.00	X10(6) BTU/HR #2 OIL	NOX	15.0000	PPM	SCR	80.800	BACT-PSD
VA-0190	BEAR ISLAND PAPER COMPANY, L.P.	ASHLAND	5/7/97	TURBINE, COMBUSTION GAS (TOTAL)	15.007	0.00		NOX	69.7000	TPY	SCR	0.000	BACT-PSD
VA-0206	PATOWMACK POWER PARTNERS, LIMITED PARTNERSHIP	LEESBURG	5/7/97	TURBINE, COMBUSTION, SIEMENS MODEL V84.2, 3	15.007	10.20	X109 SCF/YR NAT GAS	NOX	131.000	LB/HR(GAS); 339 OIL	DRY LOW NOX COMBUSTOR; DESIGN, WATER INJECTION	0.000	BACT-PSD
LA-0093	FORMOSA PLASTICS CORPORATION, BATON ROUGE PLANT	BATON ROUGE	4/28/97	TURBINE/HSRG, GAS COGENERATION	15.004	450.00	MM BTU/HR	NOX	9.0000	PPMV	DRY LOW NOX BURNER/COMBUSTION DESIGN AND CONSTRUCTION.	0.000	BACT-PSD
NM-0029	SOUTHWESTERN PUBLIC SERVICE COMPANY/CUNNINGHAM STA	HOBBS	3/31/97	COMBUSTION TURBINE, NATURAL GAS	15.004	100.00	MW	NOX	0.0000	SEE FACILITY NOTES	DRY LOW NOX COMBUSTION	0.000	BACT-PSD
MS-0030	SOUTHERN NATURAL GAS COMPANY	BAY SPRINGS	3/24/97	TURBINE, NATURAL GAS-FIRED	15.004	9160.00	HORSEPOWER	NOX	110.000	PPMV @ 15% O2, DRY	PROPER TURBINE DESIGN AND OPERATION	0.000	BACT-PSD

Table 5-1
Salt River Project
Proposed Expansion Project - Existing Santan Generating Station
RLBC Database Information - Combined Cycle Turbines
NOx Emissions

RBLCID	FACILITY	CITY	LAST UPDATE	PROCESS	PROC TYPE	THRU PUT	THRUPUT UNIT	POLL.	PRIM EMISS	PRIME UNIT	CTRLDESC	PCT EFFIC	BASIS
NM-0028	SOUTHWESTERN PUBLIC SERVICE CO/CUNNINGHAM STATION	HOBBS	12/30/96	COMBUSTION TURBINE, NATURAL GAS	15.004	100.00	MW	NOX	15.0000	PPM; SEE FAC. NOTES	DRY LOW NOX COMBUSTION	0.000	BACT-PSD
AL-0089	SOUTHERN NATURAL GAS COMPANY-SELMA COMPRESSOR STAT	SELMA	12/18/96	916O HP GE MS3002G NATURAL GAS FIRED TURBINE	15.004	0.00		NOX	53.0000	LB/HR		0.000	BACT-PSD
GA-0063	MID-GEORGIA COGEN.	KATHLEEN	8/19/96	COMBUSTION TURBINE (2), NATURAL GAS	15.004	116.00	MW	NOX	9.0000	PPMVD	DRY LOW NOX BURNER WITH SCR	0.000	BACT-PSD
NC-0059	CAROLINA POWER & LIGHT	GOLDSBORO	8/19/96	COMBUSTION TURBINE, 4 EACH	15.007	1907.60	MMBTU/HR	NOX, OIL	512.300	LB/HR	WATER INJECTION; FUEL SPEC: 0.04% N FUEL OIL	0.000	BACT-PSD
NC-0059	CAROLINA POWER & LIGHT	GOLDSBORO	8/19/96	COMBUSTION TURBINE, 4 EACH	15.007	1907.60	MMBTU/HR	NOX, GAS	158.000	LB/HR	WATER INJECTION	0.000	BACT-PSD
FL-0104	SEMINOLE HARDEE UNIT 3	FORT GREEN	5/31/96	COMBINED CYCLE COMBUSTION TURBINE	15.007	140.00	MW	NOX	15.0000	PPM @ 15% O2	DRY LNB STAGED COMBUSTION	0.000	BACT-PSD
FL-0102	PANDA-KATHLEEN, L.P.	LAKELAND	5/20/96	COMBINED CYCLE COMBUSTION TURBINE (TOTAL 115MW)	15.004	75.00	MW	NOX	15.0000	PPM @ 15% O2	DRY LOW NOX BURNER	0.000	BACT-PSD
SC-0036	CAROLINA POWER AND LIGHT	HARTSVILLE	4/29/96	STATIONARY GAS TURBINE	15.007	1520.00	MMBTU/H	NOX (NG)	25.0000	PPMDV @ 15% O2	WATER INJECTION	30.000	BACT-PSD
SC-0036	CAROLINA POWER AND LIGHT	HARTSVILLE	4/29/96	STATIONARY GAS TURBINE	15.007	1520.00	MMBTU/H	NOX (OIL)	62.0000	PPMDV @ 15% O2	WATER INJECTION	30.000	BACT-PSD
PA-0130	PROCTOR AND GAMBLE PAPER PRODUCTS CO (CHARMIN)	MEHOOPANY	11/27/95	TURBINE, NATURAL GAS	15.004	580.00	MMBTU/HR	NOX	55.0000	PPM @ 15% O2	STEAM INJECTION	75.000	RACT
NY-0044	BROOKLYN NAVY YARD COGENERATION PARTNERS L.P.	NEW YORK CITY	6/30/95	TURBINE, NATURAL GAS FIRED	15.004	240.00	MW	NOX	3.5000	PPM @ 15% O2	SCR	0.000	LAER
NY-0068	KAMINE/BESICORP NATURAL DAM LP	NATURAL DAM	6/30/95	GE FRAME 6 GAS TURBINE	15.007	500.00	MMBTU/HR	NOX	42.0000	PPM, 80.1 LB/HR	STEAM INJECTION	35.000	BACT
MN-0022	LSP-COTTAGE GROVE, L.P.	COTTAGE GROVE	5/29/95	COMBUSTION TURBINE/GENERATOR	15.007	1970.00	MMBTU/HR	NOX	4.5000	PPM @ 15% O2 GAS	SELECTIVE CATALYTIC REDUCTION (SCR)	70.000	BACT-PSD
MN-0022	LSP-COTTAGE GROVE, L.P.	COTTAGE GROVE	5/29/95	COMBUSTION TURBINE/GENERATOR	15.007	1970.00	MMBTU/HR	VOC	19.0000	LB/HR GAS	FUEL SELECTION, GOOD COMBUSTION	0.000	BACT-PSD
NJ-0013	LAKEWOOD COGENERATION, L.P.	LAKEWOOD TOWNSHIP	5/29/95	TURBINES (NATURAL GAS) (2)	15.004	1190.00	MMBTU/HR (EACH)	NOX	0.0330	LB/MMBTU	SCR, DRY LOW NOX BURNER	64.000	BACT-OTHER
NJ-0017	NEWARK BAY COGENERATION PARTNERSHIP, L.P.	NEWARK	5/29/95	TURBINES, COMBUSTION, NATURAL GAS-FIRED (2)	15.004	617.00	MMBTU/HR (EACH)	NOX	8.3000	PPMDV	SCR	0.000	BACT-PSD
NJ-0017	NEWARK BAY COGENERATION PARTNERSHIP, L.P.	NEWARK	5/29/95	BOILER, AUXILIARY, NATURAL GAS-FIRED	11.005	200.00	MMBTU/HR	NOX	0.0500	LB/MMBTU	LOW NOX BURNERS, FLUE GAS RECIRCULATION (FGR)	0.000	BACT-PSD
NM-0024	MILAGRO, WILLIAMS FIELD SERVICE	BLOOMFIELD	5/29/95	TURBINE/COGEN, NATURAL GAS (2)	15.004	900.00	MMCF/DAY	NO2	9.0000	PPM @ 15% O2	DRY LOW NOX (GENERAL ELECTRIC MODEL PG6541B)	94.000	BACT-PSD
NY-0061	ANITEC COGEN PLANT	BINGHAMTON	4/27/95	GE LM5000 COMBINED CYCLE GAS TURBINE EP #00001	15.007	451.00	MMBTU/HR	NOX	25.0000	PPM, 41 LB/HR	NO CONTROLS	0.000	BACT-OTHER
NY-0062	FULTON COGEN PLANT	FULTON	4/27/95	GE LM5000 GAS TURBINE	15.007	500.00	MMBTU/HR	NOX	36.0000	PPM, 65 LB/HR	WATER INJECTION	58.500	BACT
NY-0062	FULTON COGEN PLANT	FULTON	4/27/95	STACK EMISSIONS (GAS TURBINE AND DUCT BURNER)	11.004	610.00	MMBTU/HR (TOTAL)	NOX	36.0000	PPM, 69.5 LB/HR	WATER INJECTION	53.000	BACT
NY-0063	TBG COGEN COGENERATION PLANT	BETHPAGE	4/27/95	GE LM2500 GAS TURBINE	15.007	214.90	MMBTU/HR	NOX	75.0000	PPM + FBN CORRECTION	WATER INJECTION	60.000	BACT
NY-0064	INDECK-OSWEGO ENERGY CENTER	OSWEGO	4/27/95	GE FRAME 6 GAS TURBINE	15.007	533.00	LB/MMBTU	NOX	42.0000	PPM, 75.00 LB/HR	STEAM INJECTION	53.000	BACT
NY-0065	KAMINE/BESICORP CARTHAGE L.P.	CARTHAGE	4/27/95	GE FRAME 6 GAS TURBINE	15.007	491.00	BTU/HR	NOX	42.0000	PPM, 76.6 LB/HR	STEAM INJECTION	63.000	BACT
NY-0065	KAMINE/BESICORP CARTHAGE L.P.	CARTHAGE	4/27/95	STACK (GAS TURBINE & DUCT BURNER) **SEE NOTE #3**	11.004	540.00	LB/MMBTU	NOX	42.0000	PPM, 87.4 LB/HR	NO CONTROLS	0.000	BACT-OTHER

Table 5-1
Salt Ri[illegible]oject
Proposed Expansion Project - Existing Santan Generating Station
RLBC Database Information - Combined Cycle Turbines
NOx Emissions

RBLCID	FACILITY	CITY	LAST UPDATE	PROCESS	PROC TYPE	THRU PUT	THRUPUT UNIT	POLL.	PRIM EMISS	PRIME UNIT	CTRLDESC	PCT EFFIC	BASIS
NY-0071	KAMINE SOUTH GLENS FALLS COGEN CO	SOUTH GLENS FALLS	4/27/95	GE FRAME 6 GAS TURBINE	15.007	498.00	MMBTU/HR	NOX	42.0000	PPM, 76.6 LB/HR	WATER INJECTION	50.000	BACT
NY-0072	KAMINE/BESICORP SYRACUSE LP	SOLVAY	4/27/95	SIEMENS V84.3 GAS TURBINE (EP #00001)	15.007	650.00	MMBTU/HR	NOX	25.0000	PPM	WATER INJECTION	70.000	BACT
NY-0073	LOCKPORT COGEN FACILITY	LOCKPORT	4/27/95	(6) GE FRAME 6 TURBINES (EP #S 00001-00006)	15.007	423.90	MMBTU/HR	NOX	42.0000	PPM	STEAM INJECTION	78.000	BACT
NY-0075	PILGRIM ENERGY CENTER	ISLIP	4/27/95	(2) WESTINGHOUSE W501D5 TURBINES (EP #S 00001&2)	15.007	1400.00	MMBTU/HR	NOX	4.5000	PPM, 23.6 LB/HR	STEAM INJECTION FOLLOWED BY SCR	0.000	BACT
NY-0079	LEDERLE LABORATORIES	PEARL RIVER	4/27/95	(2) GAS TURBINES (EP #S 00101&102)	15.007	110.00	MMBTU/HR	NOX	42.0000	PPM, 18 LB/HR	STEAM INJECTION	0.000	BACT-PSD
NM-0022	MARATHON OIL CO. - INDIAN BASIN N.G. PLAN	CARLSBAD	4/26/95	TURBINES, NATURAL GAS (2)	15.004	5500.00	HP	NOX	7.4000	LBS/HR	LEAN-PREMIXED COMBUSTION TECHNOLOGY. DRY/LOW NOX	66.000	BACT-PSD
LA-0086	INTERNATIONAL PAPER	MANSFIELD	4/17/95	TURBINE/HRSG, GAS COGEN	15.004	338.00	MM BTU/HR TURBINE	NOX	25.0000	PPMV 15% O2 TURBINE	DRY LOW NOX COMBUSTOR/COMBUSTION CONTROL	0.000	BACT
LA-0089	FORMOSA PLASTICS CORPORATION, LOUISIANA	BATON ROUGE	4/17/95	TURBINE/HRSG, GAS COGENERATION	15.004	450.00	MM BTU/HR	NOX	9.0000	PPMV	DRY LOW NOX BURNER/COMBUSTION DESIGN AND CONTROL	0.000	LAER
OH-0218	CNG TRANSMISSION	WASHINGTON COURT HOUSE	4/5/95	TURBINE (NATURAL GAS) (3)	15.004	5500.00	HP (EACH)	NOX	1.6000	G/HP-HR*	LOW NOX COMBUSTION	0.000	BACT-OTHER
WA-0274	NORTHWEST PIPELINE COMPANY	SUMAS	4/5/95	TURBINE, GAS-FIRED	15.004	12100.00	HP	NO2	196.000	PPM @ 15% O2	ADVANCED DRY LOW NOX COMBUSTOR (BY 07/01/95)	76.000	BACT-PSD
NY-0066	INDECK ENERGY COMPANY	SILVER SPRINGS	3/31/95	GE FRAME 6 GAS TURBINE EP #00001	15.007	491.00	MMBTU/HR	NOX	32.0000	PPM	STEAM INJECTION	58.200	BACT
NY-0076	TRIGEN MITCHEL FIELD	HEMPSTEAD	3/31/95	GE FRAME 6 GAS TURBINE	15.007	424.70	MMBTU/HR	NOX	60.0000	PPM, 90 LB/HR	STEAM INJECTION	20.000	BACT
NY-0077	INDECK-YERKES ENERGY SERVICES	TONAWANDA	3/31/95	GE FRAME 6 GAS TURBINE (EP #00001)	15.007	432.20	MMBTU/HR	NOX	42.0000	PPM, 74 LB/HR	STEAM INJECTION	35.000	BACT
NY-0077	INDECK-YERKES ENERGY SERVICES	TONAWANDA	3/31/95	DUCT BURNER (EP #00001)	11.005	20.00	MMBTU/HR	NOX	0.1100	LB/MMBTU, 2.2 LB/HR	FUEL SPEC: NATURAL GAS ONLY	0.000	BACT-OTHER
NY-0080	PROJECT ORANGE ASSOCIATES	SYRACUSE	3/31/95	GE LM-5000 GAS TURBINE	15.004	550.00	MMBTU/HR	NOX	25.0000	PPM, 47 LB/HR	STEAM INJECTION, FUEL SPEC: NATURAL GAS ONLY	80.000	BACT
NY-0080	PROJECT ORANGE ASSOCIATES	SYRACUSE	3/31/95	STACK (TURBINE AND DUCT BURNER)	11.005	715.00	MMBTU/HR	NOX	26.0000	PPM, 69 LB/HR	NO CONTROLS FOR NOX ON STACK *SEE TURBINE NOX DATA	0.000	BACT-OTHER
NY-0057	MEGAN-RACINE ASSOCIATES, INC	CANTON	3/30/95	GE LM5000-N COMBINED CYCLE GAS TURBINE	15.007	401.00	LB/MMBTU	NOX	42.0000	PPMDV @ 15% O2	WATER INJECTION	60.000	BACT
NY-0081	LILCO SHOREHAM	HICKSVILLE	3/30/95	(3) GE FRAME 7 TURBINES (EP #S 00007-9)	15.002	850.00	MMBTU/HR	NOX	55.0000	PPM +FBN & HEAT RATE	WATER INJECTION	30.000	BACT
AL-0069	INTERNATIONAL PAPER CO. RIVERDALE MILL	SELMA	3/24/95	TURBINE, STATIONARY (GAS-FIRED) WITH DUCT BURNER	15.007	40.00	MW	NOX	0.0800	LB/MMBTU (GAS)	LOW NOX BURNERS (ON THE DUCT BURNER) STEAM INJECTION INTO THE TURBINE	0.000	BACT-PSD
AZ-0010	EL PASO NATURAL GAS		3/24/95	TURBINE, GAS, SOLAR CENTAUR H	15.004	5500.00	HP	NOX	84.9000	PPM @ 15% O2	LEAN BURN	0.000	NSPS
AZ-0010	EL PASO NATURAL GAS		3/24/95	TURBINE, GAS, SOLAR CENTAUR H	15.004	5500.00	HP	NOX	42.0000	PPM @ 15% O2	DRY LOW NOX COMBUSTOR	51.000	BACT-PSD
AZ-0011	EL PASO NATURAL GAS		3/24/95	TURBINE, GAS, SOLAR CENTAUR H	15.004	5500.00	HP	NOX	85.1000	PPM @ 15% O2	FUEL SPEC: LEAN FUEL MIX	0.000	NSPS
AZ-0011	EL PASO NATURAL GAS		3/24/95	TURBINE, GAS, SOLAR CENTAUR H	15.004	5500.00	HP	NOX	42.0000	PPM @ 15% O2	DRY LOW NOX COMBUSTOR	51.000	BACT-PSD
CO-0017	THERMO INDUSTRIES, LTD.	FT. LUPTON	3/24/95	TURBINE, GAS FIRED, 5 EACH	15.004	246.00	MMBTU/H	NOX	25.0000	PPM @ 15% O2	DRY LOW NOX TECH.	0.000	BACT-PSD
CO-0023	PHOENIX POWER PARTNERS	GREELEY	3/24/95	TURBINE (NATURAL GAS)	15.004	311.00	MMBTU/HR	NOX	22.0000	PPM @ 15% O2	DRY LOW NOX COMBUSTION	0.000	BACT-OTHER

Table 5-1
Salt Ri[illegible]oject
Proposed Expansion Project - Existing Santan Generating Station
RLBC Database Information - Combined Cycle Turbines
NOx Emissions

RBLCID	FACILITY	CITY	LAST UPDATE	PROCESS	PROC TYPE	THRU PUT	THRUPUT UNIT	POLL.	PRIM EMISS	PRIME UNIT	CTRLDESC	PCT EFFIC	BASIS
FL-0045	CHARLES LARSEN POWER PLANT	CITY OF OF LAKELAND	3/24/95	TURBINE, GAS, 1 EACH	15.004	60.00	MW	NOX	25.0000	PPM @ 15% O2	WET INJECTION	0.000	BACT-PSD
FL-0052	FLORIDA POWER AND LIGHT	NORTH PALM BEACH	3/24/95	TURBINE, GAS, 4 EACH	15.004	400.00	MW	NOX	25.0000	PPM @ 15% O2	LOW NOX COMBUSTORS	0.000	BACT-PSD
FL-0052	FLORIDA POWER AND LIGHT	NORTH PALM BEACH	3/24/95	TURBINE, CG, 4 EACH	15.004	400.00	MW	NOX	42.0000	PPM @ 15% O2	LOW NOX COMBUSTORS	0.000	BACT-PSD
FL-0053	FLORIDA POWER AND LIGHT	LAVOGROME STATION	3/24/95	TURBINE, GAS, 4 EACH	15.004	240.00	MW	NOX	42.0000	PPM @ 15% O2	COMBUSTION CONTROL	0.000	BACT-PSD
FL-0054	LAKE COGEN LIMITED	UMATILLA	3/24/95	TURBINE, GAS, 2 EACH	15.004	42.00	MW	NOX	25.0000	PPM @ 15% O2	COMBUSTION CONTROL	0.000	BACT-PSD
GA-0052	SAVANNAH ELECTRIC AND POWER CO.		3/24/95	TURBINES, 8	15.004	1032.00	MMBTU/H, NAT GAS	NOX	25.0000	PPM @ 15% O2	MAX WATER INJECTION	0.000	BACT-PSD
GA-0052	SAVANNAH ELECTRIC AND POWER CO.		3/24/95	TURBINES, 8	15.006	972.00	MMBTU/H, #2 OIL	NOX	0.0000	SEE NOTES	MAX WATER INJECTION	0.000	BACT-PSD
GA-0053	HARTWELL ENERGY LIMITED PARTNERSHIP	HARTWELL	3/24/95	TURBINE, GAS FIRED (2 EACH)	15.004	1817.00	M BTU/HR	NOX	25.0000	PPM @ 15% O2	MAXIMUM WATER INJECTION	0.000	BACT-PSD
GA-0056	GEORGIA POWER COMPANY, ROBINS TURBINE PROJECT	ROBINS AIR FORCE BASE	3/24/95	TURBINE, COMBUSTION, NATURAL GAS	15.004	80.00	MW	NOX	25.0000	PPM	WATER INJECTION, FUEL SPEC: NATURAL GAS	0.000	BACT-PSD
HI-0015	MAUI ELECTRIC COMPANY, LTD./MAALAEA GENERATING STA	MAUI	3/24/95	TURBINE, COMBINED-CYCLE COMBUSTION	15.006	28.00	MW	NOX	42.3000	LB/HR	WATER INJECTION	69.000	BACT-OTHER
MA-0015	PEABODY MUNICIPAL LIGHT PLANT	PEABODY	3/24/95	TURBINE, 38 MW NATURAL FAS FIRED	15.004	412.00	MMBTU/HR	NOX	25.0000	PPM @ 15% O2	WATER INJECTION	0.000	BACT-OTHER
MD-0017	SOUTHERN MARYLAND ELECTRIC COOPERATIVE (SMECO)	EAGLE HARBOR	3/24/95	TURBINE, NATURAL GAS FIRED ELECTRIC	15.004	90.00	MW	NO2	199.000	LB/HR	WATER INJECTION	0.000	BACT-PSD
MD-0019	BALTIMORE GAS & ELECTRIC - PERRYMAN PLANT	PERRYMMAN	3/24/95	TURBINE, 140 MW NATURAL GAS FIRED ELECTRIC	15.004	140.00	MW	NO2	15.0000	PPM @ 15% O2	DRY BURN LOW NOX BURNERS	91.000	BACT-PSD
NC-0055	DUKE POWER CO. LINCOLN COMBUSTION TURBINE STATION	LOWESVILLE	3/24/95	TURBINE, COMBUSTION	15.006	1247.00	MM BTU/HR	NOX	287.000	LB/HR	MULTINOZZLE COMBUSTOR, MAXIMUM WATER INJECTION	0.000	BACT-PSD
NC-0055	DUKE POWER CO. LINCOLN COMBUSTION TURBINE STATION	LOWESVILLE	3/24/95	TURBINE, COMBUSTION	15.004	1313.00	MM BTU/HR	NOX	119.000	LB/HR	MULTINOZZLE COMBUSTOR, MAXIMUM WATER INJECTION	0.000	BACT-PSD
NV-0017	NEVADA POWER COMPANY, HARRY ALLEN PEAKING PLANT	LAS VEGAS	3/24/95	COMBUSTION TURBINE ELECTRIC POWER GENERATION	15.004	600.00	MW (8 UNITS 75 EACH)	NO2	88.6000	TPY (EACH TURBINE)	LOW NOX COMBUSTOR	0.000	BACT-PSD
OK-0027	OKLAHOMA MUNICIPAL POWER AUTHORITY	PONCA CITY	3/24/95	TURBINE, COMBUSTION	15.007	58.00	MW	NOX (FROM OIL FUEL)	65.0000	PPM @ 15% O2	COMBUSTION CONTROLS	83.000	BACT-OTHER
OK-0027	OKLAHOMA MUNICIPAL POWER AUTHORITY	PONCA CITY	3/24/95	TURBINE, COMBUSTION	15.007	58.00	MW	NOX (FROM GAS" FUEL)	25.0000	PPM @ 15% O2	COMBUSTION CONTROLS	83.000	BACT-OTHER
VA-0189	GORDONSVILLE ENERGY L.P.	FAIRFAX	3/24/95	TURBINE FACILITY, GAS	15.007	1331.13	X10(7) SCF/Y NAT GAS	NOX	245.000	TOTAL TPY	SELECTIVE CATALYTIC REDUCTION (SCR) W/ WATER INJEC	80.000	BACT-PSD
VA-0189	GORDONSVILLE ENERGY L.P.	FAIRFAX	3/24/95	TURBINE FACILITY, GAS	15.007	7.44	X10(7) GPY FUEL OIL	NOX	245.000	TOTAL TPY	SELECTIVE CATALYTIC REDUCTION (SCR)	80.000	BACT-PSD
VA-0189	GORDONSVILLE ENERGY L.P.	FAIRFAX	3/24/95	TURBINES (2) [EACH WITH A SF]	15.007	1.51	X10(9) BTU/HR N GAS	NOX	9.0000	PPMDV/UNIT @ 15% 02	SCR WITH WATER INJECTION	80.000	BACT-PSD
VA-0189	GORDONSVILLE ENERGY L.P.	FAIRFAX	3/24/95	TURBINES (2) [EACH WITH A SF]	15.007	1.36	X10(9) BTU/H #2 OIL	NOX	66.0000	LBS/HR/UNIT	WATER INJECTION AND SCR	80.000	BACT-PSD
FL-0068	ORANGE COGENERATION LP	BARTOW	1/13/95	TURBINE, NATURAL GAS, 2	15.004	368.30	MMBTU/H	NOX	15.0000	PPM @ 15% O2	DRY LOW NOX COMBUSTOR	0.000	BACT-PSD
FL-0072	TIGER BAY LP	FT. MEADE	1/13/95	TURBINE, GAS	15.004	1614.80	MMBTU/H	NOX	15.0000	PPM @ 15% O2	DRY LOW NOX COMBUSTOR	0.000	BACT-PSD

Table 5.1
Salt River Project
Proposed Expansion Project - Existing Santan Generating Station
RLBC Database Information - Combined Cycle Turbines
NOx Emissions

RBLCID	FACILITY	CITY	LAST UPDATE	PROCESS	PROC TYPE	THRU PUT	THRUPUT UNIT	POLL.	PRIM EMISS	PRIME UNIT	CTRLDESC	PCT EFFIC	BASIS
FL-0078	KISSIMMEE UTILITY AUTHORITY	INTERCESSION CITY	1/13/95	TURBINE, NATURAL GAS	15.004	869.00	MMBTU/H	NOX	15.0000	PPM @ 15% O2	DRY LOW NOX COMBUSTOR	0.000	BACT-PSD
FL-0078	KISSIMMEE UTILITY AUTHORITY	INTERCESSION CITY	1/13/95	TURBINE, NATURAL GAS	15.004	367.00	MMBTU/H	NOX	15.0000	PPM @ 15% O2	DRY LOW NOX COMBUSTOR	0.000	BACT-PSD
FL-0080	AUBURNDALE POWER PARTNERS, LP	AUBURNDALE	1/13/95	TURBINE,GAS	15.004	1214.00	MMBTU/H	NOX	15.0000	PPMVD @ 15 % O2	DRY LOW NOX COMBUSTOR	0.000	BACT-PSD
FL-0082	FLORIDA POWER CORPORATION POLK COUNTY SITE	BARTOW	1/13/95	TURBINE, NATURAL GAS (2)	15.004	1510.00	MMBTU/H	NOX	12.0000	PPMVD @15 % O2	DRY LOW NOX COMBUSTOR	0.000	BACT-PSD
CA-0613	UNOCAL	WILMINGTON	12/5/94	TURBINE, GAS (SEE NOTES)	15.004	0.00		NOX	9.0000	PPM @ 15% O2	SELECTIVE CATALYTIC REDUCTION (SCR), WATER INJECTN	80.000	BACT-OTHER
PA-0099	FLEETWOOD COGENERATION ASSOCIATES	FLEETWOOD	11/22/94	NG TURBINE (GE LM6000) WITH WASTE HEAT BOILER	15.004	360.00	MMBTU/HR	NOX	21.0000	LB/HR	SCR WITH LOW NOX COMBUSTORS	47.000	BACT-OTHER
TX-0231	WEST CAMPUS COGENERATION COMPANY	COLLEGE STATION	10/31/94	GAS TURBINES	15.004	75.30	MW (TOTAL POWER)	NOX	200.000	TPY	INTERNAL COMBUSTION CONTROLS	0.000	BACT-PSD
NY-0045	SELKIRK COGENERATION PARTNERS, L.P.	SELKIRK	9/13/94	COMBUSTION TURBINES (2) (252 MW)	15.004	1173.00	MMBTU/HR (EACH)	NOX	9.0000	PPM GAS	STEAM INJECTION AND SCR	0.000	BACT-OTHER
NY-0045	SELKIRK COGENERATION PARTNERS, L.P.	SELKIRK	9/13/94	COMBUSTION TURBINE (79 MW)	15.004	1173.00	MMBTU/HR	NOX	25.0000	PPM GAS	STEAM INJECTION	0.000	BACT-OTHER
NY-0046	SARANAC ENERGY COMPANY	PLATTSBURGH	9/13/94	TURBINES, COMBUSTION (2) (NATURAL GAS)	15.004	1123.00	MMBTU/HR (EACH)	NOX	9.0000	PPM	SCR	0.000	BACT-OTHER
NY-0047	PASNY/HOLTSVILLE COMBINED CYCLE PLANT	HOLTSVILLE	9/13/94	TURBINE, COMBUSTION GAS (150 MW)	15.007	1146.00	MMBTU/HR (GAS)*	NOX (FROM GAS)	9.0000	PPM	DRY LOW NOX	0.000	BACT-OTHER
NY-0047	PASNY/HOLTSVILLE COMBINED CYCLE PLANT	HOLTSVILLE	9/13/94	TURBINE, COMBUSTION GAS (150 MW)	15.007	1146.00	MMBTU/HR (GAS)*	NOX (FROM OIL)	42.0000	PPM	WATER INJECTOR	0.000	BACT-OTHER
NY-0048	KAMINE/BESICORP CORNING L.P.	SOUTH CORNING	9/13/94	TURBINE, COMBUSTION (79 MW)	15.004	653.00	MMBTU/HR	NOX	9.0000	PPM	DRY LOW NOX OR SCR	0.000	BACT-OTHER
NY-0050	SITHE/INDEPENDENCE POWER PARTNERS	OSWEGO	9/13/94	TURBINES, COMBUSTION (4) (NATURAL GAS) (1012 MW)	15.004	2133.00	MMBTU/HR (EACH)	NOX	4.5000	PPM	SCR AND DRY LOW NOX	0.000	BACT-OTHER
CA-0544	GOAL LINE, LP ICEFLOE	ESCONDIDO	8/4/94	TURBINE, COMBUSTION (NATURAL GAS) (42.4 MW)	15.004	386.00	MMBTU/HR	NOX	5.0000	PPMVD @ 15% OXYGEN	WATER INJECTION & SCR W/ AUTOMATIC AMMONIA INJECT.	88.000	BACT-OTHER
AZ-0012	EL PASO NATURAL GAS		7/20/94	TURBINE, NAT. GAS TRANSM., GE FRAME 3	15.004	12000.00	HP	NOX	225.000	PPM @ 15% O2	LEAN BURN	0.000	BACT-PSD
AZ-0012	EL PASO NATURAL GAS		7/20/94	TURBINE, NAT. GAS TRANSM., GE FRAME 3	15.004	12000.00	HP	NOX	42.0000	PPM @ 15% O2	DRY LOW NOX COMBUSTOR	80.000	BACT-PSD
CO-0018	BRUSH COGENERATION PARTNERSHIP	BRUSH	7/20/94	TURBINE	15.004	350.00	MMBTU/H	NOX	25.0000	PPM @ 15% O2	DRY LOW NOX BURNER	74.000	BACT-PSD
CO-0019	COLORADO POWER PARTNERSHIP	BRUSH	7/20/94	TURBINES, 2 NAT GAS & 2 DUCT BURNERS	15.004	385.00	MMBTU/H EACH TURBINE	NOX	42.0000	PPM @ 15% O2	WATER INJECTION	66.000	BACT-PSD
CO-0020	CIMARRON CHEMICAL	JOHNSTOWN	7/20/94	TURBINE #1, GE FRAME 6	15.004	33.00	MW	NOX	25.0000	PPM @ 15% O2	WATER INJECTION	0.000	OTHER
CO-0020	CIMARRON CHEMICAL	JOHNSTOWN	7/20/94	TURBINE #2, GE FRAME 6	15.004	33.00	MW	NOX	9.0000	PPM @ 15% O2	SCR	0.000	OTHER
MD-0018	PEPCO - CHALK POINT PLANT	EAGLE HARBOR	7/20/94	TURBINE, 105 MW NATURAL GAS FIRED ELECTRIC	15.004	105.00	MW	NO2	77.0000	PPM @ 15% O2	DRY PREMIX AND WATER INJECTION	0.000	BACT-PSD
MD-0018	PEPCO - CHALK POINT PLANT	EAGLE HARBOR	7/20/94	TURBINE, 84 MW NATURAL GAS FIRED ELECTRIC	15.004	84.00	MW	NO2	25.0000	PPM @ 15% O2	QUIET COMBUSTION AND WATER INJECTION	0.000	BACT-PSD
MD-0021	PEPCO - STATION A	DICKERSON	7/20/94	TURBINE, 124 MW NATURAL GAS FIRED	15.004	125.00	MW	NO2	42.0000	PPM @ 15% O2	WATER INJECTION	0.000	BACT-PSD
OR-0007	PACIFIC GAS TRANSMITION	MADRAS	7/20/94	TURBINE, NAT. GAS	15.004	14600.00	HP	NOX	42.0000	PPM @ 15% O2	LOW NOX BURNERS	75.000	BACT-PSD
OR-0009	PACIFIC GAS TRANSMISSION COMPANY	MADRAS	7/20/94	TURBINE GAS, COMPRESSOR STATION	15.004	110.00	MMBTU/HR	NO2	199.000	PPM @ 15% O2	LOW NOX BURNER DESIGN	30.000	NSPS
PA-0083	NORTHERN CONSOLIDATED POWER	NORTH EAST	7/20/94	TURBINES, GAS, 2	15.004	34.60	KW EACH	NOX	25.0000	PPM @ 15% O2	STEAM INJECTION/+SCR IN 1997	85.000	OTHER
WI-0067	WEPCU, PARIS SITE	PARIS	7/20/94	TURBINES, COMBUSTION (4)	15.007	0.00		NOX (FROM NAT. GAS)	25.0000	PPM @ 15% O2	GOOD COMBUSTION PRACTICES	0.000	BACT-PSD

Table 5-1
Salt R[illegible]roject
Proposed Expansion Project - E[illegible]ng Santan Generating Station
RLBC Database Information - Combined Cycle Turbines
NOx Emissions

RBLCID	FACILITY	CITY	LAST UPDATE	PROCESS	PROC TYPE	THRU PUT	THRUPUT UNIT	POLL.	PRIM EMISS	PRIME UNIT	CTRLDESC	PCT EFFIC	BASIS
WI-0067	WEPCU, PARIS SITE	PARIS	7/20/94	TURBINES, COMBUSTION (4)	15.007	0.00		NOX (FROM OIL)	65.0000	PPM @ 15% O2	GOOD COMBUSTION PRACTICES	0.000	BACT-PSD
AL-0074	FLORIDA GAS TRANSMISSION COMPANY	MOBILE	5/12/94	TURBINE, NATURAL GAS	15.004	12600.00	BHP	NOX	0.5800	GM/HP HR	AIR-TO-FUEL RATIO CONTROL, DRY LOW NOX COMBUSTION	71.000	BACT-PSD
FL-0074	FLORIDA GAS TRANSMISSION	PERRY	4/11/94	TURBINE, GAS	15.004	131.59	MMBTU/H	NOX	25.0000	PPM @ 15% O2	DRY LOW NOX COMBUSTOR	0.000	BACT-PSD
MI-0206	KALAMAZOO POWER LIMITED	COMSTOCK	3/23/94	TURBINE, GAS-FIRED, 2, W/ WASTE HEAT BOILERS	15.004	1805.90	MMBTU/H	NOX	15.0000	PPMV	DRY LOW NOX TURBINES	0.000	BACT-PSD
NM-0021	WILLIAMS FIELD SERVICES CO. - EL CEDRO COMPRESSOR	BLANCO	3/2/94	TURBINE, GAS-FIRED	15.004	11257.00	HP	NOX	42.0000	PPM @ 15% O2	SOLONOX COMBUSTOR, DRY LOW NOX TECHNOLOGY	66.000	BACT-PSD
CA-0418	SOUTHERN CALIFORNIA GAS	WHEELER RIDGE	8/4/93	TURBINE, GAS-FIRED	15.004	47.64	MMBTU/H	NOX	9.0000	PPMVD @ 15% O2	HIGH TEMPERATURE SELECTIVE CATALYTIC REDUCTION	93.000	BACT-PSD
CA-0437	KINGSBURG ENERGY SYSTEMS		8/3/93	TURBINE, NATURAL GAS FIRED, DUCT BURNER	15.004	34.50	MW	NOX	6.0000	PPM @ 15% O2	SCR, STEAM INJECTION	90.000	BACT-PSD
CA-0441	GRANITE ROAD LIMITED		8/3/93	TURBINE, GAS, ELECTRIC GENERATION	15.004	460.90	MMBTU/H*	NOX	3.5000	PPMVD @ 15% O2	SCR, STEAM INJECTION	97.000	BACT-PSD
NJ-0009	NEWARK BAY COGENERATION PARTNERSHIP	NEWARK	7/7/93	TURBINE, NATURAL GAS FIRED	15.004	585.00	MMBTU/HR	NOX	0.0330	LB/MMBTU	STEAM INJECTION AND SCR	94.000	BACT-PSD
NV-0015	SAGUARO POWER COMPANY	HENDERSON	6/1/93	COMBUSTION TURBINE GENERATOR	15.007	34.50	MW	NOX	16.9000	PPH (WINTER)	SELECTIVE CATALYTIC REDUCTION (SCR)	80.000	BACT-PSD
FL-0056	ORLANDO UTILITIES COMMISSION	TITUSVILLE	5/14/93	TURBINE, GAS, 4 EACH	15.004	35.00	MW	NOX	42.0000	PPM @ 15% O2	WET INJECTION	70.000	BACT-PSD
FL-0059	SEMINOLE FERTILIZER CORPORATION	BARTOW	5/14/93	TURBINE, GAS	15.004	26.00	MW	NOX	9.0000	PPM @ 15% O2	SCR	0.000	BACT-PSD
NJ-0010	PEDRICKTOWN COGENERATION LIMITED PARTNERSHIP	OLDMANS TOWNSHIP	4/30/93	TURBINE, NATURAL GAS FIRED	15.004	1000.00	MMBTU/HR	NOX	0.0440	LB/MMBTU	STEAM INJECTION AND SCR	93.000	BACT-PSD
NJ-0011	LINDEN COGENERATION TECHNOLOGY	LINDEN	4/30/93	TURBINE, NATURAL GAS FIRED	15.004	50.00	X E12 BTU/YR	NO2	33.8000	LB/HR	STEAM INJECTION AND SCR	94.500	BACT-PSD
CA-0463	SOUTHERN CALIFORNIA GAS	WHEELER RIDGE	5/31/92	TURBINE, GAS FIRED, SOLAR MODEL H	15.004	5500.00	HP	NOX	8.0000	PPM @ 15% O2	HIGH TEMP SELECT. CAT. REDUCTION	93.000	BACT-PSD
RI-0010	NARRAGANSETT ELECTRIC/NEW ENGLAND POWER CO.	PROVIDENCE	5/31/92	TURBINE, GAS AND DUCT BURNER	15.004	1360.00	MMBTU/H EACH	NOX	9.0000	PPM @ 15% O2, GAS	SCR	0.000	BACT-PSD
RI-0012	ALGONQUIN GAS TRANSMISSION CO.	BURRILLVILLE	5/31/92	TURBINE, GAS, 2	15.004	49.00	MMBTU/H	NOX	100.000	PPM @ 15% O2	LOW NOX COMBUSTION	0.000	BACT-OTHER
LA-0079	ENRON LOUISIANA ENERGY COMPANY	EUNICE	10/30/91	TURBINE, GAS, 2	15.004	39.10	MMBTU/H	NOX	40.0000	PPM @ 15% O2	H2O INJECT 0.67 LB/LB	71.000	BACT-PSD
WA-0027	SUMAS ENERGY INC.	SUMAS	8/1/91	TURBINE, NATURAL GAS	15.004	88.00	MW	NOX	6.0000	PPM @ 15% O2	SCR	90.000	BACT-PSD

For the auxiliary boiler, LAER is not so well defined. This type of boiler is used to support the combined cycle systems during startup conditions. Thus, it is used on an as-needed basis and is not used as a standard baseload steam-producing boiler. Due to limited use of this boiler, it is not technically feasible to install combustion modification techniques and/or flue-gas controls.

Because of the specialized requirements of this boiler, LAER for NO_x emissions is being proposed as the combustion of natural gas, 1,200 hours per year of operation, and a NO_x limitation of 0.07 lb/MMBtu.

5.3 CO EMISSIONS

The combustion of natural gas in the combined cycle systems and auxiliary boiler will result in the potential to generate CO emissions. Proper mixing of air and fuel is important for complete combustion to occur. When a hydrocarbon fuel, such as natural gas, burns completely, the oxygen in the air combines with the hydrogen to form water (H_20) and with the carbon to form carbon dioxide (CO_2). If the combustion is incomplete, some of the carbon atoms combine with only one oxygen atom to form carbon monoxide (CO). Because oxygen is not ideally available in stoichiometric amounts, the carbon in the gas is not oxidized completely to CO_2 and CO is formed.

To reduce CO emissions from natural gas combustion equipment, flue gas controls can be employed. These types of control techniques include the following:

- Oxidation Catalyst — In catalytic oxidation, a catalyst is used to oxidize CO at lower temperatures. The addition of a catalyst to the basic thermal oxidation process accelerates the rate of oxidation by absorbing oxygen from the air stream and CO in the waste stream onto the catalyst surface to react to form CO_2 and H_2O. Typical control efficiencies from an oxidation catalyst are form 80 to 90 percent; or
- SCONOx — In addition to NO_x, The SCONOx catalyst system also removes CO emissions by oxidizing CO to CO_2. The reaction is shown below:

  $CO + ½ O_2 \rightarrow CO_2$

A more lengthy description of the SCONOx technology is described in the previous discussion of flue-gas NO_x controls. As stated previously, SRP is reluctant to install the SCONOx system due to its limited use and proven reliability on larger turbines (>100 MW). SRP will continue to follow its development for larger turbines.

5.3.1 Proposed Expansion Project - Control of CO Emissions

As discussed previously, SRP has selected the SCR system over the SCONOx system. Subsequently, the proposed combined cycle systems will be equipped with a dry low NO_x combustor, low NO_x burner for the HRSG and SCR. To further reduce CO emissions, the combined cycle systems will be equipped with an oxidation catalyst. This catalyst will be capable of reducing CO emissions by 90% or more.

For the auxiliary boiler, the same reasons discussed under the NOx emission category also apply to CO emissions. Thus, to minimize CO emissions, good combustion techniques will be employed.

5.3.2 LAER Determination for CO Emissions

A detailed listing of facilities, along with their permitted emission rates is provided in Table 5-2. The results of the evaluation revealed that LAER for CO emissions for existing combined cycle systems across the United States is:

- 6.0 parts per million volume density at 15% O_2 averaged over a 3-hour period.

Several combined cycle systems have been permitted at levels below 6.0 ppmvd for emissions of CO. These systems have been installed in New Jersey and California. Each system incorporated an oxidation catalyst. However, in a document prepared by the California Air Resource Board (CARB) "Guidance for Expansion project Siting and Best Available Control Technology," the agency has concluded that LAER is 6.0 ppmvd at 15% O_2 averaged over a 3-hour period. This emission rate is intended to apply to CO nonattainment areas within California. The agency also believes this level of emissions is reasonable given that CO emissions violations are primarily caused by concentrated motor vehicle emissions.

Based on the above information, SRP is reluctant to commit to a CO limitation less than 6.0 ppmvd at 15% O_2 averaged over a 3-hour period. However, SRP is committed to the installation of an oxidation catalyst, the same type of control employed by other existing facilities who have obtained permitted emission rates below 6.0 ppmvd. In defining LAER for this type of equipment, LAER may not be the lowest rate achieved. The actual rate that can be achieved will be dictated by the type of turbine selected, burner design, add-on control equipment, operating configuration and site conditions.

Subsequently, the installation of an oxidation catalyst on the combined cycle systems will be capable of achieving 6.0 ppmvd @ 15% O_2 over a 3-hour period. Thus, this is considered to be LAER.

For auxiliary boilers, LAER is also not well defined. This type of boiler is used to support the combined cycle systems during startup conditions. It is used on an as-needed basis and is not used like a standard baseload steam-producing boiler. Due to the limited use of this boiler, it is not technically feasible to install combustion modification techniques and/or flue-gas controls.

Because of the specialized requirements of this boiler, LAER for emissions of CO is being proposed as the combustion of natural gas, 1,200 hours per year of operations and good combustion techniques.

5.4 VOC EMISSIONS

The combustion of natural gas in the combined cycle systems and auxiliary boiler will generate emissions of VOCs. Similar to CO emissions, VOC emissions result from incomplete combustion.

Table 5-2
Salt Ri[illegible]oject
Proposed Expansion Project - E[illegible]ng Santan Generating Station
RLBC Database Information - Combined Cycle Turbines
CO Emissions

RBLCID	FACILITY	CITY	LAST UPDATE	PROCESS	PROC TYPE	THRU PUT	THRUPUT UNIT	POLL.	PRIM EMISS	PRIME UNIT	CTRLDESC	PCTEFFIC	BASIS
	FIMA	PORT ARTHUR	PENDING	COMBINED CYCLE UNIT WITH HEAT RECOVERY AND SUPPLEMENTAL DUCT BURNER FIRING		39.00	MW	CO	50.0000		DRY LOW NOx CONTROL, FUEL GAS FIRED		
	FIMA	PORT ARTHUR	PENDING	COMBINED CYCLE UNIT WITH HEAT RECOVERY AND SUPPLEMENTAL DUCT BURNER FIRING		39.00	Mwe	CO	50.0000		SCR CATALYST CONTROL, FUEL GAS FIRED		
	UNION CARBIDE CORPORATION	SEADRIFT	PENDING	COMBINED CYCLE UNIT WITH HEAT RECOVERY AND SUPPLEMENTAL DUCT BURNER FIRING		39.00	MW	CO	25.0000		DRY LOW NOx CONTROL		
	LUBBOCK POWER AND LIGHT	LUBBOCK	1/8/99	COMBINED CYCLE UNIT WITH HEAT RECOVERY AND SUPPLEMENTAL DUCT BURNER FIRING		44.00	MW	CO	25.0000		SCR CATALYST CONTROL		
	PANDA ONETA POWER L.P.	ONETA	9/29/99	COMBINED CYCLE GAS TURBINES WITH SUPPLEMENTAL DUCT BURNERS		1000.00	MW	CO	7.8000	PPMVD	EFFICIENT COMBUSTION		BACT
AL-0128	ALABAMA POWER COMPANY - THEODORE COGENERATION	THEODORE	6/23/99	TURBINE, WITH DUCT BURNER	15.004	170.00	MW	CO	0.0860	LB/MMBTU	EFFICIENT COMBUSTION	0.000	BACT-PSD
CT-0139	PDC EL PASO MILFORD LLC	MILFORD	6/17/99	TURBINE, COMBUSTION, ABB GT-24, #1 WITH 2 CHILLERS	15.004	1.97	MMCF/H	CO	13.0000	LB/H NAT GAS	OXIDATION CATALYST	0.000	BACT-PSD
CT-0140	PDC EL PASO MILFORD LLC	MILFORD	6/17/99	TURBINE, COMBUSTION, ABB GT-24E,#2 WITH 2 CHILLERS	15.004	1.97	MMCF/H	CO	13.0000	LB/H NAT GAS	OXIDATION CATALYST	0.000	BACT-PSD
HI-0018	ENCOGEN HAWAII, L.P.	HAINA	6/8/99	TURBINES, COMBUSTION, 2 EA	15.007	23.00	MW	CO	57.5000	PPMVD @ 15% O2	GOOD COMBUSTION DESIGN AND OPERATION.	0.000	BACT-PSD
HI-0019	MAUI ELECTRIC COMPANY	MAALAEA	6/8/99	TURBINE, COMBUSTION, 2 EA	15.002	20.00	MW	CO	44.0000	PPMVD @ 15% O2	GOOD COMBUSTION DESIGN AND OPERATION.	0.000	BACT-PSD
CA-0855	CROCKETT COGENERATION - C&H SUGAR	CROCKETT	4/19/99	TURBINE, GAS, GENERAL ELECTRIC MODEL PG7221(FA)	15.004	240.00	MW	CO	5.9000	PPMVD @ 15% O2	ENGELHARD OXIDATION CATALYST	90.000	BACT-OTHER
MA-0021	MILLENNIUM POWER PARTNER, LP	CHARLTON	4/19/99	TURBINE, COMBUSTION, WESTINGHOUSE MODEL 501G	15.007	2534.00	MMBTU/H	CO	0.0700	LB/MMBTU	DRY LOW NOX COMBUSTION TECHNOLOGY IN CONJUNCTION WITH SCR ADD-ON NOX CONTROL.	0.000	BACT-PSD
MA-0022	BERKSHIRE POWER DEVELOPMENT, INC.	AGAWAM	4/19/99	TURBINE, COMBUSTION, ABB GT24	15.007	1792.00	MMBTU/H	CO	14.3000	LB/H	DRY LOW NOX COMBUSTION TECHNOLOGY WITH SCR ADD-ON NOX CONTROL.	0.000	BACT-PSD
MA-0022	BERKSHIRE POWER DEVELOPMENT, INC.	AGAWAM	4/19/99	ENGINES, CHILLER, NATURAL GAS-FIRED, TWO	15.004	23.40	MMBTU/H	CO	0.4000	LB/H	DRY LOW NOX COMBUSTION TECHNOLOGY WITH SCR ADD-ON NOX CONTROL.	0.000	BACT-PSD
MA-0023	DIGHTON POWER ASSOCIATE, LP	DIGHTON	4/19/99	TURBINE, COMBUSTION, ABB GT11N2	15.004	1327.00	MMBTU/H	CO	5.9700	LB/H	DRY LOW NOX COMBUSTION TECHNOLOGY WITH SCR ADD-ON NOX CONTROL.	0.000	BACT-PSD
ME-0016	GORHAM ENERGY LIMITED PARTNERSHIP	GORHAM	4/19/99	TURBINE, COMBINED CYCLE	15.007	900.00	MW TOTAL	CO	5.0000	PPM @ 15% O2 (NAT G)	0.05% SULFUR DISTILLATE OIL #2 IS USED. EMISSION IS FROM EACH 300 MW SYSTEM.	0.000	BACT-PSD
ME-0018	WESTBROOK POWER LLC	WESTBROOK	4/19/99	TURBINE, COMBINED CYCLE, TWO	15.004	528.00	MW TOTAL	CO	15.0000	PPM @15% O2	USING 15 % EXCESS AIR.	0.000	BACT-PSD
ME-0019	CHAMPION INTERNATL CORP. & CHAMP. CLEAN ENERGY	BUCKSPORT	4/19/99	TURBINE, COMBINED CYCLE, NATURAL GAS	15.004	175.00	MW	CO	9.0000	PPMVD @15% O2 GAS		0.000	BACT-OTHER
ME-0020	CASCO RAY ENERGY CO	VEAZIE	4/19/99	TURBINE, COMBINED CYCLE, NATURAL GAS, TWO	15.004	170.00	MW EACH	CO	20.0000	PPM @ 15% O2	15% EXCESS AIR	0.000	BACT-PSD
MI-0244	WYANDOTTE ENERGY	WYANDOTTE	4/19/99	TURBINE, COMBINED CYCLE, POWER PLANT	15.004	500.00	MW	CO	3.0000	PPM	CATALYTIC OXIDIZER	90.000	LAER
FL-0116	SANTA ROSA ENERGY LLC	NORTHBROOK	4/16/99	TURBINE, COMBUSTION, NATURAL GAS	15.004	241.00	MW	CO	0.0000		DRY LOW NOX BURNER GOOD COMBUSTION PRACTICE	0.000	BACT-PSD
WA-0280	EEX POWER SYSTEMS, ENCOGEN NW COGENERATION PROJECT	BELLINGHAM	4/16/99	TURBINES, COMBINED CYCLE COGEN, GE FRAME 6	15.007	123.00	MW	CO	10.0000	PPMDV @ 15% O2		0.000	BACT-PSD
AL-0126	MOBILE ENERGY LLC	MOBILE	4/9/99	TURBINE, GAS, COMBINED CYCLE	15.006	168.00	MW	CO	0.0400	LB/MMBTU	GOOD COMBUSTION PRACTICES	0.000	BACT-PSD
WY-0039	TWO ELK GENERATION PARTNERS, LIMITED PARTNERSHIP	15 MILES SE OF WRIGHT	3/31/99	TURBINE, STATIONARY	15.004	33.30	MW	CO	25.0000	PPM @ 15% O2		0.000	OTHER
AL-0123	U S ALLIANCE	COOSA PINES	3/30/99	TURBINE, GAS COMBUSTION W/DUCT BURNER	30.002	0.00		CO	0.0680	LB/MMBTU		0.000	BACT-PSD
ME-0015	ANDROSCOGGIN ENERGY LIMITED	JAY	3/17/99	GAS TURBINES, COGEN, W/DUCT BURNERS	15.007	675.00	MMBTU/H TURBINE	CO	74.2100	LB/H NG	CATALYTIC OXIDATION, GOOD COMBUSTION PRACTICES.	0.000	BACT-PSD

Table 5-2
Salt Ri[illegible]oject
Proposed Expansion Project - E[illegible]ing Santan Generating Station
RLBC Database Information - Combined Cycle Turbines
CO Emissions

RBLCID	FACILITY	CITY	LAST UPDATE	PROCESS	PROC TYPE	THRU PUT	THRUPUT UNIT	POLL.	PRIM EMISS	PRIME UNIT	CTRLDESC	PCTEFFIC	BASIS
ME-0015	ANDROSCOGGIN ENERGY LIMITED	JAY	3/17/99	GAS TURBINES, COGEN, W/DUCT BURNERS	15.007	675.00	MMBTU/H TURBINE	CO	43.7300	LB/H NG OIL	CATALYTIC OXIDATION, GOOD COMBUSTION PRACTICES.	0.000	BACT-PSD
NJ-0031	UNIVERSITY OF MEDICINE & DENTISTRY OF NEW JERSEY	NEWARK	2/17/99	COMBUSTION TURBINE COGENERATION UNITS, 3	15.004	56.00	MMBTU/H	CO	75.0000	PPMVD NAT. GAS		0.000	RACT
ME-0014	RUMFORD POWER ASSOCIATES	RUMFORD	2/10/99	TURBINE GENERATOR, COMBUSTION, NATURAL GAS	15.004	1906.00	MMBTU/H	CO	15.0000	PPM @ 15% O2	GE DRY LOW-NOX COMBUSTOR DESIGN. GOOD COMBUSTION CONTROL.	0.000	BACT-PSD
NM-0039	TNP TECHN, LLC (FORMERLY TX-NM POWER CO.)	LORDSBURG	2/10/99	GAS TURBINES	15.004	375.00	MMBTU/H	CO	18.0000	PPM	GOOD COMBUSTION PRACTICES	0.000	BACT-PSD
RI-0018	TIVERTON POWER ASSOCIATES	TIVERTON	2/8/99	COMBUSTION TURBINE, NATURAL GAS	15.004	265.00	MW	CO	12.0000	PPM @ 15% O2	GOOD COMBUSTION	0.000	BACT-PSD
OR-0011	HERMISTON GENERATING CO.	HERMISTON	1/27/99	TURBINES, NATURAL GAS (2)	15.004	1696.00	MMBTU/H	CO	15.0000	PPM @ 15% O2	GOOD COMBUSTION PRACTICES	0.000	BACT-PSD
CT-0130	BRIDGEPORT ENERGY, LLC	BRIDGEPORT	1/21/99	TURBINES, COMBUSTION MODEL V84.3A, 2 SIEMES	15.004	260.00	MW/HRSG PER TURBINE	CO	10.0000	PPM GAS & OIL	PRE-MIX FUEL FAIR TO OPTIMIZE EFFICIENCY ACTUAL EMISSIONS EXPECTED BETWEEN 5-7PPM	0.000	BACT-PSD
LA-0113	BASF CORPORATION	GEISMAR	1/21/99	TURBINE, COGEN UNIT 2, GE FRAME 6	15.004	42.40	MW	CO	83.9300	LB/MMBTU	GOOD DESIGN, PROPER COMBUSTION TECHNIQUES, 2% EXCESS O2	0.000	BACT-PSD
LA-0112	AIR LIQUIDE AMERICA CORPORATION	GEISMAR	1/20/99	TURBINE GAS, GE, 7ME 7	15.004	966.00	MMBTU/H	CO	25.0000	PPMV	GOOD EQUIPMENT DESIGN, PROPER COMBUSTION TECHNIQUEAND MIN. 2% EXCESS O2	0.000	BACT-PSD
PA-0148	BLUE MOUNTAIN POWER, LP	RICHLAND	1/12/99	COMBUSTION TURBINE WITH HEAT RECOVERY BOILER	15.004	153.00	MW	CO	3.1000	PPM @ 15% O2	OXIDATION CATALYST 16 PPM @ 15% O2 WHEN FIRING NO. 2 OIL. AT 75% NG LIMIT SET TO 22.1 PPM	80.000	OTHER
AL-0120	GENERAL ELECTRIC PLASTICS	BURKVILLE	7/2/98	COMBINED CYCLE (TURBINE AND DUCT BURNER)	15.004	0.00		CO	0.0800	LBS/MMBTU	PROPER COMBUSTION	0.000	BACT-PSD
CO-0024	PUBLIC SERVICE OF COLO.-FORT ST VRAIN	PLATTEVILLE	5/19/98	COMBINED CYCLE TURBINES (2), NATURAL	15.004	471.00	MW	CO	15.0000	PPMVD, SMPL CY	GOOD COMBUSTION CONTROL PRACTICES. COMMITMENT TO APATTERN OF OPERATION (LOAD VARIATIONS, ETC.) TO MINIMIZE OPERATION AT HIGH EMISSIONS.	0.000	BACT-PSD
CO-0027	COLO. POWER PARTNERS-BRUSH COGEN FAC	BRUSH	5/19/98	COGEN TURBINES W/ DUCT BURNERS & BOILERS	15.004	385.00	MM BTU/HR	CO	35.0000	PPM @ 15% O2	GOOD COMBUSTION	0.000	BACT-PSD
PR-0004	ECOELECTRICA, L.P.	PENUELAS	5/6/98	TURBINES, COMBINED-CYCLE COGENERATION	15.004	461.00	MW	CO, GAS	33.0000	PPMDV	COMBUSTION CONTROLS.	0.000	BACT-PSD
PA-0149	BUCKNELL UNIVERSITY	LEWISBURG	11/30/97	NG FIRED TURBINE, SOLAR TAURUS T-7300S	15.004	5.00	MW	CO	50.0000	PPMV@15 %O2	GOOD COMBUSTION	0.000	BACT-OTHER
NM-0031	LORDSBURG L.P.	LORDSBURG	9/29/97	TURBINE, NATURAL GAS-FIRED, ELEC. GEN.	15.004	100.00	MW	CO	27.0000	LBS/HR	DRY LOW-NOX TECHNOLOGY BY MAINTAINING PROPER AIR- FUEL RATIO.	0.000	BACT-PSD
OR-0010	PORTLAND GENERAL ELECTRIC CO.	BOARDMAN	8/6/97	TURBINES, NATURAL GAS (2)	15.004	1720.00	MMBTU	CO	15.0000	PPM @ 15% O2	GOOD COMBUSTION PRACTICES	0.000	BACT-PSD
AL-0096	MEAD COATED BOARD, INC.	PHENIX CITY	5/31/97	COMBINED CYCLE TURBINE (25 MW)	15.004	568.00	MMBTU/HR	CO	28.0000	PPMVD@15% O2 (GAS)	PROPER DESIGN AND GOOD COMBUSTION PRACTICES	0.000	BACT-PSD
IN-0071	PORTSIDE ENERGY CORP.	PORTAGE	5/31/97	TURBINE, NATURAL GAS-FIRED	15.004	63.00	MEGAWATT	CO, POWER MODE	40.0000	LBS/HR	GOOD COMBUSTION AND EMISSIONS NOT TO EXCEED 40 PPMVD AT 15% OXYGEN.	0.000	BACT-PSD
IN-0071	PORTSIDE ENERGY CORP.	PORTAGE	5/31/97	TURBINE, NATURAL GAS-FIRED	15.004	63.00	MEGAWATT	CO, NON-POWER MODE	12.0000	LBS/HR	GOOD COMBUSTION AND EMISSIONS NOT TO EXCEED 10 PPMVD AT 15% OXYGEN.	0.000	BACT-PSD
IN-0071	PORTSIDE ENERGY CORP.	PORTAGE	5/31/97	BOILERS, NATURAL GAS-FIRED (2)	11.005	260.00	MMBTU/HR	CO	40.0000	LBS/HR POWER AUGMENT	FUEL SPEC: NG; GOOD COMBUSTION PRACTICES	0.000	BACT-PSD
LA-0096	UNION CARBIDE CORPORATION	HAHNVILLE	5/31/97	GENERATOR, GAS TURBINE	15.004	1313.00	MM BTU/HR	CO	198.6000	LB/HR	NO ADD-ON CONTROL GOOD COMBUSTION PRACTICE	0.000	BACT-PSD
VA-0184	BERMUDA HUNDRED ENERGY LIMITED PARTNERSHIP	CHESTERFIELD	5/7/97	TURBINE, COMBUSTION	15.999	1175.00	MMBTU/H NAT. GAS	CO	82.0000	LB/H/UNIT	FURNACE DESIGN	91.000	BACT-PSD

Table 5-2
Salt Ri[illegible]bject
Proposed Expansion Project - Existing Santan Generating Station
RLBC Database Information - Combined Cycle Turbines
CO Emissions

RBLCID	FACILITY	CITY	LAST UPDATE	PROCESS	PROC TYPE	THRU PUT	THRUPUT UNIT	POLL.	PRIM EMISS	PRIME UNIT	CTRLDESC	PCTEFFIC	BASIS
VA-0184	BERMUDA HUNDRED ENERGY LIMITED PARTNERSHIP	CHESTERFIELD	5/7/97	TURBINE, COMBUSTION	15.999	1117.00	MMBTU/H NO2 FUEL OIL	CO	62.0000	LB/H/UNIT	FURNACE DESIGN	91.000	BACT-PSD
VA-0184	BERMUDA HUNDRED ENERGY LIMITED PARTNERSHIP	CHESTERFIELD	5/7/97	TURBINE, COMBUSTION, 2	15.999	0.00		CO	229.3000	T/YR/UNIT		0.000	BACT-PSD
VA-0190	BEAR ISLAND PAPER COMPANY, L.P.	ASHLAND	5/7/97	TURBINE, COMBUSTION GAS	15.007	474.00	X10(6) BTU/HR N. GAS	CO	11.0000	LBS/HR	GOOD COMBUSTION	0.000	BACT-PSD
VA-0190	BEAR ISLAND PAPER COMPANY, L.P.	ASHLAND	5/7/97	TURBINE, COMBUSTION GAS	15.007	468.00	X10(6) BTU/HR #2 OIL	CO	11.0000	LBS/HR	GOOD COMBUSTION	0.000	BACT-PSD
VA-0190	BEAR ISLAND PAPER COMPANY, L.P.	ASHLAND	5/7/97	TURBINE, COMBUSTION GAS (TOTAL)	15.007	0.00		CO	48.2000	TPY	GOOD COMBUSTION	0.000	BACT-PSD
VA-0206	PATOWMACK POWER PARTNERS, LIMITED PARTNERSHIP	LEESBURG	5/7/97	TURBINE, COMBUSTION, SIEMENS MODEL V84.2, 3	15.007	10.20	X109 SCF/YR NAT GAS	CO	26.0000	LB/HR	GOOD COMBUSTION OPERATING PRACTICES	0.000	BACT-PSD
LA-0093	FORMOSA PLASTICS CORPORATION, BATON ROUGE PLANT	BATON ROUGE	4/28/97	TURBINE/HSRG, GAS COGENERATION	15.004	450.00	MM BTU/HR	CO	70.0000	LB/HR	COMBUSTION DESIGN AND CONSTRUCTION.	0.000	BACT-PSD
NM-0029	SOUTHWESTERN PUBLIC SERVICE COMPANY/CUNNINGHAM STA	HOBBS	3/31/97	COMBUSTION TURBINE, NATURAL GAS	15.004	100.00	MW	CO	0.0000	SEE FACILITY NOTES	GOOD COMBUSTION PRACTICES	0.000	BACT-PSD
GA-0063	MID-GEORGIA COGEN.	KATHLEEN	8/19/96	COMBUSTION TURBINE (2), NATURAL GAS	15.004	116.00	MW	CO	10.0000	PPMVD	COMPLETE COMBUSTION	0.000	BACT-PSD
MS-0028	SOUTH MISSISSIPPI ELECTRIC POWER ASSOC.	MOSELL	8/19/96	COMBUSTION TURBINE, COMBINED CYCLE	15.007	1299.00	MMBTU/HR NAT GAS	CO	26.3000	PPM @ 15% O2, GAS	GOOD COMBUSTION CONTROLS	0.000	BACT-PSD
NC-0059	CAROLINA POWER & LIGHT	GOLDSBORO	8/19/96	COMBUSTION TURBINE, 4 EACH	15.007	1907.60	MMBTU/HR	CO, GAS	80.0000	LB/HR	COMBUSTION CONTROL	0.000	BACT-PSD
FL-0104	SEMINOLE HARDEE UNIT 3	FORT GREEN	5/31/96	COMBINED CYCLE COMBUSTION TURBINE	15.007	140.00	MW	CO	20.0000	PPM (NAT. GAS)	DRY LNB GOOD COMBUSTION PRACTICES	0.000	BACT-PSD
FL-0102	PANDA-KATHLEEN, L.P.	LAKELAND	5/20/96	COMBINED CYCLE COMBUSTION TURBINE (TOTAL 115MW)	15.004	75.00	MW	CO	25.0000	PPM @ 15% O2	COMBUSTION CONTROLS STANDARD ONLY APPLIES IF GE CT IS SELECTED, THE ABB CT WAS LESS THAN SIGNIFICANT EMIS. INCR FOR CO	0.000	BACT-PSD
SC-0036	CAROLINA POWER AND LIGHT	HARTSVILLE	4/29/96	STATIONARY GAS TURBINE	15.007	1520.00	MMBTU/H	CO (NG)	702.0000	LB/H	PROPER OPERATION TO ACHIEVE GOOD COMBUSTION	0.000	BACT-PSD
NY-0044	BROOKLYN NAVY YARD COGENERATION PARTNERS L.P.	NEW YORK CITY	6/30/95	TURBINE, NATURAL GAS FIRED	15.004	240.00	MW	CO	4.0000	PPM @ 15% O2		0.000	LAER
NY-0068	KAMINE/BESICORP NATURAL DAM LP	NATURAL DAM	6/30/95	GE FRAME 6 GAS TURBINE	15.007	500.00	MMBTU/HR	CO	0.0200	LB/MMBTU, 10 LB/HR	NO CONTROLS	0.000	BACT-OTHER
NJ-0013	LAKEWOOD COGENERATION, L.P.	LAKEWOOD TOWNSHIP	5/29/95	TURBINES (NATURAL GAS) (2)	15.004	1190.00	MMBTU/HR (EACH)	CO	0.0260	LB/MMBTU	TURBINE DESIGN	0.000	BACT-OTHER
NJ-0017	NEWARK BAY COGENERATION PARTNERSHIP, L.P.	NEWARK	5/29/95	TURBINES, COMBUSTION, NATURAL GAS-FIRED (2)	15.004	617.00	MMBTU/HR (EACH)	CO	1.8000	PPMDV	OXIDATION CATALYST	0.000	OTHER
NJ-0017	NEWARK BAY COGENERATION PARTNERSHIP, L.P.	NEWARK	5/29/95	BOILER, AUXILIARY, NATURAL GAS-FIRED	11.005	200.00	MMBTU/HR	CO	0.0400	LB/MMBTU	BOILER DESIGN	0.000	OTHER
NM-0024	MILAGRO, WILLIAMS FIELD SERVICE	BLOOMFIELD	5/29/95	TURBINE/COGEN, NATURAL GAS (2)	15.004	900.00	MMCF/DAY	CO	27.6000	PPM @ 15% O2		0.000	BACT-PSD
NY-0061	ANITEC COGEN PLANT	BINGHAMTON	4/27/95	GE LM5000 COMBINED CYCLE GAS TURBINE EP #00001	15.007	451.00	MMBTU/HR	CO	36.0000	PPM, 33 LB/HR	BAFFLE CHAMBER	80.000	SEE NOTE #4
NY-0062	FULTON COGEN PLANT	FULTON	4/27/95	GE LM5000 GAS TURBINE	15.007	500.00	MMBTU/HR	CO	107.0000	PPM, 120 LB/HR	NO CONTROLS	0.000	BACT-OTHER

Table 5.2
Salt River Project
Proposed Expansion Project - Existing Santan Generating Station
RLBC Database Information - Combined Cycle Turbines
CO Emissions

RBLCID	FACILITY	CITY	LAST UPDATE	PROCESS	PROC TYPE	THRU PUT	THRUPUT UNIT	POLL.	PRIM EMISS	PRIME UNIT	CTRLDESC	PCTEFFIC	BASIS
NY-0062	FULTON COGEN PLANT	FULTON	4/27/95	STACK EMISSIONS (GAS TURBINE AND DUCT BURNER)	11.004	610.00	MMBTU/HR (TOTAL)	CO	156.0000	PPM, 175.0 LB/HR	NO CONTROLS	0.000	BACT-OTHER
NY-0063	TBG COGEN COGENERATION PLANT	BETHPAGE	4/27/95	GE LM2500 GAS TURBINE	15.007	214.90	MMBTU/HR	CO	0.1810	LB/MMBTU	CATALYTIC OXIDIZER	80.000	BACT
NY-0064	INDECK-OSWEGO ENERGY CENTER	OSWEGO	4/27/95	GE FRAME 6 GAS TURBINE	15.007	533.00	LB/MMBTU	CO	10.0000	PPM, 10.00 LB/HR	NO CONTROLS	0.000	BACT-OTHER
NY-0065	KAMINE/BESICORP CARTHAGE L.P.	CARTHAGE	4/27/95	GE FRAME 6 GAS TURBINE	15.007	491.00	BTU/HR	CO	10.0000	PPM, 11.0 LB/HR	NO CONTROLS	0.000	BACT-OTHER
NY-0065	KAMINE/BESICORP CARTHAGE L.P.	CARTHAGE	4/27/95	STACK (GAS TURBINE & DUCT BURNER) **SEE NOTE #3**	11.004	540.00	LB/MMBTU	CO	23.0000	PPM, 28.3 LB/HR	NO CONTROLS	0.000	BACT-OTHER
NY-0071	KAMINE SOUTH GLENS FALLS COGEN CO	SOUTH GLENS FALLS	4/27/95	GE FRAME 6 GAS TURBINE	15.007	498.00	MMBTU/HR	CO	9.0000	PPM, 11.0 LB/HR	NO CONTROLS	0.000	BACT-OTHER
NY-0072	KAMINE/BESICORP SYRACUSE LP	SOLVAY	4/27/95	SIEMENS V64.3 GAS TURBINE (EP #00001)	15.007	650.00	MMBTU/HR	CO	9.5000	PPM	NO CONTROLS	0.000	BACT-OTHER
NY-0073	LOCKPORT COGEN FACILITY	LOCKPORT	4/27/95	(6) GE FRAME 6 TURBINES (EP #S 00001-00006)	15.007	423.90	MMBTU/HR	CO	10.0000	PPM	NO CONTROLS	0.000	BACT-OTHER
NY-0075	PILGRIM ENERGY CENTER	ISLIP	4/27/95	(2) WESTINGHOUSE W501D5 TURBINES (EP #S 00001&2)	15.007	1400.00	MMBTU/HR	CO	10.0000	PPM, 29.0 LB/HR		0.000	BACT-OTHER
NY-0079	LEDERLE LABORATORIES	PEARL RIVER	4/27/95	(2) GAS TURBINES (EP #S 00101&102)	15.007	110.00	MMBTU/HR	CO	46.0000	PPM, 12.6 LB/HR		0.000	BACT-OTHER
NM-0022	MARATHON OIL CO. - INDIAN BASIN N.G. PLAN	CARLSBAD	4/26/95	TURBINES, NATURAL GAS (2)	15.004	5500.00	HP	CO	13.2000	LBS/HR	LEAN-PREMIXED COMBUSTION TECHNOLOGY.	66.000	BACT-PSD
LA-0086	INTERNATIONAL PAPER	MANSFIELD	4/17/95	TURBINE/HRSG, GAS COGEN	15.004	338.00	MM BTU/HR TURBINE	CO	165.9000	LB/HR	COMBUSTION CONTROL	0.000	BACT
LA-0089	FORMOSA PLASTICS CORPORATION, LOUISIANA	BATON ROUGE	4/17/95	TURBINE/HRSG, GAS COGENERATION	15.004	450.00	MM BTU/HR	CO	25.8000	LB/HR	PROPER OPERATION	0.000	BACT-PSD
OH-0218	CNG TRANSMISSION	WASHINGTON COURT HOUSE	4/5/95	TURBINE (NATURAL GAS) (3)	15.004	5500.00	HP (EACH)	CO	0.0150	G/HP-HR	FUEL SPEC: USE OF NATURAL GAS	0.000	OTHER
NY-0066	INDECK ENERGY COMPANY	SILVER SPRINGS	3/31/95	GE FRAME 6 GAS TURBINE EP #00001	15.007	491.00	MMBTU/HR	CO	40.0000	PPM	NO CONTROLS	0.000	BACT-OTHER
NY-0076	TRIGEN MITCHEL FIELD	HEMPSTEAD	3/31/95	GE FRAME 6 GAS TURBINE	15.007	424.70	MMBTU/HR	CO	10.0000	PPM, 10.0 LB/HR	NO CONTROLS	0.000	BACT-OTHER
NY-0077	INDECK-YERKES ENERGY SERVICES	TONAWANDA	3/31/95	GE FRAME 6 GAS TURBINE (EP #00001)	15.007	432.20	MMBTU/HR	CO	10.0000	PPM, 10 LB/HR	NO CONTROLS	0.000	BACT-OTHER
NY-0080	PROJECT ORANGE ASSOCIATES	SYRACUSE	3/31/95	GE LM-5000 GAS TURBINE	15.004	550.00	MMBTU/HR	CO	92.0000	LB/HR TEMP > 20F	NO CONTROLS	0.000	BACT-OTHER
NY-0080	PROJECT ORANGE ASSOCIATES	SYRACUSE	3/31/95	STACK (TURBINE AND DUCT BURNER)	11.005	715.00	MMBTU/HR	CO	106.4000	LB/HR TEMP > 20F	OXIDATION CATALYST	80.000	BACT
NY-0057	MEGAN-RACINE ASSOCIATES, INC	CANTON	3/30/95	GE LM5000-N COMBINED CYCLE GAS TURBINE	15.007	401.00	LB/MMBTU	CO	0.0260	LB/MMBTU, 11 LB/HR	NO CONTROLS	0.000	BACT-OTHER
NY-0081	LILCO SHOREHAM	HICKSVILLE	3/30/95	(3) GE FRAME 7 TURBINES (EP #S 00007-9)	15.002	850.00	MMBTU/HR	CO	10.0000	PPM, 19.7 LB/HR	NO CONTROLS	0.000	BACT-OTHER
AL-0069	INTERNATIONAL PAPER CO. RIVERDALE MILL	SELMA	3/24/95	TURBINE, STATIONARY (GAS-FIRED) WITH DUCT BURNER	15.007	40.00	MW	CO	22.1000	LB/HR	DESIGN	0.000	BACT-PSD
AZ-0010	EL PASO NATURAL GAS		3/24/95	TURBINE, GAS, SOLAR CENTAUR H	15.004	5500.00	HP	CO	10.5000	PPM @ 15% O2	FUEL SPEC: LEAN FUEL MIX	0.000	BACT-PSD
AZ-0011	EL PASO NATURAL GAS		3/24/95	TURBINE, GAS, SOLAR CENTAUR H	15.004	5500.00	HP	CO	10.5000	PPM @ 15% O2	FUEL SPEC: LEAN FUEL MIX	0.000	BACT-PSD

Tab[illegible]2
Salt Ri[illegible]oject
Proposed Expansion Project - Existing Santan Generating Station
RLBC Database Information - Combined Cycle Turbines
CO Emissions

RBLCID	FACILITY	CITY	LAST UPDATE	PROCESS	PROC TYPE	THRU PUT	THRUPUT UNIT	POLL.	PRIM EMISS	PRIME UNIT	CTRLDESC	PCTEFFIC	BASIS
CO-0017	THERMO INDUSTRIES, LTD.	FT. LUPTON	3/24/95	TURBINE, GAS FIRED, 5 EACH	15.004	246.00	MMBTU/H	CO	25.0000	PPM @ 15% O2	COMBUSTION CONTROL	0.000	BACT-PSD
CO-0023	PHOENIX POWER PARTNERS	GREELEY	3/24/95	GENERATOR, STEAM, W/ DUCT BURNER	11.005	50.00	MMBTU/HR	CO	91.1800	TPY	FUEL SPEC: NATURAL GAS COMBUSTION	0.000	OTHER
FL-0045	CHARLES LARSEN POWER PLANT	CITY OF OF LAKELAND	3/24/95	TURBINE, GAS, 1 EACH	15.004	80.00	MW	CO	25.0000	PPM @ 15% O2	COMBUSTION CONTROL	0.000	BACT-PSD
FL-0052	FLORIDA POWER AND LIGHT	NORTH PALM BEACH	3/24/95	TURBINE, GAS, 4 EACH	15.004	400.00	MW	CO	30.0000	PPM @ 15% O2	COMBUSTION CONTROL	0.000	BACT-PSD
FL-0052	FLORIDA POWER AND LIGHT	NORTH PALM BEACH	3/24/95	TURBINE, CG, 4 EACH	15.004	400.00	MW	CO	33.0000	PPM @ 15% O2	COMBUSTION CONTROL	0.000	BACT-PSD
FL-0053	FLORIDA POWER AND LIGHT	LAVOGROME STATION	3/24/95	TURBINE, GAS, 4 EACH	15.004	240.00	MW	CO	30.0000	PPM @ 15% O2	COMBUSTION CONTROL	0.000	BACT-PSD
FL-0054	LAKE COGEN LIMITED	UMATILLA	3/24/95	TURBINE, GAS, 2 EACH	15.004	42.00	MW	CO	42.0000	PPM @ 15% O2	COMBUSTION CONTROL	0.000	BACT-PSD
GA-0052	SAVANNAH ELECTRIC AND POWER CO.		3/24/95	TURBINES, 8	15.004	1032.00	MMBTU/H, NAT GAS	CO	9.0000	PPM @ 15% O2	FUEL SPEC: LOW SULFUR FUEL OIL	0.000	BACT-PSD
GA-0052	SAVANNAH ELECTRIC AND POWER CO.		3/24/95	TURBINES, 8	15.006	972.00	MMBTU/H, #2 OIL	CO	9.0000	PPM @ 15% O2	FUEL SPEC: LOW SULFUR FUEL OIL	0.000	BACT-PSD
GA-0053	HARTWELL ENERGY LIMITED PARTNERSHIP	HARTWELL	3/24/95	TURBINE, GAS FIRED (2 EACH)	15.004	1817.00	M BTU/HR	CO	25.0000	PPMVD @ FULL LOAD	FUEL SPEC: CLEAN BURNING FUELS	0.000	BACT-PSD
HI-0015	MAUI ELECTRIC COMPANY, LTD./MAALAEA GENERATING STA	MAUI	3/24/95	TURBINE, COMBINED-CYCLE COMBUSTION	15.006	28.00	MW	CO	26.9000	LB/HR	COMBUSTION TECHNOLOGY/DESIGN	0.000	BACT-OTHER
MA-0015	PEABODY MUNICIPAL LIGHT PLANT	PEABODY	3/24/95	TURBINE, 38 MW NATURAL FAS FIRED	15.004	412.00	MMBTU/HR	CO	40.0000	PPM @ 15% O2	GOOD COMBUSTION PRACTICES	0.000	BACT-OTHER
MD-0019	BALTIMORE GAS & ELECTRIC - PERRYMAN PLANT	PERRYMMAN	3/24/95	TURBINE, 140 MW NATURAL GAS FIRED ELECTRIC	15.004	140.00	MW	CO	20.0000	PPM @ 15% O2	GOOD COMBUSTION PRACTICES	0.000	BACT-PSD
NC-0055	DUKE POWER CO. LINCOLN COMBUSTION TURBINE STATION	LOWESVILLE	3/24/95	TURBINE, COMBUSTION	15.006	1247.00	MM BTU/HR	CO	60.0000	LB/HR	COMBUSTION CONTROL	0.000	BACT-PSD
NC-0055	DUKE POWER CO. LINCOLN COMBUSTION TURBINE STATION	LOWESVILLE	3/24/95	TURBINE, COMBUSTION	15.004	1313.00	MM BTU/HR	CO	59.0000	LB/HR	COMBUSTION CONTROL	0.000	BACT-PSD
NV-0017	NEVADA POWER COMPANY, HARRY ALLEN PEAKING PLANT	LAS VEGAS	3/24/95	COMBUSTION TURBINE ELECTRIC POWER GENERATION	15.004	600.00	MW (8 UNITS 75 EACH)	CO	152.5000	TPY (EACH TURBINE)	PRECISION CONTROL FOR THE LOW NOX COMBUSTOR	0.000	BACT-PSD
VA-0189	GORDONSVILLE ENERGY L.P.	FAIRFAX	3/24/95	TURBINE FACILITY, GAS	15.007	1331.13	X10(7) SCF/Y NAT GAS	CO	249.9000	TOTAL TPY	GOOD COMBUSTION PRACTICES	0.000	BACT-PSD
VA-0189	GORDONSVILLE ENERGY L.P.	FAIRFAX	3/24/95	TURBINE FACILITY, GAS	15.007	7.44	X10(7) GPY FUEL OIL	CO	249.9000	TOTAL TPY	GOOD COMBUSTION PRACTICES	0.000	BACT-PSD
VA-0189	GORDONSVILLE ENERGY L.P.	FAIRFAX	3/24/95	TURBINES (2) [EACH WITH A SF]	15.007	1.51	X10(9) BTU/HR N GAS	CO	57.0000	LBS/HR/UNIT	GOOD COMBUSTION PRACTICES	0.000	BACT-PSD
VA-0189	GORDONSVILLE ENERGY L.P.	FAIRFAX	3/24/95	TURBINES (2) [EACH WITH A SF]	15.007	1.36	X10(9) BTU/H #2 OIL	CO	68.0000	LBS/HR/UNIT	GOOD COMBUSTION PRACTICES	0.000	BACT-PSD
FL-0068	ORANGE COGENERATION LP	BARTOW	1/13/95	TURBINE, NATURAL GAS, 2	15.004	368.30	MMBTU/H	CO	30.0000	PPMVD	GOOD COMBUSTION	0.000	BACT-PSD
FL-0072	TIGER BAY LP	FT. MEADE	1/13/95	TURBINE, GAS	15.004	1814.80	MMBTU/H	CO	49.0000	LB/H	GOOD COMBUSTION PRACTICES	0.000	BACT-PSD
FL-0078	KISSIMMEE UTILITY AUTHORITY	INTERCESSION CITY	1/13/95	TURBINE, NATURAL GAS	15.004	869.00	MMBTU/H	CO	54.0000	LB/H	GOOD COMBUSTION PRACTICES	0.000	BACT-PSD
FL-0078	KISSIMMEE UTILITY AUTHORITY	INTERCESSION CITY	1/13/95	TURBINE, NATURAL GAS	15.004	367.00	MMBTU/H	CO	40.0000	LB/H	GOOD COMBUSTION PRACTICES	0.000	BACT-PSD
FL-0080	AUBURNDALE POWER PARTNERS, LP	AUBURNDALE	1/13/95	TURBINE,GAS	15.004	1214.00	MMBTU/H	CO	15.0000	PPMVD	GOOD COMBUSTION PRACTICES	0.000	BACT-PSD
FL-0082	FLORIDA POWER CORPORATION POLK COUNTY SITE	BARTOW	1/13/95	TURBINE, NATURAL GAS (2)	15.004	1510.00	MMBTU/H	CO	25.0000	PPMVD	GOOD COMBUSTION PRACTICES	0.000	BACT-PSD

Table 5-2
Salt River Project
Proposed Expansion Project - Existing Santan Generating Station
RLBC Database Information - Combined Cycle Turbines
CO Emissions

RBLCID	FACILITY	CITY	LAST UPDATE	PROCESS	PROC TYPE	THRU PUT	THRUPUT UNIT	POLL.	PRIM EMISS	PRIME UNIT	CTRLDESC	PCTEFFIC	BASIS
CA-0613	UNOCAL	WILMINGTON	12/5/94	TURBINE, GAS (SEE NOTES)	15.004	0.00		CO	10.0000	PPM @ 15% O2	OXIDATION CATALYST	75.000	BACT-OTHER
TX-0231	WEST CAMPUS COGENERATION COMPANY	COLLEGE STATION	10/31/94	GAS TURBINES	15.004	75.30	MW (TOTAL POWER)	CO	300.0000	TPY	INTERNAL COMBUSTION CONTROLS	0.000	BACT
NY-0045	SELKIRK COGENERATION PARTNERS, L.P.	SELKIRK	9/13/94	COMBUSTION TURBINES (2) (252 MW)	15.004	1173.00	MMBTU/HR (EACH)	CO	10.0000	PPM	COMBUSTION CONTROLS	0.000	BACT-OTHER
NY-0045	SELKIRK COGENERATION PARTNERS, L.P.	SELKIRK	9/13/94	COMBUSTION TURBINE (79 MW)	15.004	1173.00	MMBTU/HR	CO	25.0000	PPM	COMBUSTION CONTROL	0.000	BACT-OTHER
NY-0046	SARANAC ENERGY COMPANY	PLATTSBURGH	9/13/94	TURBINES, COMBUSTION (2) (NATURAL GAS)	15.004	1123.00	MMBTU/HR (EACH)	CO	3.0000	PPM	OXIDATION CATALYST	0.000	BACT-OTHER
NY-0047	PASNY/HOLTSVILLE COMBINED CYCLE PLANT	HOLTSVILLE	9/13/94	TURBINE, COMBUSTION GAS (150 MW)	15.007	1146.00	MMBTU/HR (GAS)*	CO	8.5000	PPM	COMBUSTION CONTROL	0.000	BACT-OTHER
NY-0050	SITHE/INDEPENDENCE POWER PARTNERS	OSWEGO	9/13/94	TURBINES, COMBUSTION (4) (NATURAL GAS) (1012 MW)	15.004	2133.00	MMBTU/HR (EACH)	CO	13.0000	PPM	COMBUSTION CONTROLS	0.000	BACT-OTHER
AZ-0012	EL PASO NATURAL GAS		7/20/94	TURBINE, NAT. GAS TRANSM., GE FRAME 3	15.004	#######	HP	CO	60.0000	PPM @ 15% O2	LEAN BURN	0.000	BACT-PSD
CO-0019	COLORADO POWER PARTNERSHIP	BRUSH	7/20/94	TURBINES, 2 NAT GAS & 2 DUCT BURNERS	15.004	385.00	MMBTU/H EACH TURBINE	CO	22.4000	PPM @ 15% O2		0.000	BACT-PSD
CO-0020	CIMARRON CHEMICAL	JOHNSTOWN	7/20/94	TURBINE #2, GE FRAME 6	15.004	33.00	MW	CO	250.0000	T/YR, LESS THAN	CO CATALYST	0.000	OTHER
PA-0083	NORTHERN CONSOLIDATED POWER	NORTH EAST	7/20/94	TURBINES, GAS, 2	15.004	34.60	KW EACH	CO	110.0000	T/YR	OXIDATION CATALYST	90.000	OTHER
WI-0067	WEPCU, PARIS SITE	PARIS	7/20/94	TURBINES, COMBUSTION (4)	15.007	0.00		CO	25.0000	LBS/HR (SEE NOTES)		0.000	BACT-PSD
AL-0074	FLORIDA GAS TRANSMISSION COMPANY	MOBILE	5/12/94	TURBINE, NATURAL GAS	15.004	#######	BHP	CO	0.4200	GM/HP HR	AIR-TO-FUEL RATIO CONTROL, DRY COMBUSTION CONTROLS	0.000	BACT-PSD
MI-0206	KALAMAZOO POWER LIMITED	COMSTOCK	3/23/94	TURBINE, GAS-FIRED, 2, W/ WASTE HEAT BOILERS	15.004	1805.90	MMBTU/H	CO	20.0000	PPMV	DRY LOW NOX TURBINES	0.000	BACT-PSD
NM-0021	WILLIAMS FIELD SERVICES CO. - EL CEDRO COMPRESSOR	BLANCO	3/2/94	TURBINE, GAS-FIRED	15.004	#######	HP	CO	50.0000	PPM @ 15% O2	COMBUSTION CONTROL	0.000	BACT-PSD
CA-0418	SOUTHERN CALIFORNIA GAS	WHEELER RIDGE	8/4/93	TURBINE, GAS-FIRED	15.004	47.64	MMBTU/H	CO	7.7400	PPM @ 15% O2	HIGH TEMPERATURE OXIDATION CATALYST	80.000	BACT-PSD
NJ-0009	NEWARK BAY COGENERATION PARTNERSHIP	NEWARK	7/7/93	TURBINE, NATURAL GAS FIRED	15.004	585.00	MMBTU/HR	CO	0.0055	LB/MMBTU	CATALYTIC OXIDATION	80.000	BACT-PSD
NV-0015	SAGUARO POWER COMPANY	HENDERSON	6/1/93	COMBUSTION TURBINE GENERATOR	15.007	34.50	MW	CO	9.0000	PPH	CONVERTER (CATALYTIC)	90.000	BACT-PSD
FL-0056	ORLANDO UTILITIES COMMISSION	TITUSVILLE	5/14/93	TURBINE, GAS, 4 EACH	15.004	35.00	MW	CO	10.0000	PPM @ 15% O2	COMBUSTION CONTROL	0.000	BACT-PSD
CA-0463	SOUTHERN CALIFORNIA GAS	WHEELER RIDGE	5/31/92	TURBINE, GAS FIRED, SOLAR MODEL H	15.004	5500.00	HP	CO	7.7400	PPM @ 15% O2	HIGH TEMP OXIDATION CATALYST	80.000	BACT-PSD
RI-0010	NARRAGANSETT ELECTRIC/NEW ENGLAND POWER CO.	PROVIDENCE	5/31/92	TURBINE, GAS AND DUCT BURNER	15.004	1360.00	MMBTU/H EACH	CO	11.0000	PPM @ 15% O2, GAS		0.000	BACT-PSD
RI-0012	ALGONQUIN GAS TRANSMISSION CO.	BURRILLVILLE	5/31/92	TURBINE, GAS, 2	15.004	49.00	MMBTU/H	CO	0.1140	LB/MMBTU	GOOD COMBUSTION PRACTICES	0.000	BACT-OTHER
LA-0079	ENRON LOUISIANA ENERGY COMPANY	EUNICE	10/30/91	TURBINE, GAS, 2	15.004	39.10	MMBTU/H	CO	60.0000	PPM @ 15% O2	BASE CASE, NO ADDITIONAL CONTROLS	0.000	BACT-PSD

VOC emissions are released in the exhaust flue gas when some of the hydrocarbon fuel remains unburned or is partially burned during combustion. To reduce VOC emissions from combined cycle systems and an auxiliary boiler, combustion techniques and/or flue-gas controls are employed.

Generally, maximizing the time, temperature and turbulence provides for more efficient combustion and reduces VOC emissions. Residence time is the amount of time for the combustion gases to flow through the combustor. The longer the residence, however, the more NO_x emissions are produced due to exposure of the combustion gases to high temperatures for increased periods of time.

Like CO emissions, VOC emissions have traditionally been abated with combustion controls and oxidation catalysts. In addition, due to low VOC emissions concentrations, the control of VOC emissions from gas turbines was relatively unimportant to regulators compared to those of NO_x and CO. As a result, initial control of VOC emissions experienced with oxidation catalysts were more coincidental then intentional since the oxidation catalysts were initially utilized to control CO emissions. Once oxidation catalysts were required for VOC control, control efficiencies of 40 to 50 percent were apparently possible.

5.4.1 Proposed Expansion Project Control of VOC Emissions

The proposed expansion project will employ an oxidation catalyst on the combined cycle systems and good combustion techniques on the auxiliary boiler.

5.4.2 LAER Determination for VOC Emissions

A detailed listing of existing facilities with their permitted emission rates is provided in Table 5-3. The results for the evaluation show that LAER for emissions of VOCs for existing combined cycle systems is:

- 2.0 parts per million volume density at 15% O_2 averaged over a 1-hour period.

The installation of an oxidation catalyst on the combined cycle systems will be capable of achieving 2.7 ppmvd @ 15% O_2 over a 1-hour period. Thus, this is considered LAER. The California Air Resource Board has also concluded that LAER for VOC emissions is 2.0 ppmvd at 15% O_2 averaged over a 1-hour period. This limitation should be achieved on a combined cycle systems through the use of an oxidation catalyst.

Based on the above information, SRP is reluctant to commit to a VOC limitation of 2.0 ppmvd at 15% O_2. However, SRP is committed to the installation of an oxidation catalyst, the same type of control employed by other existing facilities who have obtained permit emission rates below 2.7 ppmvd. In defining LAER for this type of equipment, LAER may not be the lowest rate achieved. The actual rate that can be achieved will be dictated by the type of turbine selected, burner design add-on control equipment, operating configuration and site conditions. Based on vendor data and an assumed efficiency of 20% from the oxidation catalyst, a guarantee of 2.7 ppmvd is being provided by the system's vendors. It is possible that once the equipment is installed and becomes operational,

Table 5-3
Salt River Project
Proposed Expansion Project - Existing Santan Generating Station
RLBC Database Information - Combined Cycle Turbines
VOC Emissions

RBLCID	FACILITY	CITY	LAST UPDATE	PROCESS	PROC TYPE	THRU PUT	THRUPUT UNIT	POLL.	PRIM EMISS	PRIME UNIT	CTRLDESC	PCT EFFIC	BASIS
	FIMA	PORT ARTHUR	PENDING	COMBINED CYCLE UNIT WITH HEAT RECOVERY AND SUPPLEMENTAL DUCT BURNER FIRING		39.00	Mwe	VOC	1.40		DRY LOW NOx CONTROL, FUEL GAS FIRED		
	FIMA	PORT ARTHUR	PENDING	COMBINED CYCLE UNIT WITH HEAT RECOVERY AND SUPPLEMENTAL DUCT BURNER FIRING		39.00	Mwe	VOC	1.40		SCR CATALYST CONTROL, FUEL GAS FIRED		
	UNION CARBIDE CORPORATION	SEADRIFT	PENDING	COMBINED CYCLE UNIT WITH HEAT RECOVERY AND SUPPLEMENTAL DUCT BURNER FIRING		39.00	MW	VOC	7.00		DRY LOW NOx CONTROL		
	LUBBOCK POWER AND LIGHT	LUBBOCK	1/8/99	COMBINED CYCLE UNIT WITH HEAT RECOVERY AND SUPPLEMENTAL DUCT BURNER FIRING		44.00	MW	VOC	10.00		SCR CATALYST CONTROL		
	PANDA ONETA POWER L.P.	ONETA	9/29/99	COMBINED CYCLE GAS TURBINES WITH SUPPLEMENTAL DUCT BURNERS		1000.00	MW	VOC	1.2000	PPMVD	EFFICIENT COMBUSTION		BACT
AL-0128	ALABAMA POWER COMPANY - THEODORE COGENERATION	THEODORE	6/23/99	TURBINE, WITH DUCT BURNER	15.004	170.00	MW	VOC	0.02	LB/MMBTU	EFFICIENT COMBUSTION	0.000	BACT-PSD
CT-0139	PDC EL PASO MILFORD LLC	MILFORD	6/17/99	TURBINE, COMBUSTION, ABB GT-24, #1 WITH 2 CHILLERS	15.004	1.97	MMCF/H	VOC	3.00	LB/H NAT GAS	COMBUSTION CONTROLS	0.000	BACT
CT-0140	PDC EL PASO MILFORD LLC	MILFORD	6/17/99	TURBINE, COMBUSTION, ABB GT-24E,#2 WITH 2 CHILLERS	15.004	1.97	MMCF/H	VOC	3.00	LB/H NAT GAS	COMBUSTION CONTROLS	0.000	BACT
HI-0018	ENCOGEN HAWAII, L.P.	HAINA	6/8/99	TURBINES, COMBUSTION, 2 EA	15.007	23.00	MW	VOC	6.50	PPMVD @ 15% O2	GOOD COMBUSTION DESIGN AND OPERATION.	0.000	BACT-PSD
HI-0019	MAUI ELECTRIC COMPANY	MAALAEA	6/8/99	TURBINE, COMBUSTION, 2 EA	15.002	20.00	MW	VOC	10.00	PPMVD @ 15% O2	GOOD COMBUSTION DESIGN AND OPERATION.	0.000	BACT-PSD
HI-0020	HAWAII ELECTRIC LIGHT CO.	KEAHOLE	6/8/99	TURBINE, COMBUSTION, GELM 2500, 2 EA	15.002	20.00	MW	VOC	2.50	PPMVD @ 15% O2	GOOD COMBUSTION DESIGN AND OPERATION.	0.000	BACT-PSD
CA-0855	CROCKETT COGENERATION - C&H SUGAR	CROCKETT	4/19/99	TRUBINE, GAS, GENERAL ELECTRIC MODEL PG7221(FA)	15.004	240.00	MW	VOC	352.60	LB/D	ENGELHARD OXIDATION CATALYST	50.000	BACT-OTHER
MA-0021	MILLENNIUM POWER PARTNER, LP	CHARLTON	4/19/99	TURBINE, COMBUSTION, WESTINGHOUSE MODEL 501G	15.007	2534.00	MMBTU/H	VOC	0.00	LB/MMBTU	DRY LOW NOX COMBUSTION TECHNOLOGY IN COJUNCTION WITH SCR ADD-ON NOX CONTROL.	0.000	BACT-PSD
MA-0022	BERKSHIRE POWER DEVELOPMENT, INC.	AGAWAM	4/19/99	TURBINE, COMBUSTION, ABB GT24	15.007	1792.00	MMBTU/H	VOC	6.30	LB/H	DRY LOW NOX COMBUSTION TECHNOLOGY WITH SCR ADD-ON NOX CONTROL.	0.000	BACT-PSD
MA-0022	BERKSHIRE POWER DEVELOPMENT, INC.	AGAWAM	4/19/99	ENGINES, CHILLER, NATURAL GAS-FIRED, TWO	15.004	23.40	MMBTU/H	VOC	0.30	LB/H	DRY LOW NOX COMBUSTION TECHNOLOGY WITH SCR ADD-ON NOX CONTROL.	0.000	BACT-PSD
MA-0023	DIGHTON POWER ASSOCIATE, LP	DIGHTON	4/19/99	TURBINE, COMBUSTION, ABB GT11N2	15.004	1327.00	MMBTU/H	VOC	5.10	LB/H	DRY LOW NOX COMBUSTION TECHNOLOGY WITH SCR ADD-ON NOX CONTROL.	0.000	BACT-PSD
ME-0016	GORHAM ENERGY LIMITED PARTNERSHIP	GORHAM	4/19/99	TURBINE, COMBINED CYCLE	15.007	900.00	MW TOTAL	VOC	0.00	LB/MMBTU NAT GAS	0.5 % SULFUR DISTILLATE OIL #2 IS USED. EMISSION IS FROM EACH 300 MW SYSTEM.	0.000	BACT-PSD
ME-0018	WESTBROOK POWER LLC	WESTBROOK	4/19/99	TURBINE, COMBINED CYCLE, TWO	15.004	528.00	MW TOTAL	VOC	0.40	PPM @ 15% O2		0.000	BACT-PSD
ME-0019	CHAMPION INTERNATL CORP. & CHAMP. CLEAN ENERGY	BUCKSPORT	4/19/99	TURBINE, COMBINED CYCLE, NATURAL GAS	15.004	175.00	MW	VOC	3.00	LB/H GAS		0.000	BACT-OTHER
ME-0020	CASCO RAY ENERGY CO	VEAZIE	4/19/99	TURBINE, COMBINED CYCLE, NATURAL GAS, TWO	15.004	170.00	MW EACH	VOC	1.00	PPM	LOW NOX BURNER	0.000	BACT-PSD
MN-0035	LSP - COTTAGE GROVE, L.P.	COTTAGE GROVE	4/19/99	GENERATOR, COMBUSTION TURBINE & DUCT BURNER	15.007	1988.00	MMBTU/H (CTG)	VOC	0.01	LB/MMBTU (NAT GAS)	NATURAL GAS COMBUSTION	0.000	BACT-PSD
AL-0126	MOBILE ENERGY LLC	MOBILE	4/9/99	TURBINE, GAS, COMBINED CYCLE	15.006	168.00	MW	VOC	0.01	LB/MMBTU	GOOD COMBUSTION PRACTICE	0.000	BACT-PSD
CA-0810	SACRAMENTO COGENERATION AUTHORITY P&G	SACRAMENTO	3/17/99	TURBINE, GAS, COMBINED CYCLE LM6000	15.004	421.40	MMBTU/H	VOC	1.10	LB/H	OXIDATION CATALYST	0.000	BACT
CA-0810	SACRAMENTO COGENERATION AUTHORITY P&G	SACRAMENTO	3/17/99	TURBINE, GAS, COMBINED CYCLE LM6000	15.004	421.40	MMBTU/H	VOC	1.10	LB/H	OXIDATION CATALYST	0.000	BACT

Table 5-3
Salt River Project
Proposed Expansion Project - Existing Santan Generating Station
RLBC Database Information - Combined Cycle Turbines
VOC Emissions

RBLCID	FACILITY	CITY	LAST UPDATE	PROCESS	PROC TYPE	THRU PUT	THRUPUT UNIT	POLL.	PRIM EMISS	PRIME UNIT	CTRLDESC	PCT EFFIC	BASIS
CA-0813	SEPCO	RIO LINDA	3/17/99	TURBINE, GAS COMBINED CYCLE GE MODEL 7	15.004	920.00	MMBTU/H	VOC	3.70	LB/H	OXIDATION CATALYST	0.000	BACT
RI-0018	TIVERTON POWER ASSOCIATES	TIVERTON	2/8/99	COMBUSTION TURBINE, NATURAL GAS	15.004	265.00	MW	VOC	2.00	PPM @ 15% O2	GOOD COMBUSTION	0.000	BACT-PSD
PA-0148	BLUE MOUNTAIN POWER, LP	RICHLAND	1/12/99	COMBUSTION TURBINE WITH HEAT RECOVERY BOILER	15.004	153.00	MW	VOC	4.00	PPM @ 15% O2	OXIDATION CATALYST WHEN FIRING NO. 2 OIL EMISSION LIMIT = 4.4 PPMVD @ 15% O2. @ 75% LOAD ALTERNATE GAS LIMIT 7.6 PPM	12.000	LAER
CO-0024	PUBLIC SERVICE OF COLO.-FORT ST VRAIN	PLATTEVILLE	5/19/98	COMBINED CYCLE TURBINES (2), NATURAL	15.004	471.00	MW	VOC	1.40	PPMVD, SMPL CY	GOOD COMBUSTION CONTROL PRACTICES.	0.000	BACT-PSD
PR-0004	ECOELECTRICA, L.P.	PENUELAS	5/6/98	TURBINES, COMBINED-CYCLE COGENERATION	15.004	461.00	MW	VOC, GAS	5.00	PPMDV	COMBUSTION CONTROLS.	0.000	BACT-PSD
PR-0004	ECOELECTRICA, L.P.	PENUELAS	5/6/98	TURBINES, COMBINED-CYCLE COGENERATION	15.004	461.00	MW	VOC, OIL	8.00	PPMDV	COMBUSTION CONTROL.	0.000	BACT-PSD
CA-0768	NORTHERN CALIFORNIA POWER AGENCY	LODI	3/16/98	GE FRAME 5 GAS TURBINE	15.004	325.00	MMBTU/HR	VOC	8.00	LB/HR	NATURAL GAS AS PRIMARY FUEL	0.000	LAER
PA-0149	BUCKNELL UNIVERSITY	LEWISBURG	11/30/97	NG FIRED TURBINE, SOLAR TAURUS T-7300S	15.004	5.00	MW	VOC	25.00	PPMV@15 %O2	GOOD COMBUSTION	0.000	BACT-OTHER
VA-0184	BERMUDA HUNDRED ENERGY LIMITED PARTNERSHIP	CHESTERFIELD	5/7/97	TURBINE, COMBUSTION	15.999	1175.00	MMBTU/H NAT. GAS	VOC	2.30	LB/H/UNIT	FURNACE DESIGN	91.000	BACT-PSD
VA-0184	BERMUDA HUNDRED ENERGY LIMITED PARTNERSHIP	CHESTERFIELD	5/7/97	TURBINE, COMBUSTION	15.999	1117.00	MMBTU/H NO2 FUEL OIL	VOC	5.80	LB/H/UNIT	FURNACE DESIGN	91.000	BACT-PSD
VA-0190	BEAR ISLAND PAPER COMPANY, L.P.	ASHLAND	5/7/97	TURBINE, COMBUSTION GAS	15.007	474.00	X10(6) BTU/HR N. GAS	VOC	5.00	LBS/HR	GOOD COMBUSTION	0.000	BACT-PSD
VA-0190	BEAR ISLAND PAPER COMPANY, L.P.	ASHLAND	5/7/97	TURBINE, COMBUSTION GAS	15.007	468.00	X10(6) BTU/HR #2 OIL	VOC	5.00	LBS/HR	GOOD COMBUSTION	0.000	BACT-PSD
VA-0190	BEAR ISLAND PAPER COMPANY, L.P.	ASHLAND	5/7/97	TURBINE, COMBUSTION GAS (TOTAL)	15.007	0.00		VOC	21.90	TPY	GOOD COMBUSTION	0.000	BACT-PSD
VA-0206	PATOWMACK POWER PARTNERS, LIMITED PARTNERSHIP	LEESBURG	5/7/97	TURBINE, COMBUSTION, SIEMENS MODEL V84.2, 3	15.007	10.20	X109 SCF/YR NAT GAS	VOC	8.00	LB/HR	GOOD COMBUSTION OPERATING PRACTICES	0.000	BACT-PSD
NM-0029	SOUTHWESTERN PUBLIC SERVICE COMPANY/CUNNINGHAM STA	HOBBS	3/31/97	COMBUSTION TURBINE, NATURAL GAS	15.004	100.00	MW	VOC	0.00			0.000	BACT-PSD
NM-0028	SOUTHWESTERN PUBLIC SERVICE CO/CUNNINGHAM STATION	HOBBS	12/30/96	COMBUSTION TURBINE, NATURAL GAS	15.004	100.00	MW	VOC	0.00	SEE P2	GOOD COMBUSTION PRACTICES	0.000	BACT-PSD
GA-0063	MID-GEORGIA COGEN.	KATHLEEN	8/19/96	COMBUSTION TURBINE (2), NATURAL GAS	15.004	116.00	MW	VOC	6.00	PPMVD	COMPLETE COMBUSTION	0.000	BACT-PSD
MS-0028	SOUTH MISSISSIPPI ELECTRIC POWER ASSOC.	MOSELL	8/19/96	COMBUSTION TURBINE, COMBINED CYCLE	15.007	1299.00	MMBTU/HR NAT GAS	VOC	5.20	PPM @ 15% O2, GAS	GOOD COMBUSTION CONTROLS	0.000	BACT-PSD
NC-0059	CAROLINA POWER & LIGHT	GOLDSBORO	8/19/96	COMBUSTION TURBINE, 4 EACH	15.007	1907.60	MMBTU/HR	VOC, O	7.00	LB/HR	COMBUSTION CONTROL	0.000	BACT-PSD
NC-0059	CAROLINA POWER & LIGHT	GOLDSBORO	8/19/96	COMBUSTION TURBINE, 4 EACH	15.007	1907.60	MMBTU/HR	VOC, GAS	2.80	LB/HR	COMBUSTION CONTROL	0.000	BACT-PSD
NY-0068	KAMINE/BESICORP NATURAL DAM LP	NATURAL DAM	6/30/95	GE FRAME 6 GAS TURBINE	15.007	500.00	MMBTU/HR	VOC	0.01	LB/MMBTU, 4 LB/HR	NO CONTROLS	0.000	BACT-OTHER
MN-0022	LSP-COTTAGE GROVE, L.P.	COTTAGE GROVE	5/29/95	COMBUSTION TURBINE/GENERATOR	15.007	1970.00	MMBTU/HR	VOC	19.00	LB/HR GAS	FUEL SELECTION, GOOD COMBUSTION	0.000	BACT-PSD

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Salt Ri[illegible]oject
Proposed Expansion Project - Existing Santan Generating Station
RLBC Database Information - Combined Cycle Turbines
VOC Emissions

RBLCID	FACILITY	CITY	LAST UPDATE	PROCESS	PROC TYPE	THRU PUT	THRUPUT UNIT	POLL.	PRIM EMISS	PRIME UNIT	CTRLDESC	PCT EFFIC	BASIS
NJ-0013	LAKEWOOD COGENERATION, L.P.	LAKEWOOD TOWNSHIP	5/29/95	TURBINES (NATURAL GAS) (2)	15.004	1190.00	MMBTU/HR (EACH)	VOC	0.00	LB/MMBTU	TURBINE DESIGN	0.000	OTHER
NJ-0017	NEWARK BAY COGENERATION PARTNERSHIP, L.P.	NEWARK	5/29/95	TURBINES, COMBUSTION, NATURAL GAS-FIRED (2)	15.004	617.00	MMBTU/HR (EACH)	VOC	4.00	PPMDV	TURBINE DESIGN	0.000	BACT-PSD
NJ-0017	NEWARK BAY COGENERATION PARTNERSHIP, L.P.	NEWARK	5/29/95	BOILER, AUXILIARY, NATURAL GAS-FIRED	11.005	200.00	MMBTU/HR	VOC	0.01	LB/MMBTU	BOILER DESIGN	0.000	OTHER
NY-0061	ANITEC COGEN PLANT	BINGHAMTON	4/27/95	GE LM5000 COMBINED CYCLE GAS TURBINE EP #00001	15.007	451.00	MMBTU/HR	VOC	0.01	LB/MMBTU, 3.0 LB/HR	NO CONTROLS	0.000	BACT-OTHER
NY-0062	FULTON COGEN PLANT	FULTON	4/27/95	GE LM5000 GAS TURBINE	15.007	500.00	MMBTU/HR	VOC	0.00	LB/MMBTU, 2.0 LB/HR	NO CONTROLS	0.000	SEE NOTE #6
NY-0062	FULTON COGEN PLANT	FULTON	4/27/95	STACK EMISSIONS (GAS TURBINE AND DUCT BURNER)	11.004	610.00	MMBTU/HR (TOTAL)	VOC	0.04	LB/MMBTU, 24 LB/HR	NO CONTROLS	0.000	SEE NOTE #6
NY-0063	TBG COGEN COGENERATION PLANT	BETHPAGE	4/27/95	GE LM2500 GAS TURBINE	15.007	214.90	MMBTU/HR	VOC	0.01	LB/MMBTU, 2.9 LB/HR	NO CONTROLS	0.000	BACT-OTHER
NY-0064	INDECK-OSWEGO ENERGY CENTER	OSWEGO	4/27/95	GE FRAME 6 GAS TURBINE	15.007	533.00	LB/MMBTU	VOC	0.01	LB/MMBTU, 5.00 LB/HR	NO CONTROLS	0.000	BACT-OTHER
NY-0065	KAMINE/BESICORP CARTHAGE L.P.	CARTHAGE	4/27/95	GE FRAME 6 GAS TURBINE	15.007	491.00	BTU/HR	VOC	0.01	LB/MMBTU, 5.0 LB/HR	NO CONTROLS	0.000	BACT-OTHER
NY-0065	KAMINE/BESICORP CARTHAGE L.P.	CARTHAGE	4/27/95	STACK (GAS TURBINE & DUCT BURNER) **SEE NOTE #3**	11.004	540.00	LB/MMBTU	VOC	0.03	LB/MMBTU, 15.8 LB/HR	NO CONTROLS	0.000	BACT-OTHER
NY-0071	KAMINE SOUTH GLENS FALLS COGEN CO	SOUTH GLENS FALLS	4/27/95	GE FRAME 6 GAS TURBINE	15.007	498.00	MMBTU/HR	VOC	0.01	LB/MMBTU, 5.0 LB/HR	NO CONTROLS	0.000	BACT-OTHER
NY-0072	KAMINE/BESICORP SYRACUSE LP	SOLVAY	4/27/95	SIEMENS V84.3 GAS TURBINE (EP #00001)	15.007	650.00	MMBTU/HR	VOC	0.01	LB/MMBTU, 4.6 LB/HR	NO CONTROLS	0.000	BACT-OTHER
NY-0073	LOCKPORT COGEN FACILITY	LOCKPORT	4/27/95	(6) GE FRAME 6 TURBINES (EP #S 00001-00006)	15.007	423.90	MMBTU/HR	VOC	0.01	LB/MMBTU, 5.0 LB/HR	NO CONTROLS	0.000	BACT-OTHER
NY-0075	PILGRIM ENERGY CENTER	ISLIP	4/27/95	(2) WESTINGHOUSE W501D5 TURBINES (EP #S 00001&2)	15.007	1400.00	MMBTU/HR	VOC	0.00	LB/MMBTU, 2.53 LB/HR		0.000	BACT-OTHER
LA-0086	INTERNATIONAL PAPER	MANSFIELD	4/17/95	TURBINE/HRSG, GAS COGEN	15.004	338.00	MM BTU/HR TURBINE	VOC	3.60	LB/HR COMBINED	COMBUSTION CONTROLS, FUEL SELECTION	0.000	BACT
OH-0218	CNG TRANSMISSION	WASHINGTON COURT HOUSE	4/5/95	TURBINE (NATURAL GAS) (3)	15.004	5500.00	HP (EACH)	VOC	0.10	G/HP-HR	FUEL SPEC: USE OF NATURAL GAS	0.000	OTHER

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RLBC Database Information - Combined Cycle Turbines
VOC Emissions

RBLCID	FACILITY	CITY	LAST UPDATE	PROCESS	PROC TYPE	THRU PUT	THRUPUT UNIT	POLL.	PRIM EMISS	PRIME UNIT	CTRLDESC	PCT EFFIC	BASIS
NY-0076	TRIGEN MITCHEL FIELD	HEMPSTEAD	3/31/95	GE FRAME 6 GAS TURBINE	15.007	424.70	MMBTU/HR	VOC	0.01	LB/MMBTU, 4.5 LB/HR	NO CONTROLS	0.000	BACT-OTHER
NY-0080	PROJECT ORANGE ASSOCIATES	SYRACUSE	3/31/95	STACK (TURBINE AND DUCT BURNER)	11.005	715.00	MMBTU/HR	VOC	5.20	PPM, 2.8 LB/HR	NO CONTROLS	0.000	BACT-OTHER
NY-0057	MEGAN-RACINE ASSOCIATES, INC	CANTON	3/30/95	GE LM5000-N COMBINED CYCLE GAS TURBINE	15.007	401.00	LB/MMBTU	VOC	0.02	LB/MMBTU, 8.0 LB/HR	NO CONTROLS	0.000	BACT-OTHER
AL-0069	INTERNATIONAL PAPER CO. RIVERDALE MILL	SELMA	3/24/95	TURBINE, STATIONARY (GAS-FIRED) WITH DUCT BURNER	15.007	40.00	MW	VOC	8.30	LB/HR (GAS)	DESIGN	0.000	BACT-PSD
CO-0017	THERMO INDUSTRIES, LTD.	FT. LUPTON	3/24/95	TURBINE, GAS FIRED, 5 EACH	15.004	246.00	MMBTU/H	VOC	16.70	LB/H		0.000	OTHER
CO-0023	PHOENIX POWER PARTNERS	GREELEY	3/24/95	GENERATOR, STEAM, W/ DUCT BURNER	11.005	50.00	MMBTU/HR	VOC	24.09	TPY	FUEL SPEC: NATURAL GAS COMBUSTION	0.000	OTHER
FL-0052	FLORIDA POWER AND LIGHT	NORTH PALM BEACH	3/24/95	TURBINE, GAS, 4 EACH	15.004	400.00	MW	VOC	1.60	PPM @ 15% O2	COMBUSTION CONTROL	0.000	BACT-PSD
FL-0052	FLORIDA POWER AND LIGHT	NORTH PALM BEACH	3/24/95	TURBINE, CG, 4 EACH	15.004	400.00	MW	VOC	9.00	PPM @ 15% O2	COMBUSTION CONTROL	0.000	BACT-PSD
FL-0053	FLORIDA POWER AND LIGHT	LAVOGROME STATION	3/24/95	TURBINE, GAS, 4 EACH	15.004	240.00	MW	VOC	1.00	PPM @ 15% O2	COMBUSTION CONTROL	0.000	BACT-PSD
GA-0052	SAVANNAH ELECTRIC AND POWER CO.		3/24/95	TURBINES, 8	15.004	1032.00	MMBTU/H, NAT GAS	VOC	0.00	LB/MMBTU	FUEL SPEC: LOW SULFUR FUEL OIL	0.000	BACT-PSD
GA-0052	SAVANNAH ELECTRIC AND POWER CO.		3/24/95	TURBINES, 8	15.006	972.00	MMBTU/H, #2 OIL	VOC	0.00	LB/MMBTU	FUEL SPEC: LOW SULFUR FUEL OIL	0.000	BACT-PSD
HI-0015	MAUI ELECTRIC COMPANY, LTD./MAALAEA GENERATING STA	MAUI	3/24/95	TURBINE, COMBINED-CYCLE COMBUSTION	15.006	28.00	MW	VOC	0.80	LB/HR	COMBUSTION TECHNOLOGY/DESIGN	0.000	BACT-OTHER
NC-0055	DUKE POWER CO. LINCOLN COMBUSTION TURBINE STATION	LOWESVILLE	3/24/95	TURBINE, COMBUSTION	15.006	1247.00	MM BTU/HR	VOC	5.00	LB/HR	COMBUSTION CONTROL	0.000	BACT-PSD
NC-0055	DUKE POWER CO. LINCOLN COMBUSTION TURBINE STATION	LOWESVILLE	3/24/95	TURBINE, COMBUSTION	15.004	1313.00	MM BTU/HR	VOC	2.00	LB/HR	COMBUSTION CONTROL	0.000	BACT-PSD
NC-0055	DUKE POWER CO. LINCOLN COMBUSTION TURBINE STATION	LOWESVILLE	3/24/95	TURBINE, COMBUSTION	15.004	1313.00	MM BTU/HR	BENZE	0.44	LB/HR	COMBUSTION CONTROL	0.000	BACT-PSD
VA-0189	GORDONSVILLE ENERGY L.P.	FAIRFAX	3/24/95	TURBINE FACILITY, GAS	15.007	1331.13	X10(7) SCF/Y NAT GAS	VOC	97.10	TOTAL TPY	GOOD COMBUSTION PRACTICES	0.000	BACT-PSD
VA-0189	GORDONSVILLE ENERGY L.P.	FAIRFAX	3/24/95	TURBINE FACILITY, GAS	15.007	7.44	X10(7) GPY FUEL OIL	VOC	97.10	TOTAL TPY	GOOD COMBUSTION PRACTICES	0.000	BACT-PSD
VA-0189	GORDONSVILLE ENERGY L.P.	FAIRFAX	3/24/95	TURBINES (2) [EACH WITH A SF]	15.007	1.51	X10(9) BTU/HR N GAS	VOC	22.00	LBS/HR/UNIT	GOOD COMBUSTION PRACTICES	0.000	BACT-PSD
VA-0189	GORDONSVILLE ENERGY L.P.	FAIRFAX	3/24/95	TURBINES (2) [EACH WITH A SF]	15.007	1.36	X10(9) BTU/H #2 OIL	TSP /PM10	13.00	LBS/HR/UNIT	FUEL SPEC: CLEAN BURNING FUEL	0.000	BACT-PSD
VA-0189	GORDONSVILLE ENERGY L.P.	FAIRFAX	3/24/95	TURBINES (2) [EACH WITH A SF]	15.007	1.36	X10(9) BTU/H #2 OIL	VOC	21.00	LBS/HR/UNIT	GOOD COMBUSTION PRACTICES	0.000	BACT-PSD
FL-0068	ORANGE COGENERATION LP	BARTOW	1/13/95	TURBINE, NATURAL GAS, 2	15.004	368.30	MMBTU/H	VOC	10.00	PPMVD	GOOD COMBUSTION	0.000	BACT-PSD

Table 5-3
Salt River Project
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RLBC Database Information - Combined Cycle Turbines
VOC Emissions

RBLCID	FACILITY	CITY	LAST UPDATE	PROCESS	PROC TYPE	THRU PUT	THRUPUT UNIT	POLL.	PRIM EMISS	PRIME UNIT	CTRLDESC	PCT EFFIC	BASIS
FL-0080	AUBURNDALE POWER PARTNERS, LP	AUBURNDALE	1/13/95	TURBINE,GAS	15.004	1214.00	MMBTU/H	VOC	6.00	LB/H	GOOD COMBUSTION PRACTICES	0.000	BACT-PSD
FL-0082	FLORIDA POWER CORPORATION POLK COUNTY SITE	BARTOW	1/13/95	TURBINE, NATURAL GAS (2)	15.004	1510.00	MMBTU/H	VOC	7.00	PPMVW	GOOD COMBUSTION PRACTICES	0.000	BACT-PSD
PA-0099	FLEETWOOD COGENERATION ASSOCIATES	FLEETWOOD	11/22/94	NG TURBINE (GE LM6000) WITH WASTE HEAT BOILER	15.004	360.00	MMBTU/HR	VOC	4.40	LB/HR	GOOD COMBUSTION PRACTICES	0.000	BACT-OTHER
TX-0231	WEST CAMPUS COGENERATION COMPANY	COLLEGE STATION	10/31/94	GAS TURBINES	15.004	75.30	MW (TOTAL POWER)	VOC	38.00	TPY	INTERNAL COMBUSTION CONTROLS	0.000	BACT
NY-0046	SARANAC ENERGY COMPANY	PLATTSBURGH	9/13/94	TURBINES, COMBUSTION (2) (NATURAL GAS)	15.004	1123.00	MMBTU/HR (EACH)	VOC	0.00	LB/MMBTU	OXIDATION CATALYST	0.000	BACT-OTHER
CO-0018	BRUSH COGENERATION PARTNERSHIP	BRUSH	7/20/94	TURBINE	15.004	350.00	MMBTU/H	VOC	26.70	T/YR		0.000	OTHER
CO-0019	COLORADO POWER PARTNERSHIP	BRUSH	7/20/94	TURBINES, 2 NAT GAS & 2 DUCT BURNERS	15.004	385.00	MMBTU/H EACH TURBINE	VOC	35.20	T/YR		0.000	OTHER
PA-0083	NORTHERN CONSOLIDATED POWER	NORTH EAST	7/20/94	TURBINES, GAS, 2	15.004	34.60	KW EACH	VOC	105.00	PPM @ 15% O2	OXIDATION CATALYST	50.000	OTHER
WI-0067	WEPCU, PARIS SITE	PARIS	7/20/94	TURBINES, COMBUSTION (4)	15.007	0.00		VOC	9.00	LBS/HR (SEE NOTES)	GOOD COMBUSTION PRACTICES	0.000	BACT-PSD
NM-0021	WILLIAMS FIELD SERVICES CO. EL CEDRO COMPRESSOR	BLANCO	3/2/94	TURBINE, GAS-FIRED	15.004	11257.00	HP	VOC	25.00	PPM @ 15% O2	COMBUSTION CONTROL	0.000	BACT-PSD
NV-0015	SAGUARO POWER COMPANY	HENDERSON	6/1/93	COMBUSTION TURBINE GENERATOR	15.007	34.50	MW	VOC	0.80	PPH	COMBUSTION SYSTEM	0.000	LAER
FL-0056	ORLANDO UTILITIES COMMISSION	TITUSVILLE	5/14/93	TURBINE, GAS, 4 EACH	15.004	35.00	MW	VOC	7.00	PPM @ 15% O2	COMBUSTION CONTROL	0.000	BACT-PSD
CA-0463	SOUTHERN CALIFORNIA GAS	WHEELER RIDGE	5/31/92	TURBINE, GAS FIRED, SOLAR MODEL H	15.004	5500.00	HP	HC	1.94	PPM @ 15% O2	HIGH TEMP OXIDATION CATALYST	50.000	BACT-PSD
RI-0010	NARRAGANSETT ELECTRIC/NEW ENGLAND POWER CO.	PROVIDENCE	5/31/92	TURBINE, GAS AND DUCT BURNER	15.004	1360.00	MMBTU/H EACH	VOC	5.00	PPM @ 15% O2		0.000	BACT-PSD
RI-0012	ALGONQUIN GAS TRANSMISSION CO.	BURRILLVILLE	5/31/92	TURBINE, GAS, 2	15.004	49.00	MMBTU/H	VOC	0.02	LB/MMBTU	GOOD COMBUSTION PRACTICES	0.000	BACT-OTHER

the efficiency of the oxidation catalyst could be in excess of 20%. Since the exact efficiency can not be determined prior to actual operation, a limitation of 2.7 ppmvd is being proposed as LAER.

For the auxiliary boiler LAER is not well defined. This type of boiler is used to support the combined cycle systems during startup conditions. It is used on an as-needed basis and is not used like a standard baseload steam-producing boiler. Due to the limited use of this type of boiler, it is not technically feasible to install combustion modification techniques and/or flue-gas controls.

Because of the specialized requirements of this boiler, LAER for emissions of VOCs is being proposed as the combustion of natural gas, 1,200 hours per year of operations and good combustion techniques.

5.5 PM_{10} EMISSIONS

The combustion of natural gas in the combined cycle systems and auxiliary boiler will also generate emissions of PM_{10}. PM_{10} emissions are partially dependent on fuel composition. In addition to ash, other constituents of concern include fuel-bound sulfur and nitrogen. Natural gas has negligible amounts of all three constituents when compared to liquid or solid fuels. As a result, there should be minimal nitrate and sulfate production. To reduce PM_{10} emissions from combined cycle systems and auxiliary boilers, combustion techniques are typically employed.

There are a limited number of options for controlling PM_{10} emissions from gas turbines. These emissions are below one micrometer in aerodynamic diameter and diluted by the high volume of exhaust from a turbine. Potential add on controls such as filtering devices, venturi scrubber, and electrostatic precipitators would be rendered less effective under these conditions and have to be scaled up in size. Neither has there been much success in reducing PM_{10} emissions through combustion controls. The only meaningful control of turbine exhaust emissions has been through limiting fuel type and sulfur content. Add on control technologies are not feasible for reducing PM_{10} emissions in gas turbine flue gas. As a result, the lowest PM_{10} emissions are achieved through combustion regulated natural gas, along with combustion design that minimizes NO_x and unburned hydrocarbons. This is also true of natural gas fired auxiliary boilers.

5.5.1 Proposed Expansion Project Control of PM_{10} Emissions

The proposed expansion project will be using natural gas in the combined cycle systems and auxiliary boiler. To minimize PM_{10} formation, pipeline natural gas will be employed with a minimum sulfur content. As stated previously, devices for controlling PM_{10} emissions from the combustion of natural gas are not technically feasible.

5.5.2 LAER Determination for PM10 Emissions

A detailed listing of existing facilities with their permitted emission rates is provided in Table 5-4. Based on the information provided in this table and the results of the PM_{10} LAER evaluation, LAER for PM_{10} emission from natural gas fired equipment is considered:

Table 5-4
Salt River Project
Proposed Expansion Project - Existing Santan Generating Station
RLBC Database Information - Combined Cycle Turbines
PM10 Emissions

RBLCID	FACILITY	CITY	LAST UPDATE	PROCESS	PROC TYPE	THRU PUT	THRUPUT UNIT	POLL.	PRIM EMISS	PRIME UNIT	CTRLDESC	PCT EFFIC	BASIS
AL-0128	ALABAMA POWER COMPANY - THEODORE COGENERATION	THEODORE	6/23/99	TURBINE, WITH DUCT BURNER	15.004	170.00	MW	PM	0.0120	LB/MMBTU	COMBUSTION OF NATURAL GAS ONLY	0.000	BACT-PSD
GA-0069	TENUSKA GEORGIA PARTNERS, L.P.	FRANKLIN	6/23/99	TURBINE, COMBUSTION, SIMPLE CYCLE, 6	15.004	160.00	MW EA	PM	0.0100	LB/MMBTU	PM EMISSION IS BECAUSE OF NATURAL GAS.	0.000	BACT-PSD
	PANDA ONETA POWER L.P.	ONETA	9/29/99	COMBINED CYCLE GAS TURBINES WITH SUPPLEMENTAL DUCT BURNERS		1000.00	MW	PM10	1.2000	PPMVD	DRY LOW NOx CONTROL		BACT
GA-0069	TENUSKA GEORGIA PARTNERS, L.P.	FRANKLIN	6/23/99	TURBINE, COMBUSTION, SIMPLE CYCLE, 6	15.004	160.00	MW EA	PM	0.0170	LB/MMBTU	PM IS BECAUSE OF FUEL OIL. WHEN GROSS OUTPUT IS BELOW 123 MW PM EMISSION LIMIT IS 0.017 LB/MMBTU AND ABOVE 123 MW IS 0.013 LB/MMBTU.	0.000	BACT-PSD
CT-0139	PDC EL PASO MILFORD LLC	MILFORD	6/17/99	TURBINE, COMBUSTION, ABB GT-24, #1 WITH 2 CHILLERS	15.004	1.97	MMCF/H	PM10	0.0110	LB/MMBTU NAT GAS	NAT GAS AS PRIMARY FUEL, LOW SULFUR (0.05%W) OIL AS BACK-UP	0.000	BACT-PSD
CT-0140	PDC EL PASO MILFORD LLC	MILFORD	6/17/99	TURBINE, COMBUSTION, ABB GT-24E,#2 WITH 2 CHILLERS	15.004	1.97	MMCF/H	PM10	0.0110	LB/MMBTU NAT GAS	NAT GAS AS PRIMARY FUEL, LOW SULFUR (0.05%W) OIL	0.000	BACT-PSD
HI-0018	ENCOGEN HAWAII, L.P.	HAINA	6/8/99	TURBINES, COMBUSTION, 2 EA	15.007	23.00	MW	PM	0.0200	GR/DSCF @12% CO2	LOW ASH AND LOW SULFUR FUELS, GOOD COMBUSTION DESIGN AND OPERATION.	0.000	BACT-PSD
HI-0019	MAUI ELECTRIC COMPANY	MAALAEA	6/8/99	TURBINE, COMBUSTION, 2 EA	15.002	20.00	MW	PM	0.0450	GR/DSCF @ 12% CO2	LOW ASH AND LOW SULFUR FUEL AND GOOD COMBUSTION DESIGN AND OPERATION.	0.000	BACT-PSD
HI-0020	HAWAII ELECTRIC LIGHT CO.	KEAHOLE	6/8/99	TURBINE, COMBUSTION, GELM 2500, 2 EA	15.002	20.00	MW	PM	0.0450	GR/DSCF @ 12% O2	LOW ASH AND LOW SULFUR FUEL. GOOD COMBUSTION DESIGN AND OPERATION.	0.000	BACT-PSD
MA-0021	MILLENNIUM POWER PARTNER, LP	CHARLTON	4/19/99	TURBINE, COMBUSTION, WESTINGHOUSE MODEL 501G	15.007	2534.00	MMBTU/H	PM10	0.0050	LB/MMBTU	DRY LOW NOX COMBUSTION TECHNOLOGY IN CONJUNCTION WITH SCR ADD-ON NOX CONTROL.	0.000	BACT-PSD
MA-0022	BERKSHIRE POWER DEVELOPMENT, INC.	AGAWAM	4/19/99	TURBINE, COMBUSTION, ABB GT24	15.007	1792.00	MMBTU/H	PM	17.4000	LB/H	DRY LOW NOX COMBUSTION TECHNOLOGY WITH SCR ADD-ON NOX CONTROL.	0.000	BACT-PSD
MA-0023	DIGHTON POWER ASSOCIATE, LP	DIGHTON	4/19/99	TURBINE, COMBUSTION, ABB GT11N2	15.004	1327.00	MMBTU/H	PM10	12.5000	LB/H	DRY LOW NOX COMBUSTION TECHNOLOGY WITH SCR ADD-ON NOX CONTROL.	0.000	BACT-PSD
ME-0016	GORHAM ENERGY LIMITED PARTNERSHIP	GORHAM	4/19/99	TURBINE, COMBINED CYCLE	15.007	900.00	MW TOTAL	PM	0.0600	LB/MMBTU NAT GAS	.05 % SULFUR DISTILLATE OIL #2 IS USED. EMISSION IS FROM EACH 300 MW SYSTEM.	0.000	BACT-PSD
ME-0018	WESTBROOK POWER LLC	WESTBROOK	4/19/99	TURBINE, COMBINED CYCLE, TWO	15.004	528.00	MW TOTAL	PM	0.0600	LB/MMBTU		0.000	BACT-PSD
ME-0018	WESTBROOK POWER LLC	WESTBROOK	4/19/99	TURBINE, COMBINED CYCLE, TWO	15.004	528.00	MW TOTAL	PM10	0.0600	LB/MMBTU		0.000	BACT-PSD
ME-0019	CHAMPION INTERNATL CORP. & CHAMP. CLEAN ENERGY	BUCKSPORT	4/19/99	TURBINE, COMBINED CYCLE, NATURAL GAS	15.004	175.00	MW	PM	0.0600	LB/MMBTU		0.000	BACT-OTHER
ME-0019	CHAMPION INTERNATL CORP. & CHAMP. CLEAN ENERGY	BUCKSPORT	4/19/99	TURBINE, COMBINED CYCLE, NATURAL GAS	15.004	175.00	MW	PM10	9.0000	LB/H GAS		0.000	BACT-OTHER
ME-0020	CASCO RAY ENERGY CO	VEAZIE	4/19/99	TURBINE, COMBINED CYCLE, NATURAL GAS, TWO	15.004	170.00	MW EACH	PM	0.0600	LB/MMBTU		0.000	BACT-PSD
WA-0280	EEX POWER SYSTEMS, ENCOGEN NW COGENERATION PROJECT	BELLINGHAM	4/16/99	TURBINES, COMBINED CYCLE COGEN, GE FRAME 6	15.007	123.00	MW	PM10	60.0000	LB/D NG		0.000	BACT-PSD
ME-0015	ANDROSCOGGIN ENERGY LIMITED	JAY	3/17/99	GAS TURBINES, COGEN, W/DUCT BURNERS	15.007	675.00	MMBTU/H TURBINE	PM	6.2700	LB/H NG	GOOD COMBUSTION PRACTICES, COMBUSTION OF CLEAN FUELS.	0.000	BACT-OTHER
ME-0015	ANDROSCOGGIN ENERGY LIMITED	JAY	3/17/99	GAS TURBINES, COGEN, W/DUCT BURNERS	15.007	675.00	MMBTU/H TURBINE	PM	24.2100	LB/H NG OIL	GOOD COMBUSTION PRACTICES, COMBUSTION OF CLEAN FUELS.	0.000	BACT-OTHER
RI-0018	TIVERTON POWER ASSOCIATES	TIVERTON	2/8/99	COMBUSTION TURBINE, NATURAL GAS	15.004	265.00	MW	PM10	0.0090	LB/MMBTU	GOOD COMBUSTION	0.000	BACT-PSD
LA-0113	BASF CORPORATION	GEISMAR	1/21/99	TURBINE, COGEN UNIT 2, GE FRAME 6	15.004	42.40	MW	PM10	5.4000	LB/H	GOOD DESIGN, PROPER OPERATING PRACTICES, USE GASEOUS FUELS	0.000	BACT-PSD
LA-0112	AIR LIQUIDE AMERICA CORPORATION	GEISMAR	1/20/99	TURBINE GAS, GE, 7ME 7	15.004	966.00	MMBTU/H	PM10	16.7000	LB/H	GOOD COMBUSTION PRACTICES AND USE CLEAN NATURAL GAS AS FUEL.	0.000	BACT-PSD
AL-0120	GENERAL ELECTRIC PLASTICS	BURKVILLE	7/2/98	COMBINED CYCLE (TURBINE AND DUCT BURNER)	15.004	0.00		PM	0.0100	LBS/MMBTU	CLEAN FUEL - NATURAL GAS/HYDROGEN	0.000	BACT-PSD
CO-0024	PUBLIC SERVICE OF COLO.-FORT ST VRAIN	PLATTEVILLE	5/19/98	COMBINED CYCLE TURBINES (2), NATURAL	15.004	471.00	MW	PM10	9.0000	LBS/HR (EACH TURBINE	FUEL SPEC: COMBUSTION OF PIPE LINE QUALITY GAS. CLOSE MONITORING AND CONTROL OF THE COMBUSTION PROCESS.	0.000	BACT-PSD
PR-0004	ECOELECTRICA, L.P.	PENUELAS	5/6/98	TURBINES, COMBINED-CYCLE COGENERATION	15.004	461.00	MW	PM10, GAS	12.0000	LB/HR	MAINTAIN EACH TURBINE IN GOOD WORKING ORDER AND IMPLEMENT GOOD COMBUSTION PRACTICES. FUEL SPEC: USE OF NG/LPG.	0.000	BACT-PSD
PR-0004	ECOELECTRICA, L.P.	PENUELAS	5/6/98	TURBINES, COMBINED-CYCLE COGENERATION	15.004	461.00	MW	PM10, OIL	59.0000	LB/HR	MAINTAIN EACH TURBINE IN GOOD WORKING ORDER AND IMPLEMENT GOOD COMBUSTION PRACTICES. FUEL SPEC: USE OF NG/LPG.	0.000	BACT-PSD

Table 5-4
Salt Ri[illegible]oject
Proposed Expansion Project - E[illegible]ng Santan Generating Station
RLBC Database Information - Combined Cycle Turbines
PM10 Emissions

RBLCID	FACILITY	CITY	LAST UPDATE	PROCESS	PROC TYPE	THRU PUT	THRUPUT UNIT	POLL.	PRIM EMISS	PRIME UNIT	CTRLDESC	PCT EFFIC	BASIS
PR-0004	ECOELECTRICA, L.P.	PENUELAS	5/6/98	TURBINES, COMBINED-CYCLE COGENERATION	15.004	461.00	MW	PM10, COOLING TOWER	0.0015	% OF FLOW	TWO STAGE MIST ELIMINATOR TO RESTRICT DRIFT.	0.000	BACT-OTHER
AL-0109	SOUTHERN NATURAL GAS	AUBURN	4/24/98	9160 HP GE MODEL M53002G NATURAL GAS FIRED TURBINE	15.004	9160.00	HP	PM10	10.9500	TPY	FUEL SPEC: NATURAL GAS	0.000	BACT-PSD
AL-0110	SOUTHERN NATURAL GAS	WARD	4/24/98	2-9160 HP GE MODEL MS3002G NATURAL GAS TURBINES	15.004	9160.00	HP	PM10	10.9500	TPY	FUEL SPEC: NATURAL GAS	0.000	BACT-PSD
CA-0793	TEMPO PLASTICS	VISALIA	4/23/98	GAS TURBINE COGENERATION UNIT	15.004	0.00		PM10	0.0120	LB/MMBTU	LUBE OIL VENT COALESCER. OPACITY LIMIT APPLIES TO LUBE OIL VENTS.	0.000	LAER
CA-0768	NORTHERN CALIFORNIA POWER AGENCY	LODI	3/16/98	GE FRAME 5 GAS TURBINE	15.004	325.00	MMBTU/HR	PM10	4.3000	LB/DAY	NATURAL GAS, AIR INTAKE COOLER, VENTING THE LUBE OIL VENT INTO THE EXHAUST STREAM OF THE TURBINE FOR OXIDATION OF THE SMOKE	0.000	LAER
NM-0031	LORDSBURG L.P.	LORDSBURG	9/29/97	TURBINE, NATURAL GAS-FIRED, ELEC. GEN.	15.004	100.00	MW	PM	5.3000	LBS/HR	HIGH COMBUSTION EFFICIENCY USE OF NO.2 LOW SULFUR FUEL OIL (LESS THAN 0.05% BY WT.)	0.000	BACT-PSD
AL-0096	MEAD COATED BOARD, INC.	PHENIX CITY	5/31/97	COMBINED CYCLE TURBINE (25 MW)	15.004	568.00	MMBTU/HR	PM	2.5000	LBS/HR (GAS)	PRIMARY FUEL IS NATURAL GAS WITH BACKUP FUEL AS DISTILLATE OIL. EFFICIENT OPERATION OF THE COM- BUSTION TURBINE	0.000	BACT-PSD
IN-0071	PORTSIDE ENERGY CORP.	PORTAGE	5/31/97	TURBINE, NATURAL GAS-FIRED	15.004	63.00	MEGAWATT	PM/PM1	5.0000	LBS/HR		0.000	BACT-PSD
LA-0096	UNION CARBIDE CORPORATION	HAHNVILLE	5/31/97	GENERATOR, GAS TURBINE	15.004	1313.00	MM BTU/HR	PM10	18.3000	LB/HR	NO CONTROL CLEAN FUEL	0.000	BACT-PSD
VA-0184	BERMUDA HUNDRED ENERGY LIMITED PARTNERSHIP	CHESTERFIEL	5/7/97	TURBINE, COMBUSTION	15.999	1175.00	MMBTU/H NAT. GAS	PM	5.0000	E-3 LB/MMBTU	FUEL SPEC: CLEAN BURN FUEL	91.000	BACT-PSD
VA-0184	BERMUDA HUNDRED ENERGY LIMITED PARTNERSHIP	CHESTERFIEL	5/7/97	TURBINE, COMBUSTION	15.999	1175.00	MMBTU/H NAT. GAS	PM10	5.0000	E-3 LB/MMBTU	FUEL SPEC: CLEAN BURN FUEL	91.000	BACT-PSD
VA-0184	BERMUDA HUNDRED ENERGY LIMITED PARTNERSHIP	CHESTERFIEL	5/7/97	TURBINE, COMBUSTION	15.999	1117.00	MMBTU/H NO2 FUEL OIL	PM	3.5000	E-2 LB/MMBTU	FUEL SPEC: CLEAN BURN FUEL	91.000	BACT-PSD
VA-0184	BERMUDA HUNDRED ENERGY LIMITED PARTNERSHIP	CHESTERFIEL	5/7/97	TURBINE, COMBUSTION	15.999	1117.00	MMBTU/H NO2 FUEL OIL	PM10	3.5000	E-2 LB/MMBTU	FUEL SPEC: CLEAN BURN FUEL	91.000	BACT-PSD
VA-0184	BERMUDA HUNDRED ENERGY LIMITED PARTNERSHIP	CHESTERFIEL	5/7/97	TURBINE, COMBUSTION, 2	15.999	0.00		PM	82.2000	T/YR/UNIT		0.000	BACT-PSD
VA-0184	BERMUDA HUNDRED ENERGY LIMITED PARTNERSHIP	CHESTERFIEL	5/7/97	TURBINE, COMBUSTION, 2	15.999	0.00		PM10	82.2000	T/YR/UNIT		0.000	BACT-PSD
VA-0190	BEAR ISLAND PAPER COMPANY, L.P.	ASHLAND	5/7/97	TURBINE, COMBUSTION GAS	15.007	474.00	X10(6) BTU/HR N. GAS	TSP	0.0053	LB/MMBTU	FUEL SPEC: CLEAN BURN FUEL	0.000	BACT-PSD
VA-0190	BEAR ISLAND PAPER COMPANY, L.P.	ASHLAND	5/7/97	TURBINE, COMBUSTION GAS	15.007	474.00	X10(6) BTU/HR N. GAS	PM10	0.0053	LB/MMBTU	FUEL SPEC: CLEAN BURN FUEL	0.000	BACT-PSD
VA-0190	BEAR ISLAND PAPER COMPANY, L.P.	ASHLAND	5/7/97	TURBINE, COMBUSTION GAS	15.007	468.00	X10(6) BTU/HR #2 OIL	TSP	0.0360	LB/MMBTU	FUEL SPEC: CLEAN BURN FUEL	0.000	BACT-PSD
VA-0190	BEAR ISLAND PAPER COMPANY, L.P.	ASHLAND	5/7/97	TURBINE, COMBUSTION GAS	15.007	468.00	X10(6) BTU/HR #2 OIL	PM10	0.0360	LB/MMBTU	FUEL SPEC: CLEAN BURN FUEL	0.000	BACT-PSD
VA-0190	BEAR ISLAND PAPER COMPANY, L.P.	ASHLAND	5/7/97	TURBINE, COMBUSTION GAS (TOTAL)	15.007	0.00		TSP	74.6000	TPY	FUEL SPEC: CLEAN BURN FUEL	0.000	BACT-PSD
VA-0190	BEAR ISLAND PAPER COMPANY, L.P.	ASHLAND	5/7/97	TURBINE, COMBUSTION GAS (TOTAL)	15.007	0.00		PM10	74.6000	TPY	FUEL SPEC: CLEAN BURN FUEL	0.000	BACT-PSD
VA-0206	PATOWMACK POWER PARTNERS, LIMITED PARTNERSHIP	LEESBURG	5/7/97	TURBINE, COMBUSTION, SIEMENS MODEL V84.2, 3	15.007	10.20	X109 SCF/YR NAT GAS	TSP/PM	1.0000	LB/HR	FUEL SPEC: CLEAN BURNING FUELS	0.000	BACT-PSD
NM-0029	SOUTHWESTERN PUBLIC SERVICE COMPANY/CUNNINGHAM STA	HOBBS	3/31/97	COMBUSTION TURBINE, NATURAL GAS	15.004	100.00	MW	PM10	0.0000			0.000	BACT-PSD
NM-0028	SOUTHWESTERN PUBLIC SERVICE CO/CUNNINGHAM STATION	HOBBS	12/30/96	COMBUSTION TURBINE, NATURAL GAS	15.004	100.00	MW	PM10	0.0000	SEE P2	GOOD COMBUSTION PRACTICES	0.000	BACT-PSD
GA-0063	MID-GEORGIA COGEN.	KATHLEEN	8/19/96	COMBUSTION TURBINE (2), NATURAL GAS	15.004	116.00	MW	PM	18.0000	LB/HR	CLEAN FUEL	0.000	BACT-PSD

Table 5.4
Salt River Project
Proposed Expansion Project - Existing Santan Generating Station
RLBC Database Information - Combined Cycle Turbines
PM10 Emissions

RBLCID	FACILITY	CITY	LAST UPDATE	PROCESS	PROC TYPE	THRU PUT	THRUPUT UNIT	POLL.	PRIM EMISS	PRIME UNIT	CTRLDESC	PCT EFFIC	BASIS
MS-0028	SOUTH MISSISSIPPI ELECTRIC POWER ASSOC.	MOSELL	8/19/96	COMBUSTION TURBINE, COMBINED CYCLE	15.007	1299.00	MMBTU/HR NAT GAS	PM	8.1000	LB/HR, GAS	GOOD COMBUSTION CONTROLS	0.000	BACT-PSD
NC-0059	CAROLINA POWER & LIGHT	GOLDSBORO	8/19/96	COMBUSTION TURBINE, 4 EACH	15.007	1907.60	MMBTU/HR	PM/PM 10, OIL	17.0000	LB/HR	COMBUSTION CONTROL	0.000	BACT-PSD
NC-0059	CAROLINA POWER & LIGHT	GOLDSBORO	8/19/96	COMBUSTION TURBINE, 4 EACH	15.007	1907.60	MMBTU/HR	PM/PM 10, GAS	9.0000	LB/HR	COMBUSTION CONTROL	0.000	BACT-PSD
FL-0104	SEMINOLE HARDEE UNIT 3	FORT GREEN	5/31/96	COMBINED CYCLE COMBUSTION TURBINE	15.007	140.00	MW	PM/PM 10	7.0000	LB/HR (NAT. GAS)	DRY LNB FUEL SPEC: LOW S OIL, LIMITED OPERATION ON OIL. GOOD COMBUSTION	0.000	BACT-PSD
SC-0036	CAROLINA POWER AND LIGHT	HARTSVILLE	4/29/96	STATIONARY GAS TURBINE	15.007	1520.00	MMBTU/H	PM (NG	5.9000	LB/H	PROPER OPERATION TO ACHIEVE GOOD COMBUSTION	0.000	BACT-PSD
SC-0036	CAROLINA POWER AND LIGHT	HARTSVILLE	4/29/96	STATIONARY GAS TURBINE	15.007	1520.00	MMBTU/H	PM (OIL	22.0000	LB/H	PROPER OPERATION TO ACHIEVE GOOD COMBUSTION	0.000	BACT-PSD
NY-0068	KAMINE/BESICORP NATURAL DAM LP	NATURAL DAM	6/30/95	GE FRAME 6 GAS TURBINE	15.007	500.00	MMBTU/HR	PM,PM1	0.0000	SEE NOTE #1	FUEL SPECIFICATION	0.000	BACT-OTHER
MN-0022	LSP-COTTAGE GROVE, L.P.	COTTAGE GRO	5/29/95	COMBUSTION TURBINE/GENERATOR	15.007	1970.00	MMBTU/HR	PM10	10.7000	LB/HR GAS	FUEL SELECTION; GOOD COMBUSTION	0.000	BACT-PSD
NJ-0013	LAKEWOOD COGENERATION, L.P.	LAKEWOOD TOWNSHIP	5/29/95	TURBINES (NATURAL GAS) (2)	15.004	1190.00	MMBTU/HR (EACH)	PM	0.0023	LB/MMBTU	TURBINE DESIGN	0.000	BACT-OTHER
NJ-0017	NEWARK BAY COGENERATION PARTNERSHIP, L.P.	NEWARK	5/29/95	TURBINES, COMBUSTION, NATURAL GAS-FIRED (2)	15.004	617.00	MMBTU/HR (EACH)	TSP	0.0060	LB/MMBTU	TURBINE DESIGN	0.000	OTHER
NJ-0017	NEWARK BAY COGENERATION PARTNERSHIP, L.P.	NEWARK	5/29/95	TURBINES, COMBUSTION, NATURAL GAS-FIRED (2)	15.004	617.00	MMBTU/HR (EACH)	PM10	0.0060	LB/MMBTU	TURBINE DESIGN	0.000	BACT-PSD
NM-0024	MILAGRO, WILLIAMS FIELD SERVICE	BLOOMFIELD	5/29/95	TURBINE/COGEN, NATURAL GAS (2)	15.004	900.00	MMCF/DAY	PM10	0.0000	SEE P2 DESC.	COMBUSTION AIR FILTERS; GOOD COMBUSTION PRACTICE AND MAINTENANCE	0.000	BACT-PSD
NY-0061	ANITEC COGEN PLANT	BINGHAMTON	4/27/95	GE LM5000 COMBINED CYCLE GAS TURBINE EP #00001	15.007	451.00	MMBTU/HR	PM,PM1	0.0050	LB/MMBTU, 2.0 LB/HR	FUEL SPEC: SULFUR CONTENT NOT TO EXCEED 0.1% BY WEIGHT	0.000	BACT-OTHER
NY-0062	FULTON COGEN PLANT	FULTON	4/27/95	GE LM5000 GAS TURBINE	15.007	500.00	MMBTU/HR	PM,PM1	0.0240	LB/MMBTU, 12.0 LB/HR	FUEL SPEC: SULFUR CONTENT NOT TO EXCEED 0.3% BY WEIGHT	0.000	BACT-OTHER
NY-0062	FULTON COGEN PLANT	FULTON	4/27/95	STACK EMISSIONS (GAS TURBINE AND DUCT BURNER)	11.004	610.00	MMBTU/HR (TOTAL)	PM,PM1	0.0240	LB/MMBTU, 13.1 LB/HR	FUEL SPEC: SULFUR CONTENT NOT TO EXCEED 0.3% BY WEIGHT	0.000	BACT-OTHER
NY-0063	TBG COGEN COGENERATION PLANT	BETHPAGE	4/27/95	GE LM2500 GAS TURBINE	15.007	214.90	MMBTU/HR	PM,PM1	0.0240	LB/MMBTU, 5.0 LB/HR	FUEL SPEC: SULFUR CONTENT NOT TO EXCEED 0.037% BY WEIGHT	0.000	BACT-OTHER
NY-0064	INDECK-OSWEGO ENERGY CENTER	OSWEGO	4/27/95	GE FRAME 6 GAS TURBINE	15.007	533.00	LB/MMBTU	PM,PM1	0.0080	LB/MMBTU, 5.00 LB/HR	FUEL SPEC: SULFUR CONTENT NOT TO EXCEED 0.27% BY WEIGHT	0.000	BACT-OTHER
NY-0065	KAMINE/BESICORP CARTHAGE L.P.	CARTHAGE	4/27/95	GE FRAME 6 GAS TURBINE	15.007	491.00	BTU/HR	PM,PM1	0.0050	LB/MMBTU, 3.0 LB/HR	FUEL SPEC: SULFUR CONTENT NOT TO EXCEED 0.20% BY WEIGHT	0.000	BACT-OTHER
NY-0065	KAMINE/BESICORP CARTHAGE L.P.	CARTHAGE	4/27/95	STACK (GAS TURBINE & DUCT BURNER) **SEE NOTE #3**	11.004	540.00	LB/MMBTU	PM,PM1	0.0050	LB/MMBTU, 3.0 LB/HR	FUEL SPEC: SULFUR CONTENT NOT TO EXCEED 0.20% BY WEIGHT	0.000	BACT-OTHER
NY-0071	KAMINE SOUTH GLENS FALLS COGEN CO	SOUTH GLENS FALLS	4/27/95	GE FRAME 6 GAS TURBINE	15.007	498.00	MMBTU/HR	PM,PM1	0.0050	LB/MMBTU, 3.0 LB/HR	FUEL SPEC: SULFUR CONTENT NOT TO EXCEED 0.20% BY WEIGHT	0.000	BACT-OTHER
NY-0071	KAMINE SOUTH GLENS FALLS COGEN CO	SOUTH GLENS FALLS	4/27/95	DUCT BURNER (SEE NOTE #3)	11.004	44.00	MMBTU/HR	PM,PM1	0.0050	LB/MMBTU, 3.0 LB/HR	FUEL SPEC: SULFUR CONTENT NOT TO EXCEED 0.20% BY WEIGHT	0.000	BACT-OTHER
NY-0072	KAMINE/BESICORP SYRACUSE LP	SOLVAY	4/27/95	SIEMENS V64.3 GAS TURBINE (EP #00001)	15.007	650.00	MMBTU/HR	PM,PM1	0.0080	LB/MMBTU, 5.8 LB/HR	FUEL SPEC: SULFUR CONTENT NOT TO EXCEED 0.15% BY WEIGHT	0.000	BACT-OTHER
NY-0073	LOCKPORT COGEN FACILITY	LOCKPORT	4/27/95	(6) GE FRAME 6 TURBINES (EP #S 00001-00006)	15.007	423.90	MMBTU/HR	PM,PM1	0.0060	LB/MMBTU, 2.5 LB/HR	FUEL SPEC: SULFUR CONTENT NOT TO EXCEED 0.20% BY WEIGHT	0.000	BACT-OTHER
NY-0075	PILGRIM ENERGY CENTER	ISLIP	4/27/95	(2) WESTINGHOUSE W501D5 TURBINES (EP #S 00001&2)	15.007	1400.00	MMBTU/HR	PM,PM1	0.0070	LB/MMBTU, 7.20 LB/HR	FUEL SPEC: SULFUR CONTENT NOT TO EXCEED 0.05% BY WEIGHT	0.000	BACT-OTHER
NY-0079	LEDERLE LABORATORIES	PEARL RIVER	4/27/95	(2) GAS TURBINES (EP #S 00101&102)	15.007	110.00	MMBTU/HR	PM,PM1	0.0000	SEE NOTE #2	FUEL SPEC: SULFUR CONTENT NOT TO EXCEED 0.30% BY WEIGHT	0.000	BACT-OTHER
OH-0218	CNG TRANSMISSION	WASHINGTON COURT HOUSE	4/5/95	TURBINE (NATURAL GAS) (3)	15.004	5500.00	HP (EACH)	PM	0.0350	LB/MMBTU	FUEL SPEC: USE OF NATURAL GAS	0.000	OTHER
NY-0066	INDECK ENERGY COMPANY	SILVER SPRIN	3/31/95	GE FRAME 6 GAS TURBINE EP #00001	15.007	491.00	MMBTU/HR	PM,PM1	0.0060	LB/MMBTU, 2.5 LB/HR	NO CONTROLS	0.000	BACT-OTHER
NY-0076	TRIGEN MITCHEL FIELD	HEMPSTEAD	3/31/95	GE FRAME 6 GAS TURBINE	15.007	424.70	MMBTU/HR	PM,PM1	0.0060	LB/MMBTU, 2.0 LB/HR	NO CONTROLS	0.000	BACT-OTHER
NY-0077	INDECK-YERKES ENERGY SERVICES	TONAWANDA	3/31/95	GE FRAME 6 GAS TURBINE (EP #00001)	15.007	432.20	MMBTU/HR	TSP/PM	0.0070	LB/MMBTU, 2.5 LB/HR	NO CONTROLS	0.000	BACT-OTHER
NY-0080	PROJECT ORANGE ASSOCIATES	SYRACUSE	3/31/95	STACK (TURBINE AND DUCT BURNER)	11.005	715.00	MMBTU/HR	PM,PM1	0.0330	LB/MMBTU, 25 LB/HR	NO CONTROLS	0.000	BACT-OTHER

Table 5-4
Salt River Project
Proposed Expansion Project - Existing Santan Generating Station
RLBC Database Information - Combined Cycle Turbines
PM10 Emissions

RBLCID	FACILITY	CITY	LAST UPDATE	PROCESS	PROC TYPE	THRU PUT	THRUPUT UNIT	POLL.	PRIM EMISS	PRIME UNIT	CTRLDESC	PCT EFFIC	BASIS
NY-0057	MEGAN-RACINE ASSOCIATES, INC	CANTON	3/30/95	GE LM5000-N COMBINED CYCLE GAS TURBINE	15.007	401.00	LB/MMBTU	PM,PM1	0.0280	LB/MMBTU, 12 LB/HR	NO CONTROLS	0.000	BACT-OTHER
NY-0081	LILCO SHOREHAM	HICKSVILLE	3/30/95	(3) GE FRAME 7 TURBINES (EP #S 00007-9)	15.002	850.00	MMBTU/HR	PM10	0.0120	LB/MMBTU, 10.2 LB/HR	NO CONTROLS	0.000	BACT-OTHER
AL-0069	INTERNATIONAL PAPER CO. RIVERDALE MILL	SELMA	3/24/95	TURBINE, STATIONARY (GAS-FIRED) WITH DUCT BURNER	15.007	40.00	MW	PM10	0.0100	LB/MMBTU (GAS)	FUEL SPECIFICATION	0.000	BACT-PSD
CO-0017	THERMO INDUSTRIES, LTD.	FT. LUPTON	3/24/95	TURBINE, GAS FIRED, 5 EACH	15.004	246.00	MMBTU/H	PM	25.8000	LB/H	FUEL SPEC: NATURAL GAS FIRED	0.000	OTHER
CO-0023	PHOENIX POWER PARTNERS	GREELEY	3/24/95	GENERATOR, STEAM, W/ DUCT BURNER	11.005	50.00	MMBTU/HR	PM10	20.2000	TPY	FUEL SPEC: NATURAL GAS COMBUSTION	0.000	BACT-OTHER
FL-0045	CHARLES LARSEN POWER PLANT	CITY OF OF LAKELAND	3/24/95	TURBINE, GAS, 1 EACH	15.004	80.00	MW	PM	0.0060	LB/MMBTU	COMBUSTION CONTROL	0.000	BACT-PSD
FL-0052	FLORIDA POWER AND LIGHT	NORTH PALM BEACH	3/24/95	TURBINE, GAS, 4 EACH	15.004	400.00	MW	PM	18.0000	LB/H	COMBUSTION CONTROL	0.000	BACT-PSD
FL-0052	FLORIDA POWER AND LIGHT	NORTH PALM BEACH	3/24/95	TURBINE, CG, 4 EACH	15.004	400.00	MW	PM	19.0000	LB/H	COMBUSTION CONTROL	0.000	BACT-PSD
FL-0053	FLORIDA POWER AND LIGHT	LAVOGROME REPOWERING STATION	3/24/95	TURBINE, GAS, 4 EACH	15.004	240.00	MW	PM	15.4000	LB/H	COMBUSTION CONTROL	0.000	BACT-PSD
FL-0054	LAKE COGEN LIMITED	UMATILLA	3/24/95	TURBINE, GAS, 2 EACH	15.004	42.00	MW	PM	0.0065	LB/MMBTU	COMBUSTION CONTROL, FUEL SPEC: CLEAN FUEL	0.000	BACT-PSD
GA-0052	SAVANNAH ELECTRIC AND POWER CO.		3/24/95	TURBINES, 8	15.004	1032.00	MMBTU/H, NAT GAS	PM	0.0060	LB/MMBTU	FUEL SPEC: LOW SULFUR FUEL OIL	0.000	BACT-PSD
GA-0052	SAVANNAH ELECTRIC AND POWER CO.		3/24/95	TURBINES, 8	15.006	972.00	MMBTU/H, #2 OIL	PM	0.0120	LB/MMBTU	FUEL SPEC: LOW SULFUR FUEL OIL	0.000	BACT-PSD
GA-0053	HARTWELL ENERGY LIMITED PARTNERSHIP	HARTWELL	3/24/95	TURBINE, GAS FIRED (2 EACH)	15.004	1817.00	M BTU/HR	PM	0.0064	LB/M BTU	FUEL SPEC: CLEAN BURNING FUELS	0.000	BACT-PSD
HI-0015	MAUI ELECTRIC COMPANY, LTD./MAALAEA GENERATING STA	MAUI	3/24/95	TURBINE, COMBINED-CYCLE COMBUSTION	15.006	28.00	MW	PM	19.7000	LB/HR	COMBUSTION TECHNOLOGY/DESIGN	0.000	BACT-OTHER
NC-0055	DUKE POWER CO. LINCOLN COMBUSTION TURBINE STATION	LOWESVILLE	3/24/95	TURBINE, COMBUSTION	15.004	1313.00	MM BTU/HR	PM10	5.0000	LB/HR	COMBUSTION CONTROL	0.000	BACT-PSD
NV-0017	NEVADA POWER COMPANY, HARRY ALLEN PEAKING PLANT	LAS VEGAS	3/24/95	COMBUSTION TURBINE ELECTRIC POWER GENERATION	15.004	600.00	MW (8 UNITS 75 EACH)	PM10	30.6000	TPY (EACH TURBINE)	PRECISION CONTROL FOR THE COMBUSTOR	0.000	BACT-PSD
OK-0027	OKLAHOMA MUNICIPAL POWER AUTHORITY	PONCA CITY	3/24/95	TURBINE, COMBUSTION	15.007	58.00	MW	PM	0.0125	LB/MMBTU	FUEL SPEC: USE OF DISTILLATE FUEL	90.000	BACT-OTHER
SC-0021	CAROLINA POWER AND LIGHT CO.	DARLINGTON	3/24/95	TURBINE, I.C.	15.007	80.00	MW	PM	15.0000	LB/H		0.000	BACT-PSD
VA-0189	GORDONSVILLE ENERGY L.P.	FAIRFAX	3/24/95	TURBINE FACILITY, GAS	15.007	1331.13	X10(7) SCF/Y NAT GAS	TSP/PM	50.6000	TOTAL TPY	FUEL SPEC: CLEAN BURNING FUEL	0.000	BACT-PSD
VA-0189	GORDONSVILLE ENERGY L.P.	FAIRFAX	3/24/95	TURBINE FACILITY, GAS	15.007	7.44	X10(7) GPY FUEL OIL	TSP/PM	50.6000	TOTAL TPY	FUEL SPEC: CLEAN BURNING FUEL	0.000	BACT-PSD
VA-0189	GORDONSVILLE ENERGY L.P.	FAIRFAX	3/24/95	TURBINES (2) [EACH WITH A SF]	15.007	1.51	X10(9) BTU/HR N GAS	TSP/PM	8.0000	LBS/HR/UNIT	FUEL SPEC: CLEAN BURNING FUEL	0.000	BACT-PSD
VA-0189	GORDONSVILLE ENERGY L.P.	FAIRFAX	3/24/95	TURBINES (2) [EACH WITH A SF]	15.007	1.36	X10(9) BTU/H #2 OIL	TSP/PM	13.0000	LBS/HR/UNIT	FUEL SPEC: CLEAN BURNING FUEL	0.000	BACT-PSD
FL-0068	ORANGE COGENERATION LP	BARTOW	1/13/95	TURBINE, NATURAL GAS, 2	15.004	368.30	MMBTU/H	PM	5.0000	LB/H	GOOD COMBUSTION	0.000	BACT-PSD
FL-0072	TIGER BAY LP	FT. MEADE	1/13/95	TURBINE, GAS	15.004	1614.80	MMBTU/H	PM	9.0000	LB/H	GOOD COMBUSTION PRACTICES	0.000	BACT-PSD
FL-0078	KISSIMMEE UTILITY AUTHORITY	INTERCESSIO N CITY	1/13/95	TURBINE, NATURAL GAS	15.004	869.00	MMBTU/H	PM	7.0000	LB/H	GOOD COMBUSTION PRACTICES	0.000	BACT-PSD
FL-0078	KISSIMMEE UTILITY AUTHORITY	INTERCESSIO N CITY	1/13/95	TURBINE, NATURAL GAS	15.004	367.00	MMBTU/H	PM	9.0000	LB/H	GOOD COMBUSTION PRACTICES	0.000	BACT-PSD
FL-0080	AUBURNDALE POWER PARTNERS, LP	AUBURNDALE	1/13/95	TURBINE,GAS	15.004	1214.00	MMBTU/H	PM	0.0136	LB/MMBTU	GOOD COMBUSTION PRACTICES	0.000	BACT-PSD
FL-0082	FLORIDA POWER CORPORATION POLK COUNTY SITE	BARTOW	1/13/95	TURBINE, NATURAL GAS (2)	15.004	1510.00	MMBTU/H	PM	9.0000	LB/H	GOOD COMBUSTION PRACTICES	0.000	BACT-PSD

Table 5-4
Salt River Project
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PM10 Emissions

RBLCID	FACILITY	CITY	LAST UPDATE	PROCESS	PROC TYPE	THRU PUT	THRUPUT UNIT	POLL.	PRIM EMISS	PRIME UNIT	CTRLDESC	PCT EFFIC	BASIS
PA-0099	FLEETWOOD COGENERATION ASSOCIATES	FLEETWOOD	11/22/94	NG TURBINE (GE LM6000) WITH WASTE HEAT BOILER	15.004	360.00	MMBTU/HR	PM	5.0000	LB/HR		0.000	BACT-OTHER
TX-0231	WEST CAMPUS COGENERATION COMPANY	COLLEGE STA	10/31/94	GAS TURBINES	15.004	75.30	MW (TOTAL POWER)	PM10	52.0000	TPY	INTERNAL COMBUSTION CONTROLS	0.000	BACT
NY-0045	SELKIRK COGENERATION PARTNERS, L.P.	SELKIRK	9/13/94	COMBUSTION TURBINES (2) (252 MW)	15.004	1173.00	MMBTU/HR (EACH)	PM/PM1	0.0040	LB/MMBTU GAS (BASE)	COMBUSTION CONTROLS AND FUEL SPEC: LOW SULFUR OIL	0.000	BACT-OTHER
NY-0045	SELKIRK COGENERATION PARTNERS, L.P.	SELKIRK	9/13/94	COMBUSTION TURBINE (79 MW)	15.004	1173.00	MMBTU/HR	PM/PM1	0.0040	LB/MMBTU, GAS	COMBUSTION CONTROLS AND FUEL SPEC: LOW SULFUR OIL	0.000	BACT-OTHER
NY-0046	SARANAC ENERGY COMPANY	PLATTSBURGH	9/13/94	TURBINES, COMBUSTION (2) (NATURAL GAS)	15.004	1123.00	MMBTU/HR (EACH)	PM/PM1	0.0062	LB/MMBTU	COMBUSTION CONTROLS	0.000	BACT-OTHER
NY-0048	KAMINE/BESICORP CORNING L.P.	SOUTH CORNI	9/13/94	TURBINE, COMBUSTION (79 MW)	15.004	653.00	MMBTU/HR	PM/PM1	0.0080	LB/MMBTU	COMBUSTION CONTROL	0.000	BACT-OTHER
CO-0018	BRUSH COGENERATION PARTNERSHIP	BRUSH	7/20/94	TURBINE	15.004	350.00	MMBTU/H	PM10	9.9000	T/YR		0.000	OTHER
CO-0018	BRUSH COGENERATION PARTNERSHIP	BRUSH	7/20/94	TURBINE	15.004	350.00	MMBTU/H	PM	9.9000	T/YR		0.000	OTHER
CO-0019	COLORADO POWER PARTNERSHIP	BRUSH	7/20/94	TURBINES, 2 NAT GAS & 2 DUCT BURNERS	15.004	385.00	MMBTU/H EACH TURBINE	PM10	12.4000	T/YR		0.000	OTHER
CO-0019	COLORADO POWER PARTNERSHIP	BRUSH	7/20/94	TURBINES, 2 NAT GAS & 2 DUCT BURNERS	15.004	385.00	MMBTU/H EACH TURBINE	PM	12.4000	T/YR		0.000	OTHER
PA-0098	GRAYS FERRY CO. GENERATION PARTNERSHIP	PHILADELPHIA	7/20/94	GENERATOR, STEAM	15.007	450.00	MMBTU	PM	0.1000	LB/MMBTU*	DRY LOW NOX BURNER, COMBUSTION CONTROL	0.000	BACT-OTHER
WI-0067	WEPCU, PARIS SITE	PARIS	7/20/94	TURBINES, COMBUSTION (4)	15.007	0.00		PM	12.0000	LBS/HR	GOOD COMBUSTION	0.000	BACT-PSD
NV-0015	SAGUARO POWER COMPANY	HENDERSON	6/1/93	COMBUSTION TURBINE GENERATOR	15.007	34.50	MW	PM	2.5000	PPH	COMBUSTION SYSTEM	0.000	LAER
RI-0010	NARRAGANSETT ELECTRIC/NEW ENGLAND POWER CO.	PROVIDENCE	5/31/92	TURBINE, GAS AND DUCT BURNER	15.004	1360.00	MMBTU/H EACH	PM	0.0050	LB/MMBTU, GAS		0.000	BACT-PSD

- Pipeline natural gas with a minimum sulfur content.

The combined cycle systems and auxiliary boiler will be limited to using pipeline natural gas. Thus, this is consistent with the approach used to achieve LAER.

To control PM emissions from the cooling tower, SRP is proposing the state-of-the-art mist eliminators. These eliminators are designed to achieve a drift of only 0.0005%. This should represent LAER for mechanical draft type cooling towers.

5.6 POLLUTANT EMISSION OFFSETS

The second requirement for new sources locating in a nonattainment area is to obtain air pollutant emission offsets. This essentially involves reducing actual air pollutant emissions in a nonattainment area to adequately offset the increase in air pollutant emissions from a new source. Thus, air pollutant emissions from the proposed SRP expansion project must be offset by reductions in air pollutant emissions for which the area has been designated as nonattainment and for which the source is classified as major. This would apply to emissions of NO_x, CO, PM_{10} and VOCs from the proposed expansion project. Emission offsets may be obtained by reductions in emissions from the source, or from any other source in existence within the allowable offset area, which reductions must commence by the startup date of the new source. Credit for an offset can only be used if it has not been relied upon in demonstrating attainment or in demonstrating reasonable further progress (RFP), and if it has not been relied upon previously in issuing a permit or permit revision pursuant to Rule 240, Sections 301-305 or not otherwise required under this rule or under any provision of the SIP.

The emission offset is not sufficient unless reductions of total emissions for the particular pollutant for which the offset is required will be:

- Obtained from sources in the allowable offset area;
- A surplus emission, which is an emission reduction not required by current regulations in the State Implementation Plan (SIP); not already relied upon for SIP planning purposes; and not used by the source to meet any other regulatory requirement, including, at the time emission reduction credits (ERCs) are used, Reasonable Available Control Technology (RACT), Reasonable Further Progress (RFP), or milestones therefor, or demonstration of attainment;
- Contemporary with the operation of the new source;
- An emission enforceable by the Administrator;
- A quantifiable emission based on emission factors, stack tests, monitored values, operating rates and averaging times, process or production inputs, modeling or other measurement practices;
- Sufficient to satisfy the Control Officer that the emissions from the new major source, together with the offset, will result in RFP for that pollutant;
- Only intrapollutant emission offsets shall be allowed; and

- RFP shall mean compliance with the schedule of annual incremental reductions in emissions of the applicable air pollutant prescribed by the Control Officer based on air quality modeling.

The baseline of total emissions from any sources in existence or sources which have obtained a permit or permit revision pursuant to Rule 240, regardless of whether or not such sources are in actual operation at the time of application for the permit or permit revision shall be the total actual emissions at the time the application is filed. In addition, the baseline of total emissions shall consist of all emission limitations included as conditions on federally enforceable permits except that the offset baseline shall be the actual emissions of the source from which the offset credit is obtained where:

- No emissions limitations are applicable to a source from which offsets are being sought; or
- The demonstration of RFP and attainment of ambient air quality standards is based upon the actual emissions of sources located within a designated nonattainment area.

Where the emission limitations for a particular pollutant allow greater emissions than the potential emission rate of the source for that pollutant, the baseline shall be the potential emission rate at the time of application for the permit or permit revision pursuant to this rule, and emissions offset credit shall be allowed only for control below the potential emission rate. Emissions reductions achieved by shutting down an existing source or permanently reducing production or operating hours below baseline levels may be credited, as long as the work force to be affected has been notified of the proposed shutdown or reduction.

As stated in Maricopa County Rules, Section 307 "Special Requirements for Sources of VOC or Oxides of Nitrogen in Ozone Nonattainment Areas Classified as Serious or Severe," any new major source with potential to emit VOC or NO_x emissions in an O_3 nonattainment area classified as serious, shall obtain emission offset at a ratio of 1.2:1. This means that for every new ton of emissions, 1.2 tons must be obtained from source reductions in the nonattainment area. Thus, emissions of NO_x and VOC from the proposed expansion project must be offset as follows:

Nonattainment Area Air Pollutant	Proposed Expansion Project Emission Rate (tons/year)	Emission Offset Ratio	Required Offsets (tons/year)
NO_x	269.3	1.2	323.2
VOC	104.7	1.2	125.6

For emissions of CO and PM_{10}, the emission offset requirement is not as well defined as that for emissions of NO_x and VOCs. According to Section 306.2(f), "An offset shall not be sufficient unless reductions of total emissions for CO and PM_{10} are sufficient to satisfy to the regulatory agency that emissions from the new source, together with the emissions offsets, will result in reasonable further

progress towards attaining the NAAQS." Section 4.7 provides the results of the net air quality benefit demonstration performed for emission of CO and PM_{10} from the proposed expansion project. These demonstrations show that the following emission offsets were sufficient to demonstrate a net air quality benefit.

Nonattainment Area Air Pollutant	Proposed Expansion Project Emission Rate (tons/year)	Proposed Offset Rate (tons/year)
CO	417.7	417.7
PM_{10}	244.7	244.7

5.6.1 Emission Offsets – NO_x Emissions

The first step in defining acceptable emission offsets, is to define the area where offsets can be obtained. According to Maricopa County Rule (Section 306.11) the allowable offset area shall refer to the geographical area in which are located the sources whose emissions are being sought for purposes of offsetting emissions from a new major source. For the proposed expansion project, the allowable offset area for emissions of NO_x is the nonattainment area.

SRP is proposing to retrofit the four existing combined cycle systems at the Santan Generating Station with low NO_x combustors. Installation of these combustors will reduce actual emissions of NO_x from the Santan Generating Station by at least 80%. This voluntary installation of low NO_x combustors will provide sufficient NOx emission reductions to offset the proposed expansion project NO_x emission credit.

As stated previously, the proposed project is required to obtain NO_x emission offsets at a rate of 1.2 to 1. Since the proposed expansion project will have the potential to emit 269.3 tons/year of NO_x emissions, emission offsets at a rate of 323.2 tons/year would be required. SRP is proposing to secure at least 323.2 tons/year of NO_x emission offsets and satisfy the emissions offset requirement.

5.6.2 Emission Offsets – VOC Emissions

As with emissions of NO_x, Maricopa County rules allow emission offsets for emissions of VOCs to be obtained within the O_3 nonattainment area. Subsequently, SRP has been investigating potential VOC emission offset sources within Maricopa County, including area sources and mobile sources. This investigation included discussions with local community leaders, county planning members and industrial facility managers. The purpose of these discussions was to identify possible alternatives for reducing VOC emissions from existing sources located in Maricopa County. Based on these discussions, SRP is in the process of developing agreements with local companies to obtain VOC offsets. This would be accomplished by either shutting down existing emitting units, restricting hours of operation, converting gas fired equipment to electric and implementing mobile source emission reduction programs.

As stated previously, the proposed project is required to obtain VOC emission offsets at a rate of 1.2 to 1. Since the proposed expansion project will have the potential to emit 104.7 tons/year of VOC emissions, emission offsets of 125.6 tons/year would be required. Based on the list above, SRP is proposing to secure at least 125.6 tons/year of VOC emission offsets and satisfy the emissions offset requirement.

5.6.3 Emission Offsets – CO Emissions

SRP has been investigating potential CO emission offset sources within Maricopa County, including area sources and mobile sources. This investigation has included discussions with local community leaders, county planning members and industrial facility managers. The purpose of these discussions was to identify possible alternatives for reducing CO emissions from existing sources located in Maricopa County. Based on these discussions, SRP has been focusing on establishing agreements with local companies and government entities to obtain CO offsets. This would be accomplished by either shutting down existing emitting units, restricting hours of operation, converting gas fired equipment to electric and implementing mobile source emission reduction programs.

As stated previously, the proposed project is required to obtain sufficient emission offsets to support that a net air quality benefit will be achieved. Based on the results of the net air quality benefit demonstration performed for emission of CO, emission offsets of 417.7 tons/year were sufficient to show a net air quality benefit. Thus, based on the list above, SRP is proposing to secure at least 417.7 tons/year of CO emission offsets and satisfy the emissions offset requirement.

5.6.4 Emission Offsets – PM_{10} Emissions

SRP has been investigating potential PM_{10} emission offset sources within Maricopa County. This investigation included discussions with local community leaders, county planning members and industrial facility managers. The purpose of these discussions was to identify possible alternatives for reducing PM_{10} emissions from existing sources located in Maricopa County. Based on these discussions, SRP has identified the following sources as potential PM_{10} emission offsets:

- Canal Bank Paving and Stabilization;
- Mobile emission reduction credits; and
- Road paving.

SRP will secure the offsets prior to issuance of the air quality permit.

As stated previously, the proposed project is required to obtain sufficient emission offsets to show a net air quality benefit. Since the proposed expansion project will have the potential to emit 244.7 tons/year of PM_{10} emissions, a minimum emission offset of 244.7 tons/year would be required. A net air quality benefit demonstration was performed using the minimum offset of 244.7 tons/year. The outcome of this demonstration showed that a minimum offset would result in a net air quality

improvement. As a result, SRP is proposing to secure at least 244.7 tons/year of PM_{10} emission offsets, which should satisfy the emissions offset requirement.

5.7 NET AIR QUALITY BENEFIT DEMONSTRATION FOR NONATTAINMENT AREA POLLUTANTS(NO_2, VOC, PM_{10} AND CO)

The third required analysis is a demonstration that the proposed expansion project in conjunction with emission offsets will provide a net air quality benefit. Since the proposed expansion project will have the potential to emit NO_x, VOC, PM_{10} and CO in excess of the major source threshold levels, a net air quality benefit demonstration must be performed for each.

Provided below is a discussion on the net air quality benefit demonstration for emissions of NO_x, VOC, PM_{10} and CO.

NO_2 Net Air Quality Benefit Demonstration

This pollutant has been determined to be a precursor to the formation of ozone. Maricopa County Rules and USEPA Region IX personnel have concluded that obtaining emission offsets of 1.2 to 1 is sufficient to demonstrate that a net air quality benefit will be achieved.

VOC Net Air Quality Benefit Demonstration

Since VOC emissions are considered a precursor to the formation of O_3, an air quality impact assessment is traditionally not performed for this air pollutant. According to county, state and federal air regulations, a net air quality benefit analysis is not required if sufficient offsets are obtained. Since the proposed expansion project will be obtaining emission offsets at a rate of at least 1.2 to 1, no net air quality impact assessment is required for emissions of VOCs.

PM_{10} Net Air Quality Benefit Demonstration

As stated in Maricopa County rules (Section 306.6) a net air quality benefit shall mean either of the following:

a) A reduction in the number of violations of the applicable Arizona ambient air quality standards within the allowable offset area; or

b) The average of the ambient concentrations within the allowable offset area with the offsets is less than the average ambient concentrations without the offsets.

To demonstrate compliance with criterion b) above, the following steps were performed:

1. Establish an emissions offset threshold greater than 1 to 1. Since Maricopa County has not established an emission offset threshold greater than 1 to 1, Step 2 was followed to demonstrate compliance with b) above.

2. Conducted an air quality impact analysis for PM_{10} emissions as follows:

   - Using the Industrial Source Complex (ISC) dispersion model, determine the annual and 24-hour impacts (concentrations in ug/m^3) on ambient air quality based on potential PM_{10} emissions from the proposed expansion project. PM_{10} emissions sources associated with the proposed expansion project are the three combined cycle systems, auxiliary boiler, emergency generator, emergency fire water pump and mechanical draft cooling tower. (Terrain elevations were included in this analysis.)
   - If the annual and 24-hour impacts (concentration in ug/m^3) on ambient air quality are determined to be insignificant (less than the PM_{10} annual and 24-hour significance levels – 1.0 ug/m^3 and 5.0 ug/m^3, respectively,) then the allowable offset area is defined as Maricopa County.
   - If the annual and 24-hour impacts on ambient air quality are determined to be significant, then the allowable offset area is defined as only the area where significant concentrations were determined.

As shown in Section 6.0, Table 6-6, predicted annual and 24-hour impacts from the proposed project were determined to be less than the corresponding significance level. Subsequently, based on guidance provided by Maricopa County, a net air quality benefit will be achieved since the following criteria has been met:

- Emission offsets will be obtained at a ratio of at least 1 to 1. In other words, the PM_{10} emissions from the proposed project will be offset equally with reductions from existing PM_{10} emission sources; and
- The air quality impact due to PM_{10} emissions from the proposed plant were determined to be less than the annual and 24-hour significance levels established by the USEPA.

CO Net Air Quality Benefit Demonstration

As stated in Maricopa County rules (Section 306.6) a net air quality benefit shall mean either of the following:

a) A reduction in the number of violations of the applicable Arizona ambient air quality standards within the allowable offset area; or

b) The average of the ambient concentrations within the allowable offset area with the offsets is less than the average ambient concentrations without the offsets.

To demonstrate compliance with criterion b) above, the following steps were performed:

1. Establish an emissions offset threshold greater than 1 to 1. Since Maricopa County has not established an emission offset threshold greater than 1 to 1, Step 2 was followed to demonstrate compliance with b) above.

2. Conducted an air quality impact analysis for CO emissions as follows:

    - Using the ISC dispersion model, determine the 1-hour and 8-hour impacts (concentrations in ug/m^3) on ambient air quality based on potential CO emissions from the proposed expansion project. CO emissions sources associated with the proposed expansion project are the three combined cycle systems, auxiliary boiler, emergency generator, and emergency fire water pump. (Terrain elevations were included in this analysis.)
    - If the 1-hour and/or 8-hour impacts (concentration in ug/m^3) on ambient air quality are determined to be insignificant (less than the CO 1-hour and 8-hour significance levels of 2,000 ug/m^3 and 500 ug/m^3, respectively), then the allowable offset area is defined as Maricopa County.
    - If the 1-hour and 8-hour impacts on ambient air quality are determined to be significant, then the allowable offset area is defined as only the area where significant concentrations were determined.

As shown in Section 6.0, Table 6-5, predicted 1-hour and 8-hour impacts from the proposed project were determined to be less than the corresponding significance level. Subsequently, based on guidance provided by Maricopa County, a net air quality benefit will be achieved since the following criteria has been met:

- Emission offsets will be obtained at a ratio of at least 1 to 1. In other words, the CO emissions from the proposed project will be offset equally with reductions from existing CO emission sources; and
- The air quality impact due to CO emissions from the proposed project were determined to be less than the 1-hour and 8-hour significance levels established by the USEPA.

5.8 ALTERNATIVE SITE ANALYSIS

The fourth and final specialized analysis required for major new sources located in nonattainment areas is an alternative site analysis. As stipulated by local, state and federal permitting requirements, an analysis of alternative sites, sizes, production processes and environmental control techniques must be performed for the proposed source. In addition, the analysis must demonstrate that the benefits of the new source significantly outweigh the social and environmental costs imposed as a result of its location, construction, and modification.

SRP has conducted a comprehensive analysis of the requirements for electrical power demands in and around Maricopa County. Based on this analysis, it was determined that constructing and operating a new plant at the existing Santan Generating Station was the best location based on technical, environmental and economic constraints.

SRP has selected this site based on the following criteria:

- Available land;
- Compatible land use;
- Availability of gas supplies;
- Availability of renewable water supplies;
- Ability to beneficially reuse waste water;
- Availability of air emission offsets;
- Access and support to local power transmission and distribution system;
- Minimum land use impacts; and
- Minimum impact to biological resources.

The following set of questions and responses is intended to address and satisfy the requirements for an alternative site analysis.

Question No. 1

Have the potential and real adverse environmental effects of the proposed expansion project been avoided to the maximum extent possible?

Response to Question No. 1

The potential and real adverse environmental effects of the proposed expansion project have been avoided by installing air pollution control equipment and obtaining emissions offsets. The proposed combined cycle systems will be equipped with a dry, low NO_x combustor, low NO_x burner, selective catalytic reduction system and oxidation catalyst. The inclusion of these air pollution control devices will achieve the lowest achievable emission rates for emissions of NO_x, CO, PM_{10}, and VOC. The proposed control devices will be capable of reducing NO_x, CO, and VOC emissions by 90%, 90% and 20%, respectively.

In addition to the proposed air pollution control techniques, SRP will obtain emission offsets at a ratio of 1.2 to 1 for emissions of NO_x and VOCs from the proposed expansion project. This correlated to a net reduction of approximately 55 tons/year of NO_x emissions and 21 tons/year of VOC emissions, and no increase in emissions of PM_{10} and CO. The NO_x offsets will be obtained by installing low NO_x combustors on the existing turbines at Santan. Thus, future NO_x emissions from the expanded site will be less than current emissions at Santan. The combination of the installation of air pollution control devices and emission offsets will actually decrease the environmental impacts in the proposed plant site area due to emissions of NO_x, CO, PM_{10} and VOCs.

Question No. 2

Do the social and economic benefits of the proposed project outweigh the environmental impacts of the project?

Response to Question No. 2

The proposed expansion project will result in an insignificant impact on air quality. In addition, the combination of the proposed expansion project with existing sources in the Gilbert area will not cause or lead to a violation of the National Ambient Air Quality Standards (NAAQS). These standards have been developed to protect human health and welfare. Furthermore, the Santan site will minimize impacts to land and water. New transmission lines and their associated land use impacts will not be required to deliver power to the local electrical service area. The Santan site also has the ability to use renewable water resources as well as beneficially reuse plant waste water.

Since this proposed expansion project will not significantly affect the environment, the social and economic benefits of the plant substantially outweigh the minimal environment effects. The proposed expansion project will result in the following social and economic benefits:

- The proposed power will result in new jobs;
- The proposed power plant will provide additional tax revenue for the Town of Gilbert and Gilbert School System;
- The proposed expansion project will provide an additional 825 MW of electrical power to the local grid;
- The proposed expansion project will provide lower cost electricity than other sites because of the existing electric, gas and water infrastructure; and
- The proposed expansion project will provide a mechanism for meeting future electrical demands.

Question No. 3

Have alternative projects that would offer more protection to the environment than the proposed plant without unduly curtailing non-environmental benefits been considered?

Response to Question No. 3

SRP's power demands have increased drastically because of growth in the SRP electric service area. This growth is anticipated to continue over the next several years. SRP's current power resources are insufficient to meet the forecasted load.

SRP examined several options to manage the load growth including 1) purchasing power from other utilities or from power marketers, 2) deploying demand side management techniques to control peak

load, 3) developing renewable energy sources, 4) encouraging conservation, 5) building new fossil fuel plants outside of the metropolitan area, and 6) building new fossil fuel plants inside the metropolitan area. Due to current transmission constraints on importing power into the Phoenix metropolitan area in the summer months options 1 and 5 would require significant investment in new high voltage transmission lines. Plus such projects would carry their own environmental impact associated with the new transmission lines to broad areas of the state. SRP has made significant past attempts to encourage options 2 and 4. Those ideas have not proven to be economically viable and any demand reduction realized is not under the control of the utility. In other words, it is not possible to truly count on such demand reductions being applicable on the days of highest customer load. Although option 3 is an admirable choice the alternatives to SRP are far more costly than the use of traditional fossil fuel plants. A new fossil fuel plant in the metropolitan area was thus considered to be the most reliable option for meeting future customer power demand.

SRP then considered numerous alternatives for new fossil fuel generation. Based on the factors described in Question #1, SRP determined that a natural gas combined cycle expansion project at the existing Santan site would be the most environmentally compatible option for new generation.

Question No. 4

Have alternative sites been considered which would offer more protection to the environment than the proposed plant without unduly curtailing non-environmental benefits?

Response to Question No. 4

Alternative sites were considered. Santan is considered the best choice among the alternatives. Alternative sites could be either within the nonattainment are or outside of it. The ideal site would require no new transmission lines to connect the plant to the area of rapidly growing demand, the East Valley of the Phoenix Metropolitan area. Transmission Lines would have both a cost and environmental impact.

Any site outside the nonattainment area would mean new high voltage transmission line requirements back to the East Valley. That results in additional environmental impacts, costs and the potential for problems on the transmission line, leading to reduced reliability. An important part of the project requirement is to improve the long-term reliability of the electric system. Fewer components are preferred to more. No new high voltage transmission is preferred.

Within the nonattainment are there are some sites that mean no associated transmission line requirements (other than short interconnections on the site itself). The selected site at Santan is such a site and is currently used for an electric generating plant. It is the only site currently used for generation that is within the area where the demand is outgrowing the combination of transmission capacity and local generation. Other sites would mean a change to the current land use and have the associated impacts of that change.

Other attributes of the selected site are its access to renewable water resources, availability of offsets for air emissions, and a relative absence of archaeological artifacts. The plant would use state-of-the-art technology to reduce emissions to the lowest achievable rate as required for new sources locating within the nonattainment area. Furthermore, emission offsets would be secured thus reducing total emissions into the urban airshed and helping improve air quality in the Maricopa county nonattainment area.

6 ATTAINMENT AREA PROVISIONS

A person proposing to construct a new major source in an attainment area must comply with specific requirements prior to issuance of a construction permit. These requirements, which are stipulated in the Prevention of Significant Deterioration (PSD) regulations apply to sources that emit significant amounts of attainment area air pollutants. This regulation states that no stationary source shall begin actual construction without a permit that stipulates that the source has met the following requirements:

- Conduct a Control Technology Review- A new stationary source shall apply Best Available Control Technology (BACT) for each attainment area air pollutant that it would have the potential to emit in significant amounts;
- Conduct a Source Impact Analysis- A demonstration shall be performed that shows the allowable increases of significant attainment area air pollutants from the proposed source would not cause or contribute to air pollution in violation of a) any NAAQS or b) Class I or Class II increment;
- Conduct an air quality analysis- An analysis shall be performed to define the ambient air quality for each significant attainment area air pollutant in the area that the major new source would affect; and
- Conduct additional impact analyses – An analysis shall be performed of the impairment to visibility, soils and vegetation that would occur as a result of the new source's significant levels of air pollutants. In addition, an analysis of the general commercial, residential, industrial and other growth associated with the new source's significant air pollutants is also required.

The following subsection presents a discussion on how the proposed expansion project will comply with each of the PSD requirements stipulated above. As discussed in the previous section, Maricopa County is classified as attainment for NO_2 and SO_2. Based on the potential to emit air pollutant emission rates (Refer to Section 2.0) associated with the proposed expansion project, only emissions of NO_x have been estimated to exceed the major modification threshold of 40 tons/year. Since emissions of NO_x from the proposed plant (269.3 tons/year) will exceed the modification threshold significance level of 40 tons/year, emissions of NO_x from the proposed project would be subject to PSD review.

The proposed expansion project's potential emissions of SO_2 have been estimated to be less that 16 tons/year. Since this emission rate does not exceed the PSD trigger level (significant emission rate) of 40 tons/year, emissions of SO_2 would not be required to demonstrate compliance with the PSD regulations.

Air quality impact analyses have been performed for emissions of NO_2, NO_x, CO, PM_{10}, and SO_2 to demonstrate that the proposed expansion project will not cause or contribute to a violation of NAAQS. The technical methodology and results of the analyses are described in this section. Due to the chemical complexity of emission of VOCs, no air quality impact assessment of this pollutant was performed or is required by county, state or federal regulations. Due to the chemical complexity of emissions of VOC, no air quality impact assessment was performed or is required by county, state, or federal air pollution regulations.

6.1 CONTROL TECHNOLOGY REVIEW- BEST AVAILABLE CONTROL TECHNOLOGY DEMONSTRATION

As previously discussed, SRP's proposed expansion project is subject to the PSD regulations for emissions of NO_x. These regulations mandate that a case-by-case Best Available Control Technology (BACT) analysis be performed for each piece of equipment associated with the new source that has the potential to emit that air pollutant subject to PSD.

6.1.1 BACT Definition and Applicability

The definition of BACT may be found in Section 165(a)(4) of the Clean Air Act, in the PSD regulations under 40 CFR 52.21(j). BACT is defined as:

> *...an emissions limitation (including a visible emission standard) based on the maximum degree of reduction for each pollutant subject to regulation under the Clean Air Act which would be emitted from any proposed major stationary source or major expansion project which the Administrator, on a case-by-case basis, taking into account energy, environmental, and economic impacts and other costs, determines is achievable for such source or expansion project through application of production processes or available methods, systems, and techniques, including fuel cleaning or treatment or innovative fuel combustion techniques for control of such pollutant. In no event shall application of best available control technology result in emissions of any pollutant that would exceed the emissions allowed by any applicable standard under 40 CFR Parts 60 and 61. If the Administrator determines that technological or economic limitations on the application of the measurement methodology to a particular emissions unit would make the imposition of an emissions standard infeasible, a design, equipment, work practice, operational standard, or combination thereof, may be prescribed instead to satisfy the requirement for the application of best available control technology. Such standard shall, to the degree possible, set forth the emissions reduction achievable by the implementation of such design, equipment, work practice, or operation, and shall provide for compliance by means which achieve equivalent results.*

6.1.2 BACT – NO_x Emissions

As presented in Section 5.0, a LAER demonstration was performed for emissions of NO_x. This type of demonstration results in an emission limitation that is more stringent than that obtained from a

BACT demonstration conducted under the PSD regulations. Subsequently, a detailed BACT analysis following USEPA's top down approach was not performed for emissions of NO_x, since LAER will be achieved for emissions of NO_x from the proposed expansion project.

The following NO_x control techniques and resulting NO_x emission rates which were defined as meeting LAER, should satisfy the control technology review requirement established in the PSD regulations.

- Combined Cycle Systems – 2.0 ppmvd at 15% O_2 over a 1-hour period and 2.5 ppmvd at 15% O_2 over a 3-hour period. To achieve these levels, the combined cycle systems will be equipped with a dry low NO_x combustor on the turbine, low NO_x burner on the supplemental duct burner associated with the HRSG and a SCR system.
- Auxiliary Boiler – A low NO_x burner capable of achieving 0.07 lbs of NO_x per MMBtu/, 1,200 hours of operation per year and the combustion of natural gas;
- Emergency Generator – 0.19 tons/year of NO_x, 37.5 hours per year of operation and the combustion of diesel fuel; and
- Emergency Fire Water Pump – 0.18 tons/year of NO_x, 37.5 hours per year of operation and the combustion of diesel fuel.

6.2 AIR QUALITY IMPACT ASSESSMENT

In accordance with Maricopa County Rule 240, Section 308, air quality dispersion modeling analyses were performed to assess the ambient air quality impact of the proposed SRP expansion project. A detailed description of the modeling approach and data requirements for the assessment of air quality impact due to the proposed project is included in this section.

6.2.1 Description of Air Quality Dispersion Model

The air quality modeling analyses employed USEPA's Industrial Source Complex (ISC3) model (USEPA, 1995a). The ISC3 model is recommended as a guideline model for assessing the impact of aerodynamic downwash (40 CFR 40465-40474 and Maricopa County Rule 240, Section 308).

The ISC3 model (Version 00101) consists of two programs: a short-term model (ISCST3) and a long-term model (ISCLT3). The difference in these programs is that the ISCST3 program utilizes an hourly meteorological data base, while ISCLT3 is a sector-averaged program using a frequency of occurrence based on categories of wind speed, wind direction, and atmospheric stability. The ISCST3 model was used for all pollutants. Major features of the ISC3 model are as follows:

- Plume rise due to momentum and buoyancy as a function of downwind distance for stack emissions (Briggs, 1971 and 1975);
- The influence of building wakes on plume transport and dispersion is evaluated by the Huber and Snyder Method (1976, 1977) for physical stack heights that are greater than $h_b + 0.5\ l_b$, where h_b is the building height and l_b is the lesser of the building height or width, and by the

Schulman and Scire Method (1980a, 1980b, 1985, 1986) for stack heights that are less than $h_b + 0.5\ l_b$;

- Terrain truncation algorithm;
- Regulatory default option;
- Calm wind treatment of NWS meteorological data;
- Buoyancy-induced plume rise algorithm;
- Procedures suggested by Briggs (1973) for evaluating stack-tip downwash;
- Consideration of the effects of gravitational settling and dry deposition on ambient particulate concentrations;
- Capability of simulating line, volume, and area sources;
- Concentration estimates for 1 hour to annual average;
- Use of COMPLEX I model algorithms to determine concentrations of receptors located in complex terrain (i.e., terrain height higher than plume height); and
- Capability of selecting the higher of the simple and complex terrain calculations on an hour-by-hour, source-by-source, and receptor-by-receptor basis for receptors in intermediate terrain (i.e., terrain between release height and plume height).

Details of the algorithms employed by ISC3 may be found in the *User's Guide for ISC* (USEPA, 1995a). The regulatory default option was selected such that USEPA guideline requirements were met.

Emission sources associated with the proposed SRP expansion project will be influenced by aerodynamic downwash. Since downwash is a function of projected building width and height, it is necessary to account for the changes in building projection as they relate to changes in wind direction. Once these projected dimensions are determined, they can be used as input to the ISC3 model.

In October 1993, USEPA released the Building Profile Input Program (BPIP) to determine wind direction - dependent building dimensions. The BPIP algorithms as described in the User's Guide (USEPA, 1993), have been incorporated into the commercially available BREEZEWAKE program. The BREEZEWAKE program was used to determine the wind direction-dependent building dimensions for input to the ISC3 model.

The BPIP program builds a mathematical representation of each building to determine projected building dimensions and its potential zone of influence. These calculations are performed for 36 different wind directions (at 10-degree intervals). For example, the BPIP building dimensions for a wind direction orientation of 30 degrees will be used for wind directions between 26 and 35 degrees. If the BPIP program determines that a source is under the influence of several potential building wakes, the structure or combination of structures which has the greatest influence ($h_b + 1.5\ l_b$) is selected for input to the ISCST3 model. Conversely, if no building wake effects are predicted to occur for a source for a particular wind direction, or if the worst-case building

dimensions for that direction yield a wake region height less than the source's physical stack height, building parameters are set equal to zero for that wind direction. For this case, wake effect algorithms are not exercised when the model is run. The building wake criteria influence zone is 5 l_b downwind, 2 l_b upwind, and 0.5 l_b crosswind. These criteria are based on recommendations by USEPA. The input to the BREEZEWAKE preprocessing program consisted of proposed expansion project exhaust stacks (three combined cycle systems, an auxiliary boiler, a cooling tower, an emergency generator and emergency fire water pump) and building dimensions. Figure 6-1 illustrates the emission sources in relation to building structures considered in the Good Engineering Practice (GEP) stack height analysis.

6.2.2 Databases for Air Quality Assessment

The databases required for the air quality impact assessment included source emission data, meteorological data, and receptor points. The following sections describe the databases required to perform the air quality impact assessment.

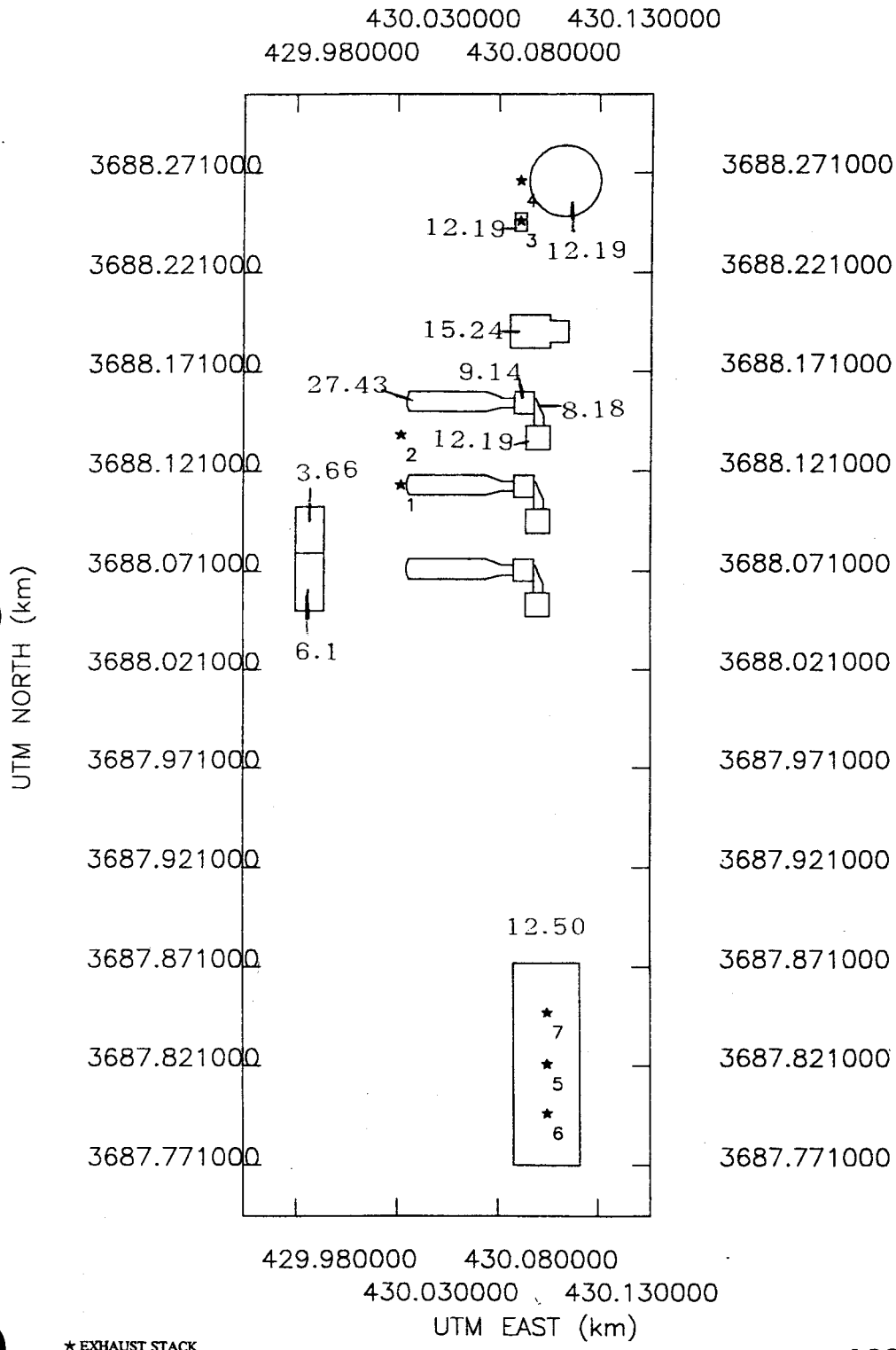
6.2.2.1 Emission Inventory Data

The emission inventory of the proposed expansion project included the combined cycle systems exhaust stacks, the representative exhaust stacks for the cooling tower, the exhaust stack for the auxiliary boiler, the emergency generator exhaust stack and the emergency fire water pump exhaust stack. Tables 6-1 and 6-2 present the criteria and toxic air pollutant emission inventories, respectively, of the proposed expansion project.

The proposed combined cycle systems can operate at various loads. In order to identify a worst case dispersion scenario for the combined cycle systems, a worst case load (corresponding to the maximum predicted ground level concentration) analysis was performed for emissions of each pollutant (NO_x, CO, PM_{10} and SO_2) for each of the 8 operating scenarios (refer to Table 6-3). The purpose of this analysis was to determine which operating scenario (combination of emission rate, stack exit gas velocity, and stack exit gas temperature) would result in the maximum predicted impact on air quality. As shown in Table 6-3, the ISC dispersion model was used to predict the ambient concentration that would occur for each of the eight operating conditions. To simplify the number of modeling analyses, a fixed emission rate of 1 gram per second was employed. The results obtained from these analyses were adjusted to reflect the actual emission rate of each individual air pollutant (Refer to Table 6-3). As shown in Table 6-3, Case #4 was predicted to result in the maximum impacts on air quality. The stack characteristics and emission rates associated with this operating case were in the detailed air quality impact analyses.

Normal operation for the proposed SRP expansion project will consist of operation of the combined cycle systems and the cooling tower. The two emergency sources (generator and fire water pump) were modeled in the normal operating scenario since these sources will be tested periodically and could potentially operate during normal facility operations. The auxiliary boiler will be used to assist the combined cycle systems during cold, warm and hot startup conditions. For purposes of this

SRP – SANTAN BPIP ANALYSIS



★ EXHAUST STACK
1 COMBUSTION TURBINE EXHAUST STACK
2 AUX BOILER EXHAUST STACK
3 EMERG FIRE PUMP EXHAUST STACK
4 EMERG GENERATOR EXHAUST STACK
5-7 COOLING TOWER EXHAUSTS

27.43 - BUILDING HEIGHT IN METERS

FIGURE 6-1

LOCATION OF EMISSION SOURCES
IN RELATION TO BUILDING STRUCTURES

TABLE 6-1
SALT RIVER PROJECT PROPOSED POWER PLANT
SANTAN GENERATING STATION
AIR QUALITY IMPACT ASSESSMENT EMISSION INVENTORY

SOURCE IDENTIFICATION	ISC SOURCE #	EMISSIONS - LBS/HR	EMISSIONS - G/S	STACK HEIGHT (M)	STACK TEMPERATURE (K)	STACK VELOCITY (M/S)	STACK DIAMETER (M)
NOX ANNUAL - WITH STARTUP							
TURBINE	2	60.36	7.6054	45.72	380.4	18.73	5.49
BOILER	4	0.99	0.125	41.15	405.4	13.72	1.07
EMERGENCY FIRE PUMP	5	0.04	5.04E-03	3.05	533.1	9.14	0.1
EMERGENCY GENERATOR	6	0.04	5.04E-03	3.05	533.1	9.14	0.1
COOLING TOWER	7,8,9	N/A	N/A	12.50	303.7	9.83	9.14
CO 1-HOUR - WITH STARTUP							
TURBINE	2	2280.72	287.371	45.72	380.4	18.73	5.49
BOILER	4	6.63	0.84	41.15	405.4	13.72	1.07
EMERGENCY FIRE PUMP	5	2.07	0.261	3.05	533.1	9.14	0.1
EMERGENCY GENERATOR	6	2.24	0.28224	3.05	533.1	9.14	0.1
COOLING TOWER	7,8,9	N/A	N/A	12.50	303.7	9.83	9.14
CO 8-HOUR - WITH STARTUP							
TURBINE	2	325.92	41.066	45.72	380.4	18.73	5.49
BOILER	4	6.63	0.84	41.15	405.4	13.72	1.07
EMERGENCY FIRE PUMP	5	0.26	0.0328	3.05	533.1	9.14	0.1
EMERGENCY GENERATOR	6	0.28	0.0353	3.05	533.1	9.14	0.1
COOLING TOWER	7,8,9	N/A	N/A	12.50	303.7	9.83	9.14
PM ANNUAL							
TURBINE	2	54.00	6.804	45.72	380.4	18.73	5.49
BOILER	4	0.135	0.01701	41.15	405.4	13.72	1.07
EMERGENCY FIRE PUMP	5	0.003	3.78E-04	3.05	533.1	9.14	0.1
EMERGENCY GENERATOR	6	0.003	3.78E-04	3.05	533.1	9.14	0.1
COOLING TOWER	7,8,9	1.74	0.07308	12.50	303.7	9.83	9.14
PM 24-HOUR							
TURBINE	2	54.00	6.804	45.72	380.4	18.73	5.49
BOILER	4	0.99	0.125	41.15	405.4	13.72	1.07
EMERGENCY FIRE PUMP	5	0.030	3.78E-03	3.05	533.1	9.14	0.1
EMERGENCY GENERATOR	6	0.030	3.78E-03	3.05	533.1	9.14	0.1
COOLING TOWER	7,8,9	1.74	0.07308	12.50	303.7	9.83	9.14
SO2 ANNUAL							
TURBINE	2	3.60	0.4536	45.72	380.4	18.73	5.49
BOILER	4	0.040	5.04E-03	41.15	405.4	13.72	1.07
EMERGENCY FIRE PUMP	5	0.0005	6.30E-05	3.05	533.1	9.14	0.1
EMERGENCY GENERATOR	6	0.0006	7.56E-05	3.05	533.1	9.14	0.1
COOLING TOWER	7,8,9	NA	NA	12.50	303.7	9.83	9.14
SO2 1-HOUR, 3-HOUR AND 24-HOUR							
TURBINE	2	3.60	0.4536	45.72	380.4	18.73	5.49
BOILER	4	0.280	0.0353	41.15	405.4	13.72	1.07
EMERGENCY FIRE PUMP	5	0.13	0.01638	3.05	533.1	9.14	0.1
EMERGENCY GENERATOR	6	0.14	0.01764	3.05	533.1	9.14	0.1
COOLING TOWER	7,8,9	NA	NA	12.50	303.7	9.83	9.14

Note: Combined cycle system emissions (ISC source #2) represent 3 combined cycle systems. Three exhaust stacks (one for each combined cycle system) are proposed in a clustered design. The center point of the three exhausts was modeled.

Table 6-2
Salt River Project
Proposed Expansion Project
Hazardous Air Pollutant Emission Estimates - Modeling Analysis

POLLUTANT	COMBINED CYCLE SYSTEM* (TONS/YEAR)	DUCT BURNER* (TONS/YEAR)	AUXILIARY BOILER (TONS/YEAR)	EMERGENCY EQUIPMENT (TONS/YEAR)	TOTAL (TONS/YEAR)
1,3-Butadiene	7.77E-03	-	-	1.20E-06	7.77E-03
2-Chloronaphthalene	4.80E-06	-	-	-	4.80E-06
2-Methylnaphthalene	9.34E-05	3.51E-05	1.40E-06	-	1.30E-04
3-Methylchloranthene	-	2.63E-06	1.05E-07	-	2.74E-06
7,12-Dimethylbenz(a)anthrace	-	2.34E-05	9.32E-07	-	2.43E-05
Acenaphthene	3.35E-04	2.63E-06	1.05E-07	4.37E-08	3.38E-04
Acenaphthylene	2.60E-04	2.63E-06	1.05E-07	1.56E-07	2.62E-04
Acetaldehyde	1.41E+00	1.30E-02	8.56E-04	2.36E-05	1.43E+00
Acrolein	4.18E-01	-	-	2.85E-06	4.18E-01
Anthracene	5.97E-04	3.51E-06	1.40E-07	5.76E-08	6.00E-04
Arsenic	1.08E-03	2.93E-04	1.16E-05	-	1.39E-03
Benzene	2.47E+00	6.30E-03	5.07E-04	2.87E-05	2.48E+00
Benzo(a)anthracene	3.99E-04	2.63E-06	1.05E-07	5.17E-08	4.02E-04
Benzo(a)pyrene	2.45E-04	1.76E-06	6.99E-08	5.79E-09	2.47E-04
Benzo(b)fluoranthene	1.99E-04	2.63E-06	1.05E-07	3.05E-09	2.02E-04
Benzo(e)pyrene	9.60E-06	-	-	-	9.60E-06
Benzo(g,h,i)perylene	2.42E-04	1.76E-06	6.99E-08		2.44E-04
Benzo(k)fluoranthene	1.94E-04	2.63E-06	1.05E-07	4.77E-09	1.97E-04
Beryllium	-	2.19E-05	6.99E-07	-	2.26E-05
Cadmium	1.85E-02	2.01E-03	6.41E-05	-	2.06E-02
Chromium VI	2.87E-02	2.56E-03	8.15E-05	-	3.13E-02
Chrysene	4.45E-04	2.63E-06	1.05E-07	1.09E-08	4.48E-04
Cobalt	-	1.54E-04	4.89E-06	-	1.58E-04
Dibenz(a,h)anthracene	4.15E-04	1.76E-06	6.99E-08	-	4.17E-04
Dichlorobenzene	-	1.76E-03	6.99E-05	-	1.83E-03
Ethylbenzene	4.24E-01	-	-	-	4.24E-01
Fluoranthene	7.63E-04	4.39E-06	1.75E-07	2.34E-07	7.67E-04
Fluorene	1.02E-03	4.10E-06	1.63E-07	8.99E-07	1.03E-03
Formaldehyde	1.94E+00	3.23E-01	1.29E-02	3.63E-05	2.28E+00
Hexane	4.57E+00	2.63E+00	1.05E-01	-	7.31E+00
Indeno(1,2,3-cd)pyrene	4.15E-04	2.63E-06	1.05E-07	1.15E-08	4.18E-04
Lead	3.53E-01	-	-	-	3.53E-01
Manganese	3.53E-02	6.95E-04	2.21E-05	-	3.60E-02
Mercury	9.71E-03	4.75E-04	1.51E-05	-	1.02E-02
Naphthalene	2.47E+00	8.92E-04	3.55E-05	2.61E-06	2.47E+00
Nickel	-	3.84E-03	1.22E-04	-	3.96E-03
N-nitrosodimethylamine	4.06E-03	-	-	-	4.06E-03
N-nitrosomorpholine	4.06E-03	-	-	-	4.06E-03
Perylene	1.24E-05	-	-	-	1.24E-05
Phenanthrene	5.53E-03	2.49E-05	9.90E-07	9.05E-07	5.55E-03
Polycyclic Aromatic Hydrocarbon	3.18E+00	-	-	-	3.18E+00
Propylene	-	-	-	-	0.00E+00
Propylene Oxide	8.44E-01	-	-	-	8.44E-01
Pyrene	4.89E-04	7.31E-06	2.91E-07	1.47E-07	4.97E-04
Selenium	-	4.39E-05	1.40E-06	-	4.53E-05
Toluene	2.30E+00	4.97E-03	1.98E-04	1.26E-05	2.30E+00
Trimethylamine	3.00E-03	-	-	-	3.00E-03
Xylene	4.77E-01	-	-	8.78E-06	4.77E-01
				Grand Total	**24.10**

= Controlled Emission Estimate

TA[illegible]6-3
SUMMARY OF PREDICTED CONCENTRATIONS FROM THE VARIOUS OPERATING CONDITIONS

CASE #	LOAD LEVEL	TEMPERATURE °F	ANNUAL AVG CONCENTRATION (UG/M³)	1-HOUR AVG CONCENTRATION (UG/M³)	3-HOUR AVG CONCENTRATION (UG/M³)	8-HOUR AVG CONCENTRATION (UG/M³)	24-HOUR AVG CONCENTRATION (UG/M³)	STACK HEIGHT (m)	STACK DIAMETER (m)	STACK TEMPERATURE (K)	STACK VELOCITY (m/s)
CASE 1	Base	34	0.09181	3.04	2.26	1.01	0.54	45.72	5.49	362.5	19.39
CASE 2	Base	76.8	0.09626	3.11	2.37	1.04	0.60	45.72	5.49	362.0	18.36
CASE 3	Base	107	0.09573	3.15	2.40	1.05	0.60	45.72	5.49	366.4	17.61
CASE 4	Base	76.8	0.10020	3.23	2.40	1.06	0.60	45.72	5.49	355.9	18.73
CASE 5	Base	107	0.10043	3.20	2.44	1.08	0.61	45.72	5.49	359.2	17.91
CASE 6	70%	34	0.10188	3.30	2.55	1.18	0.64	45.72	5.49	366.4	16.18
CASE 7	70%	72.5	0.10690	3.40	2.64	1.21	0.66	45.72	5.49	366.4	15.34
CASE 8	70%	107	**0.11231**	**3.50**	**2.74**	**1.24**	**0.68**	45.72	5.49	366.4	14.5

The above concentrations are model results based on a unit emission rate of 1.0 g/s. The 1998 meteorological data was used for this analysis.
Bolded concentrations represent the worst case load for a particular averaging period.

The tables below reflect the worst case load incorporating vendor emission data.

NO_x Annual Average	
CASE 1	0.19
CASE 2	0.19
CASE 3	0.18
CASE 4	**0.22**
CASE 5	0.21
CASE 6	0.16
CASE 7	0.15
CASE 8	0.15

Bolded concentrations represent the worst case load for a particular averaging period.

Example Calculation
Modeled emission rate : 7.9 lbs/hr
Actual NOx emission rate for Case #1: 16.3 lbs/hr
Calculation ratio: 16.3/7.9= 2.06
Adjusted predicted concentration based on 7.9 lbs/hr = 0.09181 x 2.06 = 0.19 ug/m³

CO	1-Hour	8-Hour
CASE 1	3.79	1.26
CASE 2	3.68	1.23
CASE 3	3.53	1.18
CASE 4	**6.71**	**2.20**
CASE 5	6.41	2.16
CASE 6	3.12	1.12
CASE 7	2.96	1.05
CASE 8	2.78	0.98

Bolded concentrations represent the worst case load for a particular averaging period.

SO_2	Annual	3-Hour	24-Hour
CASE 1	0.013	0.31	0.07
CASE 2	0.012	0.30	0.08
CASE 3	0.012	0.30	0.08
CASE 4	**0.015**	**0.36**	**0.09**
CASE 5	0.014	0.34	0.08
CASE 6	0.010	0.26	0.06
CASE 7	0.009	0.23	0.06
CASE 8	0.010	0.24	0.06

Bolded concentrations represent the worst case load for a particular averaging period.

PM_{10}	Annual	24-Hour
CASE 1	0.35	2.07
CASE 2	0.35	2.16
CASE 3	0.33	2.04
CASE 4	**0.40**	**2.40**
CASE 5	0.38	2.31
CASE 6	0.31	1.96
CASE 7	0.31	1.90
CASE 8	0.30	1.82

Bolded concentrations represent the worst case load for a particular averaging period.

*****Conclusion: Case 4 is the worst case load for all pollutants/averaging periods.*****

application, the auxiliary boiler was modeled along with the combined cycle systems and emergency equipment.

The combined cycle systems were modeled along with the cooling tower, emergency generator, emergency fire water pump, and auxiliary boiler. It is noted that modeled NO_x, PM_{10} and SO_2 annual emissions from the emergency generator and the emergency fire water pump were based on operating these emergency sources 37.5 hours each per year and were spread out over the duration of the entire year (8,760 hours). For the auxiliary boiler, the NO_x, PM_{10} and SO_2 annual average emission rates were based on 1,200 hours of operation per year. A similar approach was used for short term impacts (3, 8, and 24-hour averaging periods) to reflect a maximum of 1-hour of operation per day for the emergency equipment. The maximum 1-hour emission rate from the emergency equipment was used for standards with 1-hour averaging periods. Operation of the auxiliary boiler was not limited for the short term averaging periods stated above.

6.2.2.2 Meteorological Data

The meteorological data used in the dispersion modeling analyses consisted of five years (1994-1998) of hourly surface observations from the Phoenix, Arizona National Weather Service Station (Sky Harbor International Airport) and coincident mixing heights from Tucson, Arizona (1994-1998). Surface observations consist of hourly measurements of wind direction, wind speed, and temperature, and estimates of ceiling height and cloud cover. The upper air station provides a daily morning and afternoon mixing height value as determined from the twice-daily radiosonde measurements. These surface and upper air data were processed into a format suitable for dispersion modeling by USEPA's RAMMET program (Turner and Novak, 1978). RAMMET utilizes the Turner Classification Scheme (Turner, 1970) to estimate the dispersive capacity of the atmosphere. Using the surface observations of wind speed and cloud cover combined with an estimate of insolation based on solar altitude, a stability class category is assigned for each hour of meteorological surface data. The twice-daily mixing height values are interpolated by a USEPA scheme (USEPA, 1974) to obtain hourly mixing height values. The USEPA developed rural and urban interpolation methods to account for the effects of the surrounding area on development of the mixing layer boundary. The urban scheme was used to determine hourly mixing heights representative of the area in the vicinity of the proposed expansion project site.

Annual wind roses for the 1994-1998 database are presented in Figures 3-1 through 3-5, respectively. A 5-year composite wind rose is shown in Figure 3-6.

Since the meteorological data were collected at a National Weather Service station, it is assumed to meet the required criteria. Missing meteorological parameters were substituted using standard filling practices according to EPA guidelines. The anemometer height at the Sky Harbor International Airport is 10 meters.

6.2.2.3 Receptor Grid

The receptor grid for the ISC3 dispersion model was designed to identify the maximum air quality impact due to the proposed expansion project, along with receptors placed at nearby Indian reservations. The receptor grid consisted of 676 receptors extending to 5 km from the proposed SRP expansion project. Since the emission sources associated with the proposed expansion project have stack heights less than GEP stack height, receptors were closely spaced (25 meters) along the plant boundary to identify the influence of aerodynamic building downwash. The following receptor spacing was used:

- Locations at 25 m spacing along the property boundary of the proposed expansion project;
- 100 m spacing from the plant property boundary to 1 km;
- 500 m spacing from 1 km out from the proposed expansion project to 2 km;
- 1000 m spacing from 2 km out from the proposed expansion project to 5 km; and
- Additional receptors were also located along the boundary of Indian reservations located within 50 km of the proposed expansion project.

Receptor elevations were included for all receptor points and were determined using data from USGS topographical maps. The base elevation of the proposed expansion project is 1,270 feet. The receptor grid is illustrated in Figures 6-2 and 6-3. Figure 6-4 presents the locations of emission sources in relation to the site boundary receptors.

6.2.2.4 Background Concentrations

Background concentrations are typically added to maximum predicted concentrations to demonstrate compliance with the NAAQS if the proposed facility has a significant air quality impact. The representative background concentrations used in the NAAQS compliance demonstrations are presented in the table below.

Pollutant	Averaging Period	Concentration ($\mu g/m^3$)	Year Data Collected	Monitor Location
NO_2	Annual	45.0	1999	South Scottsdale
PM_{10}	Annual	41.8	1999	Gilbert
PM_{10}	24-Hour	90.0	1999	Gilbert
CO	1-Hour	3771	1999	Gilbert
CO	8-Hour	2667	1999	Gilbert
SO_2	Annual	2.7	1999	South Scottsdale
SO_2	3-Hour	46.8	1999	South Scottsdale
SO_2	24-Hour	13.0	1999	South Scottsdale
O_3	1-Hour	0.097 ppm	1999	Chandler

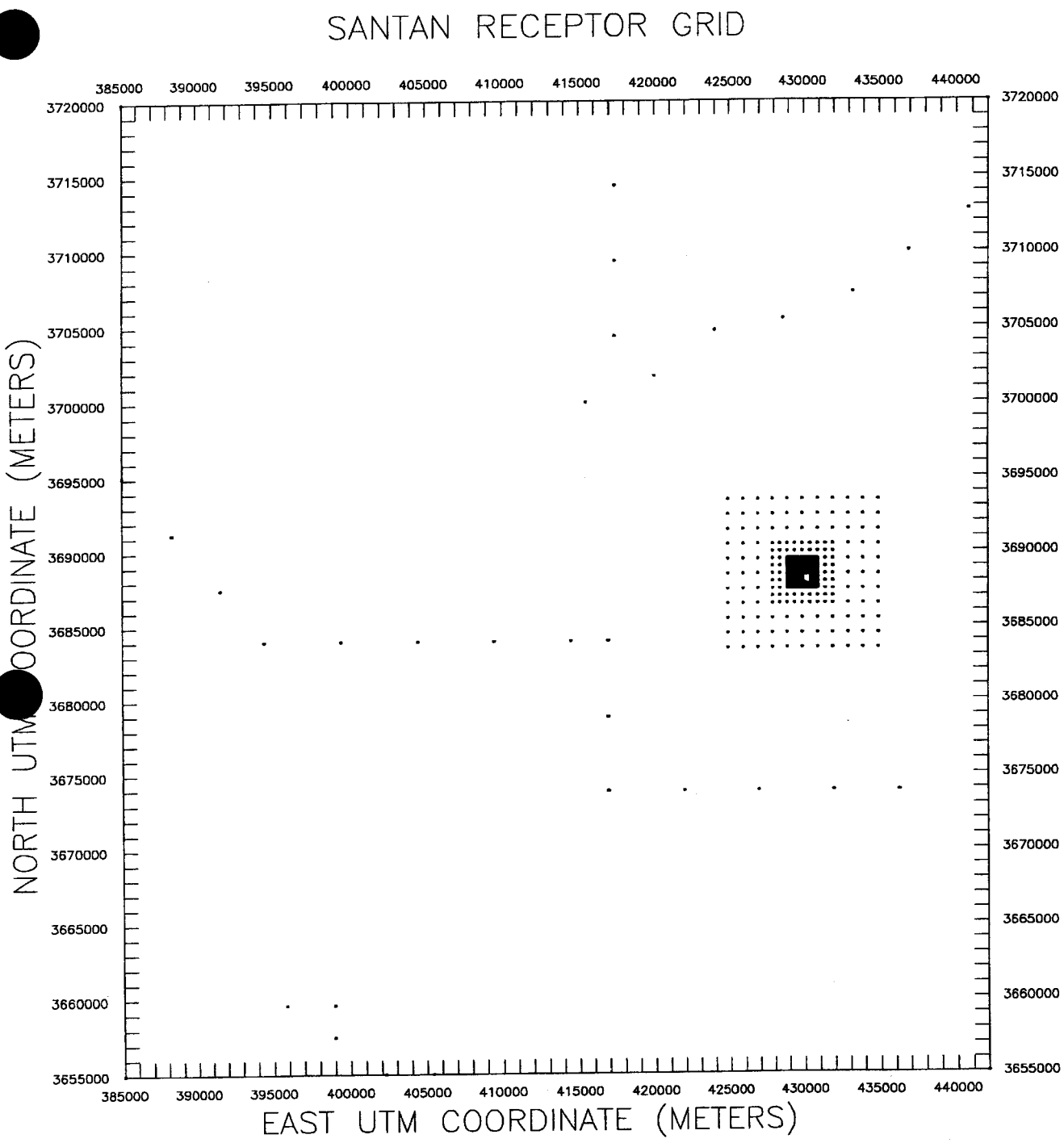
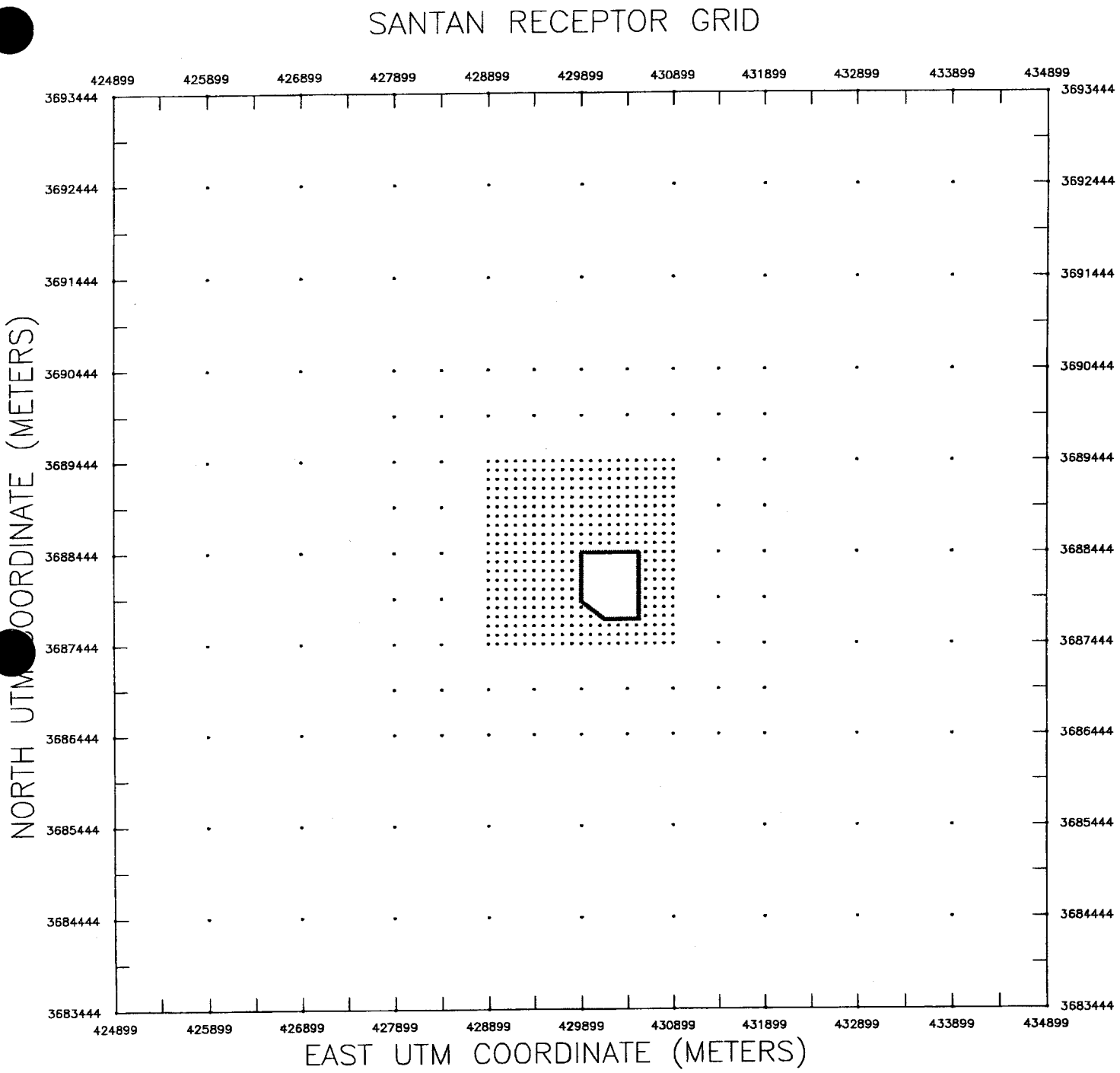


FIGURE 6-2

• RECEPTOR POINT

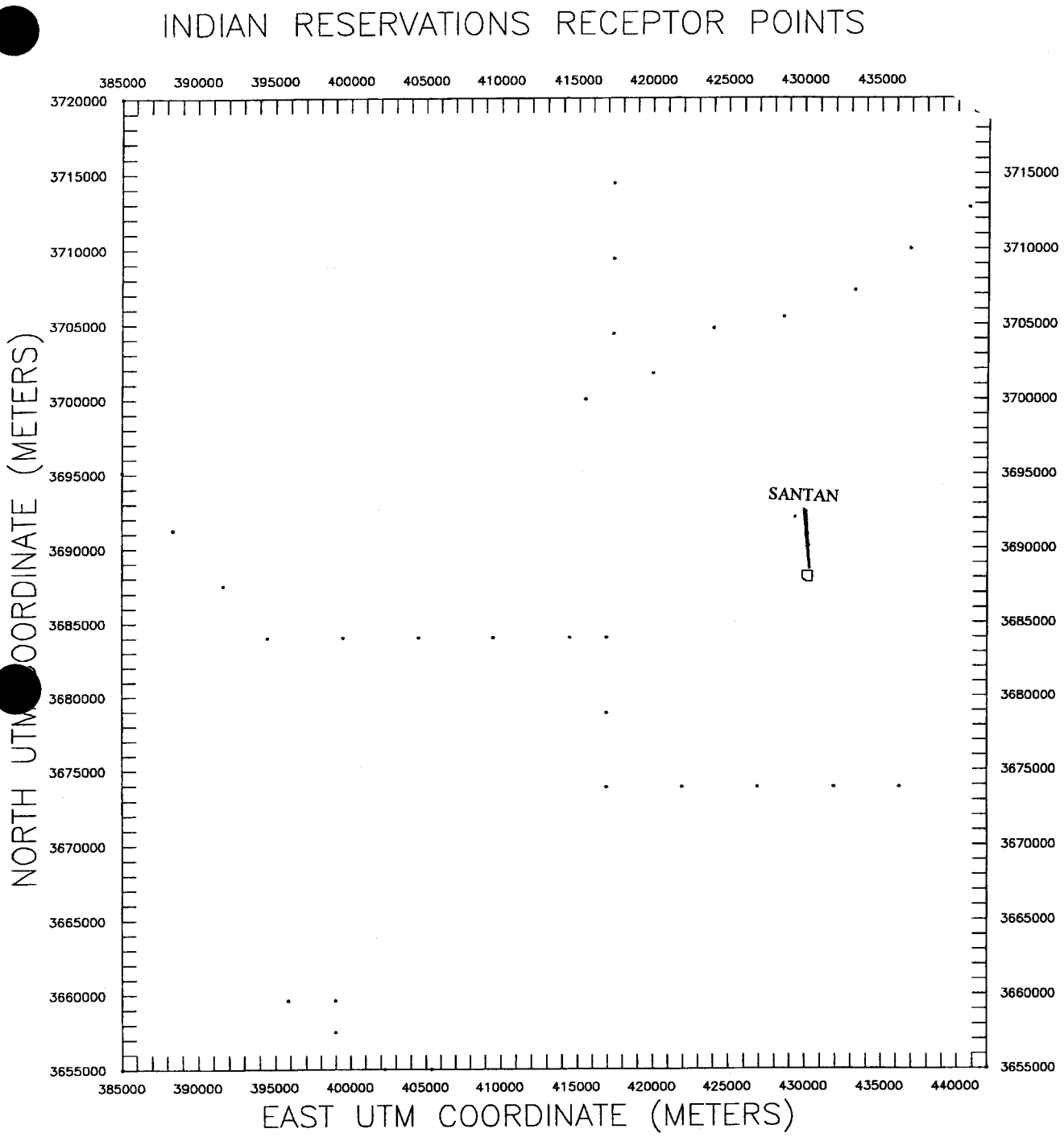
RECEPTOR GRID FOR AIR QUALITY IMPACT ANALYSES



• RECEPTOR POINT

FIGURE 6-2

RECEPTOR GRID FOR AIR QUALITY IMPACT ANALYSES



• RECEPTOR POINT

FIGURE 6-3

RECEPTOR GRID - INDIAN RESERVATIONS

- *Note: It is important to point out that the maximum 1-hour ozone levels measured during 1999 at the monitoring stations located in Chandler (approximately 5 miles southeast of the Santan Station) was 0.097 part per million (ppm). This concentration is below the NAAQS established by USEPA of 0.12 ppm. Impacts due to VOC emissions from the proposed expansion project should not significantly impact the concentration levels measured at the Chandler monitoring station.*

NO_x Modeling Demonstration

Step 1 - Significant Impact Analysis

Since NO_2 is subject to PSD review, emissions of NO_x from the proposed expansion project were modeled using the representative databases described above. This analysis consisted of using the ISCST dispersion model in conjunction with 5-years of hourly meteorological data (including startup emissions from the combined cycle systems, auxiliary boiler and emergency sources). The purpose of this analysis was to determine whether the proposed expansion project's emissions of NO_x will have a significant impact on ambient air quality. If emissions of NO_x result in maximum predicted annual concentrations exceeding the significant impact concentration of 1.0 $\mu g/m^3$, then the proposed project will be considered to have a significant impact on air quality, requiring additional modeling analyses. Table 6-4 presents the maximum predicted annual average concentrations for the proposed expansion project (under worst case operating conditions). As shown in Table 6-4, the proposed expansion project will have an insignificant impact on ambient NO_2 air quality. Therefore, no additional modeling analyses were performed for emissions of NO_x from the proposed expansion project.

Under the PSD program, if a proposed source has an insignificant impact on ambient air quality, an applicant applying for a construction permit under this program, is usually not required to go beyond a preliminary analysis in order to make necessary showing of compliance. A preliminary analysis consists of a determination of the air quality impacts from the proposed source only. The PSD program requires that two compliance demonstrations be performed. These demonstrations require an applicant to show that the proposed source will not cause or contribute to air pollution in violation of any NAAQS or PSD increment concentrations. The specific concentration levels have been established by USEPA and are presented in Table 4-1(Section 4.0).

Since the proposed expansion project will have an insignificant impact on air quality, a refined analysis (incorporating existing emissions sources in the area surrounding the proposed plant site) was not required by the Maricopa County regulatory agency. This approach is consistent with USEPA's guidance under the PSD program. However, to demonstrate that the proposed plant will not cause or contribute to air pollution in violation of any NAAQS or PSD increment, Steps 2 and 3 below, discuss the appropriate compliance demonstrations that were employed for this air permit application.

TA[illegible]6-4

SUMMARY OF MAXIMUM PREDICTED NO_2 CONCENTRATIONS
FROM THE PROPOSED EXPANSION PROJECT AT THE EXISTING SANTAN
GENERATING STATIONS

AVERAGING PERIOD	DATA PERIOD	RECEPTOR LOCATION (KM)		MAXIMUM PREDICTED CONCENTRATION ($\mu g/m^3$)	SIGNIFICANT IMPACT INCREMENT ($\mu g/m^3$)
	YEAR	EAST	NORTH		
ANNUAL	1994	429.899	3688.276	0.72	1
ANNUAL	1995	429.899	3688.300	0.79	1
ANNUAL	1996	429.899	3688.276	0.71	1
ANNUAL	1997	429.899	3688.300	0.74	1
ANNUAL	1998	429.899	3688.276	0.77	1

AVERAGING PERIOD	DATA PERIOD	RECEPTOR LOCATION (KM)		MAXIMUM PREDICTED CONCENTRATION ($\mu g/m^3$)	PSD CLASS II INCREMENT ($\mu g/m^3$)
	YEAR	EAST	NORTH		
ANNUAL	1994	429.899	3688.276	0.72	25
ANNUAL	1995	429.899	3688.300	0.79	25
ANNUAL	1996	429.899	3688.276	0.71	25
ANNUAL	1997	429.899	3688.300	0.74	25
ANNUAL	1998	429.899	3688.276	0.77	25

AVERAGING PERIOD	DATA PERIOD	RECEPTOR LOCATION (KM)		MAXIMUM PREDICTED CONCENTRATION ($\mu g/m^3$)	BACKGROUND CONCENTRATION ($\mu g/m^3$)	COMBINED CONCENTRATION ($\mu g/m^3$)	NAAQS ($\mu g/m^3$)
	YEAR	EAST	NORTH				
ANNUAL	1994	429.899	3688.276	0.72	45	45.72	100
ANNUAL	1995	429.899	3688.300	0.79	45	45.79	100
ANNUAL	1996	429.899	3688.276	0.71	45	45.71	100
ANNUAL	1997	429.899	3688.300	0.74	45	45.74	100
ANNUAL	1998	429.899	3688.276	0.77	45	45.77	100

Step 2 - Compliance with NO_2 PSD Increments

Since the proposed expansion project was shown under Step 1 above, to have an insignificant impact on NO_2 air quality, only NO_x emission sources associated with the proposed expansion project (worst case operating conditions for the combined cycle systems, auxiliary boiler and emergency sources) were evaluated to demonstrate compliance with the annual PSD Class II increment of 25 $\mu g/m^3$. As presented in Table 6-4, maximum predicted NO_2 concentrations are several orders of magnitude below the PSD Class II increment of 25 $\mu g/m^3$.

An NO_2 Class I increment analysis was also performed at the Superstition Class I area. The results obtained from this analysis (refer to Table 6-12 in Section 6.5) also demonstrate that the proposed expansion project will not exceed the Class I increment concentration of 0.1 ug/m^3 on an annual basis.

Step 3 - Compliance with NO_2 NAAQS

NO_x emissions sources associated with the proposed expansion project (under worst case operating conditions for the combined cycle systems, auxiliary boiler and emergency sources) were assessed (ISCST with the 5-year meteorological database) to demonstrate compliance with the annual NAAQS established by USEPA. The refined analysis, which includes other significant existing sources in the area surrounding the proposed expansion project site, was not performed due to the outcome of Step 1. As stated previously, a refined analysis is not required by USEPA or Maricopa County if the proposed source's air pollutant emissions have an insignificant impact on air quality.

To demonstrate that the proposed expansion project will not cause or contribute to a violation of the NAAQS, the maximum predicted annual average NO_2 concentrations obtained from the dispersion modeling analyses were added to the representative background concentration and compared to the annual NAAQS. The NAAQS have been established by the USEPA under the Clean Air Act. The representative background annual concentration is 45.0 $\mu g/m^3$. This concentration represents the annual NO_2 concentration measured for calendar year 1999 at the South Scottsdale Monitor (Scottsdale Road and Thomas Road). As presented in Table 6-4, maximum predicted annual NO_2 concentrations in conjunction with a representative background concentration are less than 50% of the NAAQS of 100 $\mu g/m^3$.

CO Modeling Demonstration

Step 1 - Significant Impact Analysis

Emissions of CO from the proposed expansion project were modeled using the representative databases described above. This analysis consisted of using the ISCST dispersion model in conjunction with 5 years of hourly meteorological data (worst case operating conditions for the combined cycle systems, auxiliary boiler and emergency sources). The purpose of this analysis was

TA[illegible]-5

SUMMARY OF MAXIMUM PREDICTED CO CONCENTRATIONS

FROM THE PROPOSED EXPANSION PROJECT - EXISTING SANTAN GENERATING STATION

AVERAGING PERIOD	DATA PERIOD			RECEPTOR LOCATION (KM)		MAXIMUM PREDICTED CONCENTRATION ($\mu g/m^3$)	SIGNIFICANT IMPACT INCREMENT ($\mu g/m^3$)
	YEAR	DAY	HOUR ENDING	EAST	NORTH		
1-HOUR HIGHEST	1994	05-Aug	10	429.899	3688.348	599.5	2000
1-HOUR HIGHEST	1995	02-Sep	16	429.899	3688.324	630.1	2000
1-HOUR HIGHEST	1996	25-Jun	14	429.899	3688.348	601.9	2000
1-HOUR HIGHEST	1997	11-Aug	14	429.899	3688.348	613.5	2000
1-HOUR HIGHEST	1998	07-Jul	17	429.799	3687.944	622.6	2000
8-HOUR HIGHEST	1994	23-Apr	24	430.523	3688.346	32.2	500
8-HOUR HIGHEST	1995	15-Sep	24	429.699	3688.344	39.3	500
8-HOUR HIGHEST	1996	09-Aug	16	429.699	3688.444	34.1	500
8-HOUR HIGHEST	1997	13-Jun	16	429.899	3688.372	45.7	500
8-HOUR HIGHEST	1998	11-Apr	16	430.099	3688.444	31.3	500

AVERAGING PERIOD	DATA PERIOD			RECEPTOR LOCATION (KM)		MAXIMUM PREDICTED CONCENTRATION ($\mu g/m^3$)	BACKGROUND CONCENTRATION ($\mu g/m^3$)	TOTAL CONCENTRATION ($\mu g/m^3$)	NAAQS ($\mu g/m^3$)
	YEAR	DAY	HOUR ENDING	EAST	NORTH				
1-HOUR HIGHEST	1994	05-Aug	10	429.899	3688.348	599.5	3771	4371	40000
1-HOUR HIGHEST	1995	02-Sep	16	429.899	3688.324	630.1	3771	4401	40000
1-HOUR HIGHEST	1996	25-Jun	14	429.899	3688.348	601.9	3771	4373	40000
1-HOUR HIGHEST	1997	11-Aug	14	429.899	3688.348	613.5	3771	4385	40000
1-HOUR HIGHEST	1998	07-Jul	17	429.799	3687.944	622.6	3771	4394	40000
8-HOUR HIGHEST	1994	23-Apr	24	430.523	3688.346	32.2	2667	2699	10000
8-HOUR HIGHEST	1995	15-Sep	24	429.699	3688.344	39.3	2667	2706	10000
8-HOUR HIGHEST	1996	09-Aug	16	429.699	3688.444	34.1	2667	2701	10000
8-HOUR HIGHEST	1997	13-Jun	16	429.899	3688.372	45.7	2667	2713	10000
8-HOUR HIGHEST	1998	11-Apr	16	430.099	3688.444	31.3	2667	2698	10000

to determine whether the proposed expansion project's emissions of CO would have a significant impact on ambient air quality. If emissions of CO result in maximum predicted 1-hour and 8-hour concentrations that exceed the significant impact increments of 2000 $\mu g/m^3$, and 500 $\mu g/m^3$, respectively, then the proposed plant will be considered to have a significant impact on air quality. Table 6-5 presents the maximum predicted 1-hour and 8-hour concentrations, respectively. As shown in Table 6-5 the proposed expansion project will have an insignificant impact on CO air quality. Although additional modeling analyses are not required by the nonattainment area new source permitting regulations, a NAAQS compliance demonstration was performed to demonstrate that the proposed expansion project would not cause or contribute to a violation of the NAAQS.

Step 2 - Compliance with CO NAAQS

To support issuance of the construction permit, a demonstration was performed to show that the proposed expansion project would not cause a violation of the CO NAAQS. This demonstration consisted of determining the maximum predicted highest 1-hour and 8-hour concentrations from Step 1. These concentrations were then added to representative background concentrations and compared with the 1-hour (40,000 $\mu g/m^3$) and 8-hour (10,000 $\mu g/m^3$) NAAQS.

The representative background concentrations used in the CO NAAQS compliance demonstration were selected from monitoring data collected during calendar year 1999. The monitor selected was located in Gilbert, Arizona. This monitor was selected based on its location in a community setting. The background concentrations used are 3771 $\mu g/m^3$ for the 1-hour averaging period and 2667 $\mu g/m^3$ for the 8-hour averaging period. Table 6-5 presents the highest 1-hour and 8-hour predicted concentrations associated with the proposed expansion project sources, respectively. As presented in these tables, maximum predicted 1-hour and 8-hour highest concentrations from the proposed expansion project are well below the respective CO NAAQS.

PM_{10} Modeling Demonstration

Step 1 - Significant Impact Analysis

Emissions of PM_{10} from the proposed expansion project were modeled using the representative databases described above. This analysis consisted of using the ISCST dispersion model in conjunction with 5 years of hourly meteorological data (three combined cycle systems, cooling tower, auxiliary boiler, and emergency sources). The purpose of this analysis was to determine whether the proposed expansion project's emissions of PM_{10} would have a significant impact on ambient air quality. If emissions of PM_{10} result in maximum predicted annual and 24-hour concentrations exceeding the significant impact increments of 1 $\mu g/m^3$, and 5 $\mu g/m^3$, respectively, then the proposed expansion project will be considered to have a significant impact on air quality. Table 6-6 presents the maximum predicted annual and 24-hour concentrations for the proposed expansion project sources, respectively. As shown in Table 6-6 the proposed expansion project's PM_{10} emission sources will have an insignificant impact on PM_{10} air quality. Although additional

modeling analyses are not required, a NAAQS compliance demonstration was performed to support issuance of the construction permit.

Step 2 - Compliance with PM_{10} NAAQS

To support issuance of the construction permit, a demonstration was performed to show that the proposed plant (under worst case operating conditions) would not cause or lead to a violation of the PM_{10} NAAQS. This demonstration consisted of determining the maximum predicted annual average and highest 24-hour concentrations from Step 1. These concentrations were then added to representative background concentrations and compared with the annual (50 $\mu g/m^3$) and 24-hour (150 $\mu g/m^3$) NAAQS.

The representative background concentrations used in the PM_{10} NAAQS compliance demonstration were selected from monitoring data collected during calendar year 1999. The monitor selected is located in Gilbert, Arizona. This monitor was selected based on its location in a community setting. The background concentrations used are 41.8 $\mu g/m^3$ for the annual period and 90.0 $\mu g/m^3$ for the 24-hour averaging period. Table 6-6 presents the maximum predicted annual average and highest 24-hour concentrations associated with the PM_{10} emission sources from the proposed expansion project. As presented in these tables, maximum predicted annual average and 24-hour highest concentrations from the proposed expansion project are well below the respective PM_{10} NAAQS.

SO_2 Modeling Demonstration

Step 1 - Significant Impact Analysis

Emissions of SO_2 from the proposed expansion project were assessed using the representative databases described above. It is understood that this analysis is not required since the proposed expansion project is not subject to PSD review. Emissions of SO_2 from the proposed expansion project were modeled using the representative databases described above. This analysis consisted of using the ISCST dispersion model in conjunction with 5-years of hourly meteorological data (three combined cycle systems, auxiliary boiler, and emergency sources). The purpose of this analysis was to determine whether the proposed expansion project's emissions of SO_2 would have a significant impact on ambient air quality. If emissions of SO_2 result in maximum predicted annual, 3-hour and 24-hour concentrations exceeding the significant impact increments of 1 $\mu g/m^3$, 25 $\mu g/m^3$ and 5 $\mu g/m^3$, respectively, then the proposed expansion project will be considered to have a significant impact on air quality. Table 6-7 presents the maximum predicted annual, 3-hour and 24-hour concentrations from the proposed expansion project, respectively. As shown in Table 6-7 the proposed expansion project will have an insignificant impact on SO_2 air quality. Although additional modeling analyses are not required, a NAAQS compliance demonstration was performed to support issuance of the construction permit.

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SUMMARY OF MAXIMUM PRE[illegible]ED PM/PM_{10} CONCENTRATIONS

FROM THE PROPOSED EXPANSION PROJECT - EXISTING SANTAN GENERATING STATION

AVERAGING PERIOD	DATA PERIOD		RECEPTOR LOCATION (KM)		MAXIMUM PREDICTED CONCENTRATION ($\mu g/m^3$)	SIGNIFICANT IMPACT INCREMENT ($\mu g/m^3$)
	YEAR	DATE	EAST	NORTH		
ANNUAL	1994	-	428.899	3688.344	0.53	1
ANNUAL	1995	-	428.899	3688.444	0.59	1
ANNUAL	1996	-	428.899	3688.444	0.50	1
ANNUAL	1997	-	428.899	3688.444	0.53	1
ANNUAL	1998	-	428.899	3688.344	0.54	1
24-HOUR HIGHEST	1994	09-Apr	430.523	3688.395	2.8	5
24-HOUR HIGHEST	1995	15-Sep	429.599	3688.344	3.6	5
24-HOUR HIGHEST	1996	22-Jul	430.523	3688.420	2.8	5
24-HOUR HIGHEST	1997	23-Apr	430.448	3688.444	3.5	5
24-HOUR HIGHEST	1998	25-Mar	430.024	3688.444	3.2	5

AVERAGING PERIOD	DATA PERIOD		RECEPTOR LOCATION (KM)		MAXIMUM PREDICTED CONCENTRATION ($\mu g/m^3$)	PSD CLASS II INCREMENT ($\mu g/m^3$)
	YEAR	DATE	EAST	NORTH		
ANNUAL	1994	-	428.899	3688.344	0.53	17
ANNUAL	1995	-	428.899	3688.444	0.59	17
ANNUAL	1996	-	428.899	3688.444	0.50	17
ANNUAL	1997	-	428.899	3688.444	0.53	17
ANNUAL	1998	-	428.899	3688.344	0.54	17
24-HOUR HIGHEST	1994	09-Apr	430.523	3688.395	2.8	30
24-HOUR HIGHEST	1995	15-Sep	429.599	3688.344	3.6	30
24-HOUR HIGHEST	1996	22-Jul	430.523	3688.420	2.8	30
24-HOUR HIGHEST	1997	23-Apr	430.448	3688.444	3.5	30
24-HOUR HIGHEST	1998	25-Mar	430.024	3688.444	3.2	30

AVERAGING PERIOD	DATA PERIOD		RECEPTOR LOCATION (KM)		MAXIMUM PREDICTED CONCENTRATION ($\mu g/m^3$)	BACKGROUND CONCENTRATION ($\mu g/m^3$)	TOTAL CONCENTRATION ($\mu g/m^3$)	NAAQS ($\mu g/m^3$)
	YEAR	DATE	EAST	NORTH				
ANNUAL	1994	-	428.899	3688.344	0.53	32.4	32.93	50
ANNUAL	1995	-	428.899	3688.444	0.59	32.4	32.99	50
ANNUAL	1996	-	428.899	3688.444	0.50	32.4	32.90	50
ANNUAL	1997	-	428.899	3688.444	0.53	32.4	32.93	50
ANNUAL	1998	-	428.899	3688.344	0.54	32.4	32.94	50
24-HOUR HIGHEST	1994	09-Apr	430.523	3688.395	2.8	71	73.80	150
24-HOUR HIGHEST	1995	15-Sep	429.599	3688.344	3.6	71	74.60	150
24-HOUR HIGHEST	1996	22-Jul	430.523	3688.420	2.8	71	73.80	150
24-HOUR HIGHEST	1997	23-Apr	430.448	3688.444	3.5	71	74.50	150
24-HOUR HIGHEST	1998	25-Mar	430.024	3688.444	3.2	71	74.20	150

Step 2 - Compliance with SO_2 NAAQS

To support issuance of the construction permit, a demonstration was performed to show that the proposed project would not cause a violation of the SO_2 NAAQS. This demonstration consisted of determining the maximum predicted annual and highest 3-hour and 24-hour concentrations from Step 1. These concentrations were then added to representative background concentrations and compared with the annual (80 $\mu g/m^3$), 3-hour (1,300 $\mu g/m^3$) and 24-hour (365 $\mu g/m^3$) NAAQS.

The representative background concentrations used in the SO_2 NAAQS compliance demonstration were selected from monitoring data collected during calendar year 1999. The monitor selected was located in Scottsdale (Scottsdale Road and Thomas Road). This monitor was selected based on its location in a community setting. The background concentrations used are 2.7 $\mu g/m^3$ for the annual averaging period, 46.8 $\mu g/m^3$ for the 3-hour averaging period and 13.0 $\mu g/m^3$ for the 24-hour averaging period. Table 6-7 presents the maximum predicted annual average and highest 3-hour and 24-hour concentrations for the proposed expansion project, respectively. As presented in these tables, maximum predicted annual average and 3-hour and 24-hour highest concentrations from the proposed expansion project are well below the respective SO_2 NAAQS.

Step 3 - Compliance with Rule 32

Emissions of SO_2 from the proposed expansion project were modeled and compared to the 1-hour, 24-hour and 72-hour concentrations of 850 $\mu g/m^3$, 250 $\mu g/m^3$ and 120 $\mu g/m^3$, respectively. Table 6-7 presents the modeling results of this analysis for the proposed expansion project. Since the ISC dispersion model is not capable of simulating a 72-hour averaging period, the 24-hour predicted concentrations were used to demonstrate compliance with the 72-hour acceptable level. This is a conservative assumption, since the predicted 24-hour concentrations will also be greater than a 72-hour average concentration. Additionally, emissions of sulfuric acid from the proposed expansion project were modeled and compared to the 24-hour concentration of 15 $\mu g/m^3$. The modeling results of this analysis are presented in Table 6-8. Compliance with Rule 32 is demonstrated as the model predicted concentrations are below the respective compliance concentrations. For purposes of this analysis it was assumed that 100% of the SO_2 emissions would convert to sulfuric acid emissions. This is an extremely conservative approach, since only a small percentage converts to sulfuric acid. The approach was selected based on the minimum impact of SO_2 emissions on air quality.

6.3 HAZARDOUS AIR POLLUTANT IMPACT ASSESSMENT

The Arizona Department of Health Services has developed health-based guidelines for contaminants in air, referred to as the Arizona Ambient Air Quality Guidelines (AAAQGs). The proposed expansion project has the potential to emit hazardous air pollutants (HAPs) and toxic air pollutants. Facility emissions of these pollutants were modeled from each emitting source with a unit emission rate of 1 gram per second using the dispersion model and databases discussed above. The ISCST

TABLE 6-7
SUMMARY OF MAXIMUM PREDICTED SO2 CONCENTRATIONS
FROM THE PROPOSED EXPANSION PROJECT - EXISTING SANTAN GENERATING STATION

AVERAGING PERIOD	DATA PERIOD			RECEPTOR LOCATION (KM)		MAXIMUM PREDICTED CONCENTRATION (ug/m³)	SIGNIFICANT IMPACT INCREMENT (ug/m³)
	YEAR	DAY	HOUR ENDING	EAST	NORTH		
ANNUAL HIGHEST	1994	-	-	428.899	3688.444	0.05	1
ANNUAL HIGHEST	1995	-	-	428.899	3688.444	0.05	1
ANNUAL HIGHEST	1996	-	-	428.899	3688.444	0.05	1
ANNUAL HIGHEST	1997	-	-	428.999	3688.444	0.05	1
ANNUAL HIGHEST	1998	-	-	428.899	3688.444	0.05	1
24-HOUR HIGHEST	1994	05-Nov	-	429.899	3688.300	0.26	5
24-HOUR HIGHEST	1995	15-Sep	-	429.699	3688.344	0.30	5
24-HOUR HIGHEST	1996	19-Nov	-	429.899	3688.300	0.31	5
24-HOUR HIGHEST	1997	02-Mar	-	429.899	3688.276	0.32	5
24-HOUR HIGHEST	1998	26-Nov	-	429.899	3688.252	0.29	5
3-HOUR HIGHEST	1994	08-Mar	24	429.899	3688.228	5.2	25
3-HOUR HIGHEST	1995	20-Nov	24	429.899	3688.180	8.1	25
3-HOUR HIGHEST	1996	26-Jan	9	429.899	3688.228	5.8	25
3-HOUR HIGHEST	1997	03-Mar	3	429.899	3688.300	5.2	25
3-HOUR HIGHEST	1998	26-Nov	24	429.899	3688.252	6.0	25

AVERAGING PERIOD	DATA PERIOD			RECEPTOR LOCATION (KM)		MAXIMUM PREDICTED CONCENTRATION (ug/m³)	PSD CLASS II INCREMENT (ug/m³)
	YEAR	DAY	HOUR ENDING	EAST	NORTH		
ANNUAL HIGHEST	1994	-	-	428.899	3688.444	0.05	20
ANNUAL HIGHEST	1995	-	-	428.899	3688.444	0.05	20
ANNUAL HIGHEST	1996	-	-	428.899	3688.444	0.05	20
ANNUAL HIGHEST	1997	-	-	428.999	3688.444	0.05	20
ANNUAL HIGHEST	1998	-	-	428.899	3688.444	0.05	20
24-HOUR HIGHEST	1994	05-Nov	-	429.899	3688.300	0.26	91
24-HOUR HIGHEST	1995	15-Sep	-	429.699	3688.344	0.30	91
24-HOUR HIGHEST	1996	19-Nov	-	429.899	3688.300	0.31	91
24-HOUR HIGHEST	1997	02-Mar	-	429.899	3688.276	0.32	91
24-HOUR HIGHEST	1998	26-Nov	-	429.899	3688.252	0.29	91
3-HOUR HIGHEST	1994	08-Mar	24	429.899	3688.228	5.2	512
3-HOUR HIGHEST	1995	20-Nov	24	429.899	3688.180	8.1	512
3-HOUR HIGHEST	1996	26-Jan	9	429.899	3688.228	5.8	512
3-HOUR HIGHEST	1997	03-Mar	3	429.899	3688.300	5.2	512
3-HOUR HIGHEST	1998	26-Nov	24	429.899	3688.252	6.0	512

AVERAGING PERIOD	DATA PERIOD			RECEPTOR LOCATION (KM)		MAXIMUM PREDICTED CONCENTRATION (ug/m³)	BACKGROUND CONCENTRATION (ug/m³)	TOTAL CONCENTRATION (ug/m³)	NAAQS (ug/m³)
	YEAR	DAY	HOUR ENDING	EAST	NORTH				
ANNUAL HIGHEST	1994	-	-	428.899	3688.444	0.05	2.7	2.75	80
ANNUAL HIGHEST	1995	-	-	428.899	3688.444	0.05	2.7	2.75	80
ANNUAL HIGHEST	1996	-	-	428.899	3688.444	0.05	2.7	2.75	80
ANNUAL HIGHEST	1997	-	-	428.999	3688.444	0.05	2.7	2.75	80
ANNUAL HIGHEST	1998	-	-	428.899	3688.444	0.05	2.7	2.75	80
24-HOUR HIGHEST	1994	05-Nov	-	429.899	3688.300	0.26	13	13.26	365
24-HOUR HIGHEST	1995	15-Sep	-	429.699	3688.344	0.30	13	13.30	365
24-HOUR HIGHEST	1996	19-Nov	-	429.899	3688.300	0.31	13	13.31	365
24-HOUR HIGHEST	1997	02-Mar	-	429.899	3688.276	0.32	13	13.32	365
24-HOUR HIGHEST	1998	26-Nov	-	429.899	3688.252	0.29	13	13.29	365
3-HOUR HIGHEST	1994	08-Mar	24	429.899	3688.228	5.2	46.8	52.02	1300
3-HOUR HIGHEST	1995	20-Nov	24	429.899	3688.180	8.1	46.8	54.90	1300
3-HOUR HIGHEST	1996	26-Jan	9	429.899	3688.228	5.8	46.8	52.60	1300
3-HOUR HIGHEST	1997	03-Mar	3	429.899	3688.300	5.2	46.8	52.02	1300
3-HOUR HIGHEST	1998	26-Nov	24	429.899	3688.252	6.0	46.8	52.81	1300

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SUMMARY OF MAXIMUM PREDICTED SO_2 CONCENTRATIONS

FROM THE PROPOSED EXPANSION PROJECT - EXISTING SANTAN GENERATING STATION

AVERAGING PERIOD	DATA PERIOD			RECEPTOR LOCATION (KM)		MAXIMUM PREDICTED CONCENTRATION ($\mu g/m^3$)	RULE 32 CONCENTRATION ($\mu g/m^3$)
	YEAR	DAY	HOUR ENDING	EAST	NORTH		
1-HOUR	1994	19-Sep	24	429.899	3688.156	23.7	850
1-HOUR	1995	11-Nov	24	429.899	3688.204	26.5	850
1-HOUR	1996	30-Jan	2	429.899	3688.180	25.2	850
1-HOUR	1997	29-Sep	2	429.899	3688.252	19.5	850
1-HOUR	1998	20-Jun	5	429.899	3688.252	19.5	850
24-HOUR	1994	05-Nov	-	429.899	3688.300	0.26	250
24-HOUR	1995	15-Sep	-	429.699	3688.344	0.30	250
24-HOUR	1996	19-Nov	-	429.899	3688.300	0.31	250
24-HOUR	1997	02-Mar	-	429.899	3688.276	0.32	250
24-HOUR	1998	26-Nov	-	429.899	3688.252	0.29	250
72-HOUR	1994	05-Nov	-	429.899	3688.300	0.26	120
72-HOUR	1995	15-Sep	-	429.699	3688.344	0.30	120
72-HOUR	1996	19-Nov	-	429.899	3688.300	0.31	120
72-HOUR	1997	02-Mar	-	429.899	3688.276	0.32	120
72-HOUR	1998	26-Nov	-	429.899	3688.252	0.29	120

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SUMMARY OF MAXIMUM PREDICTED SULFURIC ACID CONCENTRATIONS
FROM THE PROPOSED EXPANSION PROJECT - EXISTING SANTAN GENERATING STATION

AVERAGING PERIOD	DATA PERIOD			RECEPTOR LOCATION (KM)		MAXIMUM PREDICTED CONCENTRATION ($\mu g/m^3$)	RULE 32 CONCENTRATION ($\mu g/m^3$)
	YEAR	DAY	HOUR ENDING	EAST	NORTH		
24-HOUR HIGHEST	1994	05-Nov	-	429.899	3688.300	0.26	15
24-HOUR HIGHEST	1995	15-Sep	-	429.699	3688.344	0.30	15
24-HOUR HIGHEST	1996	19-Nov	-	429.899	3688.300	0.31	15
24-HOUR HIGHEST	1997	02-Mar	-	429.899	3688.276	0.32	15
24-HOUR HIGHEST	1998	26-Nov	-	429.899	3688.252	0.29	15

dispersion model calculated the annual, 1-hour and 24-hour average concentrations. The estimated toxic air pollutant emission rate associated with the proposed expansion project was then ratioed to the unit emission rate. The resultant ratio was multiplied by the model-predicted concentration and compared to the appropriate AAAQG(s) for that air toxic pollutant. Tables 6-9(a)-(d) presents the results of the toxic air pollutant modeling demonstration for the proposed expansion project. As shown in the table, the proposed expansion project is in compliance with the respective AAAQGs.

6.4 NO_2 PSD AMBIENT AIR QUALITY MONITORING REQUIREMENT

The proposed expansion project is subject to PSD review for NO_2. Preconstruction ambient air quality monitoring for up to a 1-year period may be required for each pollutant subject to PSD review. An applicant may be exempted from this requirement if there are existing air quality monitoring data representative of the site, or if the annual NO_2 impacts from the proposed project are less than the annual monitoring de minimis concentration of 14.0 $\mu g/m^3$.

As shown in Table 6-10 the proposed expansion project will result in predicted NO_2 concentrations that are well below the monitoring de minimis concentration. In addition, existing ambient monitors are also strategically located throughout Maricopa County that adequately represent NO_2 background levels. Thus, it is SRP's understanding, that it may be exempt from the preconstruction ambient air quality monitoring requirement for NO_2 which is a requirement under the PSD program.

6.5 ADDITIONAL AIR QUALITY IMPACT ANALYSES

NO_2, PM_{10}, CO and SO_2 emissions from the proposed expansion project were modeled and concentrations were predicted at the Gila River, Maricopa Ak Chin, and Salt River Indian Reservations. Table 6-11 summarizes the overall maximum predicted concentrations at these Indian Reservations.

Analyses of the impact of the proposed expansion project's air pollutant emissions associated with construction and related growth are presented in this section in accordance with Maricopa County Rule 240, Section 308. Assessment of the impact on soil, vegetation, and visibility are also presented in this section. A qualitative approach to these analyses was necessary for those areas in which analytical techniques are not well established.

6.5.1 Construction and Growth Impacts

Construction impacts on air quality will consist mainly of the relatively minor amounts of pollutants emitted from construction equipment required for site preparation and from fugitive dust emissions. General construction vehicles (both gasoline- and diesel-powered) and other diesel-powered engines will be used. These engines emit minor amounts of VOC, SO_2, CO, NO_2, and PM. The contaminants are expected to cause localized, temporary increases in existing air quality levels, but are not expected to cause any adverse impacts on or beyond the site boundary. Fugitive dust emissions will probably be the most noticeable impact during construction. Dust will be associated with ground excavation, cut-and-fill operations, and other activities. The amount of dust will vary from day to day, depending on the level of activity and the weather. Overall, PM concentrations

TABLE 6-9 (a)
SUMMARY OF MAXIMUM PREDICTED AIR TOXIC CONCENTRATIONS FROM THE PROPOSED EXPANSION PROJECT

Combustion Turbines (Represents predicted concentration of one combustion turbine)

AVERAGING PERIOD	DATA PERIOD			RECEPTOR LOCATION (KM)		MAXIMUM PREDICTED CONCENTRATION (ug/m³)
	YEAR	DAY	HOUR ENDING	EAST	NORTH	
ANNUAL	1998	-	-	428.399	3688.444	0.08
1-HOUR	1998	07/07	17	429.899	3687.988	2.97
24-HOUR	1998	04/11	-	430.149	3688.444	0.54

Auxiliary Boiler

AVERAGING PERIOD	DATA PERIOD			RECEPTOR LOCATION (KM)		MAXIMUM PREDICTED CONCENTRATION (ug/m³)
	YEAR	DAY	HOUR ENDING	EAST	NORTH	
ANNUAL	1998	-	-	429.799	3688.244	1.25
1-HOUR	1998	07/22	20	429.699	3688.244	17.69
24-HOUR	1998	02/21	-	429.599	3688.344	4.38

Emergency Fire Pump

AVERAGING PERIOD	DATA PERIOD			RECEPTOR LOCATION (KM)		MAXIMUM PREDICTED CONCENTRATION (ug/m³)
	YEAR	DAY	HOUR ENDING	EAST	NORTH	
ANNUAL	1998	-	-	429.899	3688.276	35.51
1-HOUR	1998	05/14	22	430.074	3688.444	423.07
24-HOUR	1998	11/26	-	429.899	3688.252	129.81

Emergency Generator

AVERAGING PERIOD	DATA PERIOD			RECEPTOR LOCATION (KM)		MAXIMUM PREDICTED CONCENTRATION (ug/m³)
	YEAR	DAY	HOUR ENDING	EAST	NORTH	
ANNUAL	1998	-	-	429.899	3688.300	34.77
1-HOUR	1998	05/14	22	430.074	3688.444	487.79
24-HOUR	1998	11/16	-	429.899	3688.300	126.40

Facility Total*

AVERAGING PERIOD	MAXIMUM PREDICTED CONCENTRATION (ug/m³)
ANNUAL	71.61
1-HOUR	931.52
24-HOUR	261.13

***Facility total concentrations are summed from all proposed emission sources regardless of receptor location and the data period.**

The above concentrations are model results based on a unit emission rate of 1.0 g/s. The 1998 meteorological data was used for this analysis.

TAB (b)

SUMMARY OF MAXIMUM PREDICTED ANNUAL AVERAGE AIR TOXIC CONCENTRATIONS
FROM THE PROPOSED EXPANSION PROJECT

Chemical Name	Predicted Annual Concentration					
	3 Combustion Turbines (µg/m3)	3 Duct Burners (µg/m3)	Auxiliary Boiler (µg/m3)	Emergency Fire Pump (µg/m3)	Emergency Generator (µg/m3)	Facility Total (µg/m3)
1,3-Butadiene	1.78E-05	-	-	1.38E-04	1.46E-04	3.02E-04
2-Methylnaphthalene	2.15E-07	8.08E-08	3.67E-07	-	-	6.63E-07
3-Methylchloranthrene	-	6.06E-09	2.75E-08	-	-	3.36E-08
Acrolein	9.63E-04	-	-	3.27E-04	3.46E-04	1.64E-03
Arsenic	-	6.73E-07	3.06E-06	-	-	3.73E-06
Benzene	5.53E-04	1.45E-05	1.33E-04	3.29E-03	3.49E-03	7.48E-03
Benzo(a)anthracene	9.18E-07	6.06E-09	2.75E-08	5.93E-06	6.28E-06	1.32E-05
Benzo(a)pyrene	5.65E-07	4.04E-09	1.83E-08	6.64E-07	7.03E-07	1.95E-06
Beryllium	-	4.04E-08	1.83E-07	-	-	2.24E-07
Cadmium	-	3.70E-06	1.68E-05	-	-	2.05E-05
Dibenzo(a,h)anthracene	9.55E-07	4.04E-09	1.83E-08	2.06E-06	2.18E-06	5.21E-06
Ethylbenzene	1.33E-03	-	-	-	-	1.33E-03
Formaldehyde	2.94E-02	7.44E-04	3.38E-03	4.17E-03	4.41E-03	4.21E-02
Hexane	1.05E-02	6.06E-03	2.75E-02	-	-	4.41E-02
Manganese	-	1.28E-06	5.81E-06	-	-	7.09E-06
Mercury	-	8.75E-07	3.97E-06	-	-	4.85E-06
Naphthalene	6.74E-05	2.05E-06	9.32E-06	2.99E-04	3.17E-04	6.95E-04
Nickel	-	7.07E-06	3.21E-05	-	-	3.92E-05
Propylene Oxide	1.94E-03	-	-	-	-	1.94E-03
Selenium	-	8.08E-08	3.67E-07	-	-	4.48E-07
Toluene	5.39E-03	1.14E-05	5.20E-05	1.44E-03	1.53E-03	8.42E-03
Xylene	2.65E-03	-	-	1.01E-03	1.07E-03	4.72E-03

TAB[illegible] (C)
SUMMARY OF MAXIMUM PREDICTED [illegible]UR AIR TOXIC CONCENTRATIONS
FROM THE PROPOSED EXPANSION PROJECT

Chemical Name	Predicted 1-Hour Concentration					
	3 Combustion Turbines (µg/m3)	3 Duct Burners (µg/m3)	Auxiliary Boiler (µg/m3)	Emergency Fire Pump (µg/m3)	Emergency Generator (µg/m3)	Facility Total (µg/m3)
1,3-Butadiene	6.62E-04	-	-	1.64E-03	2.05E-03	4.36E-03
2-Methylnaphthalene	7.98E-06	3.00E-06	5.19E-06	-	-	1.62E-05
3-Methylchloranthrene	-	2.25E-07	3.89E-07	-	-	6.14E-07
Acrolein	3.57E-02	-	-	3.89E-03	4.85E-03	4.45E-02
Arsenic	-	2.50E-05	4.33E-05	-	-	6.83E-05
Benzene	2.05E-02	5.39E-04	1.88E-03	3.92E-02	4.89E-02	1.11E-01
Benzo(a)anthracene	3.41E-05	2.25E-07	3.89E-07	7.07E-05	8.81E-05	1.93E-04
Benzo(a)pyrene	2.10E-05	1.50E-07	2.60E-07	7.91E-06	9.86E-06	3.91E-05
Beryllium	-	1.50E-06	2.60E-06	-	-	4.10E-06
Cadmium	-	1.37E-04	2.38E-04	-	-	3.75E-04
Dibenzo(a,h)anthracene	3.54E-05	1.50E-07	2.60E-07	2.45E-05	3.06E-05	9.09E-05
Ethylbenzene	4.92E-02	-	-	-	-	4.92E-02
Formaldehyde	1.09E+00	2.76E-02	4.78E-02	4.96E-02	6.19E-02	1.28E+00
Hexane	3.91E-01	2.25E-01	3.89E-01	-	-	1.00E+00
Manganese	-	4.75E-05	8.22E-05	-	-	1.30E-04
Mercury	-	3.25E-05	5.62E-05	-	-	8.87E-05
Napnthalene	2.50E-03	7.62E-05	1.32E-04	3.57E-03	4.45E-03	1.07E-02
Nickel	-	2.62E-04	4.54E-04	-	-	7.17E-04
Propylene Oxide	7.21E-02	-	-	-	-	7.21E-02
Selenium	-	3.00E-06	5.19E-06	-	-	8.19E-06
Toluene	2.00E-01	4.25E-04	7.36E-04	1.72E-02	2.14E-02	2.40E-01
Xylene	9.85E-02	-	-	1.20E-02	1.49E-02	1.25E-01

TABL (d)
SUMMARY OF MAXIMUM PREDICTED 2 UR AIR TOXIC CONCENTRATIONS
FROM THE PROPOSED EXPANSION PROJECT

Chemical Name	Predicted 24-Hour Concentration					
	3 Combustion Turbines (µg/m3)	3 Duct Burners (µg/m3)	Auxiliary Boiler (µg/m3)	Emergency Fire Pump (µg/m3)	Emergency Generator (µg/m3)	Facility Total (µg/m3)
1,3-Butadiene	1.20E-04	-	-	5.05E-04	5.31E-04	1.16E-03
2-Methylnaphthalene	1.45E-06	5.45E-07	1.29E-06	-	-	3.28E-06
3-Methylchloranthrene	-	4.09E-08	9.64E-08	-	-	1.37E-07
Acrolein	6.50E-03	-	-	1.19E-03	1.26E-03	8.95E-03
Arsenic	-	4.54E-06	1.07E-05	-	-	1.53E-05
Benzene	3.73E-03	9.79E-05	4.66E-04	1.20E-02	1.27E-02	2.90E-02
Benzo(a)anthracene	6.20E-06	4.09E-08	9.64E-08	2.17E-05	2.28E-05	5.08E-05
Benzo(a)pyrene	3.81E-06	2.73E-08	6.43E-08	2.43E-06	2.55E-06	8.88E-06
Beryllium	-	2.73E-07	6.43E-07	-	-	9.15E-07
Cadmium	-	2.50E-05	5.89E-05	-	-	8.39E-05
Dibenzo(a,h)anthracene	6.44E-06	2.73E-08	6.43E-08	7.52E-06	7.92E-06	2.20E-05
Ethylbenzene	8.95E-03	-	-	-	-	8.95E-03
Formaldehyde	1.99E-01	5.02E-03	1.18E-02	1.52E-02	1.60E-02	2.47E-01
Hexane	7.10E-02	4.09E-02	9.64E-02	-	-	2.08E-01
Manganese	-	8.63E-06	2.04E-05	-	-	2.90E-05
Mercury	-	5.91E-06	1.39E-05	-	-	1.98E-05
Naphthalene	4.55E-04	1.39E-05	3.27E-05	1.09E-03	1.15E-03	2.75E-03
Nickel	-	4.77E-05	1.12E-04	-	-	1.60E-04
Propylene Oxide	1.31E-02	-	-	-	-	1.31E-02
Selenium	-	5.45E-07	1.29E-06	-	-	1.83E-06
Toluene	3.64E-02	7.73E-05	1.82E-04	5.28E-03	5.56E-03	4.75E-02
Xylene	1.79E-02	-	-	3.68E-03	3.87E-03	2.55E-02

(e)

TABL

COMPARISON OF MAXIMUM PRED R TOXIC CONCENTRATIONS
FROM THE PROPOSED EXPANS OJECT WITH THE AAAQGs

Chemical Name	Predicted 1-Hour Concentration From The Proposed Facility (µg/m3)	1-Hour AAAQG (µg/m3)	Below AAAQG?	Predicted 24-Hour Concentration From The Proposed Facility (µg/m3)	24-Hour AAAQG (µg/m3)	Below AAAQG?	Predicted Annual Concentration From The Proposed Facility (µg/m3)	Annual AAAQG (µg/m3)	Below AAAQG?
1,3-Butadiene	4.36E-03	5.00	YES	1.16E-03	1.3	YES	3.02E-04	3.60E+00	YES
2-Methylnaphthalene	1.62E-05	—	YES	3.28E-06	—	YES	6.63E-07	—	YES
3-Methylchloranthrene	6.14E-07	—	YES	1.37E-07	—	YES	3.38E-08	—	YES
Acrolein	4.45E-02	6.3	YES	8.95E-03	2	YES	1.64E-03	—	YES
Arsenic	6.83E-05	0.06	YES	1.53E-05	0.02	YES	3.73E-06	2.30E-04	YES
Benzene	1.11E-01	170	YES	2.90E-02	44	YES	7.48E-03	1.20E-01	YES
Benzo(a)anthracene	1.93E-04	6	YES	5.08E-05	1.6	YES	1.32E-05	4.80E-03	YES
Benzo(a)pyrene	3.91E-05	0.67	YES	8.88E-06	0.18	YES	1.95E-06	4.80E-04	YES
Beryllium	4.10E-06	0.06	YES	9.15E-07	0.02	YES	2.24E-07	4.20E-04	YES
Cadmium	3.75E-04	0.77	YES	8.39E-05	0.2	YES	2.05E-05	5.60E-04	YES
Dibenzo(a,h)anthracene	9.09E-05	0.67	YES	2.20E-05	0.18	YES	5.21E-06	4.80E-04	YES
Ethylbenzene	4.92E-02	4500	YES	8.95E-03	3500	YES	1.33E-03	—	YES
Formaldehyde	1.28E+00	25	YES	2.47E-01	18	YES	4.21E-02	7.60E-02	YES
Hexane	1.00E+00	5400	YES	2.08E-01	1400	YES	4.41E-02	—	YES
Lead	-	NAAQS	YES	-	NAAQS	YES	-	—	YES
Manganese	1.30E-04	25	YES	2.90E-05	7.9	YES	7.09E-06	—	YES
Mercury	8.87E-05	1.5	YES	1.98E-05	0.4	YES	4.85E-06	—	YES
Naphthalene	1.07E-02	630	YES	2.75E-03	400	YES	6.95E-04	—	YES
Nickel	7.17E-04	0.45	YES	1.60E-04	0.12	YES	3.92E-05	2.10E-03	YES
Propylene Oxide	7.21E-02	370	YES	1.31E-02	98	YES	1.94E-03	2.70E-01	YES
Selenium	8.19E-06	6	YES	1.83E-06	1.6	YES	4.48E-07	—	YES
Toluene	2.40E-01	4400	YES	4.75E-02	3000	YES	8.42E-03	—	YES
Xylene	1.25E-01	5400	YES	2.55E-02	3500	YES	4.72E-03	—	YES

TABLE 10

SUMMARY OF MAXIMUM PREDICTED NO_2 CONCENTRATIONS

FROM THE PROPOSED EXPANSION PROJECT FOR COMPARISON WITH THE MONITORING DE MINIMIS CONCENTRATION

AVERAGING PERIOD	DATA PERIOD	RECEPTOR LOCATION (KM)		MAXIMUM PREDICTED CONCENTRATION (µg/m³)	MONITORING DE MINIMIS (µg/m³)
	YEAR	EAST	NORTH		
ANNUAL	1994	428.399	3688.444	0.68	14
ANNUAL	1995	428.899	3688.544	0.75	14
ANNUAL	1996	428.899	3688.444	0.63	14
ANNUAL	1997	428.899	3688.544	0.67	14
ANNUAL	1998	428.899	3688.444	0.70	14

TABLE 11
SUMMARY OF MAXIMUM PREDICTED NO2, PM10, CO AND SO2 CONCENTRATIONS AT NEARBY INDIAN RESERVATIONS FROM THE PROPOSED EXPANSION PROJECT

POLLUTANT	AVERAGING PERIOD	DATA PERIOD			RECEPTOR LOCATION (KM)		MAXIMUM PREDICTED CONCENTRATION AT NEARBY INDIAN RESERVATIONS (ug/m3)
		YEAR	DAY	HOUR ENDING	EAST	NORTH	
NO2	ANNUAL HIGHEST	1998	-	-	416.950	3684.000	0.07
PM10	ANNUAL HIGHEST	1998	-	-	416.950	3684.000	0.06
	24-HOUR HIGHEST	1996	26-Jan	-	414.500	3684.000	0.67
CO	1-HOUR HIGHEST	1996	17-Jun	2	431.950	3673.875	222.2
	8-HOUR HIGHEST	1994	8-Mar	24	414.500	3684.000	8.9
SO2	ANNUAL HIGHEST	1998	-	-	416.950	3684.000	0.003
	3-HOUR HIGHEST	1996	25-Apr	6	416.950	3684.000	0.19
	24-HOUR HIGHEST	1998	18-Nov	-	416.950	3684.000	0.04

* The nearest Indian Reservation boundarys relative to the Santan Generating Station were modeled with representative receptor points. The Indian Reservations modeled included:

Gila River Indian Reservation
Maricopa Ak Chin Indian Reservation
Salt River Indian Reservation

The concentrations presented above are the maximums for each pollutant/averaging period predicted over the five year meteorological data period.

beyond the expansion project boundary, due to fugitive dust from construction activities, should add only minimally to existing background PM levels in the area. Various control techniques (if so required) will be taken to prevent PM from becoming airborne.

The operation of the proposed expansion project will result in minimal growth in the area. The air quality impact due to the associated residential growth will be in the form of additional automobile emissions, which will be dispersed over a large area and, therefore, have negligible impact. Commercial growth is anticipated to occur at a gradual rate in the future. Commercial growth, of course, will add to the background pollutant concentrations. Based on the maximum predicted concentrations associated with the proposed expansion project, there is sufficient air resource available for future development in the Gilbert area.

6.5.2 Impact on Soil and Vegetation

The secondary NAAQS are intended to protect the public welfare from adverse effects of airborne effluents. This protection extends to agricultural soil. As demonstrated in Section 6, maximum predicted pollutant concentrations from the proposed expansion project are well below the secondary NAAQS for all pollutants. As discussed in Section 6, the proposed expansion project has an insignificant impact on ambient air quality. Since the secondary NAAQS protect impact on human welfare, no significant adverse impact on soil is anticipated due to the proposed expansion project.

The effects of gaseous air pollutants on vegetation may be classified into three rather broad categories: acute, chronic, and long-term. Acute effects are those that result from relatively short (less than 1 month) exposures to high concentrations of pollutants. Chronic effects occur when organisms are exposed for months or even years to certain threshold levels of pollutants. Long-term effects include abnormal changes in ecosystems and subtle physiological alterations in organisms. Acute and chronic effects are caused by the gaseous pollutant acting directly on the organism, whereas long-term effects may be indirectly caused by secondary agents such as changes in soil pH. SO_2 enters the plant primarily through the leaf stomata and passes into the intercellular spaces of the mesophyll, where it is absorbed on the moist cell walls and combined with water to form sulfurous acid and sulfite salts. Plant species show a considerable range of sensitivity to SO_2. This range is the result of complex interactions among microclimatic (temperature, humidity, light, etc.), edaphic, phenological, morphological, and genetic factors that influence plant response (USEPA, 1973).

NO_2 may affect vegetation either by direct contact of NO_2 with the leaf surface or by solution in water drops, becoming nitric acid. Acute and chronic threshold injury levels for NO_2 are much higher than those for SO_2 (USEPA, 1971).

As discussed in Section 6.2, maximum predicted ambient concentrations from the proposed expansion project are well below the ambient air quality standards which are designed to protect public health and welfare from any known or adverse effects of air pollutants, including effects on vegetation.

6.5.3 Impact on Visibility (Regional Haze Analysis)

The proposed expansion project will result in a significant net increase in emissions of regulated air pollutants and therefore subject the project to review under PSD. A further requirement of PSD includes the special protection of air quality and air quality related values (AQRV) at potentially affected nearby Class I areas. Assessment of the potential impact to visibility (regional haze analysis) is required if the source is located within 100 km of a Class I area. An evaluation may be requested if the source is within 200 km of a Class I area.

There are three Class I areas within 100 km of the proposed expansion project site as shown in Figure 6-5. The distance from Santan to the nearest boundary of the Superstition Class I area is less than 50 km (45 km) and the distances to the others are about 70 km and 100 km for Mazatzal and Pine Mountain, respectively. Because of the proximity of the Class I areas to the Santan site, a Tier 2 assessment of the potential impact to regional haze was completed along with a long-range significant impact assessment.

The modeling was conducted based on guidance contained in the *Interagency Workgroup on Air Quality Modeling (IWAQM) Phase 2 Summary Report and Recommendations for Modeling Long Range Transport Impacts* (EPA, 1998a), *the Federal Land Managers Air Quality Related Values (FLAG) draft report* (October 1999) and used the CALPUFF (version 990228) model to calculate concentrations within Class I area equivalent distance rings of receptors. The CALPUFF modeling methodology included:

- Stack and emission characteristics from Section 2 with modeled emissions of NO_x, SO_2, and PM_{10} used to calculate impacts of NO_2, NO_3, HNO_3, SO_2, SO_4, and PM_{10}.

- Five years (1994-1998) of representative nearby meteorological data (Phoenix surface data) augmented with roughness, precipitation, solar radiation, and relative humidity parameters;

- Four rings of receptors coincident with the Class I area boundaries as shown in Figure 6.5;

- Terrain heights for each receptor in the receptor ring coincident with the average, minimum, and maximum elevations determined for the Class I area topography at the ring distance; and

- Default CALPUFF settings and a partial plume path terrain adjustment.

The output from the CALPUFF modeling was processed in CALPOST to calculate the potential impact on visual range in the vicinity of the Class I area. The potential effects were determined through calculation of the 24-hour concentrations of NO_3, and SO_4, and the subsequent use of the IWAQM equations to determine the potential change in extinction. Any calculated impairment exceeding 5 percent of current background levels indicates the potential to affect the Class I area and could require a Tier 3 CALPUFF analysis. In accordance with the Federal Land Managers Air

Quality Related Values Workgroup (FLAG) recommendations, the CALPOST analysis assumed a constant background visual range (BVR) of 224 km or 17.6 Mm^{-1}.

Because the nearest boundary to the Superstition Class I area is less than 50 km (the range suggested by IWAQM as appropriate to begin long range transport modeling using CALPUFF) the potential visual impacts were assessed for this area using USEPA's screening model for visibility impacts called VISCREEN. The potential significant impacts for the less than 50 km distant Superstition area were calculated using ISCST3 and receptors coincident with the Superstition boundary.

6.5.3.1 Results of the Analyses

Once the CALPUFF modeling was completed using the settings and input parameters discussed above, calculation of visibility impairment was completed using the CALPOST post-processed output files. CALPOST was run using standard inputs to return the short-term 24-hour concentrations of NO_3, SO_4, and PM_{10}.

The potential affect on visibility and regional haze at the Superstition Class I area was determined from the short-term concentrations of NO_3, SO_4, and PM_{10}. The visibility analysis was performed by calculating the change in light-extinction based on the estimated air quality impacts from the project.

Light-extinction, or the sum of light scattering and absorption (represented by the coefficient, b_{ext}), was calculated based on Section 3.2 of the IWAQM Phase 2 guidance (December 1998). The maximum calculated concentrations for sulfate (SO_4), and nitrate (NO_3) were used in the IWAQM formulas. The formula for b_{ext} assumes sulfates and nitrates exist in the form of ammonium sulfate [$(NH_4)_2SO_4$] and ammonium nitrate (NH_4NO_3), and therefore a conversion is made by multiplying the maximum 24-hour concentration of sulfate or nitrate by the mass ratio of $(NH_4)_2SO_4$ to SO_4^{2-} or NH_4NO_3 to NO_3^-.

Extinction coefficients for nitrates and sulfates were calculated by multiplying the concentrations of ammonium sulfate and ammonium nitrate by a dry scattering coefficient of 3.0 square meters per gram (m^2/g). The $(NH_4)_2SO_4$ and NH_4NO_3 concentrations were also multiplied by relative humidity factors determined from the FLAG report, (i.e., f(RH)). The PM_{10} impacts were included in the visibility calculations by applying a scattering coefficient of 1.0 m^2/g to the maximum modeled 24-hour PM_{10} concentration. The fine particles are considered to be non-hygroscopic and therefore were not subject to the humidity factor. All of the extinction coefficients, in inverse megameters (Mm^{-1}), were then summed to yield the total light-extinction coefficient for the proposed source (b_{source}).

The aggregate source light-extinction (b_{source}) was divided by the current background light-extinction coefficient appropriate for the Superstition area (17.6 Mm^{-1}) to determine the potential change in extinction. Results of the analysis are shown in Table 6-12(a). The results indicate that the potential effect on regional haze is less than 10 percent and therefore, the proposed expansion project should not impact visibility in the Superstition Wilderness or the more distant Class I areas.

The Federal Land Managers (FLMs) have established a three level screening analyses according to the FLAG report and they are 0.4%, 5% and 10% changes in extinction. Below 0.4% the impact is considered insignificant. Impact of less than 5% should not affect visibility and will most likely be approved by the FLM. Between 5 and 10%, the FLM may request an aggregate assessment of visual impacts requiring modeling of a larger emission inventory. Beyond 10% the FLM will most likely not approve of the project without further detailed or more complex analyses. As discussed above, the proposed expansion project will fall into the impact category of 5 to 10%. This percent impact is not anticipated to affect visibility in the Superstition area. However, as part of the air permit application process to construct the proposed plant, SRP will discuss these results with the FLM and perform any additional analyses that may be required.

Results of the VISCREEN analysis for the visual impacts at Superstition for the 28.5 kilometer (km) distance from Santan are shown in Table 6-12(b). Shown are three VISCREEN analyses, with meteorological conditions simulating the default, Level 2, and average morning viewing conditions. As shown, under each scenario the potential to impact visibility at Superstition is demonstrated, although the average morning viewing conditions indicate that the impact should be barely perceptible. As VISCREEN is a conservative assessment, and because the average viewing conditions suggest a minimal impact, it is likely that the proposed project's emissions should not greatly affect visibility at Superstition.

Results of the significant impact assessment are shown in Table 6-12(c) for the ISCST3 iterations. The ISC impacts are for those Superstition Class I area receptors within 50 km of Santan. As shown, the results indicate that the proposed project will have an insignificant impact to air quality. It is noted that these analyses were only performed for the nearest (Superstition) Class I area. It is assumed that impacts at the more distant Class I areas will be less.

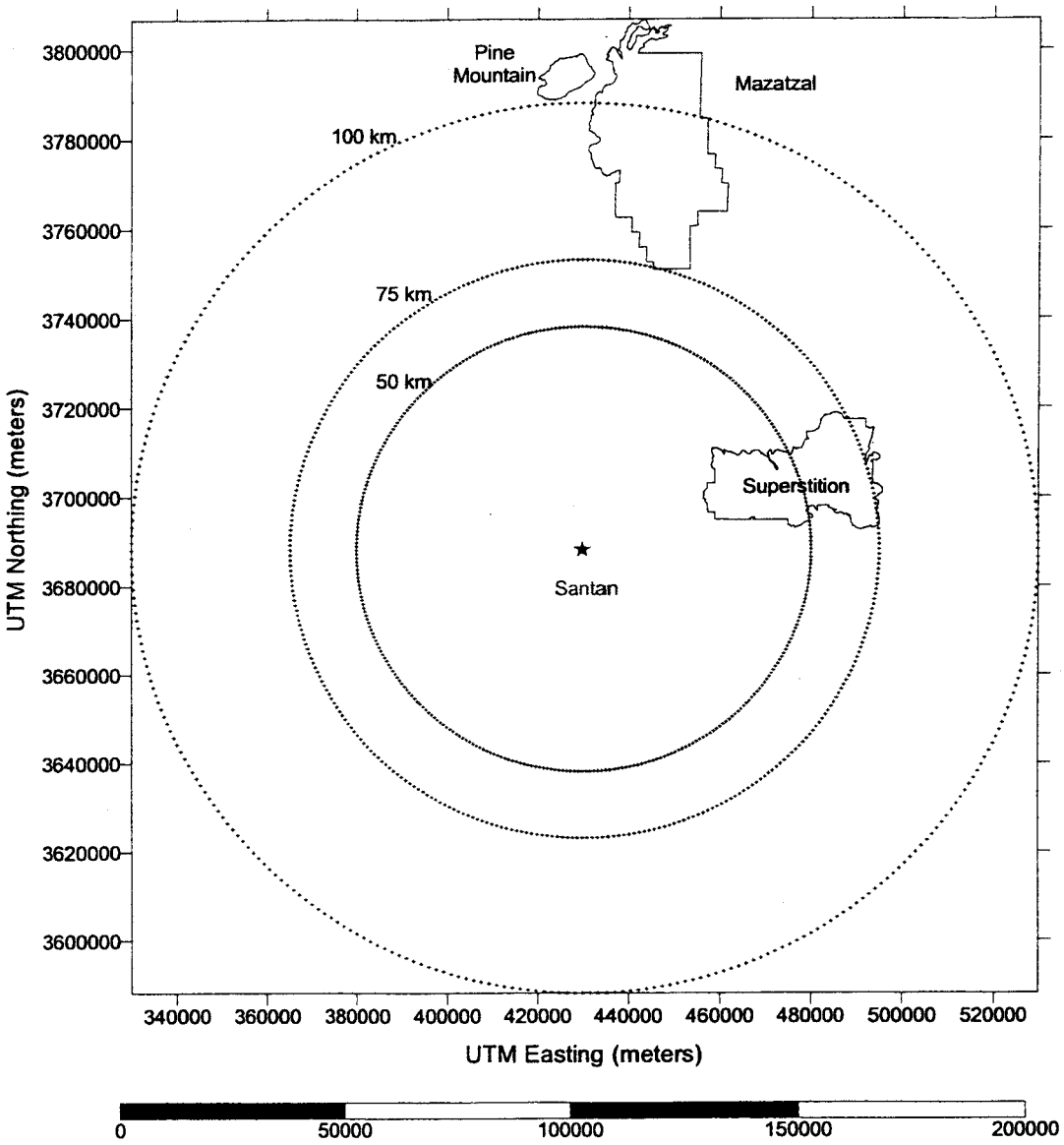

Figure 6-5

CALPUFF Receptor Grid

Table 6-12 A

IMPACTS AT THE SUPERSTITION CLASS I AREA

(Santan – CALPUFF Screen Regional Haze Impacts – Top Four Impacts)

Pollutant	Averaging Period	Maximum Modeled Impact ($\mu g/m^3$)	Year of Data Yielding Maximum Impact	Location of Maximum Impact (UTM)[a]			Calculated Santan Extinction (Mm^{-1})	Background Extinction (Mm^{-1})	Percent Change in Extinction	Does Change Exceed Critical 10 Percent Threshold ?
				X (km)	Y (km)	Z (meters msl)				
Values Coincident with Maximum NO_3 Concentration Receptor and Date										
NO_3	24-hour	0.156	1994	479.531	3695.050	1200	1.63	17.6	9.28	No
SO_4	24-hour	0.0011								
PM_{10}	24-hour	0.416								
Values Coincident with Second Highest NO_3 Concentration Receptor and Date										
NO_3	24-hour	0.118	1994	479.896	3691.579	1200	1.28	17.6	7.25	No
SO_4	24-hour	0.00549								
PM_{10}	24-hour	0.317								
Values Coincident with Third Highest NO_3 Concentration Receptor and Date										
NO_3	24-hour	0.096	1998	480.018	3688.092	1200	1.22	17.6	6.92	No
SO_4	24-hour	0.00098								
PM_{10}	24-hour	0.469								
Values Coincident with Fourth Highest NO_3 Concentration Receptor and Date										
NO_3	24-hour	0.0845	1997	383.033	3705.193	1200	1.09	17.6	6.19	No
SO_4	24-hour	0.0019								
PM_{10}	24-hour	0.419								

[a] - Receptors used in CALPUFF analysis are from the 50 km ring of receptors representative of the distance from Santan to Superstition.

Table 6-12 B

IMPACTS AT THE SUPERSTITION CLASS I AREA

(Santan – VISCREEN Calculated Impacts at Superstition for Three Meteorological Conditions)

Background	Theta	Azimuth	Distance	Alpha	Delta E		Contrast	
					Criteria	Plume	Criteria	Plume
Worst Case Default VISCREEN Meteorological Conditions – 1 m/s; F stability								
Sky	10	155	80	14	2.00	11.075*	0.05	0.229*
Sky	140	155	80	14	2.00	2.425*	0.05	-0.079*
Terrain	10	84	45	84	2.00	16.601*	0.05	0.116*
Terrain	140	84	45	84	2.00	0.898	0.05	0.010
Level II VISCREEN Meteorological Conditions – 2 m/s; F stability								
Sky	10	155	80	14	2.00	9.436*	0.05	0.162*
Sky	140	155	80	14	2.00	1.748	0.05	-0.056*
Terrain	10	84	45	84	2.00	11.523*	0.05	0.119*
Terrain	140	84	45	84	2.00	1.993	0.05	0.045
Average Morning Viewing Conditions – 2.5 m/s; D stability								
Sky	10	155	80	14	2.00	1.849	0.05	0.031
Sky	140	155	80	14	2.00	0.322	0.05	-0.011
Terrain	10	84	45	84	2.00	2.623*	0.05	0.025
Terrain	140	84	45	84	2.00	0.363	0.05	0.008

* - Exceeds screening visual impact criteria. FLM has the discretion to request more refined analyses.

Table 6-12 C

IMPACTS AT THE SUPERSTITION CLASS I AREA

Pollutant	Averaging Period	Maximum Modeled Concentration ($\mu g/m^3$)	Year of Data Yielding Maximum Concentration	Location of Maximum Impact (UTM)[a]			Class I Significant Impact Level	Does Kyrene Impact Exceed Class I Level ?
				X (meters)	Y (meters)	Z (meters msl)		
ISCST3 Results at Supserstition								
NO_2	Annual	0.0135	1996	458928	3694813	625	0.1	No
PM_{10}	24-hour	0.153	1994	459020	3710876	548	0.3	No
	Annual	0.017	1996	458928	3694813	625	0.2	No
SO_2	3-hour	0.03	1998	457349	3698156	792	1.0	No
	24-hour	0.006	1996	458928	3694813	625	0.2	No
	Annual	0.0008	1996	458928	3694813	625	0.1	No

[a] – Receptors used in ISC analysis represent Superstition boundary receptors only.

7 SUMMARY

This report demonstrates that the proposed 825 MW natural gas-fired combined cycle facility at SRP's existing Santan Generating Station will not adversely impact air quality. The key conclusions from this analysis are:

1. The plant will be equipped with state-of-the-art control technology;

2. Based on a 825 MW combined cycle plant with the aforementioned emission controls, the expansion project will have the potential to emit the following air pollutants and quantities:

- Oxides of Nitrogen (NO_x) ≈ 269.3 tons/year;
- Carbon Monoxide (CO) ≈ 417.7 tons/year;
- Particulate Matter less than 10 microns in aerodynamic diameter (PM_{10}) ≈ 244.7 tons/year;
- Sulfur Dioxide (SO_2) ≈ 15.9 tons/year;
- Volatile Organic Compounds (VOCs) ≈ 104.7 tons/year; and
- Hazardous Air Pollutants (HAPs) <25 tons/year (aggregate), and <10 tons/year (individual).

3. SRP will be required to secure an air quality control permit from Maricopa County. Because the plant is located in the Maricopa County nonattainment area, SRP's permit application will need to demonstrate conformance with Nonattainment Area New Source Review for emissions of NO_x, CO, PM_{10} and VOCs. SRP will also need to demonstrate conformance with the Prevention of Significant Deterioration (PSD) regulations for emission of NO_x. These demonstrations require that SRP meet the following:

   Lowest Achievable Emission Rate: The proposed equipment will be designed to achieve the most stringent air pollutant emission rates (for NO_x, CO, PM_{10} and VOC) being achieved at similar sources across the United States. As stated previously, these rates will be achieved by using the state-of-the-art air pollution control equipment.

   Emission Offsets: The proposed project will be required to demonstrate that emissions offsets have been obtained at a ratio of 1.2 to 1 for emissions of NO_x and VOC (323.2 and 125.6 tons/year, respectively) and at least 1 to 1 for emissions of CO and PM_{10} (417.7 and 244.7 tons/year, respectively). These offsets reflect existing sources that have shut down, sources that will either shut down or install air pollution control equipment prior to startup of the proposed expansion project, or reductions in emissions from mobile sources. Emission offsets represent a decrease in actual emissions within Maricopa County.

   Best Available Control Technology – The proposed project is required to demonstrate that it will employ the Best Available Control Technology (BACT) for equipment that will have

the potential to emit emissions of NO_x. As stated above, the proposed project will be installing state-of-the-art air pollution control technology. This technology is considered LAER, which can be several orders of magnitude more stringent than that considered BACT.

Additional Air Quality Impact Analysis - The proposed project is expected to have a minimal impact on residential, commercial or industrial growth in the area surrounding the Santan site. In addition any related impact on air quality during the construction phase of the proposed plant is also expected to be minimal. Appropriate measures will be employed by SRP to minimize any fugitive dust that may be generated during the construction phase.

4. SRP conducted air quality modeling analyses to determine the impact on air quality in the nonattainment area (urban airshed) and at nearby Class I areas. For the urban airshed analysis, SRP used EPA's ISC air dispersion model to predict concentrations from the proposed expansion project under worst-case operating conditions. The maximum predicted concentrations and corresponding significant threshold levels are as follows:

Air Pollutant	***Predicted Concentration***	***Significance Level***
NO_x (Annual)	0.75 ug/m3	1
CO (1-Hour)	889 ug/m3	2000
CO (8-Hour)	58 ug/m3	500
PM_{10} (Annual)	0.7 ug/m3	1
PM_{10} (24-Hour)	4.97 ug/m3	5
SO_2 (Annual)	0.04 ug/m3	1
SO_2 (3-Hour)	15.9 ug/m3	25
SO_2 (24-Hour)	4.7 ug/m3	5

The maximum predicted concentrations were all below the significance levels developed by USEPA and are several orders of magnitude below the NAAQS developed by the USEPA to protect human health and welfare.

The modeling results at the Superstition Class I area indicate that the proposed expansion project should not impact visibility or significantly impact air quality in that Class I area or the more distant Class I areas. It is noted that these analyses were only performed for the nearest (Superstition) Class I area. It is assumed that impacts at the more distant Class I areas will be less. As part of the construction permit process, SRP will discuss with the Federal Land Manager the visibility impact results and the need to conduct any additional analyses.

5. In addition to the proposed air pollution control techniques, SRP will obtain emission offsets at a ratio of 1.2 to 1 for emissions of NO_x and VOCs from the proposed expansion project. This correlated to a net reduction of approximately 55 tons/year of NO_x emissions and 21 tons/year of

VOC emissions, and no increase in emissions of PM_{10} and CO. The combination of the installation of air pollution control devices and emission offsets will actually decrease the environmental impacts in the proposed project site area.

SRP has been investigating potential NO_x, CO and VOC emission offset sources within Maricopa County. This investigation included discussions with local community leaders, county planning members and industrial facility managers. The purpose of these discussions was to identify possible alternatives for reducing NO_x CO and VOC emissions from existing sources located in Maricopa County. Based on these discussions, SRP has been focusing on establishing agreements with local companies and government agencies to obtain these offsets. This will be accomplished by either shutting down existing emitting units, installing additional emission controls on existing units, restricting hours of operation, converting gas powered equipment to electric and pursuing mobile emission reduction projects. To reduce emissions of NO_x, SRP is proposing to retrofit the four existing combined cycle units at the existing Santan Station with low NO_x combustors. Installation of these combustors will reduce NO_x emissions by at least 80%.

SRP has been investigating potential PM_{10} emission offset sources within Maricopa County. This investigation included discussions with local community leaders, county planning members and industrial facility managers. The purpose of these discussions was to identify possible alternatives for reducing PM_{10} emissions from existing sources located in Maricopa County. Based on these discussions, SRP has identified the following sources as potential PM_{10} emission offsets:

- Canal Bank Paving and Stabilization;
- Mobile emission reduction credits; and
- Road paving.

SRP will secure the offsets prior to issuance of the air quality permit.

6. As stipulated by local, state and federal permitting requirements, an analysis of alternative sites, sizes, production processes and environmental control techniques must be performed for the proposed source. In addition, the analysis must demonstrate that the benefits of the new source significantly outweighs the social and environmental costs imposed as a result of its location, construction, and modification.

SRP has conducted a comprehensive analysis of the requirements for electrical power demands in and around Maricopa County. Based on this analysis, it was determined that constructing and operating a new plant at the existing Santan Generating Station was the best location based on technical, environmental and economic constraints.

SRP has selected this site based on the following criteria:

- Available land;
- Compatible land use;
- Availability of gas supplies;
- Availability of renewable water supplies;
- Ability to beneficially reuse waste water;
- Availability of air emission offsets;
- Access and support to local power transmission and distribution system; and
- Minimum land use impacts; and minimum impact to biological resources.

7. SRP will secure all required permits from the Maricopa County Environmental Services Department (MCESD). MCESD has been delegated authority by USEPA for Prevention of Significant Deterioration, Nonattainment Area New Source Review (NANSR), and Title V Operational Permits requirements, as well as the primary authority for air permit approvals for new and modified sources.

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Exhibit C

EXHIBIT C
AREAS OF BIOLOGICAL WEALTH

EXHIBIT C
AREAS OF BIOLOGICAL WEALTH

As stated in Arizona Corporation Commission Rules of Practice and Procedure R-14-3-219:

"Describe any areas in the vicinity of the proposed site or route which are unique because of biological wealth or because they are habitats for rare and endangered species. Describe the biological wealth or species involved and state effects, if any, the proposed facilities will have thereon."

BIOLOGICAL WEALTH

There are no areas of biological wealth (as defined) within the SEP property. The site is composed of flat barren land. The vegetation on the site is composed of several weedy herbaceous plants, grasses, and shrubs and trees along the majority of the SRP property perimeter.

POTENTIAL EFFECTS

None of the species listed in Table C-1 are expected to be impacted by the proposed project because of the level of disturbance already at the site.

TABLE C-1
SPECIAL STATUS WILDLIFE AND PLANT SPECIES KNOWN FROM MARICOPA COUNTY

Key to Table:
Federal Status: E = Endangered T = Threatened C = Candidate
State Status: SC = Special Concern HS = Highly Safeguarded

Common Name	Scientific Name	Habitat	Federal Status	State Status	Habitat Present in Project Area
Mammals					
California leaf-nosed bat	*Macrotus californicus*	Primarily cave and mine dwellers, mostly in Sonoran desertscrub		SC	Yes
Lesser long-nosed bat	*Leptonycteris curasoae yerbabuenae*	Desertscrub with agave and columnar cacti present as food plants	E	SC	No
Red bat	*Lasiurus borealis*	Over ponds, along waterways, among oaks, sycamores, walnuts, cottonwoods, and pine-fir forest		SC	No
Southern yellow bat	*Lasiurus ega*	Associated with Washington fan palms		SC	No
Spotted bat	*Euderma maculatum*	Uneven cliffs within 1 mile of a riparian situation		SC	No
Jaguar	*Panthera onca*	Generally distributed		SC	No
Chihuahuan pronghorn	*Antilocapra americana mexicana*	Plains and meadows of shortgrass from the deserts of the south to the high plateaus of the north		SC	No
Sonoran pronghorn	*Antilocapra americana sonoriensis*	Broad, intermountain alluvial valleys with creosote-bursage and paloverde-mixed cacti	E	SC	No
Birds					
American bittern	*Botaurus lentiginosus*	Marshy areas		SC	No
Least bittern	*Ixobrychus exilis*	Cattail marshes		SC	No
Great egret	*Ardea alba*	Ponds, streams, and marshes		SC	No
Snowy egret	*Egretta thula*	Ponds, streams, and marshes		SC	No
Black-bellied whistling duck	*Dendrocygna autumnalis*	Ponds		SC	No
Osprey	*Pandion haliaetus*	Near lakes and streams		SC	No
Mississippi kite	*Ictinia mississippiensis*	Riparian areas		SC	No
Bald eagle	*Haliaeetus leucocephalus*	Large trees or cliffs near water (reservoirs, rivers and streams) with abundant prey	T	SC	No
Northern goshawk	*Accipiter gentilis*	Generally distributed		SC	No
Gray hawk	*Asturina nitida*	Riparian areas in Sonoran zones		SC	No
Common black-hawk	*Buteogallus anthracinus*	Riparian areas in Sonoran zones		SC	No

TABLE C-1
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Common Name	Scientific Name	Habitat	Federal Status	State Status	Habitat Present in Project Area
Ferruginous hawk	*Buteo regalis*	Dry open country, fields		SC	No
Peregrine falcon	*Falco peregrinus*	Cliffs near Salt River Reservoir, generally distributed, tops of tall urban buildings		SC	Yes
Yuma clapper rail	*Rallus longirostris yumanensis*	Fresh water and brackish marshes	E	SC	No
Snowy plover	*Charadrius alexandrinus*	Ponds		SC	No
Western yellow-billed cuckoo	*Coccyzus americanus*	Riparian areas of lower Sonoran zone		SC	No
Cactus ferruginous pygmy-owl	*Glaucidium brasilianum cactorum*	Mature cottonwood/willow, mesquite bosques, and Sonoran desertscrub	E	SC	No
Mexican spotted owl	*Strix occidentalis lucida*	Nests in canyons and dense forests with multi-layered foliage structure	T	SC	No
Belted kingfisher	*Ceryle alcyon*	Ponds, streams, and canals		SC	No
Southwestern willow flycatcher	*Empidonax trailli extimus*	Cottonwood/willow and tamarisk vegetation communities along rivers and streams	E	SC	No
Tropical kingbird	*Tyrannus melancholicus*	Lowlands near water, often nests in cottonwood		SC	No
Reptiles And Amphibians					
Chiricahua leopard frog	*Rana chiricahuensis*	Rocky streams and other wetlands	C	SC	No
Lowland leopard frog	*Rana yavapaiensis*	Restricted to permanent waters: pools of foothill streams, overflow ponds		SC	No
Desert tortoise	*Gopherus agassizii*	Riverbanks, washes, dunes, and rocky slopes		SC	No
Arizona skink	*Eumeces gilberti arizonensis*	Piñon-juniper woodland and yellow pine forest		SC	No
Narrow-headed garter snake	*Thamnophis rufipunctatus*	Piñon-juniper and oak-pine belts to ponderosa pine forests along clear, permanent, or semi-permanent rocky streams		SC	No
Fish					
Bonytail chub	*Gila elegans*	Eddies and pools, not in swift currents	E	SC	No
Colorado squawfish	*Ptychocheilus lucius*	Water deeper than 1 meter and with strong to moderate currents	E	SC	No

TABLE C-1
SPECIAL STATUS WILDLIFE AND PLANT SPECIES KNOWN FROM MARICOPA COUNTY

Key to Table:
Federal Status: E = Endangered T = Threatened C = Candidate
State Status: SC = Special Concern HS = Highly Safeguarded

Common Name	Scientific Name	Habitat	Federal Status	State Status	Habitat Present in Project Area
Spikedace	*Meda fulgida*	Shallow water, often near the downstream end of riffles or in eddies	T	SC	No
Razorback sucker	*Xyrauchen texanus*	Riverine and lacustrine areas, generally not in fast-moving water and may use backwaters	E	SC	No
Desert pupfish	*Cyprinodon macularius macularius*	Shallow springs, small streams, and marshes; tolerates saline and warm water	E	SC	No
Gila topminnow	*Poeciliopsis occidentalis occidentalis*	Concentrates in shallow water, especially where aquatic vegetation or debris is present	E	SC	No
Plants					
Arizona agave	*Agave arizonica*	Transition zone between oak-juniper woodland and mountain mahogany oak scrub	E	HS	No
Hohokam agave	*Agave murpheyi*	In Maricopa County found in Paradise Valley		HS	No
Arizona cliffrose	*Purshia subintegra*	Characteristic white soils or tertiary limestone lakebed deposits	E	HS	No
Crested or fan-top saguaro	*Carnegiea gigantea*	Rocky hillsides and outwash slopes		HS	Yes
Arizona hedgehog cactus	*Echinocereus triglochidiatus arizonicus*	Ecotone between interior chaparral and madrean evergreen woodland	E	HS	No
Acuna cactus	*Echinomastus erectocentrus acunensis*	Limestone hills and flatlands in western lower Sonoran desert	C	HS	No
Lemmon fleabane	*Erigeron lemmoni*	Cliff areas within Fish Creek Canyon in Maricopa County	C	HS	No

Sources: Arizona Department of Agriculture 1999; Arizona Game and Fish Department 1996; Hoffmeister 1986; Stebbins 1985; U.S. Fish and Wildlife Service 1999a, 1999b, 1999c.

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Exhibit D

EXHIBIT D
BIOLOGICAL RESOURCES

EXHIBIT D
BIOLOGICAL RESOURCES

As stated in Arizona Corporation Commission Rules of Practice and Procedure R-14-3-219:

"List the fish, wildlife, plant life and associated forms of life associated with the vicinity of the proposed sites or route and describe the effects, if any, other proposed facilities will have thereon."

BIOLOGICAL RESOURCES

Tables D-1, D-2, and D-3 list the species of mammals, birds, and reptiles and amphibians that could occupy the project site. Table D-4 list the plant species that were observed on the site.

POTENTIAL EFFECTS

The biological resources on the SEP site are typical of highly disturbed urban sites. Wildlife that utilize the site include species that are well adapted to human altered landscapes. The potential effects to biological resources from expansion of the generating facility are expected to be limited to direct impacts to fossorial mammals and lizards during construction and displacement of other more mobile wildlife species during construction. Natural plant communities and associated assemblages of wildlife no longer exist on the Santan site.

Adverse impacts to biological resources (if any) will be limited specifically to the Santan site and are expected to be negligible to plant and wildlife populations during construction.

MITIGATION AND ENHANCEMENTS

Several of the mitigation and enhancement measures pertaining most specifically to other resources (i.e., land use, recreation, and visual resources) will also have a secondary benefit to plant and wildlife in the area. The introduction of additional landscaping (in particular) associated with mitigation and enhancement measures as shown in Exhibit G will assist in reclaiming portions of the site and will potentially provide an overall benefit to biological habitat and resources.

TABLE D-1 MAMMAL SPECIES		
Common Name	**Scientific Name**	**Habitat**
Desert shrew	*Notiosorex crawfordi*	Any arid habitat with ample cover, in oak belt, among junipers, desertscrub, and riparian
Cave myotis	*Myotis velifer*	Inhabit mine shafts, tunnels, caves, under bridges in desert areas, never far from water source – tanks, canal
Yuma myotis	*Myotis yumanensis*	Where water is present – Colorado and Little Colorado rivers, irrigation canals, permanent ponds, streams
Big brown bat	*Eptesicus fuscus*	In wooded areas and desertscrub
Southern yellow bat	*Lasiurus ega*	Associated with California fan palms (*Washingtonia filifera*)
Townsend's big-eared bat	*Plecotus townsendi*	Caves or mine tunnels, buildings in desertscrub
Pallid bat	*Antrozous pallidus*	Attics of houses, roofs of barns and sheds, old mine tunnels, crevices in cliffs, under bridges in desertscrub
American free-tailed bat	*Tadarida brasiliensis*	Caves and mines, old buildings or bridges in desertscrub and foothills of some higher mountains
Pocketed free-tailed bat	*Tadarida femorosacca*	Rocky cliffs and slopes of southern deserts, also use manmade shelters such as roofing tiles of buildings
Desert cottontail	*Sylvilagus audubonii*	Desertscrub, as high as junipers or oak belt
Black-tailed jack rabbit	*Lepus californicus*	Deserts to open scrub forests, grazed lands, croplands
Botta's pocket gopher	*Thomomys bottae*	Nearly every habitat with sufficient tuberous roots and plant material, and soil is suitable for digging tunnels
Arizona pocket mouse	*Perognathus amplus*	Mohave and Sonoran desertscrub and parts of Great Basin desertscrub
Western harvest mouse	*Reithrodontomys megalotis*	Wide variety of habitats and elevations, along streams, bottomlands, fences, around irrigated areas
Deer mouse	*Peromyscus maniculatus*	Sonoran desertscrub along intermittent creek beds or canals
Arizona cotton rat	*Sigmodon arizonae*	Desert areas or along canals and banks of small streams
House mouse*	*Mus musculus*	In and around houses, buildings, cultivated fields, manmade dumps, edge of towns
Coyote	*Canis latrans*	Every habitat
*exotic/introduced species Sources: Hoffmeister 1986; Jones et al. 1992		

TABLE D-2 BIRD SPECIES		
Common Name	**Scientific Name**	**Habitat**
Pied-billed grebe	*Podilymbus podiceps*	Lakes, ponds, streams, and canals
Double-crested cormorant	*Phalacrocorax auritus*	Lakes, ponds, streams, and aqueducts
Great blue heron	*Ardea herodias*	Lakes, ponds, streams, canals, and marshes
Green heron	*Butorides striatus*	Lakes, ponds, streams, marshes, and canals
Mallard	*Anas platyrhynchos*	Lakes, ponds, streams, and canals
Cinnamon teal	*Anas cyanoptera*	Ponds, streams, and canals
Turkey vulture	*Cathartes aura*	Generally distributed
Red-tailed hawk	*Buteo jamaicensis*	Generally distributed
American kestrel	*Falco sparverius*	Generally distributed
Peregrine falcon	*Falco peregrinus*	Cliffs near Salt River Reservoir, generally distributed, tops of tall urban buildings
Killdeer	*Charadrius vociferus*	Ponds, streams, and fields
Spotted sandpiper	*Actitis macularia*	Lakes, ponds, streams, and canals
Rock dove*	*Columba livia*	Suburban and agricultural areas
White-winged dove	*Zenaida asiatica*	Sonoran zones
Mourning dove	*Zenaida macroura*	Generally distributed, mainly in agricultural and suburban areas
Inca dove	*Columbina inca*	Suburban areas, farmyards, and fields
Western screech owl	*Otus kennicottii*	Riparian woodlands, Sonoran desert, and suburban areas
Great horned owl	*Bubo virginianus*	Riparian woodlands, Sonoran desert, and suburban areas
Lesser nighthawk	*Chordeiles acutipennis*	Lower Sonoran zone
Black-chinned hummingbird	*Archilochus alexandri*	Suburban and riparian areas in Sonoran zones
Anna's hummingbird	*Calypte anna*	Suburban areas, riparian areas, and fields in Sonoran zones
Belted kingfisher	*Ceryle alcyon*	Ponds, streams, and canals
Gila woodpecker	*Melanerpes uropygialis*	Lower Sonoran desert
Ladder-backed woodpecker	*Picoides scalaris*	Riparian and desert areas in Sonoran desert
Red-shafted northern flicker	*Colaptes cafer*	Transition zone forests, lowlands
Gilded flicker	*Colaptes chrysoides*	Desert and riparian areas in lower Sonoran desert
Black phoebe	*Sayornis nigricans*	Streams and ponds
Common raven	*Corvus corax*	Upper Sonoran desert, generally distributed
Cactus wren	*Campylorhynchus brunneiccapillus*	Lower Sonoran desert, upper Sonoran mesquite habitat
Northern mockingbird	*Mimus polyglottos*	Suburban areas in Sonoran desert
European starling*	*Sturnus vulgaris*	Sonoran desert
Abert's towhee	*Pipilo aberti*	Riparian areas, suburban areas, lower Sonoran desert
Brewer's sparrow	*Spizella breweri*	Lower and upper Sonoran desert deserts, field edges, and suburban areas
White-crowned sparrow	*Zonotrichia leucophrys*	Suburban, riparian, and other brushy areas in Sonoran desert
Great-tailed grackle	*Quiscalus mexicanus*	Riparian areas, ponds, marshes, farmyards, and suburban areas
Brown-headed cowbird	*Molothrus ater*	Generally distributed, feedlots and fields

TABLE D-2 BIRD SPECIES		
Common Name	**Scientific Name**	**Habitat**
House finch	*Carpodacus mexicanus*	Riparian and suburban areas, farmlands, and desert in Sonoran desert
House sparrow*	*Passer domesticus*	Wherever humans live
*exotic/introduced species Source: Witzeman et al. 1997		

TABLE D-3 REPTILE AND AMPHIBIAN SPECIES		
Common Name	**Scientific Name**	**Habitat**
Southern spadefoot	**Scaphiopus multiplicatus**	Sandy or gravelly soil in desert grassland, shortgrass plains, creosote bush and sagebrush desert, mixed grassland and chaparral, piñon-juniper and pine-oak woodlands, and open pine forests
Couch spadefoot	*Scaphiopus couchii*	Shortgrass plains, mesquite savannah, creosote bush desert, thornforest and tropical deciduous forest and other areas of low rainfall
Woodhouse toad	*Bufo woodhousei*	Sandy areas in grassland, sagebrush flats, woods, desert streams, valleys, floodplains, farms, and city backyards, breeds in quiet water of streams, marshes, lakes, freshwater pools, and irrigation ditches
Great plains toad	*Bufo cognatus*	Prairies or deserts, primarily a grassland species, breeds in shallow temporary pools or quite water of streams, marshes, irrigation ditches, and flooded fields
Sonoran desert toad	*Bufo alvarius*	Ranges from arid mesquite-creosote bush lowlands and arid grasslands into oak-sycamore-walnut groves in mountain canyons, often found near permanent water of springs, reservoirs, canals, and streams, and frequents temporary pools
Lowland leopard frog	*Rana yavapaiensis*	Desert, grassland, oak and oak-pine woodland, entering the permanent pools of foothill streams, overflow ponds and side channels of major rivers, and permanent springs and stock tanks
Bullfrog*	*Rana catesbeiana*	Wide variety of habitats with permanent water
Western banded gecko	*Coleonyx variegatus*	Ranges from creosote bush flats and sagebrush desert to the piñon-juniper belt, often associated with rocks and crevices
Mediterranean gecko*	*Hemidactylus turcicus*	Urban environments
Zebra-tailed lizard	*Callisaurus draconoides*	Washes, desert pavement, and hardpan where plant growth is scant
Long-tailed brush lizard	*Urosaurus graciosus*	Loose sand and scattered bushes and trees, creosote bush, burrobush, galleta grass, catclaw, mesquite, and paloverde
Side-blotched lizard	*Uta stansburiana*	Sand, rock, hardpan, or loam with grass, shrubs, and scattered trees
Desert horned lizard	*Phrynosoma platyrhinos*	Arid lands – sandy flats, alluvial fans, along washes, at the edge of dunes
Western whiptail	*Cnemidophorus tigris*	Firm soil, sandy, or rocky ground in deserts and semi-arid habitats usually where plants are sparse with open areas
Coachwhip	*Masticophis flagellum*	Sandy or rocky ground in desert, prairie, scrubland, juniper-grassland, woodland, thornforest, and farmland, avoids dense vegetation
Western patch-nosed snake	*Salvadora hexalepis*	Sandy and rocky lower slopes of mountains, low dry creosote bush plains, grasslands, chaparral, sagebrush plains, piñon-juniper woodland, and desertscrub

TABLE D-3 REPTILE AND AMPHIBIAN SPECIES		
Common Name	**Scientific Name**	**Habitat**
Gopher snake	*Pituophis melanoleucus*	Sand, loam, rock or hardpan soils in desert, prairie, brushland, woodland, open coniferous forest, and farmland
Glossy snake	*Arizona elegans*	Sandy or loamy open areas – light shrubby to barren desert, sagebrush flats, grassland, chaparral-covered slopes, and woodland
Long-nosed snake	*Rhinocheilus lecontei*	Deserts, prairies, and shrubland
Western shovel-nosed snake	*Chionactis occipitalis*	In the desert in washes, dunes, sandy flats, loose soil, and rocky hillsides with sandy gullies or pockets of sand among rocks, vegetation is sparse
Nightsnake	*Hypsiglena torquata*	Rocky and sandy areas in grassland, chaparral, sagebrush flats, deserts, woodlands, moist mountain meadows, thornscrub, and thornforest
Western diamondback rattlesnake	*Crotalus atrox*	Sandy flats to rocky upland areas in desert, grassland, shrubland, woodland, pine forests, and rank growth of river bottoms
*exotic/introduced species Source: Stebbins 1985		

TABLE D-4 SPECIES OF PLANTS	
Common Name	**Scientific Name**
Aleppo pine*	*Pinus* sp.
Bermuda grass	*Cynodon dactylon*
Johnsongrass*	*Sorghum halapense*
Russian thistle*	*Salsola iberica*
Sticky-stem, Spiderling	*Boerhaavia* sp.
Velvet mesquite	*Prosopis velutina*
Filaree*	*Erodium cicutarium*
Spurge	*Euphorbia* sp.
Cheeseweed	*Malva neglecta*
Tamarisk, Salt cedar*	*Tamarisk pentandra*
Red gum, Eucalyptus*	*Eucalyptus* sp.
Pepper tree*	*Schinus* sp.
Oleander*	*Nerium oleander*
Western ragweed	*Ambrosia psilostachya*
Desert broom	*Baccharis sarathroides*
*exotic/ornamental Sources: Elias 1989; Jeager 1941; Kearney and Peebles 1960	

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Exhibit E

EXHIBIT E
SCENIC AREAS, HISTORIC SITES AND STRUCTURES, AND ARCHAEOLOGICAL SITES

EXHIBIT E
SCENIC AREAS, HISTORIC SITES AND STRUCTURES, AND ARCHAEOLOGICAL SITES

As stated in Arizona Corporation Commission Rules of Practice and Procedure R-14-3-219:

"Describe any existing scenic areas, historic sites and structures or archaeological sites in the vicinity of the proposed facilities and state the effects, if any, the proposed facilities will have thereon."

SCENIC AREAS/VISUAL RESOURCES

The SEP is proposed within the boundaries of the existing plant site located near the corner of Val Vista Drive and Warner Road in Gilbert, Arizona. As shown in Figure A-3, the site is characterized by large scale existing industrial (utility) development on the plant site itself with a mixture of commercial/retail, residential, open space, and agricultural areas in the vicinity.

The visual resource study considers the existing visual conditions of the Santan site and identifies visual impacts to the visual character (setting) and sensitive viewers based on the introduction of new facilities. These existing visual conditions and impacts are described at a site, local, and regional level. Mitigation measures that address visual impacts resulting from the addition of new facilities, as well as enhancement measures developed in conjunction with input from the CWG, public, and agencies, are also presented. The visual study includes a specific discussion of the following:

- inventory methods
- inventory results
- impact assessment
- mitigation measures
- enhancement measures

Inventory Methods

The visual inventory consisted of (1) characterizing the existing visual character of the site, local, and regional area; and (2) identifying representative key observation points (KOPs) including residential and recreational areas and transportation routes from which viewers, who may have a concern for the scenic resources, are located. The visual character and KOPs were determined through the interpretation of aerial photography, field review, and the use of computer simulations.

Inventory Results

Inventory results, including the documentation of the visual character and the identification of representative KOPs within the context of the site, local, and regional areas, are described below.

Site Area

The visual character of the site is dominated by the existing power generating facilities and associated infrastructure including generators, a cooling tower, storage tanks, transmission lines, switchyards, solar generating facility, evaporation pond, administration building, and other ancillary facilities. The power generating and support facilities are generally located in the southern portion of the property. The Town of Gilbert's General Plan designates the site as a Multi-Use Employment classification that accommodates future industrial use on site.

Viewers on site primarily include employees of the plant that have unobscured views of the existing facilities. These views are generally confined to the site due to the existing vegetation that generally encloses the SRP property on all sides.

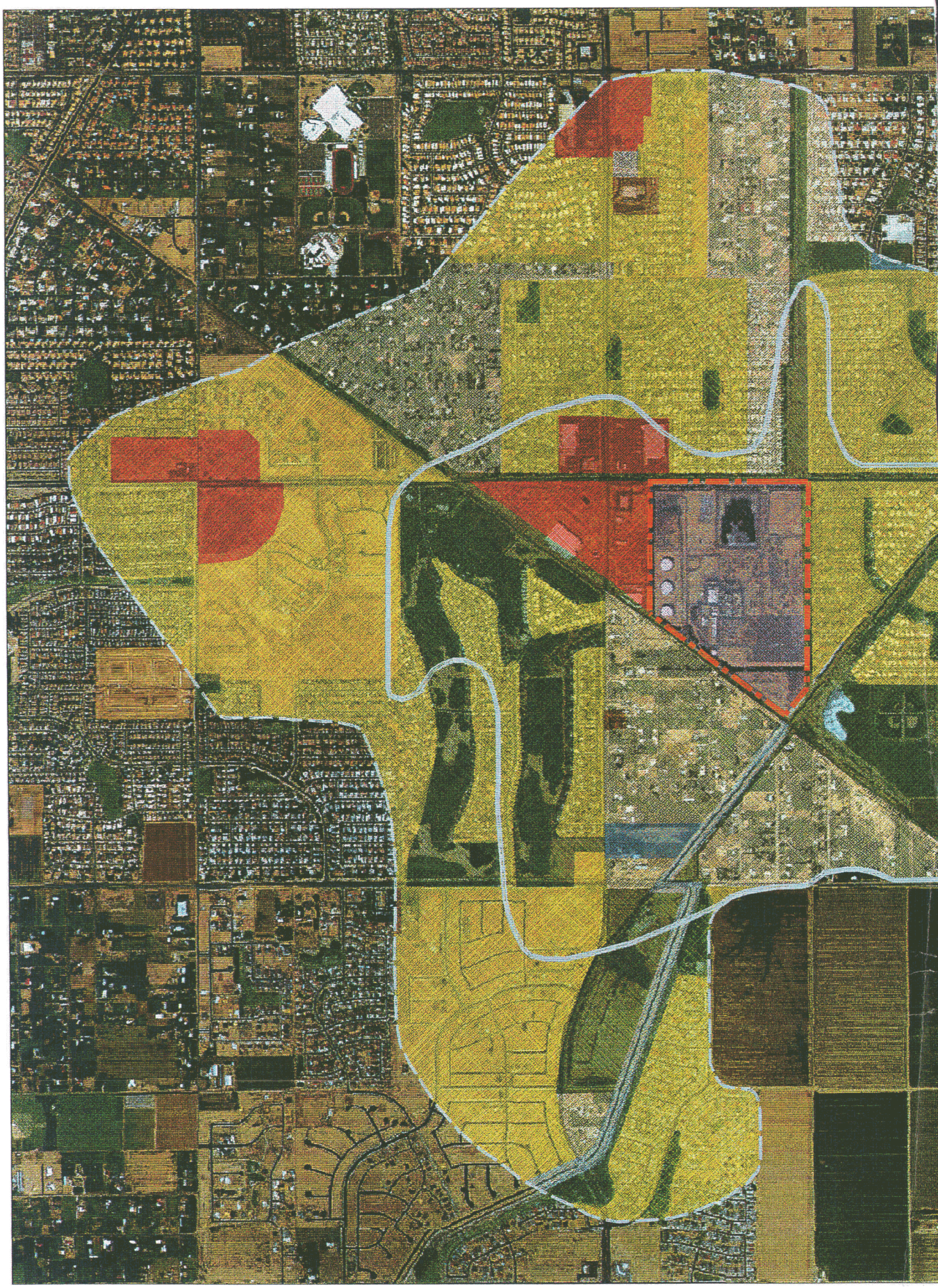
Local Area

The visual character of the local area immediately surrounding the plant includes a mixture of commercial, open space areas, and large and small lot residential development. Warner Road, a major arterial street, borders the site to the north. Immediately across Warner Road are the residential neighborhoods of Rancho Cimarron and Finley Farms (north and east). The Union Pacific Railroad corridor and Eastern Canal are located on the southern boundary of the site with scattered rural residences farther south. The Val Vista and Warner Crossroads Center commercial area borders the property to the west (a developing area) and the Cottonwoods Crossing residential neighborhood is located immediately to the east.

The location of potential KOPs in the local area was determined by identifying zones of influence where the surrounding community is likely to experience views to the proposed facilities. This area was identified through field studies conducted using a "lift" or crane that was placed in the general location of the proposed facilities and raised to approximately 150 feet to simulate the height of the proposed emission stacks.

Using the crane as a reference, a team of visual resource specialists toured the local area and identified representative locations where the highest elements of the proposed plant could be visible. Upon completion of the studies, two zones were mapped that broadly define relative visibility in the local area (Figure E-1). The immediate zone of influence within the local area included locations adjacent to the project site out to a distance where, using the crane, the

FIGURE E-1
LOCAL AREA



LOCAL AREA

Figure E-1

Legend

- Residential Low Density
- Residential Medium Density
- Commercial Retail
- Multi-Use Employment
- Multi-Use Commercial
- Utilities
- Public/Quasi-Public
- School/Educational Facilities
- Lakes/Canals
- Golf Course/Open Space/ Greenbelt/Recreation
- Transportation
- Immediate Zone of Influence
- Extended Zone of Influence
- Project Site

N
W E
S

0 1/2 1

Scale in Miles

SANTAN
EXPANSION PROJECT

Map Produced by EPG, Inc.
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emission stacks are estimated to be a noticeable and dominant factor from on-the-ground views. The extended zone of influence included the area beyond the immediate zone where occasional views occur but are less dominant. Representative KOPs, including selective locations, were identified in the immediate local zone of influence (Figure E-2) with views from residential, commercial, recreational, and transportation areas. Views were characterized according to the visibility of facilities associated with the existing and proposed plant. In general, visibility from KOPs within this area from residential and recreational locations and transportation routes is locally governed by factors such as existing vegetation, buildings, and orientation of the viewers. In the immediate zone especially, views are generally restricted due to the existing vegetation that screens a majority of the plant site on all four sides. These trees create an edge condition that provides a unique screening that generally limits views into facilities at the existing site.

Regional Area

The visual character of the regional area includes a range of suburban and rural or pastoral landscapes, many of which are in a state of transition as the Town of Gilbert and surrounding area continues to expand (see Exhibit A-3). KOPs in this area include recreational, transportation, and residential locations (existing and planned). Views of the project site from the regional area primarily occur under circumstances where viewers have a direct line of sight (road corridor) or where vacant or agricultural lands provide open viewing conditions. In addition, visibility to the site is expected from viewpoints in areas where viewers are located in elevated positions (e.g., hills, multi-story residences or buildings, and overpasses on Highway 60 north of the Santan site and from the proposed Santan Freeway).

Impact Assessment

Landscape Character

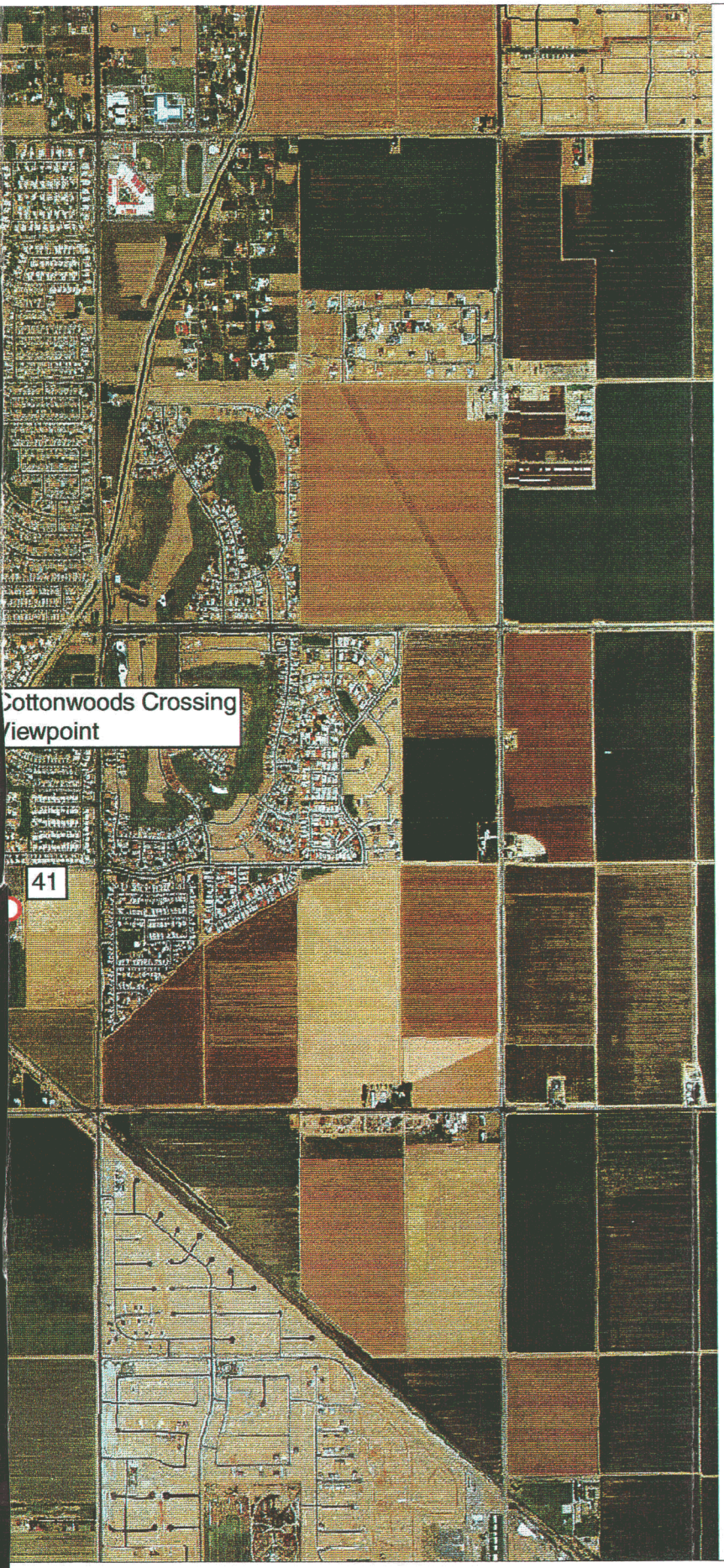
The proposed expansion would have a very limited, if any, direct effect to the character of the site primarily due to the present use and existing facilities. The proposed facilities would dominate the project site due to size but would maintain a similar character and location as the existing facilities. This area has been and is planned to remain industrial in character; hence, the SEP is considered to be consistent with this setting.

Sensitive Viewers (KOPs)

Impacts to viewers were determined by evaluating the change in views resulting from the introduction of proposed expansion facilities (plant, cooling tower, transmission structures, etc.) from representative KOPs identified during the visual inventory. These included transportation, residential, and recreational views at locations ranging from site and local areas (immediate zones of influence on Figure E-2) to key regional transportation views.

FIGURE E-2
SELECTIVE KEY OBSERVATION POINTS

49
48
2
60
Val Vista Dr.
Viewpoint
19
20
35



SELECTIVE KEY OBSERVATION POINTS

Figure E-2

Legend

Project Site

Viewpoints

N
W
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SCALE IN MILES

SANTAN
EXPANSION PROJECT

Map Produced by EPG, Inc.
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Views to existing plant facilities and potential views to proposed new facilities were analyzed from these representative viewpoint locations. A majority of the KOPs will have views to the planned facilities that are partially screened, primarily by the existing vegetation surrounding the plant, or by intervening buildings and vegetation.

Long-term adverse visual impacts to sensitive viewers in the local and the regional areas will primarily be confined to the visibility associated with the upper portions of the transmission structures, HRSGs, and emissions stacks. This equipment will be visible from various locations above the existing vegetation currently on site. Visibility to these facilities is anticipated to be more prominent from second-story dwellings or buildings in the vicinity that are oriented toward the site.

Portions of the new cooling tower will be visible primarily from the immediate local area in locations south and southwest of the site (these views would often be in conjunction with other existing plant facilities). Cooling tower steam will also be intermittently visible from locations throughout the local and regional areas (on colder days). The remainder of the other facilities associated with the SEP will be effectively screened by existing structures and trees, and by proposed mitigation and enhancement measures (due to their lower height). These and other measures that will assist in addressing impacts are described below.

Mitigation Measures

To reduce visual impacts SRP will implement several mitigation measures that have been suggested by the CWG, public, and agencies. First, major new facilities (HRSGs, emission stacks, cooling tower, transmission structures, etc.) have been specifically placed in areas that help to consolidate the proposed and existing facilities while considering other environmental standards (air and noise). In this manner the potential visibility and contrast of new structures is minimized. Secondly, and perhaps most important, SRP proposes to locate the three emission stacks in a clustered configuration. These stacks are the most visible and recognizable elements of the SEP, and through clustering and architectural treatments, the overall profile of the plant will be reduced. SRP has also committed to landscape buffering in order to address visibility issues, and will implement a lighting plan for proposed facilities in order to reduce effects on light emissions into local neighborhoods and the night sky.

Additional mitigation in the form of coloring of the plants and dulled transmission structures will also be critical, especially to address extended local and regional area views in which only the emission stacks will be prominent. At the time of this submittal, SRP intends to use colors in a light gray spectrum in order to reduce contrast with the background (often sky). Different hues of gray are also anticipated for other elements of the plant including the cooling tower and HRSGs.

Enhancement Measures

Throughout the planning process, several visual issues were identified by the CWG and the public regarding the existing general appearance of the Santan Plant and local areas of concern. In particular, conditions along Warner Road and the coloring of the existing facilities (fuel tanks) were an issue. In addition, it was suggested that the training tower (230kV lattice structure) be removed, and that selective tree planting occur off site in the local area.

Although these are issues associated with existing conditions on site, independent of the proposed SEP, SRP has committed to aesthetic enhancements as a part of the SEP. These enhancements specifically outlined in the IGA with the Town of Gilbert include (1) landscape improvements and additional screening on Warner Road; (2) use of berming, vegetation, architectural treatments, and/or walls on the west side of the plant to reduce visibility; (3) removal of the two northern fuel tanks; (4) painting to reduce the color contrast of the remaining southern fuel tank; (5) removal of the training tower; and (6) development of an off-site tree planting program in the local area.

At the time of this CEC application, SRP is continuing to work with the CWG/Focus Group for the SEP (outgrowth of the CWG), including local residents, Town of Gilbert, and other interested parties in the refinement of mitigation and enhancement measure concepts for the site that will help to integrate the Santan site into the character of the existing and planned local community. The appearance of initial concepts resulting from these meetings are described and illustrated in Exhibit G. As discussed in the planning process overview (Exhibit B-1), members from this group have and will continue to review concepts and finalize plans for the SEP.

HISTORIC SITES AND STRUCTURES, ARCHAEOLOGICAL SITES

This study was completed to address the Corporation Commission Rules of Practice and Procedure by determining if any historic properties, including prehistoric and historic archaeological sites and historic structures, were present in the project area and what effects, if any, the proposed SEP might have on the resources.

Cultural Environment

Humans have lived in southern Arizona for at least 12,000 years beginning with the Paleoindian period. Except in the southernmost part of Arizona, evidence of the Paleoindian culture is generally limited to isolated projectile points. There is only limited evidence of occupation of the lower Salt River area during the succeeding Archaic period, prior to the advent of the Hohokam cultural tradition (Hackbarth 1992). The Hohokam occupied the Phoenix Basin and much of southern Arizona for a period of about 1,500 years until approximately AD 1450. The culture probably represents an indigenous development from the preceding Archaic period. The Hohokam are generally characterized by their irrigation technology and Red-on-buff pottery. Archaeological sites consist of a variety of settlement types ranging from seasonally occupied

farmsteads to large agricultural communities that practiced canal irrigation. Some of the more obvious features common to large settlements are canal systems and other water-control features, ball courts, platform mounds, and compound architecture. Other features include pithouses, various size thermal and non-thermal pits, human and non-human burials, and middens.

There is no evidence of permanent habitation of the lower Salt River for about 400 years following the Hohokam occupation. The area was within the territorial range of the Pima (Akimel O'otam) (Ezell 1983) but was also used for resource procurement, travel, and raiding by the Maricopa, Yavapai, and Apache (Dene). People speaking closely related Piman dialects occupied southern Arizona and northwestern Mexico prior to European contact (Ezell 1983; Spier 1970). Many Pima consider themselves the descendants of the Hohokam and there is evidence that the Pima at least interacted with the Hohokam (Ezell 1983; Teague 1989). The modern Pima are a coalescence of the agriculturally oriented Piman groups that occupied the Gila and San Pedro rivers at the time of Spanish contact.

The present Maricopa represent a combination of five Yuman-speaking groups that migrated up the Gila River Valley from the Colorado River Valley to escape internecine conflict with the Quechan and Mohave, also Yuman speakers. The first two groups to settle along the lower Gila River moved prior to European exploration, possibly as early as the AD 1200s (Harwell and Kelly 1983). These groups formed an alliance with the Pima and eventually all were living along the Gila River, upstream from its confluence with the Salt River. The first use of the name Maricopa was in 1846 "...as an all-inclusive designation for the Yuman-speaking population of the Salt and Gila valleys" (Ezell 1963). The Gila River Indian Reservation was established in 1859; the tribal entity is the Gila River Indian Community.

Deteriorating environmental conditions along the Gila River due to drought and up-stream water diversion by Euroamerican and Mexican settlers, caused some Pima and Maricopa to move into the Salt River Valley to farm in the late 1860s and early 1870s, with the Maricopa moving first (Hackenberg 1974). These people settled on the north and south sides of the Salt River, providing the basis of Salt River Indian Reservation, established in 1879 by the Executive Order of Rutherford B. Hayes (Zarbin 1997). The tribal entity is the Salt River Pima-Maricopa Indian Community.

The Spanish were the first non-aboriginal government to claim the area in the 1500s; Mexico controlled the area after its independence from Spain in 1821. Neither country established any permanent settlements north of the Tucson area. Control of present Arizona north of the Gila River was ceded to the United States with the Treaty of Guadalupe Hidalgo in 1848, which ended the war with Mexico. The Gadsden Purchase of 1853 sold that portion of Arizona between the Gila River and the present international border to the United States.

The lower Salt River was resettled in the 1860s and 1870s after the establishment of Camp McDowell, later Fort McDowell, in 1865 on the Verde River (Barnes 1979). By 1878, Phoenix, Tempe, Lehi, and Mesa had been founded (Barnes 1979).

In 1902, William "Bobby" Gilbert donated the land on which the railroad station and original community of Gilbert were located. This was part of an effort to bring the Arizona Eastern Railway from Florence to Phoenix. The subsequent line was named the Phoenix and Eastern Railroad (Maricopa County 1960). Irrigated land in Gilbert produced sugar beets, alfalfa, and cotton; livestock and dairy products were important also. By 1908, Gilbert was the largest hay shipping point in the world (Maricopa County 1960). The Gilbert post office was established in 1912 (Barnes 1979). Gilbert had a population of 500 when the town was incorporated in 1920. The population in 1960 was 1,640 and the town was one square mile in area (Maricopa County 1960). Gilbert completed a strip annexation in the 1970s that enclosed a 54-mile area. The town's population at the time was under 2,000, but the valley's booming growth was moving closer. The population was 5,717 in 1980 and presently is about 100,000. The Santan Receiving Station was built in 1963; the generating station was built between 1972 and 1974. Operation of Units 1-3 began in 1974; Unit 4 operation began in 1975. In 1984 Gilbert annexed the area around the Santan facility.

Cultural Resource Inventory

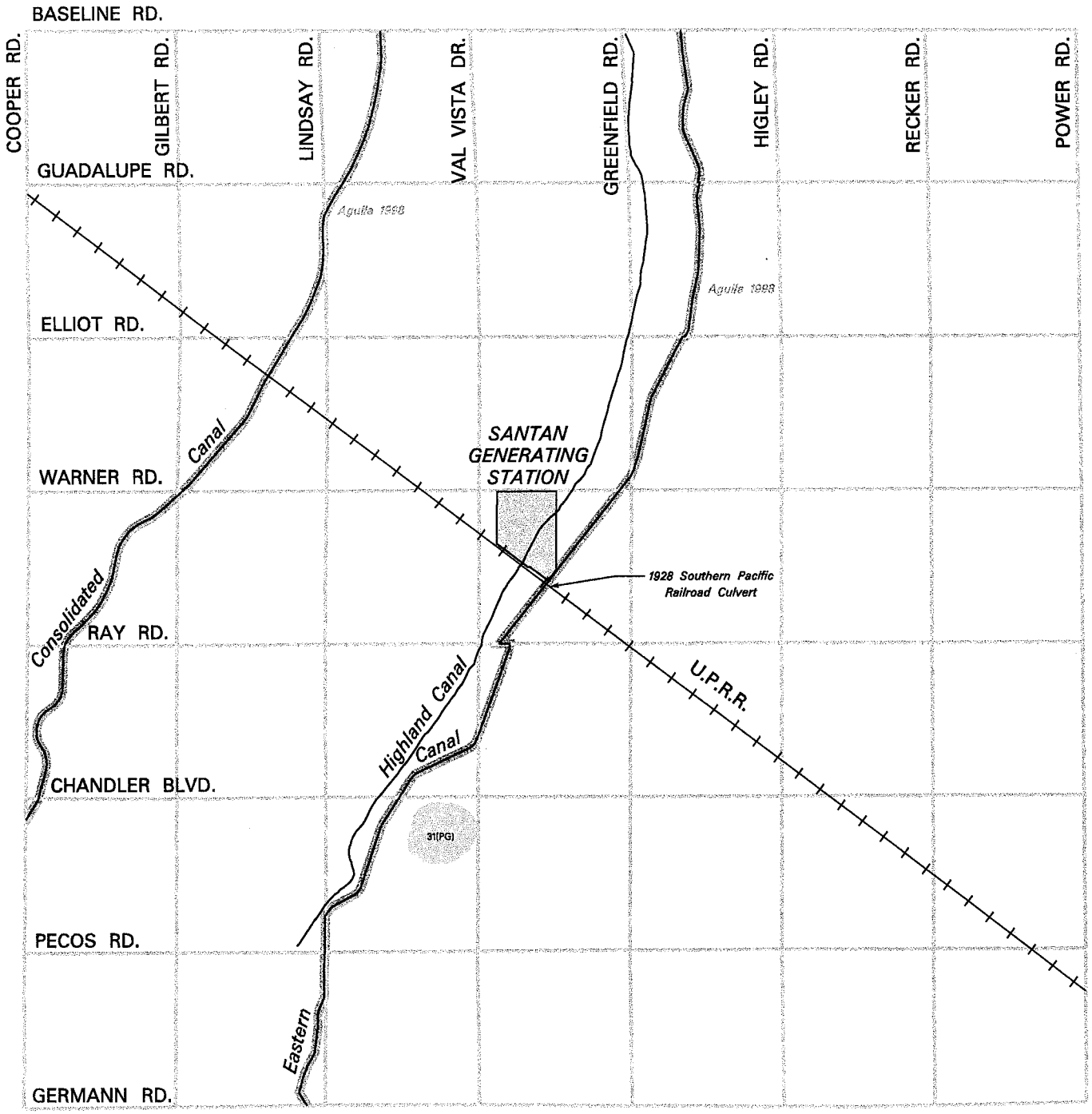
Methods

A cultural resources study was completed to determine if any historic properties, including prehistoric and historic archaeological sites and historic structures, were present in the project area and what effects, if any, the proposed SEP might have on the resources. Historic structures, archaeological project areas, and sites are depicted in Figure E-3.

Previous research in and adjacent to the proposed project area, SRP records, an archaeological map of the Phoenix Basin, and a recent aerial photograph of the Santan facility were reviewed. Additionally, the area surrounding the Santan Facility was inspected visually. Other than SRP records, a new record search was not conducted for the preparation of this document. A records search had previously been conducted for an inventory survey of the SRP water-transmission canals (Aguila 1998) at the following institutions and agencies:

- Arizona State Historic Preservation Office (SHPO)
- Arizona State Museum, including the Gila Pueblo records
- Arizona State University Anthropology Department and Historical Foundation
- Bureau of Land Management General Land Office
- Mesa Southwest Museum
- Pueblo Grande Museum
- SRP
- Tempe Historical Society

FIGURE E-3
HISTORIC STRUCTURES, ARCHAEOLOGICAL PROJECTS AREAS, ARCHAEOLOGICAL SITES



Historic Structures, Archaeological Project Areas, Archaeological Sites

Figure E-3

SRP makes no representation as to the accuracy of this mapping product nor as to its fitness for a particular purpose.

NORTH

© 2000 Salt River Project (SRP)

Scale in Miles

0 .25 .50 .75 1

SANTAN EXPANSION PROJECT

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Historic Cultural Resources

The Eastern (Canal Number 4) and Consolidated (Canal Number 5) canals were included in the recent inventory survey of the SRP water-transmission system (Aguila 1998). The Eastern Canal is adjacent to the southeast corner of the Santan facility; the Consolidated Canal is about 2 miles to the west of the facility. The records search only noted one previously studied cultural resource near the Santan facility, the Southern (now referred to as Union) Pacific Railroad. The survey identified only one new cultural resource in the area, a railroad culvert built in 1928 by the Union Pacific Railroad at its crossing of the Eastern Canal. The railroad is considered a historic property (Janus Associates 1989; Myrick 1980 in Aguila 1998) and is potentially eligible for inclusion to the National Register of Historic Places (NRHP). However, the culvert requires further evaluation to determine if it is a contributing element to the railroad.

A review of SRP records indicates that the Highland Canal, the predecessor of the Eastern Canal, extended diagonally, northeast to southwest, through Section 21, Township 1 South, Range 6 East and through the Santan facility. There is currently no visible evidence of this canal; SRP records contain only minimal information regarding the canal. The Highland Canal Company began construction of the Highland Canal in 1887 (Zarbin 1997) and it was completed in 1891 (SRP 1983). The canal was not well maintained and parts of it were falling into disuse by the time the Eastern Canal was constructed. There is no information regarding the size of the canal in the project area. If the canal was relatively shallow, previous agricultural activities or the development of the Santan facility may have destroyed it. If portions of the canal were extant, they would possibly be eligible for inclusion to the NRHP.

The U.S. Bureau of Reclamation (BOR) constructed the Eastern Canal in 1909. It followed the same general course as, and was approximately ¼ mile east of, the Highland Canal. The Consolidated Canal was constructed between 1891 and 1893 under the direction of Dr. A.J. Chandler (Zarbin 1997). It was originally named the Ferry Canal (Zarbin 1997). The canal was sold to the federal government in 1908. The Eastern and Consolidated canals have been previously determined by the SHPO, SRP, and BOR to be eligible for inclusion to the NRHP.

The general area of the proposed project was formerly under cultivation. Visual inspection of the area surrounding the Santan facility has determined that while historic structures related to agriculture might be present within a 2-mile radius of the project area, it is doubtful that any significant structures remain. The recent urbanization surrounding the Santan facility has heavily disturbed the area removing most historic settings.

Prehistoric Cultural Resources

The land parcel presently containing the existing Santan Generating and Santan Receiving stations was surveyed for archaeological resources in 1972 (Dittert 1972; see attachment following page E-12) prior to construction of the generating station. At the time of the survey, the parcel contained the Santan Receiving Station and a large borrow pit; the remainder was under cultivation. The survey located only one artifact, a prehistoric Salt Red pottery sherd. The

7-meter-deep (23 feet) borrow pit in the southeastern corner of the property did not exhibit any evidence of a cultural horizon.

A map of historically recorded prehistoric archaeological sites and canals depicts a prehistoric site numbered 31(PG) about 3 kilometers (2 miles) south-southwest of the Santan facility (GEO-MAP 1992). No attempt was made to relocate the site and its significance is unknown.

Conclusions

Four historic structures and one prehistoric archaeological site are known to be located within 2 miles of the proposed project area: the Union Pacific Railroad, an associated railroad culvert, the Eastern and Consolidated canals, and Site 31(PG). The historic Highland Canal may be present within the proposed area. None of the resources are listed on either the NRHP or the Arizona Register of Historic Places. The Union Pacific Railroad (Janus Associates 1989; Myrick 1980 in Aguila 1998) is considered eligible for inclusion to the NRHP. The railroad culvert has not been fully evaluated, but may be a contributing element to the railroad (Aguila 1998). The Eastern and Consolidated canals are considered eligible for inclusion to the NRHP. The Highland Canal is potentially eligible to the NRHP if it is intact and in good condition, but a determination cannot be made until it is relocated and evaluated. It is not known if Site 31(PG) still exists and its significance is unknown.

The construction of a new generating station could affect the historic Highland Canal if it exists at the Santan facility. The degree of the effect cannot presently be determined. No other potentially significant cultural resources are present at the Santan facility. The Union Pacific Railroad and its associated culvert, the Eastern and Consolidated canals, and Site 31(PG) will not be affected by the construction of the proposed generating station. In fact, potential interpretive signage associated with trail enhancements (see Exhibit F), could provide recreational users with an historic background of these historic resources.

Should any unknown cultural resources be discovered during the project, SRP will have the materials evaluated to determine their significance. If human remains are located that appear to be older than 50 years, they will be protected in situ and the Arizona State Museum will be notified immediately as per the requirements of ARS § 41-865. Any modern remains will be protected in situ and the Gilbert police will be notified immediately.

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AN ARCHAEOLOGICAL SURVEY

of the

SALT RIVER PROJECT

SANTAN RECEIVING STATION LANDS

Submitted to

SALT RIVER PROJECT

Phoenix, Arizona

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AN ARCHAEOLOGICAL SURVEY

of the

SALT RIVER PROJECT SANTAN RECEIVING STATION LANDS

Introduction

An examination of lands owned by the Salt River Project adjacent to the Santan Receiving Station was conducted at the request of Mr. Alfred H. Colton, Salt River Project Environmental Planning Division. The facility is situated about 3.1 miles (5.0 kilometers) southeast of Gilbert, Maricopa County, Arizona, in T. 1 S., R. 6 E., Sec. 21 ($3_{86}950$ m. to $3_{88}575$ m. North and $4_{29}660$ m. to $4_{31}280$ m. East). The land area is 119.0 acres (48.1 hectare) as shown on Ref. Dwg. No. A-362-31. Permission to enter the private lands was given by Mr. Alfred H. Colton.

The investigations were conducted by Dr. Alfred E. Dittert, Jr. and Mrs. Audrey R. Dittert. Mr. Colton and Mr. Jack A. Rassi of the Salt River Project met the investigators at the site and supplied information about the proposed developments. The latter program includes additional facilities at the station and extensive landscaping. The purpose of the survey was to determine whether or not historic or archaeological remains existed within the defined area and, if so, the impact that the developments would have on the resources. Approximately one-half day was spent examining the lands on 11 November 1972.

Area of Investigations

The major portion of the plot, 110.2 acres (44.61 hectare), is in T. 1 S., R. 6 E., Sec 21, NW^{4}, with a small unit of 8.8 acres (3.49 hectare) in the NE^{4}, SW^{4} of that section. All of the land has been subjugated by construction of the present receiving station, by the excavation of an area for borrow, and for cultivation. There is no vestige

of the native vegetation or of the original surface. The lands are within the lower bajada zone and should have had a growth of creosote and bursage with an occasional paloverde and ironwood or mesquite in places where moisture concentrates. There is no distinct drainage system; the closest is Queen Creek which spreads out onto the lower bajada some 5.0 miles (8.0 kilometers) to the south-southeast. Part of the plot is shown on the U.S.G.S. Chandler, Arizona, 1952, 7.5' and part is on the U.S.G.S. Higley, Arizona, 1956, 7.5' quadrangles.

A borrow pit dug to obtain dirt for canal maintenance is located at the southernmost end of the unit. It is bounded on the southeast by the Eastern Canal and on the southwest by the Southern Pacific Railroad. North of the pit is the present receiving station. The latter occupies an area approximately 750 by 800 feet (228.6 by 243.9 meters). A small triangular area used for cattle and horses is adjacent to the railroad west of the receiving station. The north half of the one-quarter section within the Salt River Project holdings is now planted with cotton; the remainder is fallow at present but has been plowed repeatedly in the recent past.

Investigations

The possibility existed that the above lands might contain historic or archaeological remains; a large number of archaeological sites are known to exist at Williams Air Force Base and along Queen Creek a short distance to the southeast. Therefore, all of the above mentioned areas proposed for subjugation were examined closely. In the case of the lands planted in cotton, it was necessary to walk the rows at intervals. Special attention was given to places that exhibited differential growth of the cotton plants. No evidence of earlier human activity was found.

The fallow area and the pasture was crossed at intervals of about 80.0 feet (25 meters). One potsherd, classified as Salt Red, was found along the field road that divides the fallow area and the cotton field;

nothing was discovered in the pasture. The receiving station area was not examined since it was covered with a layer of gravel.

Excavation of the borrow pit had exposed a face up to 23.0 feet (7.0 meters) high. Careful study revealed no evidence of human occupation. However, excellent stratigraphic units of water-deposited silts and sands, fine gravel, and cienega clays are represented. It is possible that pollen studies of the sediments might be able to provide a correspondence between these deposits and ones which have been dated elsewhere.

Disturbance of the land has eliminated the flora and fauna that should occur here. No attempt was made to identify the birds that were seen; most appear to have come in as a response to the changed conditions brought about by recent land use. Mourning Doves were noted in the area planted in cotton; the habitat for most expectable species has been destroyed.

Conclusions

1. Construction of additional facilities adjacent to the Santan Receiving Station will not endanger any archaeological or historic resources. Origin of the one potsherd could not be determined. An intensive search in the immediate vicinity of the potsherd locus did not yield additional cultural remains.

2. Since natural conditions have already been modified by long continued use of the land for agriculture and other purposes, there is no consideration about destruction of natural resources, modification of the drainage pattern, or removal of wildlife habitats.

3. It is possible that useful data might be obtained from the borrow pit face before construction and landscaping takes place. If correlations with dated deposits can be demonstrated, considerable

information would be obtained about past environmental events in this district. The importance that this exposure might have for studies by other disciplines has not been explored completely.

4. The proposed landscaping will be beneficial in terms of providing wildlife habitats and visual considerations. This is considered to be an improvement over existing conditions.

5. The research did not attempt to evaluate the noise factor, air pollution considerations, or other factors.

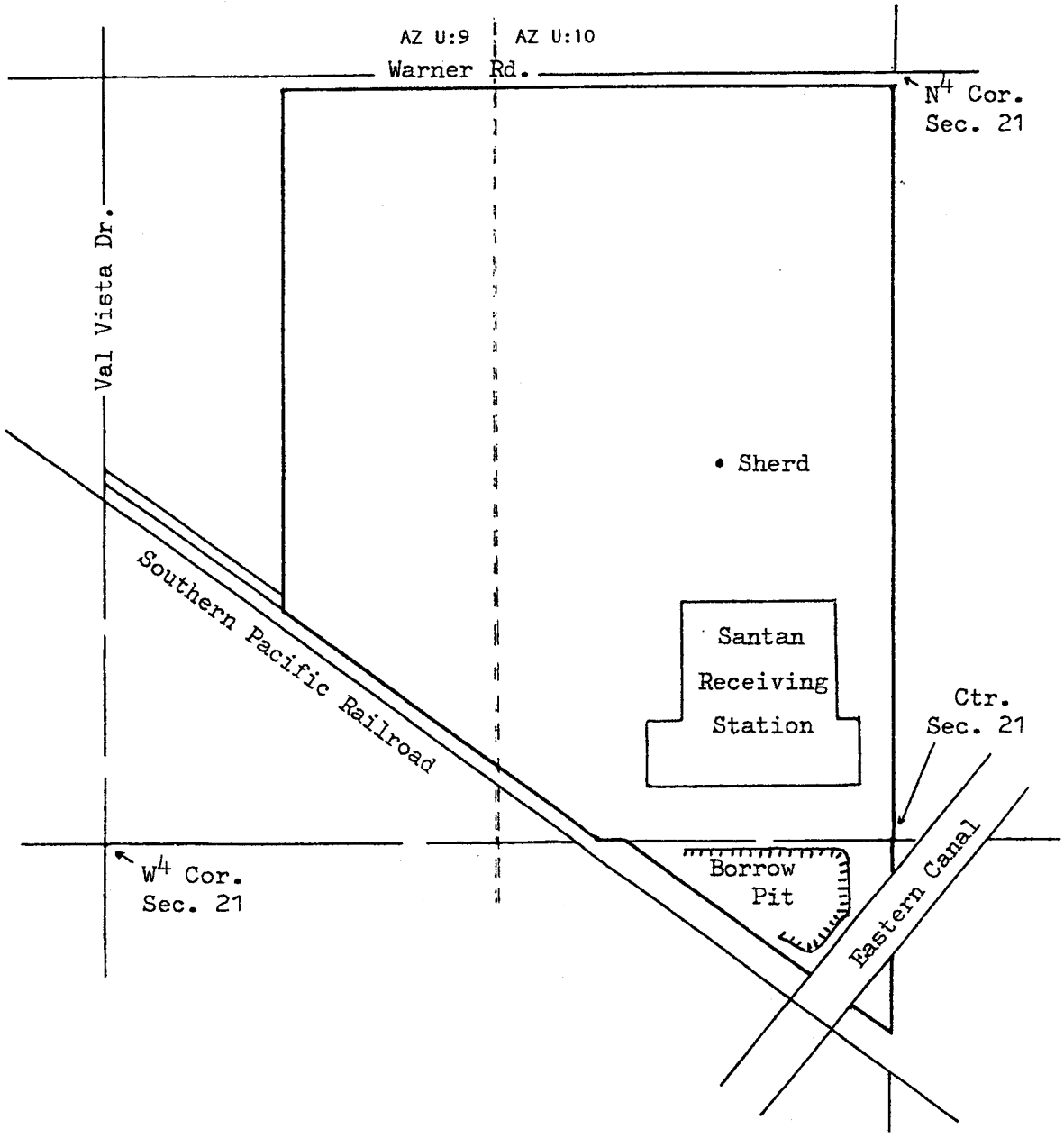


Exhibit F

EXHIBIT F
RECREATIONAL PURPOSES AND ASPECTS

EXHIBIT F
RECREATIONAL PURPOSES AND ASPECTS

As stipulated in Arizona Corporation Commission Rules of Practice and Procedure R14-3-219:

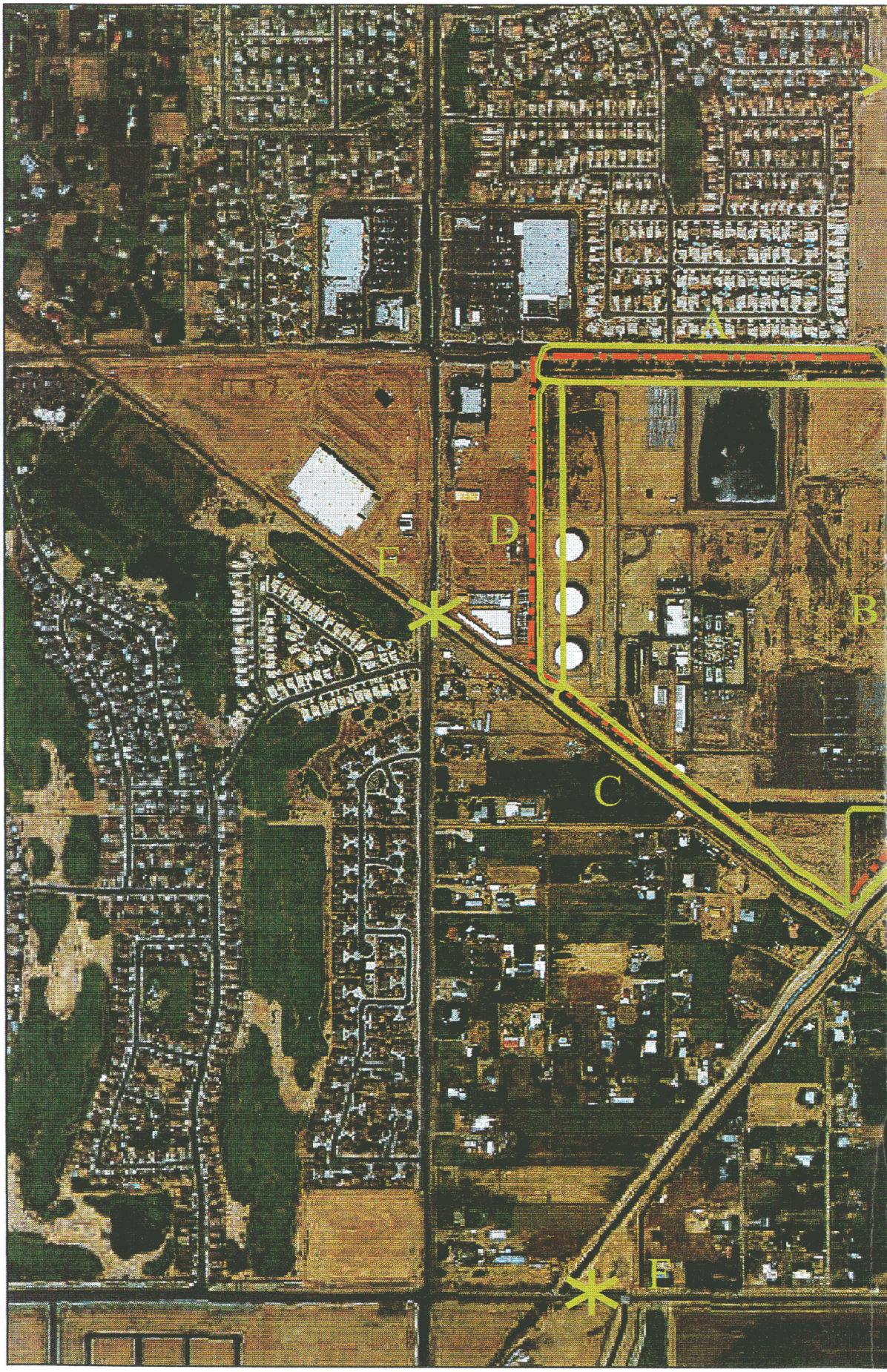
"State the extent, if any, the proposed site or route will be available to the public for recreational purposes, consistent with safety considerations and regulations and attach any plans the applicant may have concerning the development of the recreational aspects of the proposed site or route."

There are no anticipated impacts to recreation in the study area from the proposed SEP and, currently, there is no recreation on the project site; however, the CWG identified opportunities for recreation enhancements on the existing site. In conjunction with the SEP, the Gilbert General Plan, Open Space and Recreation Element provides for securing permanent interconnected open-space to make visual and functional links with a regional network of recreational amenities that include parks, schools, and neighborhoods (Figure F-1). In general, this policy supports hiking trails, bicycling, jogging, and equestrian uses by utilizing railroad and electrical transmission line corridors and both sides of canals for non-motorized transportation.

At present, the majority of the Town of Gilbert's park system is concentrated in the northwest portion of their planning area. The Union Pacific Railroad corridor runs through the center of this concentration of parks and continues southeast to the proposed SEP site. Only four major parks currently exist outside of this northwestern area: (1) Crossroads Park, located on Knox Road just west of Greenfield Road; (2) Rodeo Park, located on Ray Road and Val Vista Drive; (3) Riparian Preserve, located on Guadalupe and Greenfield roads; and (4) Nichols Park, located on the southwest corner of Higley and Guadalupe roads. Crossroads Park and Rodeo Park Plaza are both located south of the proposed SEP in the vicinity of the intersection of the Eastern Canal and the Union Pacific Railroad corridor. The Riparian Preserve and Nichols Park are found approximately 1½ miles northeast of the proposed SEP along the Eastern Canal.

In keeping consistent with the Open Space and Recreation Element of the Gilbert General Plan, SRP has committed to enhancements that would connect proposed trail linkages using property on the north and east sides of the project site. These enhancements would provide public access along the site boundaries to link parks and open space areas in the local community and throughout the Town of Gilbert.

The Gilbert General Plan includes an existing trail immediately north of the proposed SEP site, beginning at Warner Road and running north along a designated transmission line easement. The plan also includes two trail linkages directly south of the project site, one along the Union Pacific Railroad corridor that would connect Crossroads Park with parks in northwest Gilbert, and the


A
B
C
D
E
F

PRELIMINARY MITIGATION AND ENHANCEMENT ZONES

Figure G-1

Legend

Project Site

Issue Areas

A - Warner Road Expansion
- landscaping, walls
- street treatment
- pedestrian/bike trail

B - Trail Extension
- pedestian, bike, equestrian
- landscaping, walls
- trailhead
- canal crossing
- training tower removal

C - South Boundary Railroad and Open Space Corridor
- landscaping

D - West Commercial Area
- tank removal (2)
- landscaping,walls
- architectural treatments
- paint remaining tank

E - Val Vista Drive Improvement

F - Re-route of Canal at Ray Road

G - Re-vegetation of RS 18 Corridor
- in conjunction with future line

N
W E
S

0 350 700 1400

SCALE IN FEET

SANTAN
EXPANSION PROJECT

Map Produced by EPG, Inc.
m:/srp/santan/amls/issmc.aml/July 13, 2000

TABLE G-1 MITIGATION MEASURES	
M1	Phasing plan to coordinate and minimize disturbance
M2	Schedule timing of construction and railroad activities
M3	Access from Warner Road for construction purposes
M4	Use of Warner Road access only for emergency purposes after construction is complete
M5	Architectural treatments
M6	Color of planned facilities
M7	Landscape buffering
M8	Lighting plan for planned facilities
M9	Plant location
M10	Cluster emission stacks

TABLE G-2 ENHANCEMENT MEASURES (IGA ELEMENTS)	
E1	Improvements to Warner Road
E2	Improvements to Val Vista Drive
E3	Screening of the plant
E4	Color of remaining tank
E5	Removal of two tanks
E6	Pedestrian/equestrian trail extension
E7	Reroute of canal at Ray Road
E8	Removal of training tower
E9	Revegetation along new RS 18 line
E10	Dust control along canals
E11	Off-site tree planting

FIGURE G-2
AREA A – WARNER ROAD EXPANSION CONCEPT

ISSUES

- Transportation and residential views to existing and planned facilities
- Widening of Warner Road - loss of trees
- Maintenance of property
- Interconnection to regional trails network and pedestrian/bike use
- Increase in traffic during construction
- Landscaping on north and south side of Warner Road

IMPACTS

- Increased construction traffic on Warner Road
- Visual presence of construction equipment
- Foreground and middleground views to planned facilities from Rancho Cimarron and Finley Farms neighborhoods
- Transportation views of planned facilities from Warner Road

MITIGATION MEASURES

- M1, M2, M3, M4, M5, M6, M7, M8, M9, M10 (see Table G-1)

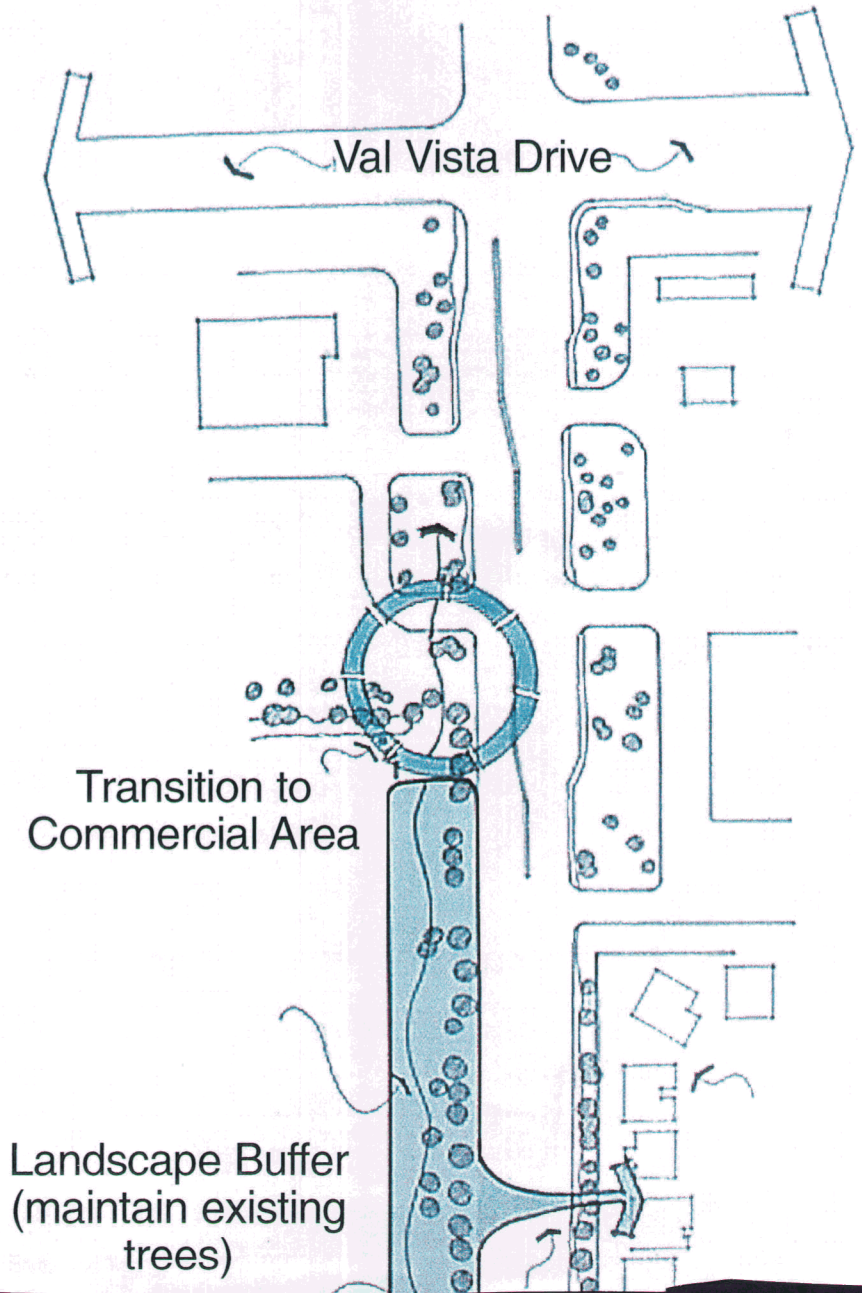
ENHANCEMENT MEASURES

- E1, E3, E5, E6, E8, E9, E11 (see Table G-2)

KEY GILBERT GENERAL PLAN ELEMENTS

Community Design Element

- Promote attractive, safe, accessible street environments.
- Plan for streets that serve the characteristics of each neighborhood with consideration given to the manner in which streets enhance appearance, safety, and function.
- Link residential areas to schools, parks, commercial services, and other neighborhoods with landscaped pedestrian walkways and bikeways.
- Develop a unified streetscape program utilizing xeriscape principles and native/drought tolerant plant materials in order to enhance neighborhood identity and provide shade while reducing glare and heat.
- The street character of the community should provide visual unity and enhance the environment of adjoining land uses.



- Enhance community identity through creation of gateways, which convey a sense of entry into the Town through use of landscaping, monumentation, signs, and public art.
- Avoid abrupt changes in landscape setbacks between districts along arterial streets. Adjust adjacent setbacks to accommodate smooth streetscape transitions.
- Avoid long, continuous landscape setbacks, which parallel the curb by encouraging use of massing of plant materials, undulation of screen walls, sidewalks, and berming.
- Create high-quality development and landscaping along arterial streets to enhance the Town's image.

Land Use Element

- Promote safe and convenient access to shopping and services from residential areas by providing pedestrian/ bicycle access.

Open Space and Recreation Element

- Secure permanent interconnected open space, which provides visual and functional links with parks, schools, and neighborhoods. Utilize both sides of canals, railroad and electrical transmission line corridors, providing for hiking, bicycling, jogging, equestrian, and non-motorized transportation.

Circulation/Transportation Element

- Create quality development and landscape themes along arterial streets to beautify the streetscape.
- Protect the carrying capacity of arterial streets by encouraging site designs, which minimize the number and frequency of curb and median cuts necessary to serve the site.
- Secure pedestrian, equestrian, and bicycle access across major barriers (canals, railroads) and provide bicycle routes along arterial and collector streets.
- Encourage the linkage of neighborhoods, schools, community and district parks, and commercial centers, with bicycle and pedestrian paths.

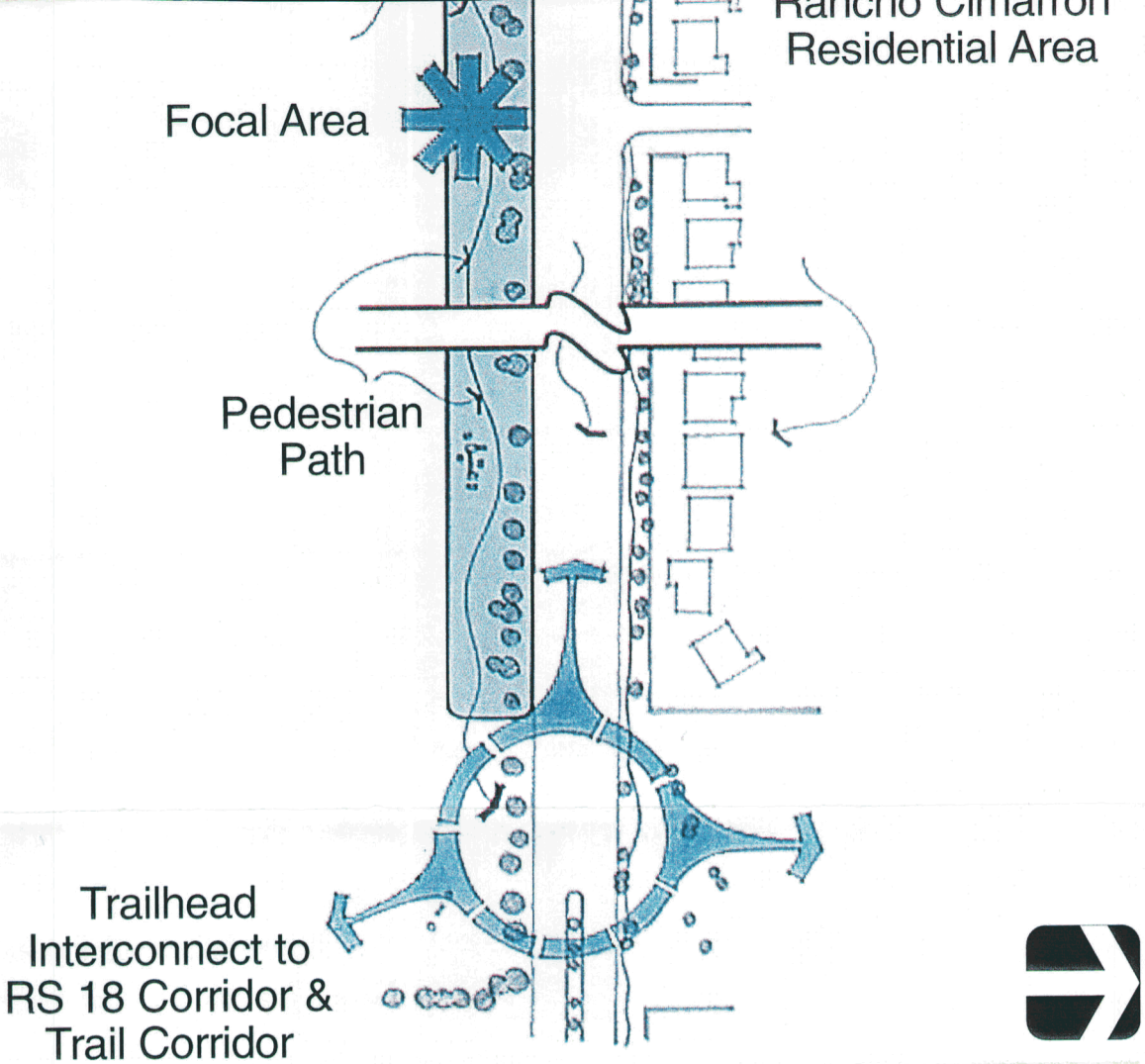


Figure G-2

AREA A - Warner Road Expansion Concept

plan view - no scale

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SANTAN
EXPANSION PROJECT

Produced by EPG, Inc.

FIGURE G-3
AREA B – RECREATIONAL TRAIL CONCEPT

ISSUES

- Interconnection to regional trails network
- Residential views to existing facilities (training tower) and proposed facilities (Cottonwoods Crossing)
- Maintenance of property
- Nighttime lighting
- Noise from existing and proposed facility
- Pedestrian/equestrian safety crossing Warner Road from RS 18 corridor

IMPACTS

- Filtered residential views through and over landscape to existing and proposed facilities

MITIGATION MEASURES

- M1, M2, M5, M6, M7, M8, M9, M10 (see Table G-1)

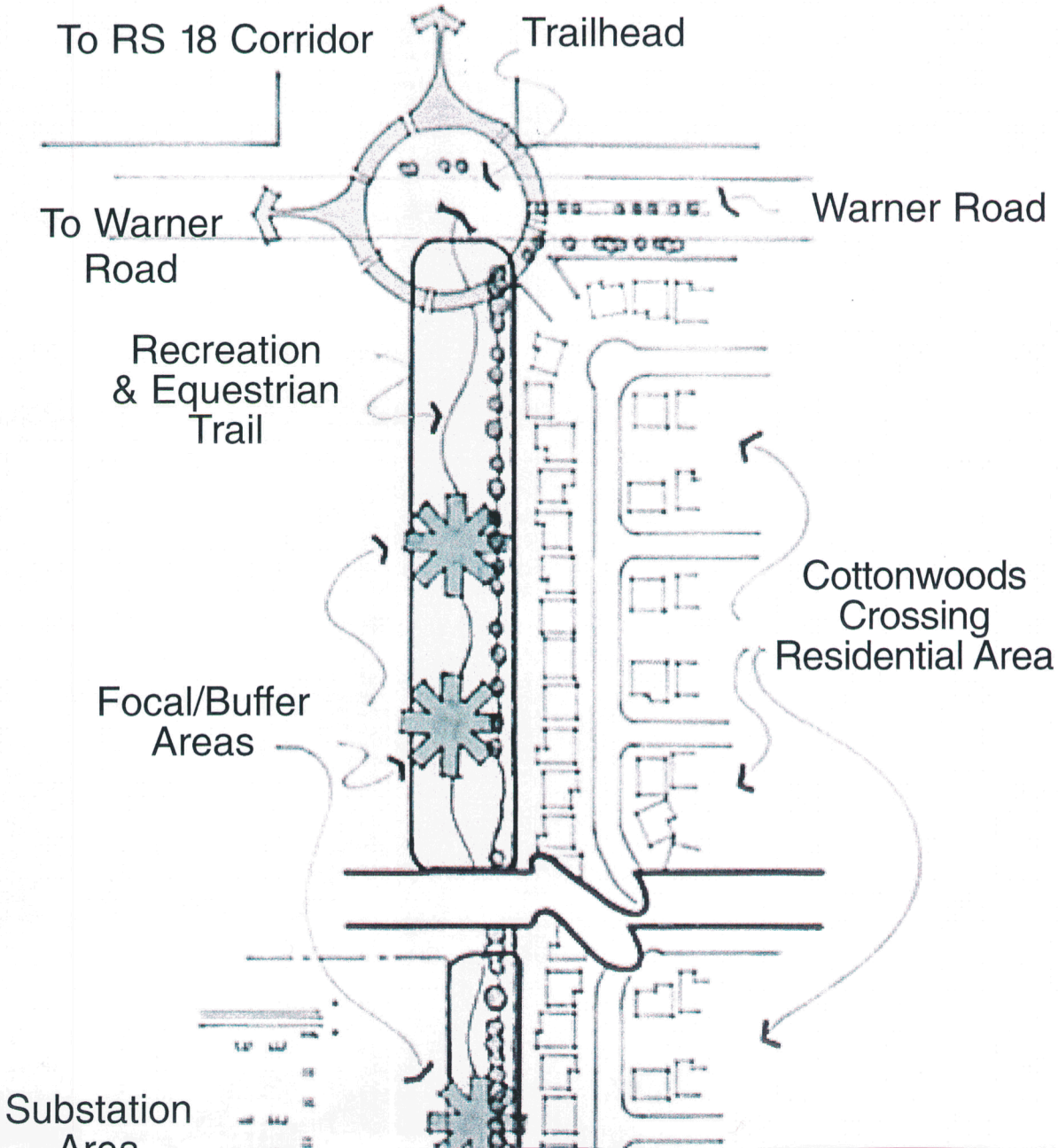
ENHANCEMENT MEASURES

- E6, E8, E9, E10, E11, (see Table G-2)

KEY GILBERT GENERAL PLAN ELEMENTS

Open Space and Recreation Element

- Utilize joint use agreements with RWCD, SRP, homeowners associations, and school districts to maximize land utilization.
- Develop design criteria and incentives to maximize useable recreation open space in areas used for storm water retention.
- Secure permanent interconnected open space, which provides visual and functional links with parks, schools, and neighborhoods. Utilize both sides of canals, railroad and electrical transmission line corridors, providing for hiking, bicycling, jog-



ging, equestrian, and non-motorized transportation.

Circulation/Transportation Element

- Secure pedestrian, equestrian, and bicycle access across major barriers (canals, railroads).
- Encourage the linkage of neighborhoods, schools, community and district parks, and commercial centers, with bicycle and pedestrian paths.
- Promote trail development that is visually pleasing to the user, as well as to those living adjacent to the trail.
- Orient equestrian trail development to accessing equestrian subdivisions, low-density areas and Rodeo Park, and limit conflicts with street traffic.
- Create complementary trail design themes that are compatible with the surrounding area or a specific destination that has a design theme.
- Consider plans for a rapid rail corridor on the existing Union Pacific Railroad line.

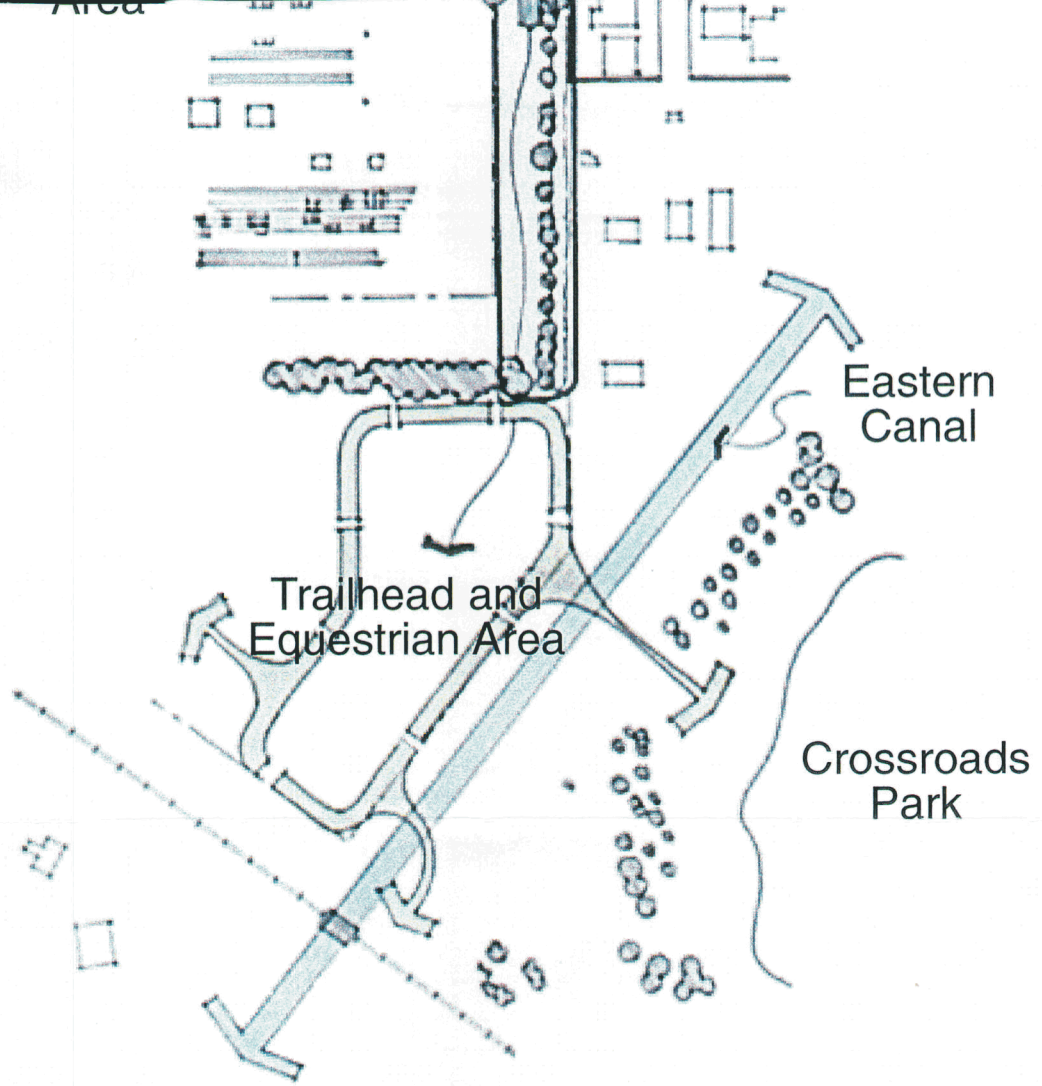


Figure G-3

AREA B - Recreational Trail Concept

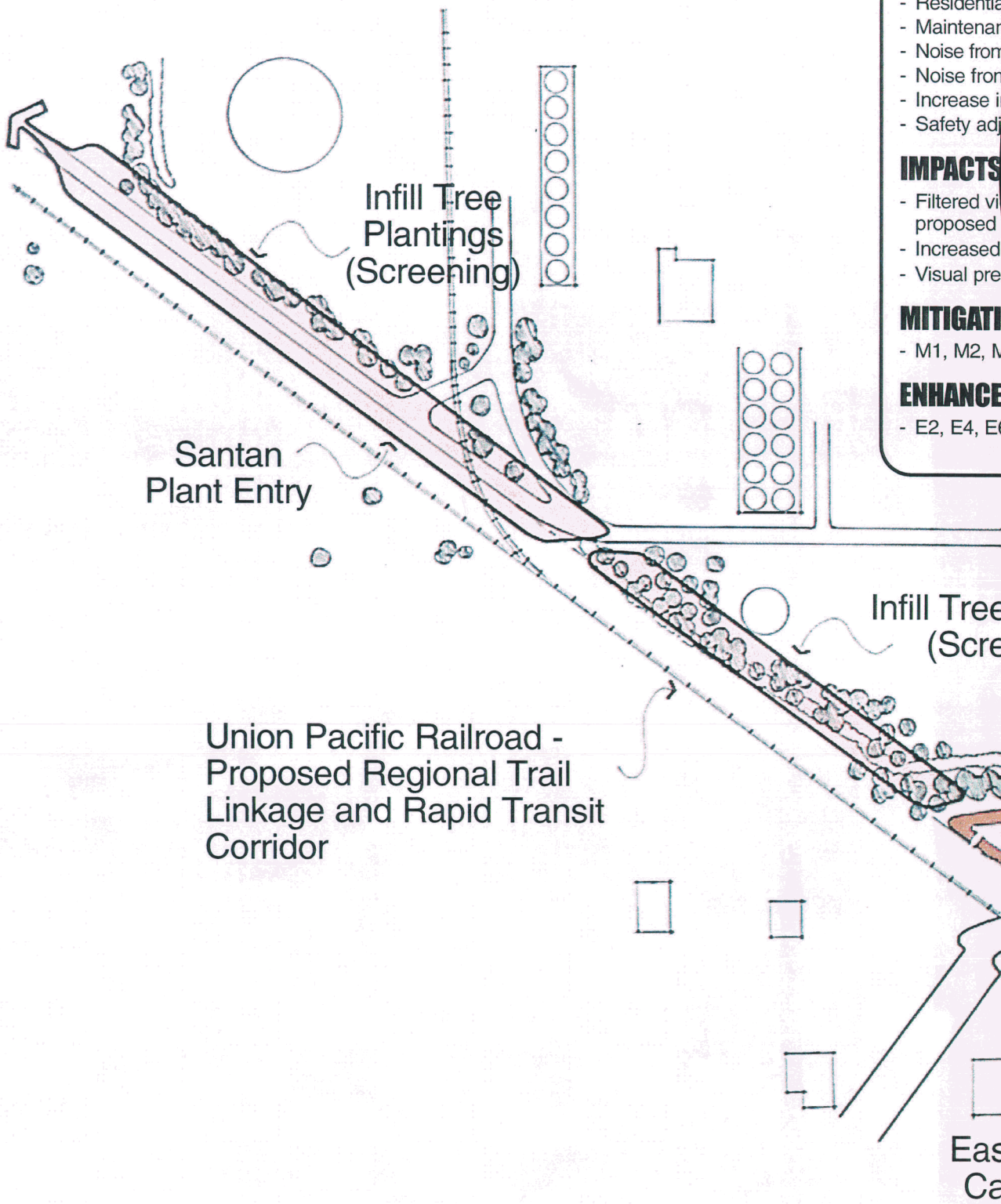
plan view - no scale

DRAFT 7/12/00

SANTAN EXPANSION PROJECT

Produced by EPG, Inc.

FIGURE G-4
AREA C –RAILROAD AND FUTURE OPEN SPACE CORRIDOR CONCEPT



ISSUES

- Interconne
- Residentia
- Maintenar
- Noise from
- Noise from
- Increase i
- Safety adj

IMPACTS

- Filtered vi proposed
- Increased
- Visual pre

MITIGATI

- M1, M2, M

ENHANCE

- E2, E4, E

AREA C - Railroad and Future Open Spac

plan view - no scale

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ction to regional trails network
l views to existing facilities and proposed facilities
ce of property
existing and proposed facilities
n construction
n traffic during construction
acent to railroad

ews through and over landscape to existing and
facilities from large lot residential area on south
railroad activity
sence of construction equipment

ON MEASURES

M3, M5, M6, M7, M8, M9, M10 (see Table G-1)

MENT MEASURES

6, E9, E10, E11 (see Table G-2)

KEY GILBERT GENERAL PLAN ELEMENTS

Open Space and Recreation Element

- Utilize joint use agreements with RWCD, SRP, homeowners associations, and school districts to maximize land utilization.
- Secure permanent interconnected open space, which provides visual and functional links with parks, schools, and neighborhoods. Utilize both sides of canals, railroad and electrical transmission line corridors, providing for hiking, bicycling, jogging, equestrian, and non-motorized transportation.
- Consider plans for a rapid rail corridor on the existing Union Pacific Railroad line.

Circulation/Transportation Element

- Encourage the linkage of neighborhoods, schools, community and district parks, and commercial centers, with bicycle and pedestrian paths.
- Promote trail development that is visually pleasing to the user, as well as to those living adjacent to the trail.
- Create complementary trail design themes that are compatible with the surrounding area or a specific destination that has a design theme.

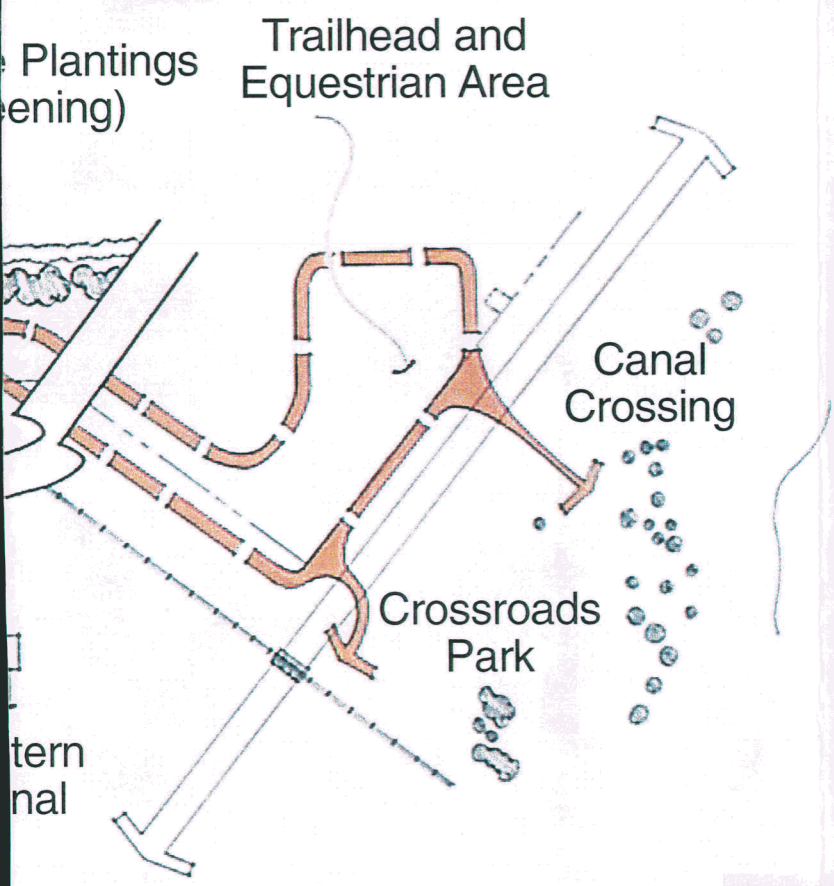


Figure G-4

e Corridor Concept

SANTAN
EXPANSION PROJECT

Produced by EPG, Inc.

FIGURE G-5
AREA D –COMMERCIAL AREA CONCEPT

ISSUES

- Transportation and residential views to existing and planned facilities
- Noise from existing and proposed facilities

IMPACTS

- Visual presence of construction equipment
- Foreground and middleground views to planned facilities from Western Skies neighborhood and other residences
- Foreground and middleground views from Western Skies Golf Course
- Foreground views from adjacent commercial zone and Warner Road and Val Vista Drive

MITIGATION MEASURES

- M1, M2, M5, M6, M7, M8, M9, M10 (see Table G-1)

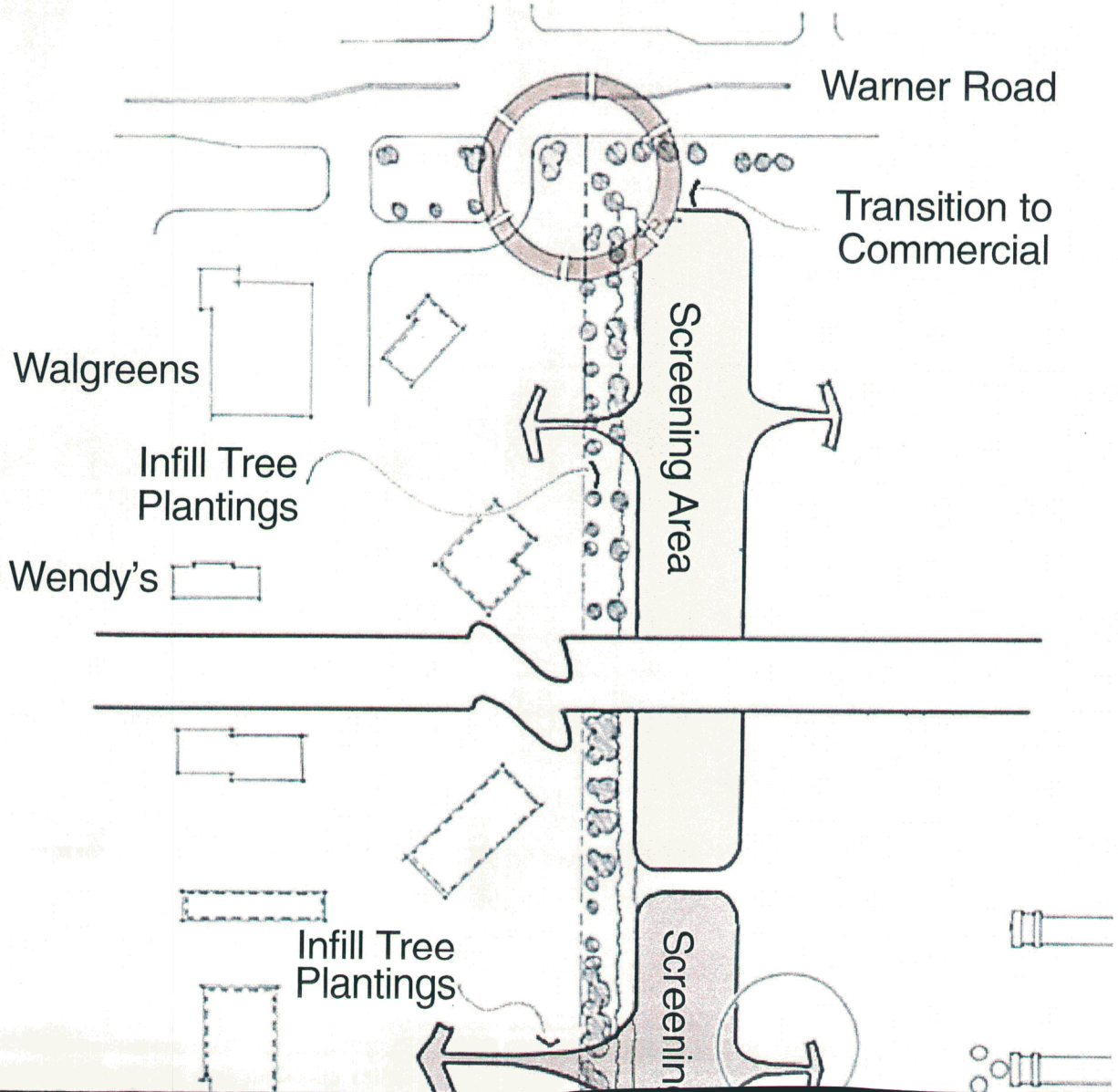
ENHANCEMENT MEASURES

- E3, E4, E5, E11 (see Table G-2)

KEY GILBERT GENERAL PLAN ELEMENTS

Community Design Element

- Create a design image in each industrial development that is complementary to the image of future individual users.
- Promote facilities that are attractive, well landscaped, and in harmony with the overall project design parameters.
- Design employment facilities to screen less attractive elements from arterials and residential areas, placing these elements away from main streets to preserve visible areas for more attractive quality office, industrial uses, and unique features.



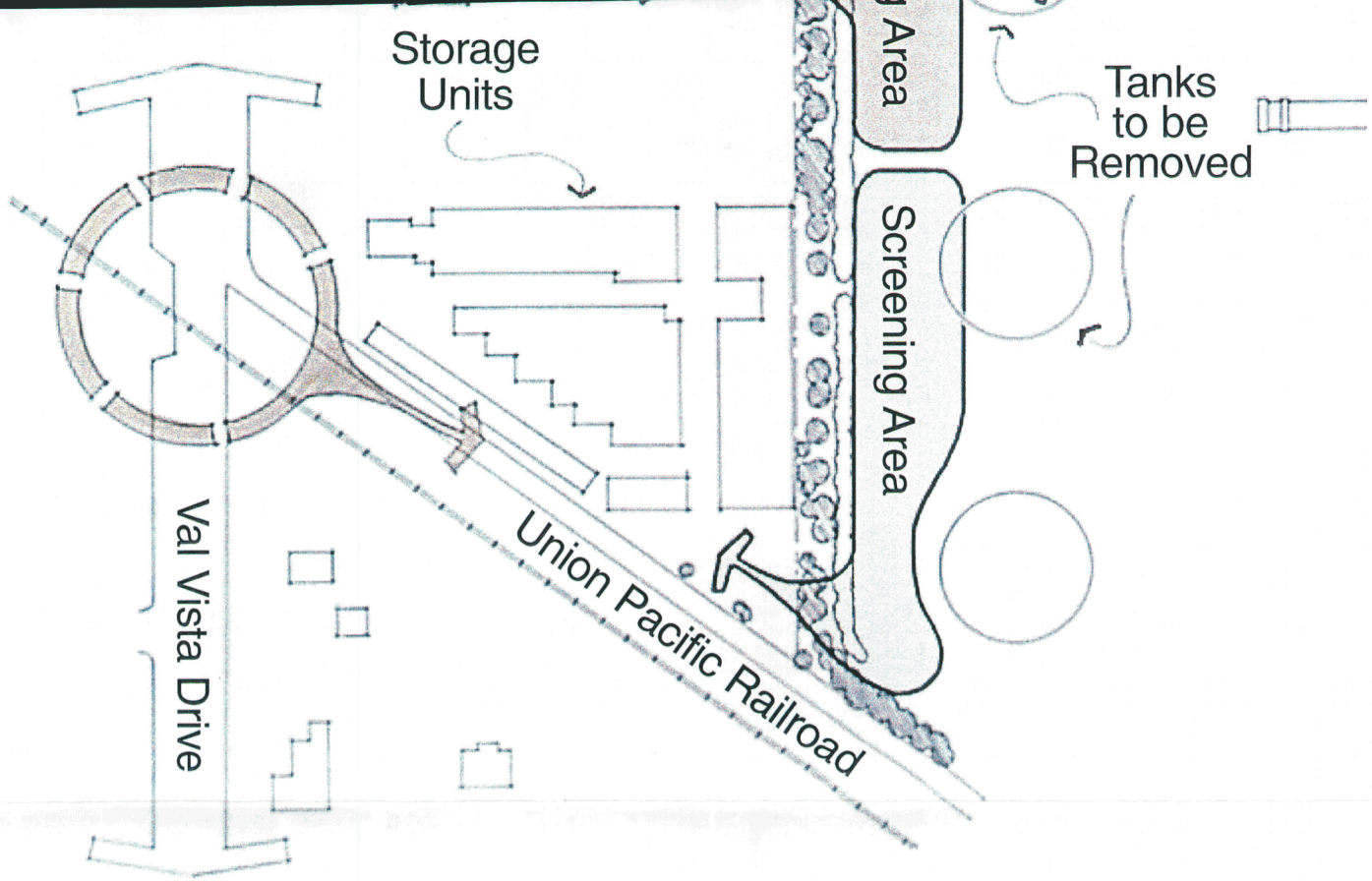


Figure G-5

AREA D - Commercial Area Concept

plan view - no scale

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SANTAN
EXPANSION PROJECT

Produced by EPG, Inc.

Exhibit H

EXHIBIT H
EXISTING PLANS

EXHIBIT H
EXISTING PLANS

As stated in Arizona Corporation Commission Rules of Practice R-14-3-219:

"To the extent applicant is able to determine, state the existing plans of the state, local government, and private entities for other developments at or in the vicinity of the proposed site or route."

The existing plan for this site is shown in Figure A-3 and Exhibit B-2. The site is zoned agricultural and planned as multi-employment including industrial uses.

SRP and the Town of Gilbert developed and approved an IGA putting forth certain mitigation and enhancement measures that would be implemented by SRP should the SEP receive all necessary approvals permitting construction and operation. The IGA is contained in Exhibit H-1. Exhibit H-2 contains a letter from ADOT regarding its plans for the area.

EXHIBIT H-1
INTERGOVERNMENTAL AGREEMENT

HOLD FOR PICK UP:

SALT RIVER PROJECT
Land Department/PAB400
P. O. Box 52025
Phoenix, Arizona 85072-2025

OFFICIAL RECORDS OF
MARICOPA COUNTY RECORDER
HELEN PURCELL
00-0370187 05/16/00 12:27
CLARK 1 OF 1

DO NOT REMOVE
THIS PAGE IS PART OF THE ORIGINAL DOCUMENT

INTERGOVERNMENTAL AGREEMENT BETWEEN THE TOWN OF GILBERT AND THE SALT RIVER PROJECT

This Intergovernmental Agreement is entered into this 25th day of April, 2000 by and between the town of Gilbert, Arizona, a municipal corporation of the State of Arizona ("Town") and the Salt River Project Agricultural Improvement and Power District, a political subdivision of the State of Arizona ("SRP").

RECITALS

1. SRP is authorized by law to generate and distribute electric power and provides such electric power to customers in Town in SRP's exercise of its governmental capacity.

2. SRP has notified Town that in order to meet projected demands in the Town and surrounding areas it is necessary to expand the Santan Generating Plant ("Plant"), an existing electric generating facility in Town, by adding 825 MW of additional generating capacity.

3. SRP has initiated and participated in the Santan Community Working Group, which includes representatives of the Town and the community, to address issues raised by the Plant expansion. The Santan Community Working Group has recommended measures to improve the Plant property and the surrounding area.

4. The Parties desire to implement the recommendations of the Santan Community Working Group and to institute cooperative action in conjunction with the expansion of the Plant through the actions set forth in this Intergovernmental Agreement.

5. Town is authorized to enter into this Intergovernmental Agreement pursuant to A.R.S. § 9-240 and SRP is authorized to enter into this Intergovernmental Agreement pursuant to A.R.S. § 48-2337.

NOW THEREFORE, in consideration of the mutual promises contained herein, the Parties agree as follows:

1. SRP OBLIGATIONS: Contingent upon SRP receiving the necessary approvals for expansion of the Plant, SRP shall, at its cost, cause the following to be performed:

1.1 Improvements to Warner Road and Val Vista Road: SRP shall, at its cost, improve or pay the cost of improving the portion of Warner Road and Val Vista Road adjacent to the Plant property boundary. Improvements shall include, but not be limited to, (i) improving the south half of Warner Road and the east half of Val Vista Road, including the construction of sidewalks, a median and street lighting facilities, and (ii) installation of landscaping on the north side of Warner Road. All such improvements shall comply with Town standards and the Town

shall maintain all landscaping improvements not located on Plant property. As part of such improvements, SRP shall pay the cost of relocating the existing 69 kV line and other electrical facilities as relocation may be required by the construction of the improvements.

1.2 Screening of the Plant: SRP shall provide screening on the north and west sides of the Plant property. Such screening shall be compatible with the design and landscaping of Warner Road and shall be approved by Town. Screening on the north side will be evaluated as part of the Warner Road improvements described in Paragraph 1.1 and as may be determined by the Santan Community Working Group on or before December 31, 2000. Screening on the west side will include evaluating the use of berms, vegetation, architectural treatment and/or walls. SRP will remove the northern fuel tanks (which is necessary to construct the Plant improvements) and will paint the remaining tank.

1.3 Trail Extension: SRP shall design and construct or pay the cost of construction on the east edge of the Plant property a horseback/hiking trail, crossing lights, and trail heads at both the north and south end of the trail. At the south end, a bridge over the canal into Crossroads Park shall be constructed. SRP will delineate property boundaries and dedicate the property to the Town, retaining appropriate property rights for necessary transmission lines and transmission line access. The Town will be responsible for ongoing maintenance.

1.4 Rerouting of Canal at Ray Road: SRP shall reroute the SRP Eastern Canal at Ray Road to eliminate the portion parallel to Ray Road. The Town agrees to grant any necessary easements over its property to facilitate the rerouting. The canal relocation is subject to the paramount rights and appropriate approvals of the United States, and shall acknowledge the prior rights of the United States and SRP.

1.5 Training Tower Removal: SRP will remove the lattice tower transmission training tower presently on the Plant property.

1.6 Revegetation Along New RS 18 Line: For a distance of one mile going north from Plant property boundaries, SRP will restore any vegetation damaged or destroyed along the RS 18 line as a result of the construction of the line. Vegetation which dies within six months of the work will be presumed to have resulted from the construction of the line and will be replaced at SRP's cost.

1.7 Dust Control Along Canals: SRP shall be responsible for meeting applicable PM-10 standards along SRP canal banks. The Parties acknowledge that Town has no jurisdiction to enforce such standards.

1.8 Offsite Tree Planting: SRP shall develop an offsite tree planting program in the local impact area (without maintenance) pursuant to mitigation concepts developed and accepted by the Santan Community Working Group on or before December 31, 2000.

2. TOWN OBLIGATIONS: Town agrees to do the following:

2.1 Acceptance of Dedications and Improvements: Upon completion in accordance with Town standards, Town shall accept the dedication and improvements described in Paragraphs 1.1 and 1.3.

2.2 Cooperation with SRP: Town agrees to work cooperatively with SRP in order that the agreements of SRP contained in Paragraph 1 will not be unreasonably delayed.

2.3 Regulatory Testimony: The Town recognizes SRP and the Santan Community Working Group have identified measures over which the Town has jurisdiction and which will serve to mitigate impacts the Plant expansion will have on the community. The Town recognizes it has a role in implementing these recommended measures and it therefore agrees it will provide supportive testimony regarding the public process which led to this Intergovernmental Agreement and the agreements contained herein.

3. SRP EXERCISE OF ITS GOVERNMENTAL POWERS.

The parties acknowledge that the Town does not have zoning jurisdiction over SRP in SRP's exercise of its governmental functions.

4. PARTIES TO NEGOTIATE FURTHER AGREEMENTS:

4.1 Cooling Water: Town and SRP explore the possibility of SRP purchasing from Town a supply of cooling water for the Plant. Any such agreements for the purchase of cooling water may include, but not be limited to, the following water supplies:

4.1.1 Surface water available in Town's domestic water service account.

4.1.2 CAP water allocated to or leased by Town.

4.1.3 Recharge credits earned by Town in SRP's Groundwater Savings Facility.

4.1.4 Reclaimed water owned by Town.

4.2 Discharges of Cooling Water: Town and SRP will explore the possibility of an agreement for the use of Town's facilities for the discharge of cooling water from the Plant.

4.3 Natural Gas Supply: Town agrees to cooperate to the extent of its governmental powers to facilitate the SRP access to its natural gas supply.

5. GENERAL PROVISIONS:

5.1 Notices: Any notice, consent or other communication ("Notice") required or permitted under this Agreement shall be in writing and either delivered in person, sent by facsimile transmission, deposited in the United States mail, postage prepaid, registered or certified mail, return receipt requested, or deposited with any commercial air courier or express service addressed as follows:

If to Town of Gilbert:

Town Manager
Town of Gilbert
1025 South Gilbert Road
Gilbert, Arizona 85296
(480) 503-6862 (telephone)
(480) 497-4943 (facsimile)

with a copy to:

Gilbert Town Attorneys
c/o Martinez & Curtis, P.C.
2712 North 7th Street
Phoenix, Arizona 85006-1090
(602) 248-0372 (telephone)
(602) 274-2381 (facsimile)

If to SRP:

Terrill A. Lonon
Corporate Secretary
Salt River Project
Post Office Box 52025
Phoenix, Arizona 85072-2025
(602) 236-5005 (telephone)
(602) 236-2188 (facsimile)

with a copy to:

Corporate Counsel
Salt River Project
Post Office Box 52025
Phoenix, Arizona 85072-2025
(602) 236-2249 (telephone)
(602) 236-2188 (facsimile)

Notice shall be deemed received at the time it is personally served, on the day it is sent by facsimile transmission, on the second day after its deposit with any commercial air courier or express service, or, if mailed, five days after the Notice s deposited in the United States mail as above provided. Any time period stated in a Notice shall be computed from the time the Notice is deemed received. Either part may change its mailing address or the person to receive Notice by notifying the other party as provided in this paragraph. Notices sent by facsimile transmission shall also be sent by regular mail to the recipient at the above address. This requirement or

duplicate notice is not intended to change the effective date of the Notice sent by facsimile transmission.

5.2 Governing Law: This Contract shall be governed by the laws of the State of Arizona.

5.3 Duration: This Agreement shall remain in effect until the actions contemplated or required herein are completed by the parties.

5.4 Conflict of Interest: This Agreement may be terminated pursuant to the provisions of A.R.S. Section 38-511.

5.5 Successors and Assigns: This Agreement shall not be assignable, except at the written consent of the parties hereto; and it shall extend to and be binding upon the heirs, executors, administrators, successors and assigns of the parties hereto.

5.6 Additional participants in the Plant: SRP may include other participants in the operation, ownership and /or financing of the Plant expansion; provided however, that the addition of other participants shall not reduce or modify the obligations set forth herein.

IN WITNESS WHEREOF, the parties hereto have caused this document to be executed the date and year first herein above written.

TOWN OF GILBERT,
A municipal corporation

By: _____
Cynthia L. Dunham, Mayor

ATTEST:

Catherine A. Templeton
Ms. Cathy Templeton, Town Clerk

SALT RIVER PROJECT
AGRICULTURAL IMPROVEMENT
AND POWER DISTRICT,
a political subdivision

By: William P. Schrader
William P. Schrader, President

ATTEST AND COUNTERSIGN:

Terrill A. Lonon
Terrill A. Lonon, Corporate Secretary

ATTORNEY DETERMINATION

In accordance with the requirements of ARS Section 11-952(D), each of the undersigned attorneys acknowledge that: (1) they have reviewed the above Agreement on behalf of their respective clients; and, (2) as to their respective clients only, each attorney has determined that this Agreement is in proper form and is within the powers and authority granted under the laws of the State of Arizona.

For the Town of Gilbert

Date April 25, 2000

For the Salt River Project Agricultural Improvement District

Date May 9, 2000

EXHIBIT H-2
RESPONSE LETTER(S)

ADOT

Arizona Department of Transportation

Transportation Planning Division
206 S. 17th Ave. Phoenix, Arizona 85007-3212
Phone 602.712.7333 FAX 602.712.3046

Jane Dee Hull
Governor

Mary E. Peters
Director

Mary Lynn Tischer
Division Director

April 13, 2000

Ms Lauren Weinstein, Project Manager
Environmental Planning Group, Inc.
4350 East Camelback Road, Suite G-200
Phoenix, AZ 85018

RE: SRP Santan Expansion Project

Dear Ms Weinstein:

This letter is to inform you that the Arizona Department of Transportation has no existing or planned facilities adjacent to the purposed Salt River Project facility as depicted in the site location map which you included with your request letter.

Sincerely,

Dale Buskirk, Deputy Director
Transportation Planning Division, ADOT

Exhibit I

EXHIBIT I
ANTICIPATED NOISE LEVELS AND INTERFERENCE WITH COMMUNICATION SIGNALS

EXHIBIT I
ANTICIPATED NOISE LEVELS AND INTERFERENCE WITH COMMUNICATION SIGNALS

As stated in Arizona Corporation Commission Rules of Practice and Procedure R14-3-219:

"Describe the anticipated noise emission levels and any interference with communication signals which will emanate from the proposed facilities."

ANTICIPATED NOISE

An acoustical engineering consultant evaluated the noise levels associated with full-load operation of the proposed SEP. The consultant evaluated the ambient noise levels prevalent at the site today and set acoustical design criteria for the proposed project. The design criteria will ensure that the noise from the proposed project will comply with all municipal noise regulations.

Figure 3 shows the approximate location of the SEP facilities on the Santan site. Homes on the north side of Warner Road will be the closest residences to the SEP combustion turbines. Homes in the sparsely populated area south of the Union Pacific Railroad tracks will be the closest residences to the new cooling tower associated with the SEP.

Analysis of the ambient noise levels in the area, predicted noise levels from the proposed plant, and incorporation of a number of noise suppression techniques resulted in the following anticipated noise levels at nearby residences.

Receptor Point	Anticipated Noise Levels in Decibels (dBA)
North side of Warner Road at midpoint of SRP property	48
Midway along eastern edge of SRP property	45
Point in western end of Western Skies development	48

The anticipated noise levels cited above describe the contribution from the proposed plant. The Santan site is located in an urban setting with major thoroughfares on a 1-mile grid. Existing generating units at the Santan site also contribute to ambient conditions.

To meet the anticipated noise levels cited above, SRP plans to utilize one or more of the following mitigation measures to ensure minimal noise emissions:

- low noise fans and splash mats for the cooling tower
- inlet silencing for the combustion turbine
- exhaust silencing in the HRSG outlet stack

- mufflers on steam vents
- barrier walls

The noise modeling and survey work was conducted by Hessler Associates, Inc. located in Haymarket, Virginia. The survey work on ambient conditions was performed in September 1999, and for at least some of the hours of the survey, all four existing generating units at the Santan site were operating. The modeling incorporated an analysis of individual equipment components and the predicted noise levels from each of such components. The model incorporates acoustical screening associated with the backyard block walls predominant in the area as well as the losses associated with distance from the proposed plant to the receptor points.

This type of noise modeling has been verified on numerous occasions via comparison of predicted and actual results. Given the information available for the type of generating station equipment, which will be employed, it is anticipated that the planned facility will not have any adverse noise impact on the local environment.

The electrical effects of SRP transmission lines are those related to electric fields, magnetic fields, and corona. Possible radio noise (RI) or television interference (TVI) are consequences of transmission line corona discharges. Corona is a function of the conductor voltage gradient, controlled by the line voltage, conductor diameter, height of conductors above ground, phase spacing, geometry, and meteorological conditions. No design changes to the Santan transmission lines and the parameters, which impact the conductor voltage gradient, are proposed; thus, SRP expects no changes in existing RI or TVI performance.

Exhibit J

EXHIBIT J
SPECIAL FACTORS

EXHIBIT J
SPECIAL FACTORS

PUBLIC INVOLVEMENT PROCESS

Introduction

Public involvement has been an integral part of the environmental planning process for the SEP. A comprehensive public involvement plan was developed to thoroughly inform and engage community members at the earliest stages of the project. Through outreach activities, the community became instrumental in the planning process.

This section will address the following topics:

- purpose of the public involvement plan
- issues identified through the public planning process
- methods and materials used to inform the community and gather public input
- community working group

Purpose of the Public Involvement Plan

The primary objective of the public involvement plan is to integrate public input with the planning process. In addition, it is designed to establish and maintain communication; inform and educate; accurately identify and consider the issues and concerns of the community through the gathering of public comment, and ensure that public input is considered as part of the overall decision-making process.

In each step of the planning process, the public was presented an opportunity to review and comment on new and updated project information. The public process allowed the project team to be responsive to comments and concerns expressed. The plan includes various methods of communication and public interaction that are explained in detail below.

Issues Identification

The first step of the public involvement plan was to conduct community interviews to identify initial potential concerns and issues as well as members for the project CWG. People who were contacted shared information about the history and character of the study area, community issues and concerns, and offered suggestions on effective means of communication with local residents. Input received from these interviews allowed the project team to develop the public involvement plan to best meet the needs of the community.

Questions and issues raised during this initial step focused on the current level of landscaping around the existing Santan facility, visual impacts, air emissions, and noise levels associated with the proposed plant. A concern often cited was the need to widen Warner Road and improve the landscaping along the south side of the road. As more community members became involved in the process, property values and site selection issues were also key concerns.

A project log of all public contacts was maintained throughout the project. A total of 348 contacts were made as of June 23, 2000; of those, 90 were e-mail messages, 132 were telephone calls, and 126 were received from comment forms.

Methods and Materials

Prior to initiating any public contact, a study area was established extending an approximate 2½-mile radius from the project site. Within this study area project members identified groups, school districts, businesses, homeowners and neighborhood associations, and individuals active in the community who would likely be interested in, or perceived to be impacted by, the proposed project.

To reach the community and offer a range of avenues for the public to provide comments and questions, a variety of public involvement methods were used. Newsletters, public open house meetings, SRP billing inserts, small group meetings, a website, newspaper advertisements, and a telephone information line are examples of methods and materials that were used to hear from the community and provide updated project information.

Community Working Group

Established in September 1999 with 15 members, the CWG has provided a diverse range of opinions and community perspective for the project team. Potential members were initially identified through community and agency contacts and then interviewed by project team members. Members were selected based on their knowledge of the community, type of affiliation (e.g., neighborhood, business, municipality, school district), willingness to share information and make the time commitment to serve, and understanding of the need to impartially consider the project information presented.

Since the existing generation facility and proposed plant site are located in close proximity to residences, representatives from neighborhoods very near the site (or within approximately ½ mile radius) were included. As the planning process progressed, members from a local charter school and neighborhood were added as they were identified and expressed interest. A list of members and their affiliations can be found on the following page.

CWG MEMBERSHIP
Town/Municipality Representation Vice Mayor Maggie Cathey, Town of Gilbert George Pettit, Assistant Town Manager, Town of Gilbert Richard Andrews, Economic Advisory Council Mike Leonard, Roosevelt Water Conservation District
School Districts/Education Larry Likes, Higley Unified School District Keith Vaughn, Gilbert Unified School District Anne McDowell, Desert Hills High School (joined February 2000, replaced Larry Bandura)
Business Bob Brazeal, Gilbert Chamber of Commerce Scott Morrison, Double M Limited Tom Schilder, Walgreens (resigned December 1999)
Neighborhood/Area Representation Larry Strand, Western Skies Michael Puzio, Val Vista Place MaryAnne Surber, Rancho Cimarron Barbara Sheldon, Cottonwoods Crossing Cathy Lopez, Finley Farms South (joined February 2000) Mark Farmer, Silverstone Ranch (resigned January 2000) Jason Marton, Maricopa County island south of Santan plant

Five CWG meetings took place to discuss aspects of the project including need, description, resources, impacts, mitigation, and enhancements. The format of the meetings was informal with open discussion of issues and included presentations, handouts, and question/answer sessions. Meeting content was based on the planning process and member requests for presentation of additional subjects or materials. There are ongoing meetings with CWG members, as well as other interested individuals. These meetings, referred to as focus group meetings, will develop and finalize mitigation and enhancement measures.

Each of the five CWG meetings is summarized below.

Meeting 1 - The first meeting presented information about the need for the proposed expansion and details about the site's current facilities. The role and responsibilities of SRP, EPG, and CWG members as part of the planning process were outlined, and members were encouraged to openly share their views.

Meeting 2 - Questions concerning the purpose and need of the project were posed by CWG members at the previous meeting, and hence were reviewed as a topic for Meeting 2. Statistics on public comments received including the source (e-mail, telephone, CWG, etc.) and subject were presented. Initial land use, recreation, and visual inventory results were discussed and photos taken from many viewpoints around the site were shown. The impact assessment and mitigation planning process was explained and CWG input was solicited on the information they had been provided. An IGA was proposed by the CWG to solidify SRP's commitment to mitigation and enhancement measures identified in the planning process. Suggestions focused on the widening of Warner Road and the realignment of canals.

Meeting 3 - Air emissions modeling was the focus of the third meeting. The types and levels of emissions from the proposed plant were explained as well as the plan to obtain emissions offsets.

Meeting 4 - Upon CWG member request, water supply and water discharge information for the proposed plant was presented. Water requirements, potential sources of supply, and discharge options were reviewed. Also discussion continued regarding support of SRP's IGA with the Town of Gilbert.

Meeting 5 - At the fifth meeting on April 26, 2000, preliminary mitigation and enhancement measures were presented. SRP shared that the Town Council had approved the IGA the previous evening. The IGA outlines the widening of Warner Road, screening the north and east sides of the site, and rerouting the Eastern Canal near Val Vista Drive and Ray Road. Discussion focused on incorporating concerns voiced by community members with the items outlined in the IGA.

Because of the particular interest in mitigation and enhancement planning related to the perimeter of the site as well as in the nearby area, many of the CWG members have volunteered to continue as part of a focus group (as mentioned previously) for concept designs adjacent to and near the site. Other citizens who have expressed interest in the project have also been invited to join the expanding group. This new focus group is dedicated to working with the project team to fully develop mitigation and enhancement concepts. As of the end of June, the focus group has met four times and is expected to hold at least one additional meeting.

Project Mailing Lists

The general mailing list of approximately 16,300 was generated through a title company contracted to search county records for property ownership within the project study area. An additional project mailing list was developed and maintained throughout the project consisting of CWG members, elected officials, Town of Gilbert homeowners/neighborhood association contact lists, and others who expressed interest in the project. Requests to be added to this second list were received from open house and newsletter comment forms, e-mail, telephone voice message line, and open house sign-in sheets. At this filing, this second list consisted of 406 contacts. Those on the mailing list received project mailings including newsletters and meeting announcements from the time they contacted project representatives.

Newsletters/Postcard

A series of project mailings were planned to provide information throughout the planning process including newsletters, public meeting reminders, comment acknowledgement postcards, and the "Energy News." Copies of these materials can be found in Exhibit J-1.

The first newsletter was distributed in November 1999 to the project mailing lists described above. It provided general information on the project description, schedule, planning process,

and opportunities for public participation, including the December 1999 public open house. Project team contact information and a comment form also were provided.

In May 2000, an oversized postcard was mailed to announce the June public open houses and provide information regarding the IGA. Also distributed in May, the second newsletter provided open house information and discussed project need, the planning process, methods of public participation, and the IGA. Additional newsletters are expected to be provided periodically throughout the project.

Another informative mailing, titled "Energy News," was distributed in June 2000. This fact sheet provided a discussion on the growing gap between energy supply and demand and gave brief facts on the SEP. Additional copies of this publication are expected to be distributed in the coming months until all permits are secured.

Telephone Information Line

A telephone voice message information line was established and maintained to regularly include project updates and upcoming open house announcements. Callers had the option to leave their name and address for inclusion on the mailing list or request that a project team member return their call to discuss any questions or concerns. Thirty-two calls have been received on this telephone line as of June 23, 2000.

Website and E-mail Address

A project website, www.santanfacts.org, was established and maintained to provide the public an opportunity to review written materials, request to be added to the mailing list, submit e-mail questions or comments, or request a call from a project team member. Thirty-nine e-mail comments have been received through this website as of June 23, 2000.

SRP Billing Insert

Another method to inform the public about the project was the use of the SRP billing insert, "Contact," which is sent to approximately 710,000 SRP customers. In September 1999, the insert contained an article about east valley growth and new generation projects. In November 1999, April 2000, and May 2000, the insert provided articles highlighting the need for additional power in the southeast valley and SRP's plans to expand the Santan Generating Facility. In addition to these inserts for residents and customers, SRP distributed four fact sheets to local business customers detailing general information on the project. Copies of both types of inserts are found in Exhibit J-1.

Media Relations

These efforts provided external communication support for the project. Information on significant developments was communicated to relevant news organizations as a means to help educate regulators, community leaders, and the general public about the need for new urban generation resources. News releases were sent on August 10, 1999, October 13, 1999, and April 26, 2000. These announced the need for additional generation, the selection of the Santan and Kyrene sites for expansion, and lastly provided information about the IGA with the Town of Gilbert. Paid advertisements were also used to announce public meetings and inform the public about the project. Informational ads will continue to be used in the future to maintain public awareness about SEP. Copies of these news releases and ads can be found in Exhibit J-2.

Public Open Houses

The project team hosted two public open house meetings at the Finley Farms Elementary School, a location that had been suggested by various community members and the CWG as a convenient location for area residents. Held at key milestones in the planning process, the open houses offered the opportunity for the public to learn about the most current project information, provide their comments, and speak individually with project team members to have questions addressed. These public meetings were advertised in newspapers (Exhibit J-2), newsletters, and letters to homeowner's associations' contacts within the immediate area. They were also announced on the project website and telephone information line.

The format for both open houses was informal, with information relayed through displays at stations staffed by the appropriate project personnel. Comment forms were provided that offered attendees the choice of completing the form at the open house or mailing at a later time.

The first open house was held December 9, 1999, during the early planning stages of this project. There were 34 attendees, and 9 written comments were received. Attendees' interests focused on basic project description information, the need for the project, and how they could become involved in the process.

Providing a project update was the focus of the second open house. This meeting was held on June 7, 2000. A presentation on the air quality studies was offered periodically throughout the three-hour open house. Information on noise modeling, water supply and discharge, site description, mitigation and enhancement, and the public process also was presented. Receiving public input on these concepts was a necessary component of providing a plan that addresses the issues and impacts considered. Of the 350 people attending, 73 returned a comment form at the meeting, with most asking questions about property values or expressing concern about the plant's location in a neighborhood setting. Four noted air quality as an issue. SRP mailed a postcard thanking each person for their attendance at this second open house, and sent a separate appreciation card for those who submitted written comments. Copies of materials distributed at both open houses can be found in Exhibit J-3.

SRP expects to hold a third public open house in late summer 2000 to provide further project updates on resource issues and mitigation and enhancement plans.

Small Group Meetings/Local Official Briefings

During the planning process, informal small group meetings and briefings were held in the community and with local officials. At the request of individuals or homeowners association groups, project team representatives met to provide information and discuss any concerns, ideas, or questions. See the listing of these meetings on the following page.

SRP's Government Relations representative arranged and attended project briefings and sent informational letters to key government officials. These communications served to inform about the need for more power generation in the southeast valley and to relay facts concerning the expansion proposal. As requested, additional information has been provided and input solicited throughout the planning process. Copies of these communications and the recipients can be found in Exhibit J-4. Exhibit J-5 contains selected letters to the editors of various newspapers regarding SEP.

SMALL GROUP MEETINGS/LOCAL OFFICAL BRIEFINGS			
Date	**Name/Organization**	**Project Team Attendees**	**Discussion**
07/20/99	Town of Gilbert Cynthia Dunham, Mayor	SRP-Kathie Lee, Bill Schrader, Mark Bonsall, Dick Hayslip; NRG- Dirk Andreas	Informational meeting about new facility at Santan.
07/22/99	Gilbert Town Council	SRP-Kathie Lee	Letter of information offering the opportunity to meet.
07/22/99	Town of Gilbert Staff: Kent Cooper, Town Manager; George Pettit, Assist. Town Manager; Scott Anderson, Planning Director; Lonnie Frost, Public Works Director; Rick Allred, Town Engineer; Ray Patton, Building. Department Director	SRP-Kathie Lee, Mark Bonsall; NRG-Dirk Andreas	Informational meeting about the new facility at Santan. Questions regarding regulatory approvals, partners, existing capacity of Santan, summer vs. winter average water use, and noise factor.
08/12/99	Rancho Cimarron Homeowners Association: Charles Henson, Connie Henson, Mark Bauman, Janice Arnold	SRP-Janeen Rohovit, Dick Hayslip	Group raised specific questions about the existing and proposed plants.
08/12/99	Town of Gilbert: Mike Evans, Councilmember; Les Presmyk, Councilmember; Steve Urie, Councilmember	SRP-Kathie Lee, Mark Bonsall, Dick Hayslip; NRG-Dirk Andreas	Informational meeting about new facility at Santan.
08/16/99	Town of Gilbert: Maggie Cathey, Vice Mayor; Dave Crozier, Councilmember; Larry Morrison, Councilmember	SRP-Kathie Lee, Mark Bonsall, Dick Hayslip; NRG-Dirk Andreas	Informational meeting about new facility at Santan.
08/24/99	Western Skies Homeowners Association: Roger Seeley, Lynn Seeley, Carol Halling, Dean Halling, Diane Howard, Janet LaTour, Tiffany Cloud, Alan Essig, Jacquelyn Essig, Larry Strand; Town of Gilbert Neighborhood Services: Helga Stafford	SRP-Janeen Rohovit, Randy Dietrich	Discussion of specific questions about the existing and proposed plant.
08/26/99	Finley Farms Homeowners Association: Mark Kwait, Mark Besthoff, Mike Jensen, Ralph Hicks, Curt Hillner, Marshall Green, Karen Rains, Tammy Ray, Ann Gottschalk, Don Gottschalk, Charlie Srery, Kevin Stannard; Caretaker, Inc: Kimberly King	SRP-Janeen Rohovit, Randy Dietrich	Discussion of specific questions about the existing and proposed plant.
09/16/99	Val Vista Lakes Homeowners Association Board Members: Bob Root, Lawrence Vanell, Jon L. Denver, Richard Porter, James Eitner, Tennilee Warhan, Lance Yost, Nicole Hines, Denise Sheridan, Jay Johanek, Joe Brodsky, one anonymous guest	SRP-Janeen Rohovit, Dick Hayslip	Discussion of specific questions about the existing and proposed plant.

SMALL GROUP MEETINGS/LOCAL OFFICAL BRIEFINGS			
Date	**Name/Organization**	**Project Team Attendees**	**Discussion**
10/08/99	Town of Gilbert Mayor and Councilmembers and Town Staff, Kent Cooper, George Pettit, Scott Anderson, Lonnie Frost, Ray Patton, Rick Allred, Susan Goodwin, Michael Curtis	SRP-Kathie Lee	Letter and newsletter to Town of Gilbert Mayor and Council members.
11/05/99	Arizona Corporation Commission	SRP-Kelly Barr, Mark Bonsall; Jennings Strouss & Salmon (JSS)-Ken Sundlof	Discussed CEC Application for Santan.
02/14/00	East Valley Chamber of Commerce	SRP-Nelson Ross	General project overview.
03/04/00	Gilbert residents: Janet LaTour, 23 friends and neighbors	SRP-Janeen Rohovit, Ellen McKenzie, Mike Hitt	Santan tour. Attendees posed questions regarding the site and plant proposal.
03/07/00	Gilbert Kiwanis	SRP-Mike Hitt	General questions regarding project need, air quality, and noise.
03/13/00	Town of Gilbert-George Pettit	EPG-Garlyn Bergdale; JSS-Ken Sundlof	Preliminary discussion on project enhancements.
03/23/00	Cottonwoods Crossing Homeowners Association: Sonny Weir, Nan Dawson, and four board members	EPG-Kurt Watzek, Lauren Weinstein, Victoria Komadina	Provided project update; discussed community working group membership.
04/06/00	Business Leadership Luncheon 13 community attendees	SRP-Janeen Rohovit, Dick Hayslip, Mike Rappoport, Doug Frerichs, Dick Silverman	Overview of project presented by Dick Silverman.
04/25/00	Gilbert Town Council Meeting	EPG-Randy Palmer, Lauren Weinstein, Garlyn Bergdale; JSS-Ken Sundlof; SRP-Randy Dietrich, Janeen Rohovit, Kathie Lee	IGA approved.
05/04/00	Town of Gilbert: Mike Evans, Councilmember	SRP-Randy Dietrich, Dick Hayslip, Kathie Lee	Discussion of (Receiving Station 18) RS 18 project power lines and concern about air quality, use of ammonia with the SCR process, and other environmental issues.
05/10/00	Arizona Association of School Business Officials	SRP-Randy Dietrich, Doug Milligan	Presentation of Kyrene and Santan proposals.
05/18/00	Gilbert resident: Marshall Green	SRP-Janeen Rohovit	RS 18 restoration concerns.
05/19/00	Gilbert residents: Mark and Jennifer Sequiera (COST)	SRP-Janeen Rohovit, Randy Dietrich, Mark Bonsall	Discussed project briefly, agreed on subsequent meeting.
05/20/00	Cottonwoods Crossing: Nan Dawson, HOA President; 45 community attendees	SRP-Janeen Rohovit, Randy Dietrich, Barbara Sanchez, Duane Bledsoe, Ellen McKenzie	Discussion on need, air quality, and aesthetic impact.

SMALL GROUP MEETINGS/LOCAL OFFICAL BRIEFINGS			
Date	**Name/Organization**	**Project Team Attendees**	**Discussion**
05/22/00	Gilbert residents: Mark Sequiera, host; Warren Love, Elisa Warner, Jeff Weideman, Stan Wilson	SRP-Janeen Rohovit, Randy Dietrich; EPG-Garlyn Bergdale, Lauren Weinstein	Randy Dietrich presented Santan CWG material and benefits and outreach material were discussed. The EPG planning process and neighborhood viewpoint photos of the crane were also presented and discussed.
05/23/00	City of Mesa: Dave Plumb, Director of Utilities	SRP-Cecilia Riviere, Mark Bonsall	Discussion of deregulation legislation, wholesale peaking power contract with SRP. District cooling in downtown Mesa, SRP solar panel installation, new City Manager, limited generation resources.
05/25/00	Gilbert residents: Elisa Warner, host; 18 community attendees	SRP-Randy Dietrich, Janeen Rohovit	SEP presentation, concerns raised about need and visual impact.
05/26/00	Office of Congressman J.D. Hayworth: Doug Nick, District Director. *Gilbert Independent*: Kelly Wendel, Editor	SRP-Randy Dietrich, Janeen Rohovit, Mike Hitt	Santan Tour
06/06/00	Town of Gilbert: Maggie Cathey, Councilmember; George Pettit, Assistant Town Manager	SRP-Mark Bonsall, Randy Dietrich, Janeen Rohovit	Review of santan storyboards to be used at upcoming open house.
06/06/00	Gilbert residents: 70 SRP Employees/Retirees	SRP-Dick Hayslip, Bill Schrader, Janeen Rohovit, Doug Frerichs	SEP presentation to SRP employees/retirees who reside in Gilbert.
06/10/00	Gilbert residents: SRP Employee/Retiree	SRP-Randy Dietrich, Janeen Rohovit, Duane Gray	Santan Tour
06/12/00	Gilbert Economic Development Advisory Board (GEDAB)	SRP-Dick Hayslip, Les Presmyk, Mark Fleming, Cecilia Riviere	Two members of CWG (Scott Morrison and Richard Andrews) are on GEDAB. APS community relations representative (Evelyn Casuga) also sits on the board. Positive about expansion, strong input provided.
06/13/00	Gilbert Residents: SRP Employee/Retiree	SRP-Janeen Rohovit, Mike Hitt	Santan tour.
06/16/00	Arizona Economic Forum	SRP-Randy Dietrich	Presentation on reliability issues and the need for additional generation resources. Discussion on gaining public acceptance for new infrastructure.
06/19/00	National Association of Retired Federal Employees (NARFE)	SRP-Mike Hitt	Presentation on SEP.

SMALL GROUP MEETINGS/LOCAL OFFICAL BRIEFINGS			
Date	**Name/Organization**	**Project Team Attendees**	**Discussion**
06/20/00	Gilbert Unified School District: Susan Giesaking, District Coordinator; 12 attendees	SRP-Janeen Rohovit, Darrel Sheppard	Science teachers in-service training on Foundations of Electricity including Santan tour. Discussion on need for SEP.
06/21/00	Gilbert resident: Hope Lopez	SRP-Randy Dietrich, Janeen Rohovit	In-home meeting to discuss Ms. Lopez' concerns regarding air quality and general quality of life in Gilbert as related to the proposed expansion.
06/22/00	Town of Gilbert Council and Staff: Maggie Cathey, Councilmember; Kenny Marin, Parks and Recreation; Mike Polumbo, Code Enforcement; Helga Stafford, Neighborhood Services; Lilly Urbina-Schuett, Neighborhood Services; Eileen Engle, Parks and Recreation; Ben Cox, Building Department; Gene Schmidt, Public Works Water Treatment; Jan Sutton, Executive Assistant to the Mayor	SRP-Randy Dietrich, Kathie Lee, Mike Hitt, Duane Bledsoe	Santan tour.
06/22/00	Town of Gilbert: Eileen Engle, Landscape Planning Technician	SRP-Russ Garrett, Michelle Colores; EPG-Randy Palmer, Kurt Watzek	Site visit to review areas to be used for the equestrian, bike, and pedestrian trail.
06/22/00	Gilbert residents: Dennis and Dean Buschong, Robert Mittchell, Beatrice Linne	SRP-Randy Dietrich, Janeen Rohovit, Duane Gray	Santan tour for open house attendees.
06/24/00	Gilbert residents: Gerald Prior, George and Jean Gabariault, Bonnie Heinsler, Jim and Seretta Perrault, Hank and Billie Foster, David and Laura Greenwalt (Rocky and Chase), Bill and Jean Becker	SRP-Randy Dietrich, Janeen Rohovit, Duane Gray	Santan tour for customers phoning with questions about the project.

EXHIBIT J-1
NEWSLETTERS, BILLING INSERTS, OPEN HOUSE ANNOUNCEMENTS

Santan Expansion Project

Number 1 November-December 1999

Introduction

SRP (Salt River Project) has begun a formal process to obtain permits to build an additional electric generating facility at SRP's existing Santan Generating Station in Gilbert. The generating facility being proposed is the most cost-efficient and prudent solution to meet the future power needs of the Southeast Valley.

Environmental Planning Group, Inc. (EPG) has been retained to conduct the environmental and public planning process for the Santan Expansion Project. This newsletter is the first in a series designed to inform and communicate to the community key facts about the project.

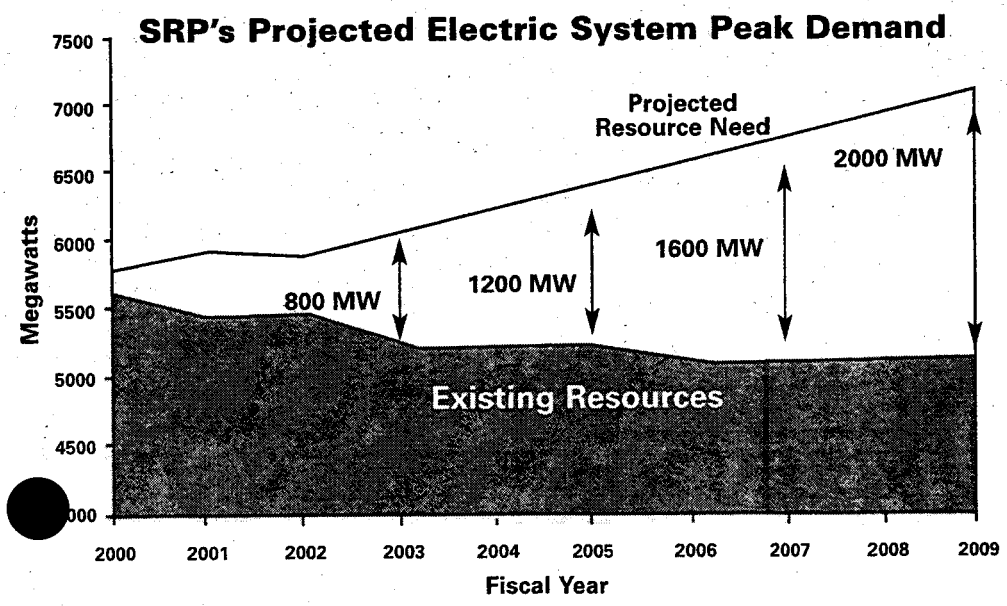
Growth Spurs Need

Metropolitan Phoenix is one of the nation's fastest-growing urban areas. During the past five years, the number of SRP electric customers has increased about 21 percent. Last fiscal year alone, SRP welcomed more than 27,000 new customers to its service territory — a record annual growth. SRP's customer growth rate is anticipated to continue at a similar pace over the coming years.

Recent studies by SRP show a growing discrepancy between projected resource needs and existing resources to meet the system peak for electric customer demand (see graphic). For example, peak demand by 2003 is expected to be 6,100 megawatts (MW), while available resources may be only 5,300 MW. This 800-megawatt disparity is expected to double in four years, in the year 2007. (During this time, some of SRP's existing power contracts will expire.) By 2009, there could be a 2,000 MW gap between projected resource need and available resources.

SRP's challenge is to ensure that its electric system requirements do not outgrow its existing generation resources. This is especially true in the Southeast Valley, where a majority of the population growth is occurring. SRP anticipates that the greatest power usage during the next 10 years in SRP territory will include Tempe, Mesa, Chandler, Gilbert and Ahwatukee/Phoenix.

SRP is a public power utility, serving more than 700,000 electric customers in metropolitan Phoenix, and is one of the state's largest water suppliers. SRP has conducted informational meetings about the project with relevant federal, state, county and municipal officials, as well as the Arizona Corporation Commission.



The Santan Expansion Project

The Santan Expansion Project will consist of a generating facility that will provide electricity for up to 200,000 homes. Plans call for an 825 MW natural gas-fired generating facility using the most efficient and environmentally friendly fossil-fuel technology available. It will occupy about 20 acres on the existing 120-acre Santan Generating Station property near Warner Road and Val Vista Drive.

Project construction should create about 300 jobs. When it is operational, the facility is expected to employ about 25 individuals. The plant may operate round-the-clock, seven days a week.

Permitting activities, including the public planning process, are expected to continue into late 2000. Construction is planned to begin in 2003, with the plant operational in the year 2005.

Who Is EPG?

The staff of Environmental Planning Group, Inc. (EPG), has provided environmental and public planning services in the Phoenix area for more than 25 years. In the western United States, EPG's professional staff has participated in numerous energy-related projects. An important objective of EPG's approach is to integrate environmental studies and public input into the planning process. One of EPG's goals is to accurately reflect the community's comments and concerns throughout the process.

What Is The Planning Process?

There are six major steps in the environmental and public planning process. The flow diagram illustrates the sequence and key element of each task. These steps focus on the identification of issues, inventory and assessment of relevant information, mitigation planning and selection, and an application of a Certificate of Environmental Compatibility (CEC) to the Arizona Corporation Commission. The schedule for this process is anticipated to last four to six months.

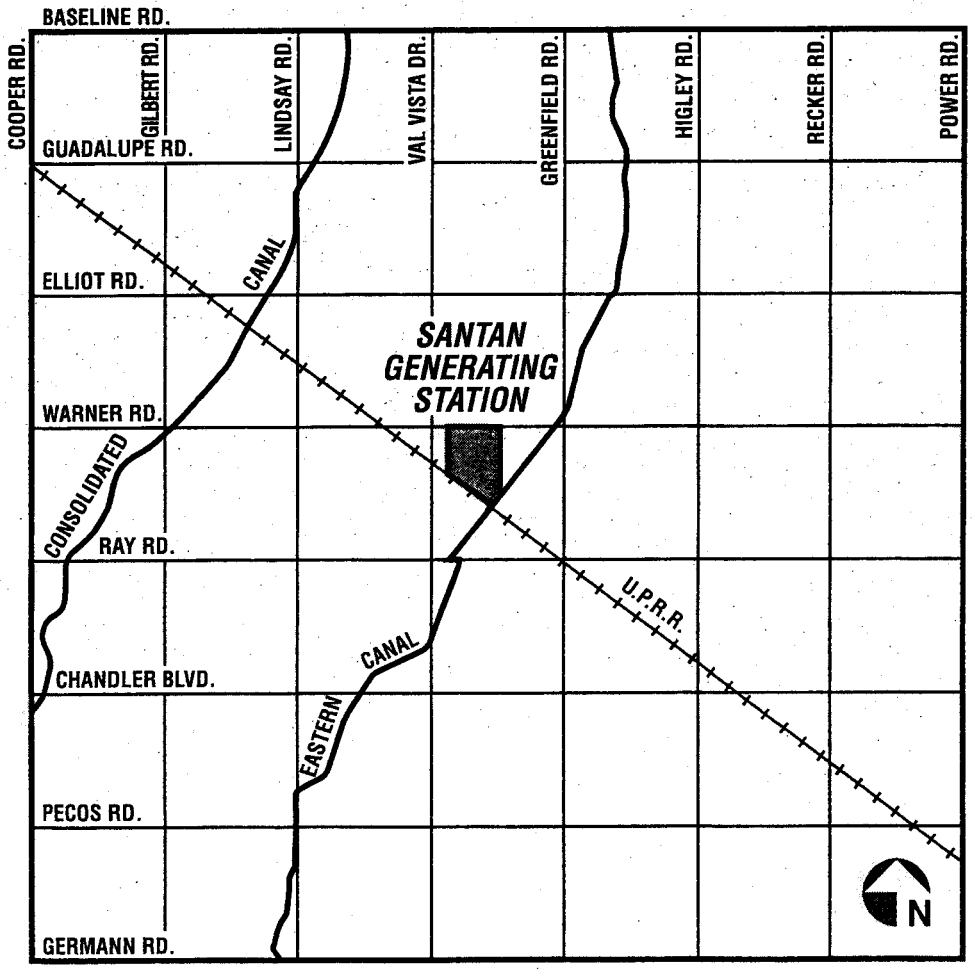
How Will The Community Be Heard?

Involving the public throughout the project is a key element of the planning process. Community members will have the opportunity through many methods to gain information and provide comments and questions.

Tools to inform the public and receive information include newsletters, public open houses, a telephone voice message information line, a project Web site, comment forms and SRP billing inserts.

- **Newsletters:** Periodic newsletters will be distributed to provide

Santan Expansion Project Location



Please attend the first public open house. More information on back page.

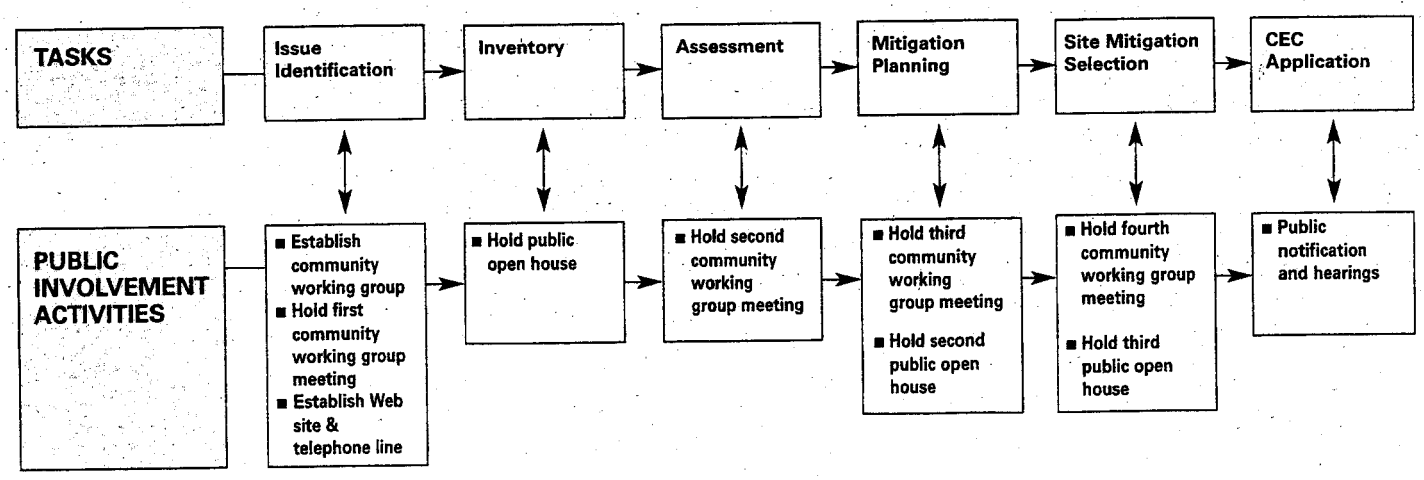
updated project information as the planning process continues. A mailing list will be maintained and updated during the project.

- **Public open houses:** Public open houses will be held to offer the community the opportunity to speak individually with the project team members, view displays and get information about project activities. At the informal open houses, the public is encouraged to ask questions and provide comments.
- **Telephone voice message information line:** If you have any questions, would like to submit a comment or want to be added to the mailing list, please call (602) 954-8156. Upon request, a project team member will return your call.
- **Web site:** A Web site has been developed that contains pertinent project information. The site can be found at **www.santanfacts.org**. This site provides a link that enables the public to e-mail the project team comments, questions or requests to be added to the mailing list.
- **Comment forms:** These forms will be available at all public open houses and distributed through newsletters and by request. The forms provide an opportunity for the public to document and relay comments to the project team.
- **SRP Billing Inserts:** Periodically, SRP customers will receive updated project information in their monthly billing newsletter.

In addition to the public involvement activities outlined above, a community working group (CWG) has been formed to serve as a "sounding board" during the project. The CWG is composed of a cross-section of individuals who are familiar with local issues and who represent a diverse range of views.

Municipalities, school districts, homeowner associations and adjacent property owners are examples of the CWG membership. While this group is not a decision-making body, its members will provide information regarding the community attitudes, issues and comments on the public involvement process.

The Santan Expansion Project
Planning Process Activities & Schedule



Environmental Planning Group, Inc.
4350 E. Camelback Road, Suite G-200
Phoenix, AZ 85018

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Mark Your Calendar
For A December 8 Open House About SRP's Proposed Santan Expansion Project

Santan Expansion Project

Public Open House Is December 8

Please attend the public open house being held to introduce the Santan Expansion Project to the community.

Refreshments will be served.

- **Wednesday, December 8**
  5 p.m. to 8 p.m.
  Finley Farms Elementary School*
  375 S. Columbus
  Gilbert

For more information, please phone the Santan Expansion Project voice message information line, (602) 954-8156.

** north of Warner Road, west of Greenfield Road*

Comment Form

We want to hear your views on the Santan Expansion Project. Your comments are important to help us identify ideas and issues for the project. Please take a few minutes to consider the information provided in this newsletter and complete and return this form to us.

My comments are:

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

Mailing List

The project mailing list will be supplemented as needed throughout the project. If you would like to be added to the Project mailing list you may either call (602) 954-8156 or provide your name and address below. If you know of additional people you believe should be included in the mailing list, pleas provide the names and addresses below.

Name: _____

Address: _____

City, State, Zip _____

E-mail: _____

Name: _____

Address: _____

City, State, Zip _____

E-mail: _____

Name: _____

Address: _____

City, State, Zip _____

E-mail: _____

Name: _____

Address: _____

City, State, Zip _____

E-mail: _____

Please fold this form (leaving the address and postage exposed) and seal the open end with tape before mailing.

Thank You For Your Comments!

Fold along perforation to reveal comment form

Santan Expansion Project

PLACE
STAMP
HERE

EPG, INC.
4350 East Camelback Road
Suite G-2000
Phoenix, Arizona 85018

SANTAN EXPANSION PROJECT

No. 2 May - June 2000

Gilbert, SRP Reach Agreement On Santan Expansion

The Town of Gilbert will receive numerous municipal improvements as part of an Intergovernmental Agreement (IGA) recently reached with SRP. The IGA is related to SRP's efforts to meet energy demand through expansion of its Santan Generating Station.

According to the IGA, SRP will:

◆ Widen Warner Road near the Santan Generating Station property. The project also includes sidewalk relocation, a new median, and lighting and landscaping on the north side of Warner Road.

◆ Extend the horseback and hiking trail near Santan. SRP will design and develop a trail on the eastern edge of its property, complete with crossing lights and trailheads. A bridge over the Eastern Canal into Crossroads Park also will be built.

◆ Widen Val Vista Drive near the entrance of the Santan property.

◆ Screen the north and east sides of the Santan property. Vegetation, trees, walls and berms may be used to better integrate the property with the surrounding area.

◆ Reroute the Eastern Canal near Val Vista Drive and Ray Road.

◆ Remove a large transmission training tower on the Santan property.

SRP also will develop a plan for dust control along its canals within Gilbert, and will add landscaping, trees and vegetation along transmission facilities and other designated areas.

SRP and Gilbert also will arrange for cooling water supply and discharge, and a natural gas supply.

Attend June 7 Public Open House

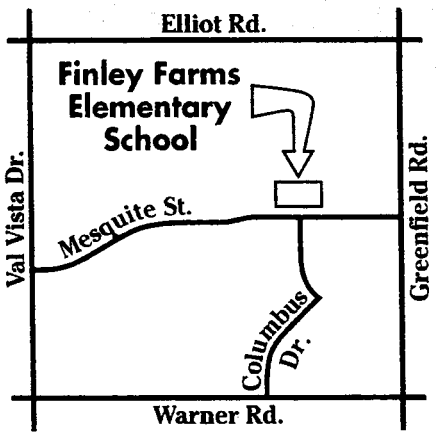
Gilbert area residents are encouraged to attend the next Santan Expansion Project open house, which will be held:

◆ **Wednesday, June 7, 2000**
5-8 p.m.
Finley Farms Elementary School
375 S. Columbus Drive
Gilbert
(north of Warner Road, west of Greenfield Road)

SRP is conducting public open houses as part of its efforts to fully inform residents about the project. At the meeting, representatives from SRP and its consultants will be available to answer questions and provide information. Topics include:

◆ Information from the independent noise consultant's reports, including data from studies completed at the Santan site and possible abatement measures.

◆ Presentations on the emission modeling conducted in accordance with the U.S. Environmental Protection Agency standards and how SRP will achieve the mandated emission offsets.



◆ Simulations of the various ways potential visual impacts would be addressed and minimized.

◆ Options for providing a water supply and wastewater disposal.

Residents are welcome to attend the open house at their convenience. Your comments and suggestions are an important part of the project.

Southeast Valley Needs More Power

Metropolitan Phoenix is among the fastest-growing areas in the nation. Much of this growth is occurring in SRP's service territory, where electric customers have increased by more than 100,000 during the past five years.

SRP is proposing the Santan Expansion Project as the most cost-efficient and prudent solution to help meet the Southeast Valley's future power needs.

Additional generation would ensure SRP's ability to maintain a dependable power supply during the next decade. Plus, more local generation must be built and integrated into the current system to meet the Southeast Valley's power reliability needs.

Another method to meet the growing demand is to bring in more generation from outside of the Valley. The existing transmission system serving metropolitan Phoenix is rapidly approaching its capacity, and to accommodate more load requires new transmission lines.

There are numerous benefits to building local generation within metropolitan Phoenix. The energy sources would be closer to the customers — thus increasing electric system reliability. Local generation reduces the need for new transmission facilities to and through the Valley. And plants built locally are under the unique obligation to make the air in our Valley better than plants built elsewhere. Truly this is the most productive way to meet demands of growth.

If the Southeast Valley is to receive the full benefit, a local site is the best option. SRP's Santan power facility in Gilbert offers adequate land already used for power generation purposes, plus access to necessary water and electric transmission interconnections.

More information also is available on our Web site, **santanfacts.org**. This is the second edition of the *Santan Expansion Project* newsletter. To request a copy, please call **(602) 236-2679** or visit **santanfacts.org**.

P.O. Box 52025
Phoenix, AZ 85072-2025

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MARK YOUR CALENDAR

FOR A JUNE 7 OPEN HOUSE ABOUT THE SANTAN EXPANSION PROJECT AT FINLEY FARMS ELEMENTARY SCHOOL 375 S. COLUMBUS DRIVE, GILBERT

The Public Planning Process - A Vital Component

There are six major steps in the environmental and public planning process. These steps focus on the identification of issues, inventory and assessment of relevant information, mitigation and enhancement planning and selection, and an application for a Certificate of Environmental Compatibility to the Arizona Power Plant & Transmission Line Siting Committee.

Additionally, a community working group or CWG has been formed to serve as a "sounding board" during the project. The CWG comprises a cross-section of individuals who are familiar with local issues and who represent a diverse range of views. While this group is not a decision-making body, its members provide information regarding the community attitudes, issues and comments on the public involvement process.

Involving the public throughout the project is a key element of the planning process. Community members are being given many opportunities to gain information and provide feedback, including:

◆ **Newsletters:** Periodic newsletters will be distributed to provide updated project information as the planning process continues. A mailing list will be maintained and updated.

◆ **Telephone voice message information line:** If you have any questions, would like to submit a comment or want to be added to the mailing list, please call **(602) 236-2679**.

◆ **Web site:** A Web site has been developed that contains pertinent project information. The site can be found at **santanfacts.org**. This site provides a link that enables the public to e-mail the project team comments, questions or requests to be added to the mailing list.

◆ **Small group presentations:** SRP representatives are available to make in-home presentations to small groups, by request. For more information, call **Janeen Rohovit at (602) 236-2679**.

◆ **Comment forms:** These forms will be available at all public open house meetings and distributed by request. The forms provide an opportunity for the public to document and relay comments to the project team.

◆ **SRP Billing Inserts:** Periodically, SRP customers will receive updated project information in their monthly billing newsletter.

Call us ...

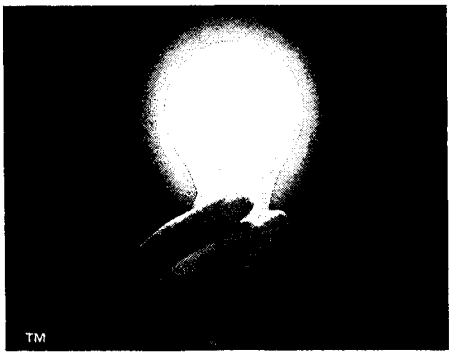
If you have additional questions, or need information about the Santan Expansion Project, or would like to schedule an in-home meeting, please call SRP Public Involvement Representative **Janeen Rohovit at (602) 236-2679**. SRP wants to ensure that you and everyone who has an interest in the Santan Expansion Project receive enough information to address your needs and concerns.

Energy News

Delivering More Than Power.®

June 2000 No. 1

Useful information for the Gilbert community



Get the facts!

- One-hundred percent of the power from the new Santan generating facility will be available to serve Gilbert electric customers. This project will help to meet growing energy needs.
- The new, state-of-the-art, clean-burning, natural gas generating facility will meet all air quality standards to protect public health. Through control or retirement of local emission sources, the Santan project will provide a net improvement to area air quality.
- SRP will pay an estimated **$101 million** in new taxes in the Gilbert community over 21 years. Approximately **$3 million** per year of this new tax revenue total will go to the Gilbert Unified School District.
- Enhancements to the Santan community, including road widening, landscaping and noise reduction, will ensure that the new generating facility is compatible with the surrounding community.

SRP wants you to know what's happening with the Santan Expansion Project. Get more facts about the project at **www.santanfacts.org**, or call the 24-hour information line at **(602) 954-8156**.

To host a small-group meeting to learn more about the Santan Expansion Project, please call **Janeen Rohovit at (602) 236-2679**.

◆

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Power for progress

More people and more buildings create a need for more power. It's a simple equation.

Metropolitan Phoenix is one of the nation's fastest-growing urban areas. This growth has fueled our local economy and resulted in a boom of homes and businesses that need to be cooled and heated, much of the growth is occuring in Gilbert. That's why there is a need for an additional source of power in the East Valley.

During the past five years, the number of customers in SRP's electric service territory grew about 16%. In the past fiscal year alone, SRP welcomed more than 27,000 new customers to its service territory—a record one-year growth.

SRP's challenge and responsibility is to prevent the growing demand for electric power from exceeding our available resources. In the next 10 years, the greatest power usage in SRP territory is expected to occur in Gilbert, Tempe, Mesa, Chandler and the Ahwatukee/east Phoenix area.

The need for additional generation isn't a local phenomenon—the nation as a whole is feeling the weight of overload on power grids. United States Department of Energy Chief Bill Richardson recently predicted that there will be an electricity supply shortage within the next few years.

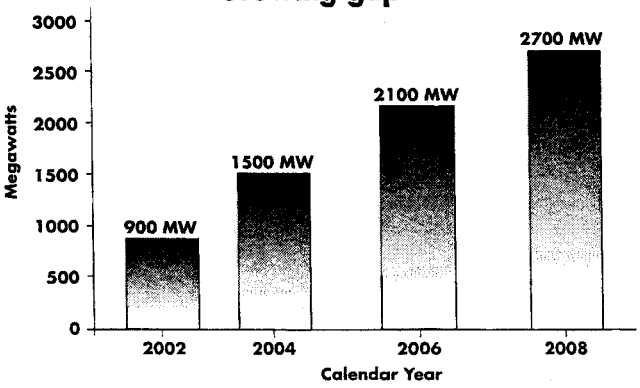
It's a very real problem and utilities and communities need to work together to find the best solution.

To meet the need for additional power, there are only two choices:

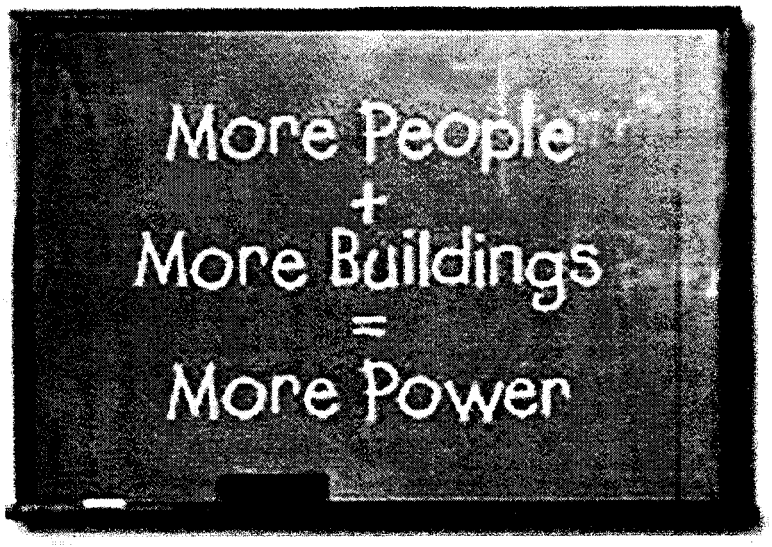
- Bring power in from a distant location via transmission lines. This is an expensive option and requires locating additional power lines through existing neighborhoods.
- Generate additional power at an existing facility located in the area of greatest need—the East Valley. We believe this is the most cost-efficient and prudent solution to meet the future power needs of the East Valley.

That's why SRP has begun a process to obtain permits to build an 825-megawatt generating facility at its existing Santan Generating Station in Gilbert. All of the power from this new generating facility will be available to serve the energy needs of local customers. We're working with the community to provide electricity with as little impact on the surrounding area as possible.

Growing gap



The gap between SRP generating resources and expected energy needs may reach 2,700 megawatts (equivalent to nearly 50% of SRP's current generating sources).



Why is more generation needed? Get the facts!

SRP

Delivering More Than Power.®

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Phoenix, AZ 85072-2025

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Contact

September 1999

News for SRP Residential Customers

We're Y2k Ready

SRP has verified that its electric supply and delivery system are "Y2k Ready." This verification includes:

- All SRP operated generating stations
- All SRP operated substations
- All other equipment used to deliver power, such as meters and communications networks
- Written contingency plans for all critical functions, which will be tested before the end of the year.

We are continuing to make sure that any newly purchased equipment is Y2k ready before

Continued on page 2

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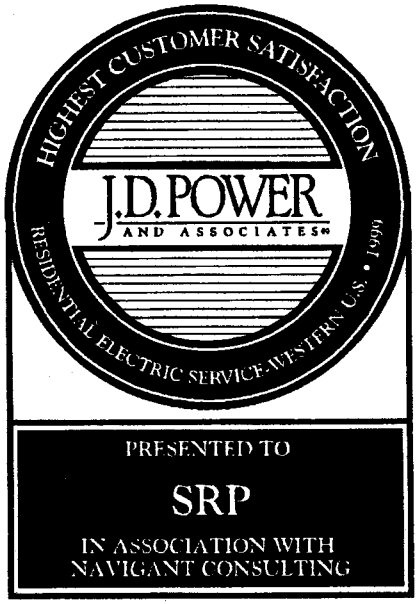
Energy Saving Advice 4

SRP Ranked Highest In Customer Satisfaction



In a study issued by J.D. Power and Associates and Navigant Consulting, SRP has been ranked highest among electric utilities in the western United States for residential customer satisfaction in a tie.

SRP and Idaho Power Company tied for the highest ranking, with an overall customer satisfaction index of 111. SRP was cited for a strong company image and reliability.

The inaugural 1999 Electric Utility Residential Customer Satisfaction Study was based on more than 26,000 responses from residential electric customers throughout the continental U.S. These responses were collected through telephone interviews.

We're pleased our customers rank SRP so highly, but we won't rest on our laurels. We'll continue to offer the low prices and quality services our customers expect.

According to J.D. Power and Associates and Navigant Consulting Inc., which jointly designed and independently financed the study, the key determinant of satisfaction in the electric utility industry is a provider's image. Image includes 14 specific attributes, including reputation, honesty, effort to become more efficient and ability to communicate changes.

Continued on page 2

SRP Tops Study

Continued from page 1

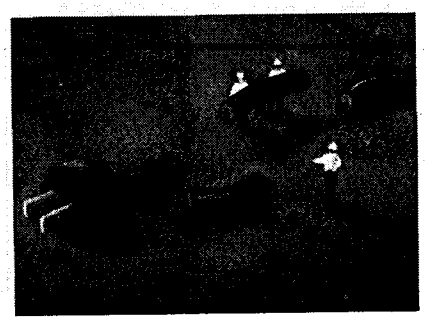
Other determinants of overall satisfaction are price and value, power quality and reliability, billing and call center. These attributes are consistent among all customers and regions.

With an overall customer satisfaction index of 111, SRP was ranked among the highest utilities in the nation. Only LG&E Energy, the parent company of Kentucky Utilities Co. and Louisville Gas and Electric Co., had a higher index of 115.

J.D. Power and Associates/ Navigant Consulting, Inc. 1999 Electric Utility Residential Customer Satisfaction Study (www.jdpower.com) ranked the top 19 largest electric companies in the western U.S. and was based on 26,096 consumer responses.

Team Proposes New Power Project

SRP, Dynegy Inc. and NRG Energy, Inc. are working together on a new power project. The team has begun the process of obtaining the necessary siting permits for a natural gas-fired electricity generating facility in the greater Phoenix area and is considering multiple sites in the East Valley.



The number of electric customers SRP serves has skyrocketed to more than 700,000, which includes last year's record total of 27,000 new customers. The pace of customer growth is expected to continue, particularly in the East Valley. The new power project will help us meet customers' increasing energy needs over the next decade.

SRP selected Dynegy, one of the country's leading marketers of energy products and services, and NRG, a world leader in independent power production, to participate in the project.

The three companies are conducting informational meetings with federal, state, county and municipal officials and will soon launch an extensive public process related to facility siting. Pending approval from local authorities and state regulators, project construction would begin in late 2000.

Save With Home Energy Manager

The answer to managing home energy costs is right at your fingertips. Using a computer with Internet service, you can access SRP's Home Energy Manager™.

The Home Energy Manager will help you examine your energy use over the past year and learn energy-efficiency techniques. There's no better time to start saving than right now. Go to **www.srpnet.com** and click on the **Online Services** icon. Then, select **Home Energy Manager** from the Product and services section.

We're Y2k Ready

Continued from page 1

it is installed. And, we're working with other major western utilities to verify regional readiness.

For more information, visit **www.srpnet.com** and click on the **Y2k** link on the front page.

◆

SRP Year 2000 Readiness Disclosure

Contact

January 2000

News for SRP Residential Customers

SRP Redeems Term Bonds

Do you hold SRP 1973A term bonds maturing in 2010? If so, please be aware that SRP will redeem as of January 1, 2000 approximately $2.69 million of these bonds in accordance with the redemption schedule.

Because many of these bonds are bearer bonds, a direct notice could not be provided to the owners. If you think your bonds may be affected, please call the SRP Bondholder Information Line at **(602) 236-2222,** or **1-800-516-0444.**

In This Issue

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Portable Generator Safety 3
Fuel Cell Project 4

Energy Providers Await Statewide Competition

Arizona's electric utility industry has moved closer to customer choice. In late September, the Arizona Corporation Commission (ACC) adopted competition rules for public service corporations. During the past year, the ACC has approved several energy service providers (ESPs) to compete for customers throughout the state.

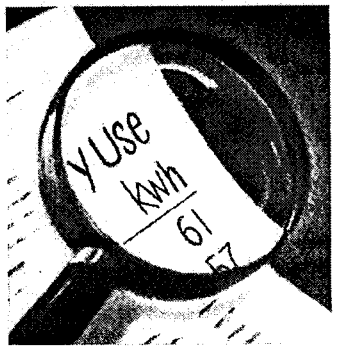
SRP will continue to serve only within its designated service territory while New West Energy, a separate affiliate of SRP, will market, on a limited basis, energy services to non-SRP customers.

Some agreements between certificated ESPs and existing Arizona electric utility distribution companies still need to take place before full competition occurs.

For information about certificated ESPs, go to **www.cc.state.az.us/utility/electric.** For details on ESPs that are authorized to serve in SRP territory, go to **www.srpnet.com.** Next, click on "Utility Competition" and select the "SRP authorized providers" link.

◆

Customer Assurance
You will continue to receive the same reliable, responsible delivery of electricity from SRP regardless of whether you purchase energy or any other product or service from another provider.



Large Print Bills

Are you straining to read your electric bill? If so, you may be interested in our Large Print Bill—an easier-to-read, simplified version of the regular bill.

Just call SRP Residential Customer Services at **(602) 236-8888** if you would like to receive our Large Print Bill and we'll be happy to send it to you. Or, if you know someone who might like to receive one, please share this information with them.

Our Promise To You

Doing business with us should be easy. That's why we provide three Service Quality Promises.

Accurate Billing

Billing errors are extremely rare, but could occur. If you discover a billing error, we will adjust your bill accordingly and credit your SRP account with 10 percent of either the billing error amount or the amount of the corrected bill, whichever is less ($5 minimum, $500 maximum).

Accurate Payment Processing

It is very rare that a properly identified electric payment would be credited to the wrong account. However, if you find that your payment was misapplied, we will adjust your bill and credit your SRP account with $25.

Accurate SurePay Withdrawals

SRP promises not to withdraw SurePay funds earlier than the date you select. If your withdrawal is made earlier, or if an incorrect amount is withdrawn, we will credit your SRP account with $25, plus any bank fees you may incur.

Valley Power Needs Continue To Grow

SRP has begun a formal process to obtain permits to build an additional electric generating facility at its existing Santan Generating Station in Gilbert. The proposed plant will help to meet future power needs of the Southeast Valley.

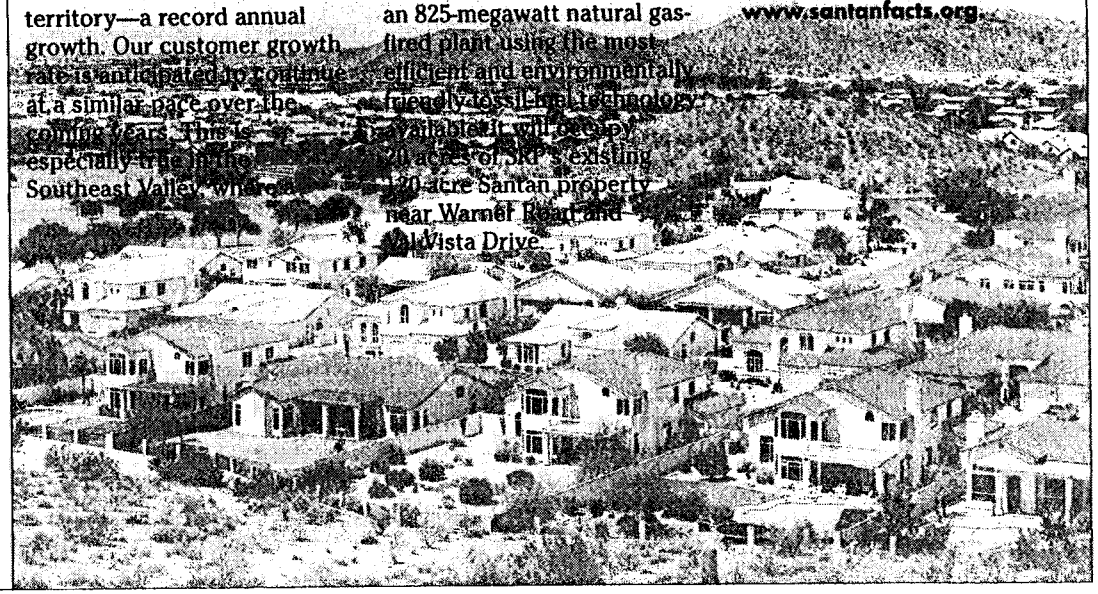
Last fiscal year, SRP welcomed more than 27,000 new customers to its service territory—a record annual growth. Our customer growth rate is anticipated to continue at a similar pace over the coming years. This is especially true in the Southeast Valley, where a majority of the population growth is occurring.

We anticipate that the greater power usage during the next 10 years in SRP territory will include Tempe, Mesa, Chandler, Gilbert and Ahwatukee/Phoenix.

The Santan Expansion Project will consist of a generating facility that will provide electricity for up to 200,000 homes. Plans call for an 825-megawatt natural gas-fired plant using the most efficient and environmentally friendly fossil-fuel technology available. It will occupy 20 acres of SRP's existing 80-acre Santan property near Warner Road and Val Vista Drive.

Permitting activities, including the public planning process, are expected to continue into late 2000. Construction is planned to begin in 2003.

For more information about the proposed Santan Expansion Project, to submit a comment or to add your name to the mailing list for project updates, please call **(602) 954-8156** or visit **www.santanfacts.org**.



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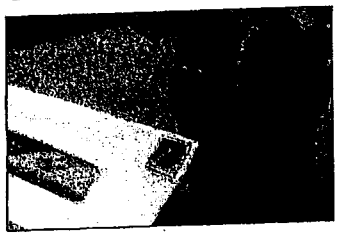
SRP®

News for SRP Residential Customers

April 2000

With Your Bill



In our envelope this month, you'll find a voucher for two free tickets to the SRP Kick Off Party at Country Thunder USA on Thursday, April 27. The festival, held in Queen Creek, will feature music, food, a rodeo and other activities. For details, call **(480) 966-9920**.

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SRP Continues To Offer Among The Lowest Prices In The Southwest

SRP management has proposed to reduce prices by $9.8 million, or approximately 1%. Under the proposal, nearly 99% of SRP electric customers will either benefit or experience no change to their monthly bills.

We continue to offer among the lowest energy prices in the Southwest. If approved by SRP's Board of Directors, this adjustment will be the fourth decrease in six years and will make SRP's overall electricity prices more than 10% lower than in 1991. With this adjustment, SRP will exceed the 10% price decrease required by the Electric Power Competition Act.

The SRP Board of Directors will decide on a proposed electric price reduction on April 10. New prices could take effect as early as May 1, 2000 if the proposal is approved.

The proposed adjustment will realign prices to better reflect costs of providing service and to further facilitate electric utility

Continued on Page 4

◆ Price Plan Comparison ◆

Basic Price Plan (E-23)

	Current	Proposed
Summer		
Monthly Service Charge	$2.69	$7.67
Delivery Charge	$0.0480/kWh	$0.0430/kWh
Energy Charge	$0.0326/kWh	$0.0376/kWh
Winter		
Monthly Service Charge	$12.65	$7.67
First 400 kWh		
Delivery Charge	$0.0478/kWh	$0.0438/kWh
Energy Charge	$0.0228/kWh	$0.0268/kWh
All Additional kWh		
Delivery Charge	$0.0203/kWh	$0.0163/kWh
Energy Charge	$0.0228/kWh	$0.0268/kWh

Three Options That Are Good Together

For truly effortless bill-paying, try the combination of our Managed Payment Plan, Customer Selected Due Date and 10-Day SurePay. With this trio of options (known as the **Advantage Billing** package), each month your electric payment will be automatically deducted from your financial account on the date you select for a pre-determined amount and you will receive a 1% discount on the cost of SRP's energy and delivery services.

Managed Payment Plan (MPP) allows you to balance the seasonal highs and lows of your electric bills so you can have predictable electric bills each month. Your annual energy cost is divided into equal monthly payments, making it easier to budget each month.

SRP's Customer-Selected Due Date enables you to pick almost any monthly due date for your SRP bill that works with your household budget. Our customer service representatives will help you select a due date that works best for you.

With 10-Day SurePay, the amount of your monthly electric bill is automatically withdrawn from your bank or other financial institution 10 days after the statement date. Since this payment option provides savings to SRP, we pass on a 1% discount on SRP services to customers who use 10-Day SurePay.

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Remember, when you combine 10-Day SurePay with Customer-Selected Due Date and the Managed Payment Plan, you:

- **receive a discount**
- **choose a due date that fits with your household's budget**
- **know the amount of your monthly bill in advance.**

You can enroll in one, two or all three of these options of our Advantage Billing package. Call us at (602) 236-8888 for sign-up information.

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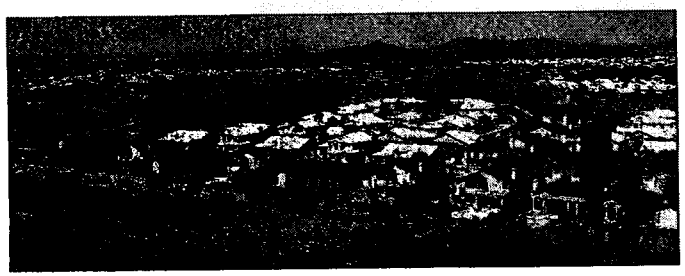


A Reasonable Plan For Growing Energy Needs

Demand for electricity is increasing due to growth in the Southeast Valley. We, at SRP, believe our plan to expand our existing Kyrene and Santan generating stations (in Tempe and Gilbert, respectively) is a reasonable and responsible approach to address our customers' energy needs.

SRP generation sources are near capacity during the hottest summer days, and transmission line constraints limit electricity imports into the Valley. These two conditions make local generation a necessity.

Locating new plants near the geographic area where most growth is occurring—the Southeast Valley—means lower development costs, less need for additional transmission structures, and a more stable and reliable supply of electricity.

As a political subdivision of the state of Arizona, SRP does not make "profits" and we do not have stockholders. Rather our prices are set according to costs. When costs are contained, so too are our prices. We offer among the lowest electricity prices in the Southwest.

Through efficient natural gas technology and emission offsets, these new power plants will result in a net improvement to the Valley's air quality. These plants will also increase property tax revenue by a combined $200 million over their life and will include property enhancements such as landscaping.

Contact

May 2000

News for SRP Residential Customers

Don't Drive On Canal Banks

Please do not drive along SRP canal banks. Motor vehicle use of canal roads is restricted to SRP and other authorized users.

If you observe unauthorized vehicles, excessive dust stirred by a vehicle, or unsafe driving practices on a canal road, please call us at **(602) 236-5305** to report these violations.

In This Issue

New Plan Benefits ... 2
Two Period Plan ... 3
Mowing Down Pollution ... 4

Electric Prices Decrease By $13.7 Million

SRP's Board of Directors approved a measure that will raise the "shopping credit" portion of customer bills and reduce overall electric prices by approximately $13.7 million (about 1%). In addition, all SRP electric customers will be eligible to choose their own generation supplier after May 31, 2000.

We are realigning prices to better reflect the cost of providing service and to further facilitate electric utility competition. The shopping credit is the energy charge part of the bill and can be used in comparing SRP's prices with those of alternative energy suppliers.

With this Board decision, SRP will become the first electric utility in Arizona and the first public power entity in the nation to open its entire service area to generation competition. This action is seven months earlier than required by Arizona's Electric Power Competition Act.

Under competition, we will continue to deliver our customers' electricity. Customers will be able to buy their supply of electricity from SRP or other energy service providers (ESPs) that are authorized to serve in SRP's service area. Supply represents about a third of a typical residential monthly bill. The current list of SRP-authorized ESPs is available through the "Utility Competition" link at **www.srpnet.com,** at **www.electricfacts.org,** or by calling us at **(602) 236-8888.**

SRP will not release customer names, consumption data or other confidential information to ESPs, unless we have written permission from customers. Please call SRP at **(602) 236-8888,** if you are interested in selecting an alternate ESP and would like to release your account information.

The price reduction is the fourth decrease in six years. Since 1991, overall prices have fallen more than 10%. This adjustment is anticipated to take effect May 15, 2000. Additional pricing details will be mailed to customers prior to the effective date of the change.

New Plants Will Offer Important Benefits

New electricity sources in the Southeast Valley will bring many real benefits to local communities.. SRP expects more than 50% of future energy demand growth to occur in the Southeast Valley. SRP's Kyrene and Santan expansion proposals would establish new, state-of-the-art generating stations to serve this growing need. Here are four benefits of the local generation projects.

1. Continued supply of reliable electric power

Increasing demands upon available electricity resources mean we must either build new local generation or import more power from outside sources. Importing energy from remote plants carries greater reliability-related risks associated with disturbances on the electric grid. However, local generation helps maintain voltage levels required by customer equipment and appliances.

2. Continued supply of low-priced power

Local generation offers a cost-benefit to SRP and in turn, the opportunity for continued low prices for customers. We evaluated alternative sites, and the Kyrene and Santan locations offer development costs that are much less than other options.

3. Increased tax revenues to local education and cities

The new plants would represent significant increases in local property tax revenues for Kyrene Elementary, Tempe Union High School and Gilbert Unified districts.

4. Reduced need for new transmission lines into this area in the future

There is no new transmission development required for the new plants. By comparison, a remote plant would require new transmission structures through communities to get the electricity to customers.

For more information about the Kyrene and Santan projects, visit **www.kyrenfacts.org** and **www.santanfacts.org.**

Preparing For Summer Storms

SRP has been taking steps to improve its electric system to reduce the possibility of service interruptions from summer storm-related damage.

Inspecting Wood Poles

SRP is in the fifth year of a comprehensive program to inspect and maintain wood poles, which carry its transmission and distribution lines. Poles that are identified as deficient are treated, reinforced or replaced.

Ongoing visual inspections of our substation equipment and transformers are also helping to avoid potential outages.

Tree Pruning

Power outages can occur during monsoon storms when trees come in contact with overhead electricity lines. To help prevent these incidents, SRP prunes and removes trees that are too close to its power lines on a regular basis.

Weather Forecasting

Because weather plays a significant role in creating power outages, SRP has improved its ability to predict storm activity. SRP uses weather satellite image loops, the Lightning Detection Network and Doppler weather radar displays to forecast potentially damaging weather. This information allows SRP to respond quickly to storm damage by placing its restoration crews on alert during heavy storm activity.

Quick Response

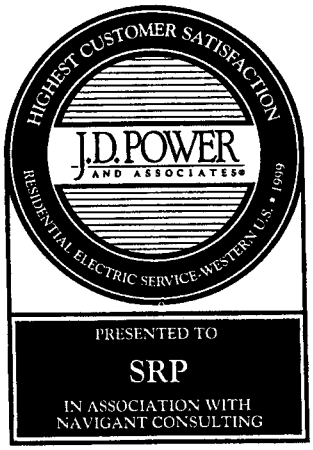
In addition to storms, car accidents sometimes knock down poles and cause power outages. While we cannot prevent these incidents from occurring, we are committed to restoring power quickly. Please call SRP at **(602) 236-8811** to report outages. This phone line is open 24 hours a day. Tell us if other homes in your area are out or if it's just your home. We will provide you with as much information as possible about the outage.

Customer Choice

August - September 1999 Vol. 2 No. 4

***SRP's** Report on Electric Power Competition*

SRP Ranked Highest In Customer Satisfaction



In a study issued by J.D. Power and Associates and Navigant Consulting, SRP has been ranked highest (in a tie) among electric utilities in the western United States for residential customer satisfaction.

SRP and Idaho Power Company tied for the highest ranking, with an overall customer satisfaction index of 111. SRP was cited for a strong company image and reliability.

The inaugural 1999 Electric Utility Residential Customer Satisfaction Study was based on more than 26,000 responses from residential electric customers throughout the continental U.S. These responses were collected through telephone interviews.

We're pleased our customers rank SRP so highly, but we won't rest on our laurels. We'll continue to offer the low prices and quality services our customers expect.

According to J.D. Power and Associates and Navigant Consulting Inc., which jointly designed and independently financed the study, the key determinant of satisfaction in electric utility industry is a provider's image. Image includes 14 specific attributes, including reputation, honesty, effort to become more efficient and ability to communicate changes.

Other determinants of overall satisfaction are price and value, power quality and reliability, billing and call center. These attributes are consistent among all customers and regions.

With an overall customer satisfaction index of 111, SRP was ranked among the highest utilities in the nation.

J.D. Power and Associates/Navigant Consulting, Inc. 1999 Electric Utility Residential Customer Satisfaction Study (www.jdpower.com) ranked the top 19 largest electric companies in the western U.S. and was based on a total of 26,096 consumer responses.

We Are Y2k Ready

SRP has verified that its electric supply and delivery system are "Y2k Ready." This verification includes:

- All SRP operated generating stations
- All SRP operated substations
- All other equipment (hardware and software) used to deliver power, such as meters, information and energy management systems and communications networks
- Written contingency plans for all critical functions, which will be tested before the end of the year.

We are continuing to make sure that any newly purchased equipment is Y2k ready before it is installed. And, we are working with other major Western utilities to verify regional readiness.

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SRP Year 2000 Readiness Disclosure

For more information, visit www.srpnet.com and click on the Y2k link on the front page.

Y2K

New Power Project Proposed

SRP, Dynegy Inc. and NRG Energy, Inc. are working together on a new power project and have begun the process for obtaining the necessary siting permits for a natural gas-fired electricity generating facility in the greater Phoenix area. Multiple sites in the East Valley are being considered for the generating facility.

The number of electric customers SRP serves has skyrocketed to more than 700,000, which includes last year's record 27,000 new customers. The pace of customer growth is expected to continue, particularly in the East Valley. The new power project will help us meet customers' increasing energy needs over the next decade.

SRP selected Dynegy, one of the country's leading marketers of energy products and services, and NRG, a wholly-owned subsidiary of Northern States Power and world leader in independent power production, to participate in the project.

The three companies are meeting with federal, state, county and municipal officials and are launching an extensive public involvement process related to facility siting. Pending approval from local authorities and state regulators, project construction would begin in late 2000.

ACC Decision Expected In Sept.

The Arizona Corporation Commission (ACC) held a hearing in July to consider New West Energy's request for certification as an energy service provider in Arizona. New West Energy, SRP's power marketing affiliate, will serve electric consumers outside SRP's traditional service territory. The ACC's final decision on the affiliate's request is expected sometime in the fall.

New West Energy will market energy in Arizona that becomes surplus in a competitive market. That surplus power, for example, will come from excess SRP generating capacity made available by the loss, through competition, of any current SRP customers.

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Customer Choice

SRP's Report On
Electric Power Competition

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Customer Choice

November 1999 Vol. 2 No. 5

SRP's Report on Electric Power Competition

Electricity Market Warms

New Plants Planned in Arizona

About a year after Arizona's Electric Power Competition Act of 1998 took effect, the state's electricity market is warming up. In just a few months, 11 different power plant construction projects have been announced to take advantage of electricity supply deregulation.

Industry analysts say it is unclear whether Arizona regulators or the regional power market will support all these proposed plants, most with remote sites far away from consumers and requiring miles of new transmission lines across the state. However, demand for energy in the Phoenix area—where the majority of the state's population resides—is rising.

Metropolitan Phoenix is one of the nation's fastest-growing urban areas. As a result, the number of SRP electric customers has increased about 21% during the past five years.

Recent studies by SRP show a growing gap between projected peak demand for electricity and existing generation.

SRP's Kyrene Generating Station in Tempe and the Santan Generating Station in Gilbert have been chosen as potential sites for new environmentally friendly, natural gas-fired generating facilities required to help meet the rapidly growing need for energy in the East Valley.

The Kyrene and Santan sites are well suited for new generating capacity. Their proximity to existing transmission facilities and access to natural gas fuel and water will reduce the costs and the environmental impact of the projects.

SRP, Dynegy Inc. and NRG Energy, Inc. will form Oasis Energy, a limited liability corporation to develop, construct and operate a generating facility at the Kyrene site. A process also is underway to obtain permits for generating capacity at the Santan location.

Environmental Planning Group, Inc. (EPG) will facilitate the public planning process for the Kyrene Expansion Project and Santan site, including consumer working groups and a series of open houses.

The working groups are composed of a cross-section of individuals who are familiar with local issues and who represent a diverse range of views. Its members will provide information regarding the community attitudes, issues and comments on the public involvement process.

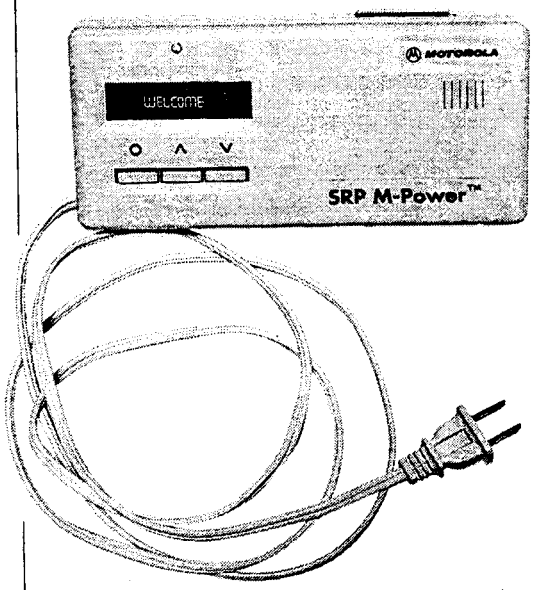
The open houses provide opportunities for the public to review information and discuss the projects with project team members.

Pending approval from local and state authorities and regulatory officials, construction on the Kyrene Expansion Project would begin in late 2000.

SRP, Motorola Develop Electric Prepay Product

Through an agreement with Motorola, SRP will purchase 20,000 of Motorola's new PowerCom™ prepayment systems during the next two years.

The SRP-Motorola agreement will give SRP residential electric customers more options and flexibility in controlling and managing their electric usage. It also will position SRP as a prepayment leader among electric utilities in the U.S. Currently, only about 20,000 prepayment units are being used nationally—nearly 2,000 by SRP customers in the greater Phoenix area.



SRP first offered some electric customers the opportunity to voluntarily participate in its Pay As You Go prepayment program in 1993. SRP will begin offering the new program called **SRP M-Power™** to residential customers later this year.

Energy Providers Await Statewide Competition

Arizona's electric utility industry has moved closer to customer choice. In late September, the Arizona Corporation Commission (ACC) adopted statewide competition rules for public service corporations. During the past year, the ACC has approved several energy service providers (ESPs) to compete for customers throughout the state.

New West Energy Corporation, an affiliate of SRP, is among the companies that are certified to provide energy and related services to Arizona consumers. Other certified providers include:

- **APS Energy Services**
- **Eastern Competitive Solutions**
- **Enron Energy Services**
- **Illinova Energy Partners**
- **New Energy Ventures Southwest**
- **PG&E Energy Services**
- **Sempra Energy Trading**
- **Sierra Southwest Electric Power Cooperative Services.**

Agreements between these ESPs and existing Arizona electric utility distribution companies still need to occur before full competition occurs.

The SRP affiliate will offer competitive electric services statewide once competition begins. New West Energy will market power outside SRP's distribution service territory and compete for customers with Arizona's existing electric utilities and other certified ESPs.

New West Energy plans to approach consumers in phases, starting with Valley business customers and a limited number of residential customers in 2000.

New West Energy supplies power to California businesses and residents from San Diego to San Francisco. New West Energy's experience in California has given the affiliate insight into how to build value for its customers in a competitive energy market.

Choice Benefits

Since SRP opened its service area to competition on January 1, 1999, we have reduced prices by 5.4% (on average) and earned top ranking in a national electric utility residential satisfaction study. We believe competition will continue to bring lower prices and better service to our customers. In addition, SRP is working to develop innovative products and services.

See the article in the front right column to learn about a new SRP program.

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Customer Choice

SRP's Report On
Electric Power Competition

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Customer Choice

January 2000 Vol. 3 No. 1 **SRP's** *Report on Electric Power Competition*

Plan For Competition And Growing Energy Needs

One of the challenges SRP faces in a competitive electricity market is determining the most effective solution to meet the growing energy needs. We've considered several approaches, including:

1. Build remote power plants (in less populated areas, miles away from electricity consumers) and new high-voltage power lines (also known as transmission) to deliver the electricity where it's needed.
2. Build local generation (close to consumers) and deliver electricity over existing transmission facilities.

Approach #1 would involve greater costs and more extensive power line impacts in the Valley than would local generation.

The second approach offers many advantages, including:

- Reduced overall costs
- Increased system reliability
- A reduced need for more power line construction
- Tax benefits to local communities.

To meet future needs, a mix of approach one and two provides the best solution. Local generation clearly is the best alternative in meeting short-term energy needs (within the next five to ten years). In previous issues of Customer Choice, we reported that SRP is pursuing permits for expanded generating facilities at our Kyrene station in Tempe and Santan station in Gilbert. These locations were selected because they are on existing generation sites, at the heart of SRP's existing delivery system and can directly serve the Southeast Valley.

In the long term, we believe expanding our high-voltage transmission system into and inside the Valley, will be necessary to fuel commerce and continued growth in our service area.

We plan to meet future energy needs, by combining our local generation expansion proposals with efforts to increase major transmission to the Valley.

That is why we are combining our local generation expansion proposals with efforts to increase major transmission to the Valley. More local generation will help us meet near-future growth demands, while new major transmission will address long-term growth.

SRP Named Best Public Power Company

PHB Hagler Baily, a firm that offers strategic advice and analysis to the energy, telecommunications and transportation industries, named SRP the "best public power entity" in its recent Energy Industry Outlook 2000.

The Outlook cited SRP's "deep and positive relationships with its customers" as an important consideration in selecting us as a top performer.

In addition to recognizing outstanding performances by SRP and other companies, the report provides information about industry trends.

SRP Sponsors Fuel Cell Project

At SRP, we're studying new technologies that will enable us to bring innovative service to customers.

That's why we have joined forces with Dana Corporation, Texaco and Southern Company to fund a fuel cell demonstration and evaluation project at the Houston Advanced Research Center (HARC). The three-year, $7 million project will determine if fuel cells can serve as clean, reliable and affordable energy sources.

Fuel cells may be an environmentally friendly alternative to conventional power plants.

A fuel cell is a device that uses hydrogen from natural gas, gasoline, methanol or ethanol, to create a chemical reaction that produces electricity, heat and water. Because fuel cells use an electrochemical reaction rather than combustion to generate electricity, emissions are minimal, making them an environmentally friendly alternative to conventional power plants.

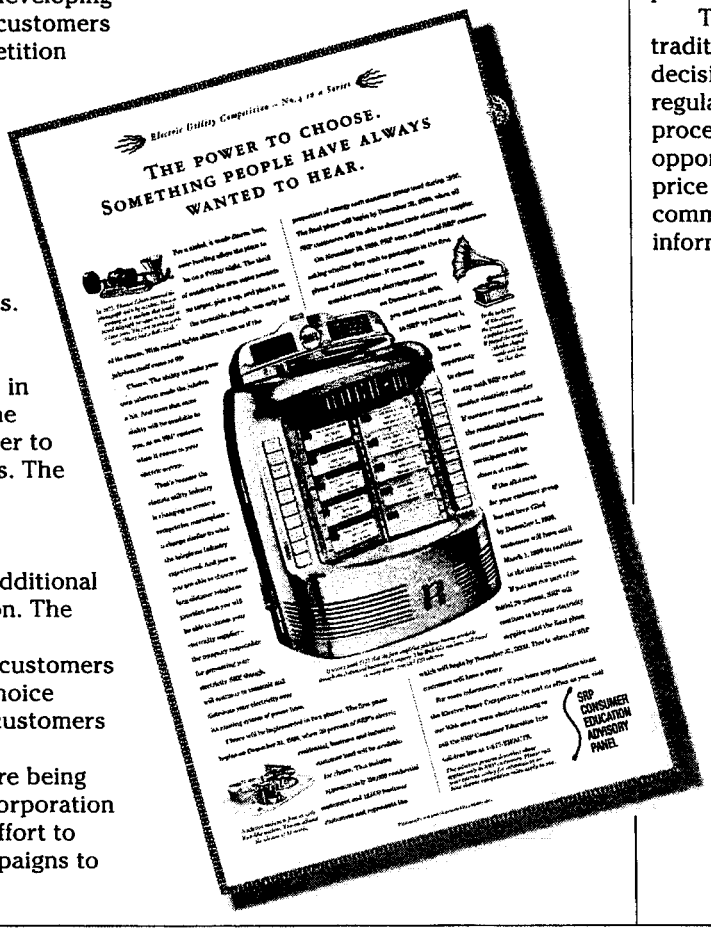
Panel Continues Education Efforts

SRP's Consumer Education Advisory Panel (CEAP), consisting of diverse community group representatives, has been developing a program to educate SRP customers about electric utility competition since 1998.

The current program consists of a Web site **(www.electricfacts.org)**, a toll-free telephone line **(1-877-23FACTS)**, public presentations and a series of seven brochures about different competition issues.

The panel is now working on a "Shopper's Guide" to assist customers in making a decision about the best energy service provider to meet their individual needs. The guide will contain a comprehensive section on criteria to consider when selecting a supplier, plus additional information on deregulation. The guide will be mailed to the approximately 80,000 SRP customers who are now eligible for choice and available to all other customers by request.

CEAP materials also are being shared with the Arizona Corporation Commission (ACC) in an effort to coordinate education campaigns to reduce confusion to the public. An ACC representative also is invited to CEAP meetings to further its understanding of our campaign.


THE POWER TO CHOOSE. SOMETHING PEOPLE HAVE ALWAYS WANTED TO HEAR.

SRP CONSUMER EDUCATION ADVISORY PANEL

SRP Begins Public Process

In February, SRP will conduct a public process to receive input on a proposed price adjustment. While the details of the proposal are still being developed, the adjustment is designed to better align prices with the cost of providing service.

The public process reflects SRP's tradition of involving customers in decisions that will affect them and is a regular part of our price setting process. Customers will have several opportunities to learn more about the price change proposal and to submit comments, including a series of informational meetings in February.

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Customer Choice

SRP's Report On
Electric Power Competition

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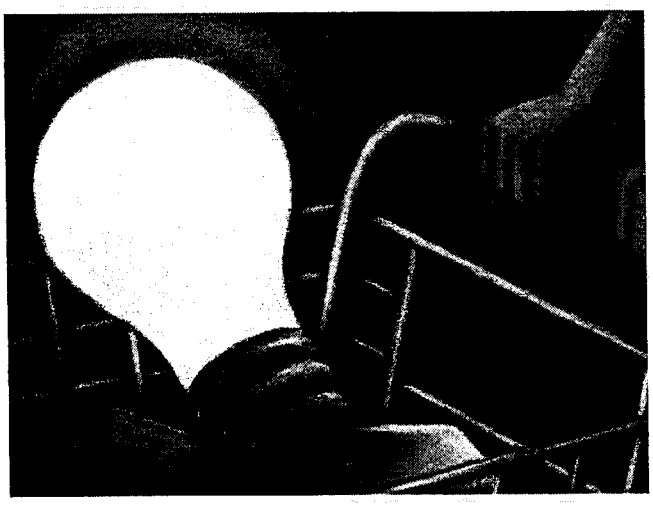
May 2000 Vol. 3 No. 2 **SRP's** *Report on Electric Power Competition*

Board Sets Shopping Credit

Electric Prices Decrease By $13.7 Million



SRP's Board of Directors approved a measure that will raise the "shopping credit" portion of customer bills and reduce overall electric prices by $13.7 million (about 1%). In addition, all SRP electric customers will be eligible to choose their own generation beginning June 2000.

We are realigning prices to better reflect the cost of providing service and to further facilitate electric utility competition. The shopping credit is the energy charge part of the bill and can be used in comparing SRP's prices with those of alternative energy suppliers. We are decreasing the delivery charge so that most customers will receive lower bills or will not be impacted by the increase in the shopping credit.

With this Board decision, SRP will become the first electric utility in Arizona and the largest public power entity in the nation to open its entire service area to generation competition. This Board action is seven months earlier than the date required by Arizona's Electric Power Competition Act. Under the act, we will continue to deliver our customers' electricity.

Customers will be able to buy their supply of electricity from SRP or other energy service providers (ESPs) that are authorized to serve in SRP's service area. Supply represents about a third of a typical residential monthly bill (supply is an even larger portion of a business customer's bill).

The price reduction is the fourth decrease in six years. Since 1991, overall prices have fallen more than 10%. This adjustment, which may take effect as early May 15, 2000, includes a new price plan for towns, cities and other organizations that will ensure affordable public area lighting for streets, parks, playgrounds, schools, parking lots and common areas. Our new public lighting plan reflects our concern for safety and commitment to Valley communities.

EPA Honors SRP Program

SRP's "Mowing Down Pollution" earned an Earth Day Award from the U.S. Environmental Protection Agency.

The EPA selected 46 groups and individuals from more than 160 nominees, seven of which were from Arizona. U.S. EPA Regional Administrator Felicia Marcus presented the award to SRP at Valley Forward EarthFest 2000 on April 11. Mowing Down Pollution, allows residents to trade in their gas-powered lawn mowers and hand-held gas-powered lawn equipment for discounts on electric models.

Generation Update

SRP and representatives of several Tempe neighborhood groups reached agreement on a new proposal for power generation at the Kyrene Generating Station in Tempe.

The agreement proposes that SRP construct a, state-of-the-art, 250-megawatt natural gas generating station at Kyrene. SRP and the neighborhood groups agreed that new generation resources are needed at the site to meet local energy needs. This new facility will result in the reduced operation of the existing 250-megawatt Kyrene plant.

Some Tempe residents initially were concerned that increased emissions from a larger project could not be readily offset in the area. By installing a smaller, highly efficient plant and limiting the use of the current facility, total emissions will be less than the project output without any new generating capacity at this site. The agreement maintains the current site characteristics while providing additional local power generation capacity, which SRP and community groups consider to be a "win-win" proposal.

Efforts to meet future East Valley needs advanced through a tentative agreement on a new proposal for power generation at the Kyrene Generating Station and an Intergovernmental Agreement with the Town of Gilbert regarding expansion of the Santan Generating Station.

Efforts to meet future East Valley energy needs also advanced with an Intergovernmental Agreement (IGA) being signed between SRP and the Town of Gilbert regarding expansion of the **Santan Generating Station** at Val Vista and Warner roads.

Through the IGA, SRP will develop several municipal improvements in Gilbert, including: widening a portion of Warner Road

continued on back page

New Plants Will Offer Important Benefits

New electricity sources in the Southeast Valley will bring many real benefits to local communities. SRP expects more than 50 percent of electricity demand growth to occur in Southeast Valley in the years ahead. SRP's Kyrene and Santan expansion proposals would establish new, state-of-the-art generating stations to serve this growing need. Here are four benefits of the local generation projects proposed by SRP.

1. Continued supply of reliable electric power

SRP has a strong power reliability record, and our customers tell us reliability is an important issue to them. Increasing demands upon available electricity resources mean we must either build new local generation or import more power from outside sources. Importing energy from remote plants carries greater reliability-related risks associated with disturbances on the electric grid. On the other hand, local generation helps maintain voltage levels required by customer equipment and appliances.

2. Continued supply of low-priced power

SRP offers among the lowest electricity prices in the Southwest. As a political subdivision of the state, we do not make "profits" and we do not have stockholders. Rather, our prices are set according to our costs. Local generation offers a cost-benefit to SRP and in turn, the opportunity for continued low prices for customers. We evaluated alternative sites, and the Kyrene and Santan locations offer development costs that are substantially less than other options.

3. Increased tax revenues to local education and cities

The new plants would represent increases in local property tax revenues for Kyrene Elementary, Tempe Union High School and Gilbert Unified districts. The new plants' estimated present-value tax payments over 20 years would total approximately $75 million.

4. Reduced need for new transmission lines into this area in the future

There is no new transmission development required for the new plants. By comparison, a remote plant would require new transmission structures through communities to deliver the electricity to customers.

For more information about the Kyrene and Santan projects, visit **www.kyrenfacts.org** and **www.santanfacts.org**.

Generation Update *continued from front*

near the existing plant site; realigning a portion of the Western Canal; completing an extension of a horseback and hiking trail on the eastern edge of the plant site; and screening of the existing facilities using trees, plants and berms.

SRP is proposing a natural gas, combined-cycle generating facility at Santan to help serve the growing demand for electricity. Natural gas generating units are an efficient and environmentally friendly way to generate electricity.

SRP will hold an open house to update the public about the siting process in June. The open house provides an opportunity for the public to review informational displays and discuss the project with project team members.

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Customer Choice

SRP's Report On
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SANTAN EXPANSION PROJECT

SRP Invites Public to June 7 Open House

Come learn more about SRP's proposed Santan Expansion Project.

SRP and representatives from the Environmental Planning Group will hold an open house about the proposed state-of-the-art electric generating facility to be located within the existing 120-acre Santan property near Val Vista Drive and Warner Road.

The Santan Expansion Project is intended as an environmentally sound and cost-efficient solution to help meet the Southeast Valley's future power needs.

Mark your calendars to attend this informational session:

- **Wednesday, June 7, 2000**
  5-8 p.m.
  Finley Farms Elementary School
  375 S. Columbus, Gilbert
  (north of Warner Rd., west of Greenfield Rd.)

SRP is conducting public open houses as part of its efforts to fully inform residents about the project. During the meeting, residents can obtain information about the municipal improvements SRP will complete as part of its intergovernmental agreement with the Town of Gilbert, including:

- widen Warner Road near the Santan Generating Station
- extend the horseback and hiking trail along Santan's eastern border
- widen Val Vista Drive at the Santan entrance
- screen the Santan property
- reroute the Eastern Canal near Val Vista Drive and Ray Road
- remove a large training transmission tower on the plant property.

In addition, representatives from SRP and its consultants will provide information and answer questions about:

- noise research and possible abatement measures
- air emission modeling studies
- ways to address potential visual impacts at and surrounding the project site
- options for providing a water supply and wastewater disposal.

Residents may arrive at the open house at their convenience. The format for this meeting is informal, emphasizing one-on-one exchange of information so individuals can discuss their issues.

If you have additional questions about the Santan Expansion Project, or would like to arrange a presentation about the project, please call SRP Public Involvement Representative Janeen Rohovit, (602) 236-2679. Additionally, a Web site has been developed that contains pertinent project information; it can be found at **santanfacts.org**.

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P.O. BOX 52025
PHOENIX AZ 85072-2025

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PLEASE READ

IMPORTANT NEWS FOR GILBERT RESIDENTS ABOUT THE PROPOSED EXPANSION OF SRP'S SANTAN GENERATING STATION

P. O. Box 52025
Phoenix, Arizona 85072-2025

June 1, 2000

Dear Gilbert Resident,

As a member of the Gilbert community, you may be aware of our plans to expand the Santan Generating Station. No doubt you're concerned about how this will affect your neighborhood. To address your issues and those of your neighbors, we are hosting a special public open house to provide you with an overview that explains the project.

- Wednesday, June 7, 2000
  5-8 p.m.
  Finley Farms Elementary School
  375 S. Columbus, Gilbert
  (north of Warner Road, west of Greenfield Road)

We are conducting open houses as part of our efforts to fully inform residents like you about the project. We want to ensure that you have the necessary details about the proposal. Your feedback and comments also will be factored into the development of this project. It's important that we know what you like or what you are unsure of when it comes to the Santan Expansion Project.

The proposed Santan Expansion Project is intended as an environmentally sound and cost-efficient solution to help meet the Southeast Valley's future power needs. Plans call for a new state-of-the-art electric generating facility to be located within the existing 120-acre Santan property near Val Vista Drive and Warner Road.

The state-of-the-art, natural gas, combined-cycle generating facility we wish to build at Santan would help serve the growing demand for electricity in Gilbert and the Southeast Valley. New natural gas generating units are an efficient, clean way to generate electricity.

If the Southeast Valley is to receive the full benefit, a local site is the best option. Our Santan property in Gilbert offers adequate land already used for power generation purposes, plus access to necessary water and electric transmission interconnections.

Janeen Rohovit of SRP Consumer Relations is available at **(602) 236-2679** to answer your questions about the Santan project. She is also available to arrange an in-home presentation for you, your friends and neighbors. Please consult the project Web site at **www.santanfacts.org** for additional information.

I look forward to meeting you on June 7th.

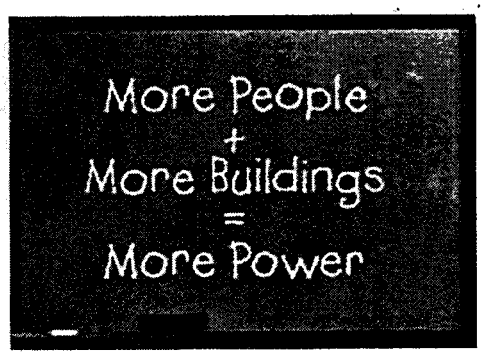
Janeen Rohovit
SRP, Public Involvement

SANTAN EXPANSION PROJECT

Thank you for contacting SRP about the proposed expansion at the Santan Generation Plant.

Delivering More Than Power.®

Thank you for contacting SRP about the proposed expansion at the Santan Generation Plant. Your comments and suggestions are an integral part of this project; input from you and your neighbors will help determine the project's ultimate disposition and design. Should you need further information, we are available for in-home, small group presentations, by request. For more information about a presentation or about the **Santan Expansion Project**, please call **(602) 236-2679**. Also, please visit our Web site at **santanfacts.org**, where you can e-mail our staff your comments, questions or requests. SRP wants to ensure that you and your neighbors are able to obtain the information needed to address your interests and issues related to the Santan Expansion Project.



P.O. Box 52025
Phoenix, AZ 85072-2025

EXHIBIT J-2
NEWS RELEASES, NEWSPAPER ADS

News Release

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Media:
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Analyst:

Margaret Nollen, Dynegy Inc.
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FOR IMMEDIATE RELEASE August 10, 1999

SRP, Dynegy and NRG Energy Form Alliance:
Propose Power Generation Project in the Phoenix Area

Phoenix (August 10, 1999) – SRP, Dynegy Inc. and NRG Energy, Inc. today announced the creation of an alliance to develop a 500 to 750-megawatt (MW) natural gas-fired, combined-cycle generating facility to serve the growing demand for electricity in the greater Phoenix area. The three companies are initiating the process to obtain the necessary siting permits and are considering multiple sites in Phoenix's East Valley.

SRP, which provides electricity to more than 700,000 customers in the greater Phoenix metropolitan area, has experienced a tremendous growth in customers the past few years, including a record 27,000 new customers last fiscal year. The pace of SRP's customer growth is anticipated to continue, particularly in the East Valley. The companies believe that the project is critical to ensure SRP's ability to meet forecasted demand and to maintain a dependable supply of power over the next decade.

"Our projections show that without new generation resources in Phoenix's East Valley, we could have difficulties meeting our growing customer load in three years," said SRP General Manager Richard Silverman. "A new natural gas-fired generating facility in the area would alleviate some of the transmission challenges in our service territory and help SRP to continue to provide the reliable service our customers expect."

- MORE -

SRP selected Dynegy and NRG to participate in the project after issuing a request for proposals in April, 1998. Dynegy is a national energy merchant headquartered in Houston; NRG is a wholly-owned subsidiary of Northern States Power, which is located in Minneapolis.

The group plans to construct a new 500 to 750-megawatt (MW) natural gas-fired generating facility in the Phoenix area. The site of the project has not been finalized, although existing SRP properties at the Kyrene Generating Station in Tempe and the Santan Generating Station in Gilbert are among the sites under consideration. Both Kyrene and Santan offer existing transmission facilities, natural gas connections and convenient water supplies and thus would reduce the environmental footprint required to install the additional generating capacity.

The three companies are conducting informational meetings about the project with relevant federal, state, county and municipal officials as well as the Arizona Corporation Commission. The participants will soon launch an extensive public process to facilitate the permitting procedure. The public process will culminate with a request for a certificate of environmental compatibility from the state of Arizona Power Plant and Transmission Siting Committee. Pending approval from local and state authorities and regulatory officials, construction on the project would begin in late 2000.

"Because of the tremendous growth in demand for power and ancillary products in the greater Phoenix area, Dynegy is pleased to join with SRP and NRG in seeking solutions to the growing demand for electricity in the region," said Steve Bergstrom, president and chief operating officer of Dynegy Inc. "Each of the participants is committed to high standards for commercial development and environmental performance. As a group, we are dedicated to receiving input from the community and keeping citizens informed as we move through the approval and construction phases of the project."

"Our three organizations and the experience and expertise we possess are well-suited to develop new power generation facilities that utilize natural gas," said David Peterson, chairman, president and chief executive officer of NRG Energy. "As the operator of more than 11,000 megawatts of generation worldwide, we have demonstrated our ability to operate safe and efficient power plants."

- MORE -

Dynegy Inc. (NYSE: DYN) is one of the country's leading marketers of energy products and services. Through its leadership position in gathering, processing, transportation, power generation, and marketing of energy, the company provides energy solutions to its customers primarily in North America and the United Kingdom. Dynegy's primary business segments are wholesale gas and power and natural gas liquids.

NRG Energy, Inc. is one of the world's leading independent power producers, specializing in the development, construction, operation, maintenance and ownership of low-cost, environmentally sensitive power plants. Established in 1989, NRG has a high quality portfolio of projects in the United States, Europe, the Pacific Rim, and Latin America.

SRP is the third largest public power utility in the U.S. serving more than 700,000 electric customers in the greater Phoenix metropolitan area and has been ranked the top-performing electric utility in the western U.S. for residential customer satisfaction by J.D. Power and Associates.

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News Release

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FOR IMMEDIATE RELEASE October 13, 1999

SRP Identifies Two Sites for New Generating Facilities
Focus on Kyrene and Santan Locations

PHOENIX (Oct. 13, 1999) – The Kyrene Generating Station in Tempe and the Santan Generating Station in Gilbert have been chosen as potential sites for new natural gas-fired, combined-cycle generating facilities required to help meet the rapidly growing need for energy in the East Valley.

Salt River Project (SRP), Dynegy Inc. and NRG Energy, Inc. will form a limited liability corporation to pursue the installation of additional generating capacity at the Kyrene site. SRP is conducting a separate process to obtain permits for additional generating capacity at the Santan location.

The Kyrene and Santan sites are best suited for new generating capacity because they have existing transmission facilities and access to natural gas fuel and water, which will reduce the costs and the environmental impact required to install the additional generating capacity.

SRP has experienced a tremendous growth in customers the past few years, including a record 27,000 new customers over the last fiscal year. The pace of SRP's customer growth is anticipated to continue, particularly in the East Valley. Additional generating capacity is critical to ensure SRP's ability to meet forecasted demand and to maintain a dependable supply of power over the next decade.

- MORE -

Environmental Planning Group, Inc. (EPG) has been retained to conduct the public planning process for the Kyrene Expansion Project (KEP). EPG has provided environmental and public planning services in the Phoenix area for more than 25 years.

A Community Working Group (CWG) began meeting on Oct. 12 with EPG and members of the KEP team to discuss plans to construct the generating station at the Kyrene site. The CWG is composed of a cross-section of individuals who are familiar with local issues and who represent a diverse range of views. Its members will provide information regarding the community attitudes, issues and comments on the public involvement process.

Open houses will be held to update the public about the siting process on:

- Thursday, Oct. 21, from 5 until 8 p.m., at Fees Middle School, located at 1600 E. Watson Drive, in Tempe, and;
- Oct. 23, from 10 a.m. until noon, at Kyrene Middle School, located at 1050 E. Carver Road, in Tempe.

The open houses are an opportunity for the public to review informational displays and discuss the project individually with project team members.

The public process will culminate with a request for a certificate of environmental compatibility from the state of Arizona Power Plant and Transmission Line Siting Committee. Pending approval from local and state authorities and regulatory officials, construction on the KEP would begin in late 2000.

A public process, including a separate CWG, will be conducted for the Santan location. No timetable has been established yet for the construction of additional generating capacity at Santan.

Headquartered in Houston, Dynegy Inc. (NYSE: DYN) is one of the country's leading generators of electricity and marketers of energy products and services. Through Dynegy Marketing and Trade, the company's wholesale natural gas and power subsidiary, Dynegy has extensive experience in developing, building, managing, financing and operating natural gas-fired power generation facilities throughout North America.

-MORE-

The capacity of Dynegy's 34 U.S. Generation assets currently operating or under construction is more than 7,000 gross megawatts.

NRG Energy Inc., a wholly owned subsidiary of Northern States Power (NTSE: NSP), is one of the world's largest independent power producers, specializing in the development, construction, operation, maintenance and ownership of low-cost, environmentally responsible power plants.

Established in 1989, NRG has a high-quality portfolio of projects in the United States, Europe, the Pacific Rim, and Latin America. NRG is involved in projects totaling more than 21,000 MW of generating capacity, utilizing diverse fuel types including natural and landfill gas, hydro, and solid fuels such as coal, lignite, biomass and refuse-derived fuel.

SRP is the third-largest public power utility in the U.S., serving more than 700,000 electric customers in the greater Phoenix metropolitan area.

For more information about the Kyrene Expansion Project, visit the project web site at www.kyrenefacts.org.

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News Release

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Scott Harelson, SRP
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hsharels@sprnet.com

FOR IMMEDIATE RELEASE April 26, 2000

SRP, Gilbert Sign Intergovernmental Agreement Regarding Expansion of Santan Generating Station

SRP and the Town of Gilbert have entered into an Intergovernmental Agreement (IGA) regarding the expansion of the existing Santan Generating Station at Val Vista and Warner roads.

A Community Working Group (CWG) that was gathered to provide input to SRP on the proposed Santan site expansion recommended the IGA, which was approved Tuesday in a 6-0 vote by the Gilbert Town Council.

After several meetings the CWG, comprised of 12 Gilbert-area business and community leaders, suggested SRP commit to municipal improvements to demonstrate SRP's concern for the area surrounding the current plant site. The CWG recommended the IGA as the best instrument with which to confirm SRP's municipal improvements.

Through the IGA, SRP will develop several municipal improvements in Gilbert, including: widening a portion of Warner Road near the existing plant site; realigning a portion of the Western Canal; completing an extension of a horseback/hiking trail on the eastern edge of the plant site; and screening of the existing facilities using vegetation, berms or walls.

SRP is proposing to develop the Santan Expansion Project (SEP), which would include up to an 825-megawatt (MW) natural gas, combined-cycle generating facility, to help serve the growing demand for electricity in the metropolitan area. Natural gas generating units are an efficient and environmentally friendly way to generate electricity.

- MORE -

SRP, which provides electricity to more than 728,000 customers in the greater Phoenix metropolitan area, has experienced a tremendous growth in customers the past few years, including a record 27,000 new customers last year. The pace of SRP's customer growth is anticipated to continue, particularly in the East Valley. The expansion of the Santan Generating Station is critical to ensure SRP's ability to meet forecasted demand and to maintain a dependable supply of power over the next decade.

One hundred percent of the energy from this proposed facility in Gilbert will be available to serve SRP customers in the Valley.

"With the Town of Gilbert's support, we can add the electricity supply we need to serve our customers' growing needs and make the Santan Generating Station a better neighbor," said SRP General Manager Richard Silverman.

The Santan site is ideally suited for new generating capacity because it has existing transmission facilities and access to natural gas fuel and water, which will reduce the costs and the environmental impact required to install the additional electricity supply.

SRP has retained the Environmental Planning Group, Inc. (EPG) to conduct the public planning process for the Santan Expansion Project. EPG has provided environmental and public planning services in the Phoenix area for more than 25 years.

SRP will hold open houses to update the public about the siting process in late May or early June. The open houses are an opportunity for the public to review informational displays and discuss the project individually with project team members.

The public process will culminate with a request for a certificate of environmental compatibility from the state of Arizona Power Plant and Transmission Line Siting Committee.

- 30 -

Southeast Valley residents, you're invited to an open house

Come learn about the **Santan Expansion Project.** The proposed project consists of an additional generating facility at SRP's Santan Generating Station in Gilbert to help meet the future energy needs of the Southeast Valley.

The Environmental Planning Group Inc. will conduct a public open house to introduce the project to the community.

- **Wednesday, December 8, 1999,** from 5 p.m. to 8 p.m.
  Finley Farms Elementary School, 375 S. Columbus, Gilbert
  (north of Warner Road, west of Greenfield Road)

For more information, to submit a comment or to add your name to the mailing list for project updates, please call **(602) 954-8156** or visit **www.santanfacts.org.**

SRP

Gilbert area residents, you're invited to an open house

Come learn about the Santan Expansion Project. The proposed project consists of an additional generating facility at SRP's Santan Generating Station in Gilbert to help meet the Southeast Valley's future energy needs.

SRP and its consultants will conduct a public open house to discuss the project with the community.

♦

Wednesday, June 7, 2000
5 – 8 p.m.
Finley Farms Elementary School
375 S. Columbus, Gilbert
(north of Warner Road, west of Greenfield Road)

♦

For more information, to submit a comment or to add your name to our mailing list for project updates, please call SRP at **(602) 236-2679** or visit **www.srpnet.com.**

SRP

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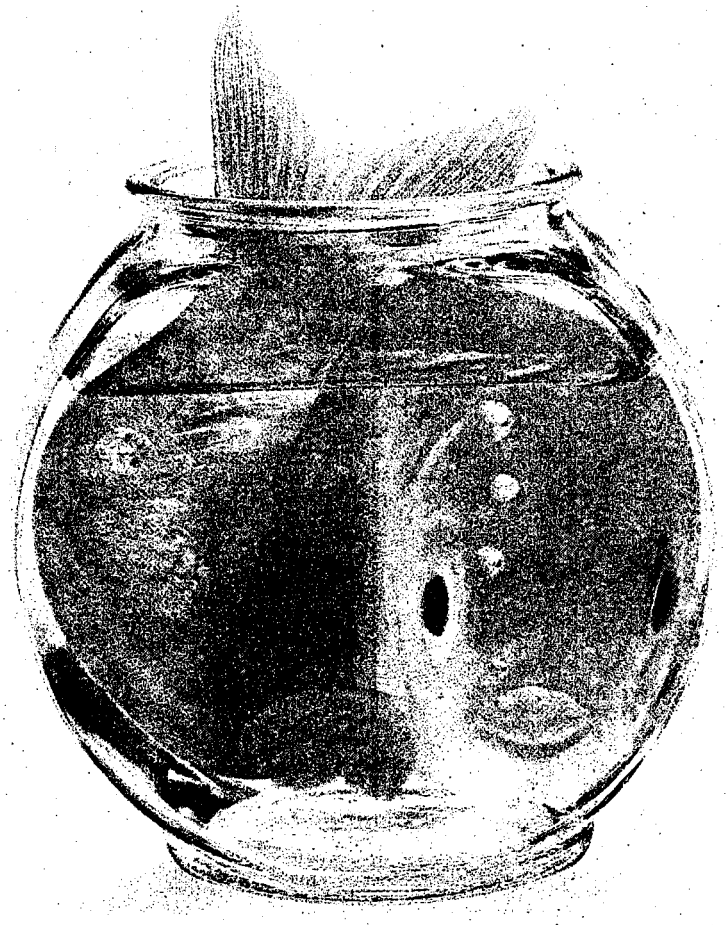


As a community grows, so must its resources.

There are some things you shouldn't have to worry about – like running out of electricity, for instance. The fact is, Gilbert is one of the fastest-growing areas in the state. A growing community needs power. With the Santan Expansion Project, Gilbert and the East Valley will have a clean and efficient energy source for years to come. Which means you'll never wonder if it's there when you need it. And since the expansion of the plant will allow it to produce electricity more efficiently, emissions will actually be reduced. In addition, most of the taxes we pay on the plant will help fund Gilbert public schools. Growing with you – it's just another way we deliver more than power. For clear and accurate information on the Santan Expansion Project, we encourage you to visit www.santanfacts.org or call us at (602) 236-2679 to answer any questions.

SRP

Delivering More Than Power.®

EXHIBIT J-3
OPEN HOUSE MATERIALS, COMMENT FORMS

SANTAN
EXPANSION PROJECT

COMMENT FORM

DECEMBER 1999

Thank you for attending this first public open house! We want to hear your views on the project. Your comments are important to help us identify ideas and issues for the Santan Expansion Project. Please take a few minutes to consider the information provided in the newsletter and the open house displays, and complete and return this form to us.

My comments are: _____

Mailing List

Names will be added to the project mailing list as requested throughout the project. If you did not receive a newsletter in the mail and wish to be added to the list, you may call **(602) 954-8156,** register at www.santan-facts.org, or provide your name and address below. If you know of additional people who you believe should be included on the mailing list, please let us know.

Name: _____

Address: _____

City, State, Zip _____

E-mail: _____

Thank You For Your Comments!

FIGURE F-1
REGIONAL AREA – TRANSPORTATION, OPEN SPACE, AND RECREATION

Exhibit G

EXHIBIT G
CONCEPTS OF TYPICAL FACILITIES

EXHIBIT G
CONCEPTS OF TYPICAL FACILITIES

As stated in Arizona Corporation Commission Rules of Practice and Procedure R14-3-219:

"Attach any artist's or architect's conception of the proposed plant or transmission line structures and switchyards which applicant believes may be informative to the committee."

As discussed in Exhibit B, planning process overview, SRP continues to evaluate and explore refined design concepts for the SEP with the design focus group (an extension of the CWG described in Exhibit J). The concepts presented reveal preliminary plans for addressing mitigation and enhancement measures that resulted from impact assessment as well as community and public issues and concerns. Gilbert General Plan elements that are consistent with the concepts are also described. Mitigation and enhancement measures are listed in Tables G-1 and G-2, respectively. Preliminary concepts and designs contained in this exhibit include the following:

Figure G-1	Preliminary Mitigation and Enhancement Zones
Figure G-2	Area A – Warner Road Expansion Concept
Figure G-3	Area B – Recreational Trail Concept
Figure G-4	Area C – Railroad and Future Open Space Corridor Concept
Figure G-5	Area D – Commercial Area Concept

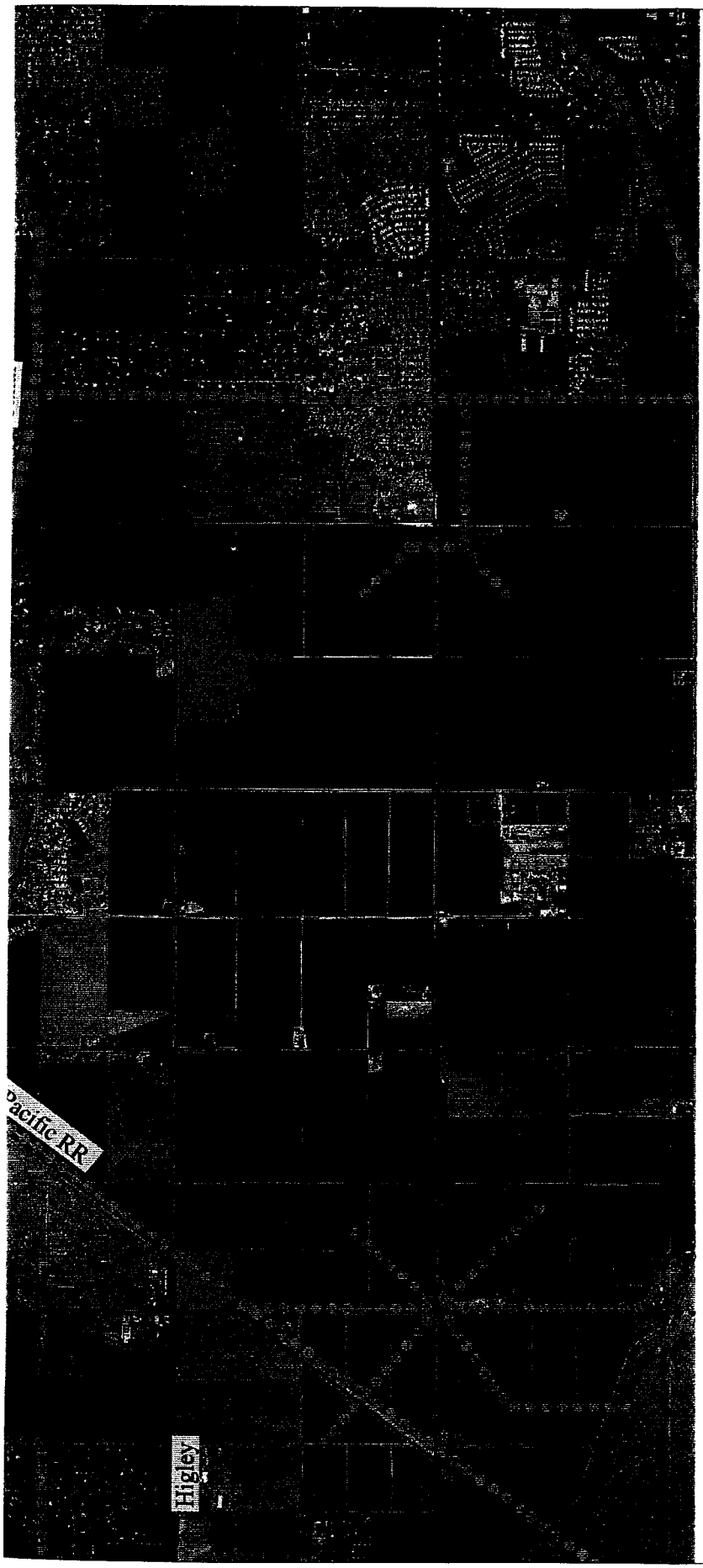
The location of mitigation and enhancement measures are shown on Figure G-1. This map illustrates the existing Santan site, the location of newly proposed facilities, and areas of proposed enhancements on site (Areas A through D) and in the immediate vicinity. Area E illustrates, as shown on the map, the location of improvements on Val Vista Drive (east half as noted in the IGA). Area F includes the reroute of the Eastern Canal to eliminate the portion parallel to Ray Road, per the IGA. Area G was noted in the IGA for revegetation along the new RS 18 line for 1 mile starting north from the plant property boundary. This location map is followed by area concepts, and specific mitigation and enhancement measures depicted for each area.

In general, each area concept identifies (1) the key issues identified by the CWG, public, and agencies associated with that area, including those not specifically resulting from the SEP; (2) the short- and long-term impacts resulting from the SEP; (3) selective mitigation measures proposed to address SEP impacts (Table G-1); (4) enhancement measures proposed to address key issues (Table G-2); and (5) how these measures relate specifically to the Gilbert General Plan Elements.

Following each area concept, preliminary mitigation and enhancement measures are illustrated in plan and section views in support of the overall concept. These concepts are preliminary and

illustrate only mitigation and enhancement measures. They will also continue to be refined and revised in accordance with the IGA in conjunction with SRP, CWG, and Town of Gilbert. At the time of this submittal SRP has initially met with the Parks and Recreation Department from the Town of Gilbert, and is in the process of making refinements based on existing conditions, maintenance and operations requirements, and Town design standards.

FIGURE G-1
PRELIMINARY MITIGATION AND ENHANCEMENT ZONES



REGIONAL AREA - TRANSPORTATION, OPEN SPACE, AND RECREATION

Figure F-1

Legend

- Planned Open Space/Greenbelt
- Existing Golf Course
- Existing Park/Recreation Complex/ Greenbelt
- Existing Bike Lanes
- Proposed Trail Linkages
- Canals
- Major Arterials
- Project Site

Sources:
Aerial Photography Provided by SRP
Gilbert, AZ. General Plan, May 1994

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W E
S

0 1/2 1 2

Scale in Miles

SANTAN

July 13, 2000

Map Produced by EPG, Inc.

Guadalupe
Elliot
Warner
Ray
Williams Field
Lindsay
Val Vista
Greenfield
Basem

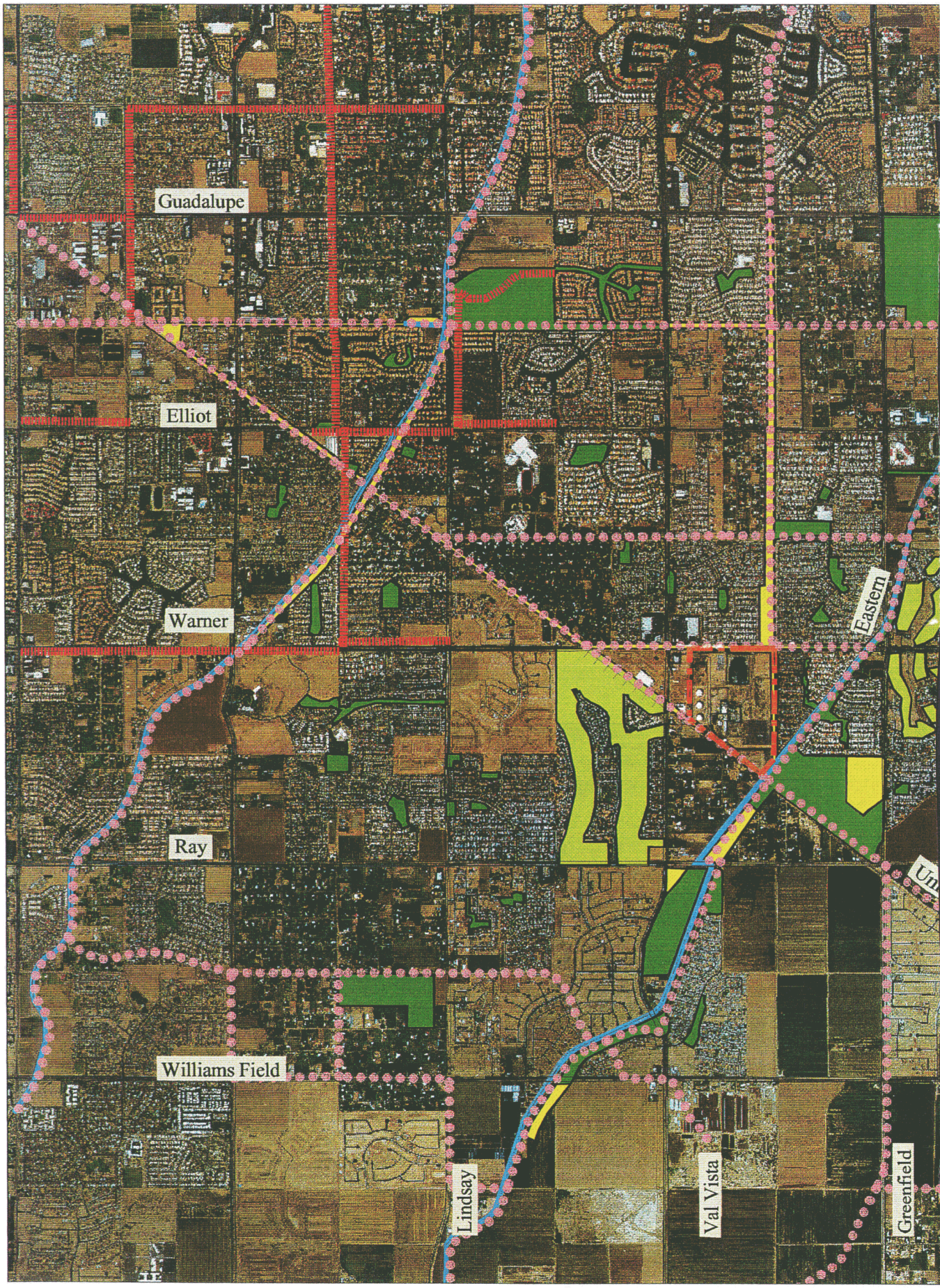
other along the Eastern Canal that would connect Rodeo Park Plaza, Riparian Preserve, and Nichols Park with Crossroads Park (see Figure F-1). Currently there is no trail recognized in the Gilbert General Plan, Open Space Trails Plan connecting the transmission line easement trail with the Eastern Canal and the Union Pacific Railroad corridor. These committed enhancements would create an open space and trail corridor that would interconnect these areas.

The proposed SRP trail would be designed to accommodate both pedestrian and equestrian use, allowing for more extensive riding trails in the Town of Gilbert (Figure G-3). The trail would also include berming and desert landscaping to enhance the aesthetics of the area. Trailheads with interpretive signs would also be included on both ends of the trail. The north end of the proposed SRP trail linkage would include a traffic signal (pedestrian and equestrian) and a crosswalk across Warner Road to connect the trail with the transmission line easement (Figures G-2 and G-3). The south end of the linkage would include a pedestrian and equestrian trailhead on the southern end of the site property interconnecting with the Union Pacific Railroad corridor, and the Eastern Canal, and providing access into Crossroads Park.

In addition, SRP also proposes to build a pedestrian path along the north side of the proposed SEP boundary along Warner Road to provide additional access to commercial areas on the western edge of the site (Figure G-2).

REFERENCE

Gilbert, City of. May 24, 1994. Town of Gilbert General Plan Update.


Guadalupe
Elliot
Warner
Ray
Williams Field
Lindsay
Val Vista
Greenfield
Eastern

REGIONAL AREA - TRANSPORTATION, OPEN SPACE, AND RECREATION

Figure F-1

Legend

- Planned Open Space/Greenbelt
- Existing Golf Course
- Existing Park/Recreation Complex/ Greenbelt
- Existing Bike Lanes
- Proposed Trail Linkages
- Canals
- Major Arterials
- Project Site

Sources:
Aerial Photography Provided by SRP
Gilbert, AZ. General Plan, May 1994

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Scale in Miles

SANTAN
EXPANSION PROJECT

July 13, 2000

Map Produced by EPG, Inc.
m:/srp/santan/amls/regstudy.aml