Transcript Exhibit(s)

Docket #(s): L-00000HH-08-0422-00141

Exhibit # : CC1-CC3, A1-A11, A13, A14

Arizona Corporation Commission
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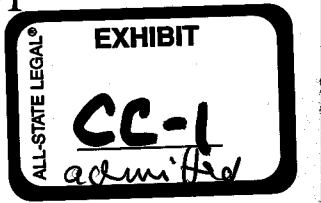
Summary of Natural Gas Issues

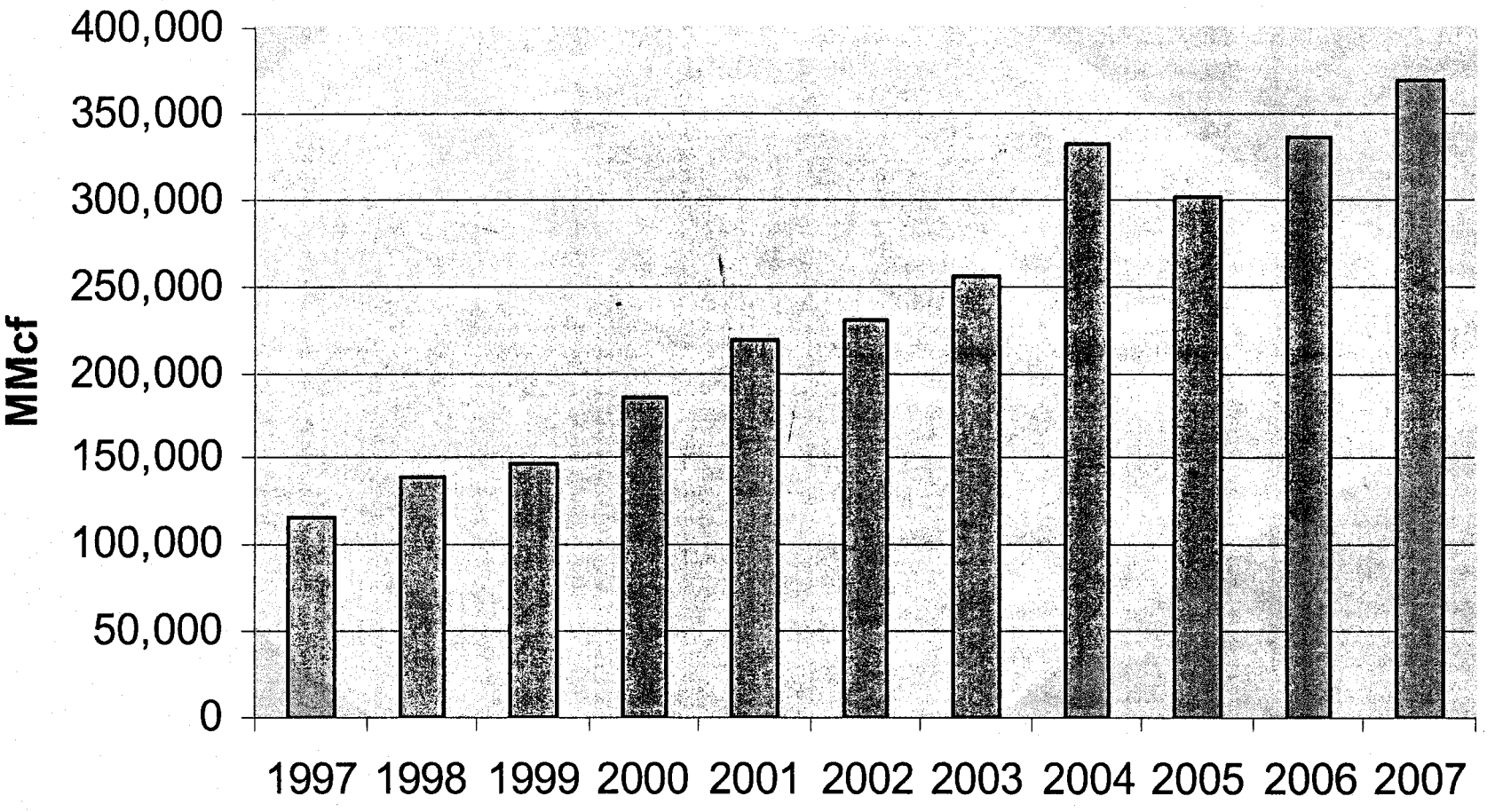
Bob Gray, ACC Staff

September 2008

Docket Number: L-00000HH-08-0422-00141

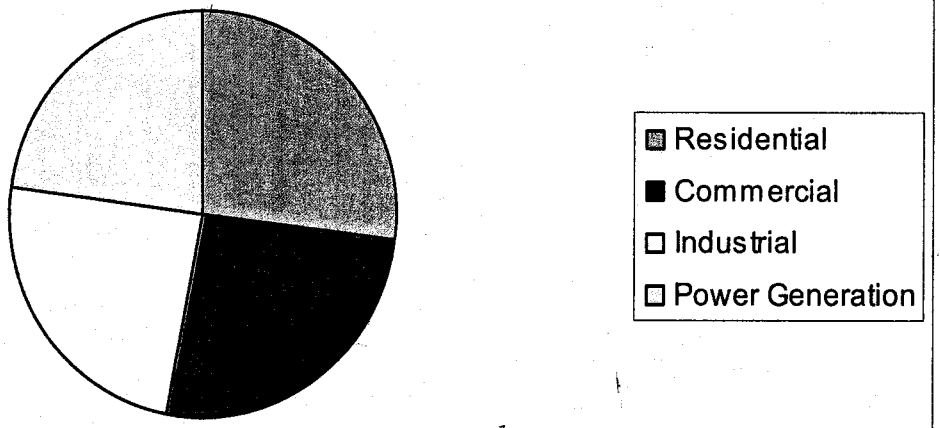


Arizona Total Natural Gas Delivered



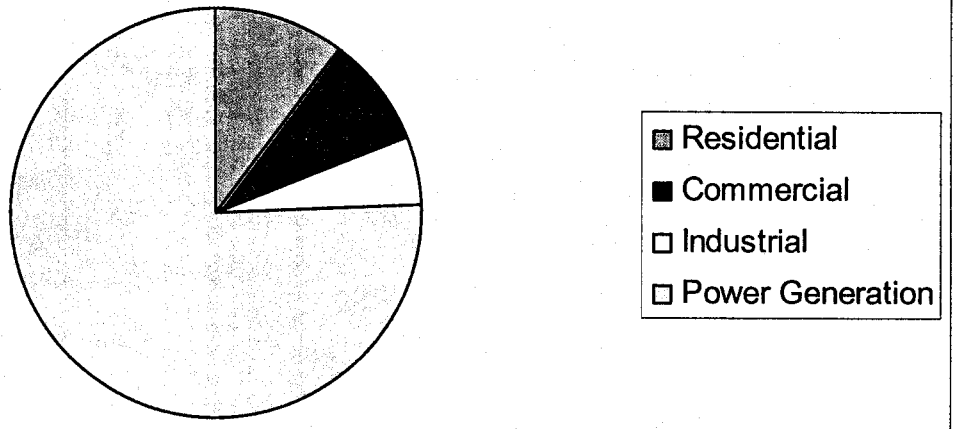
Source: U.S. Department of Energy, Energy Information Administration

Arizona Delivered Volumes by Sector - 1997



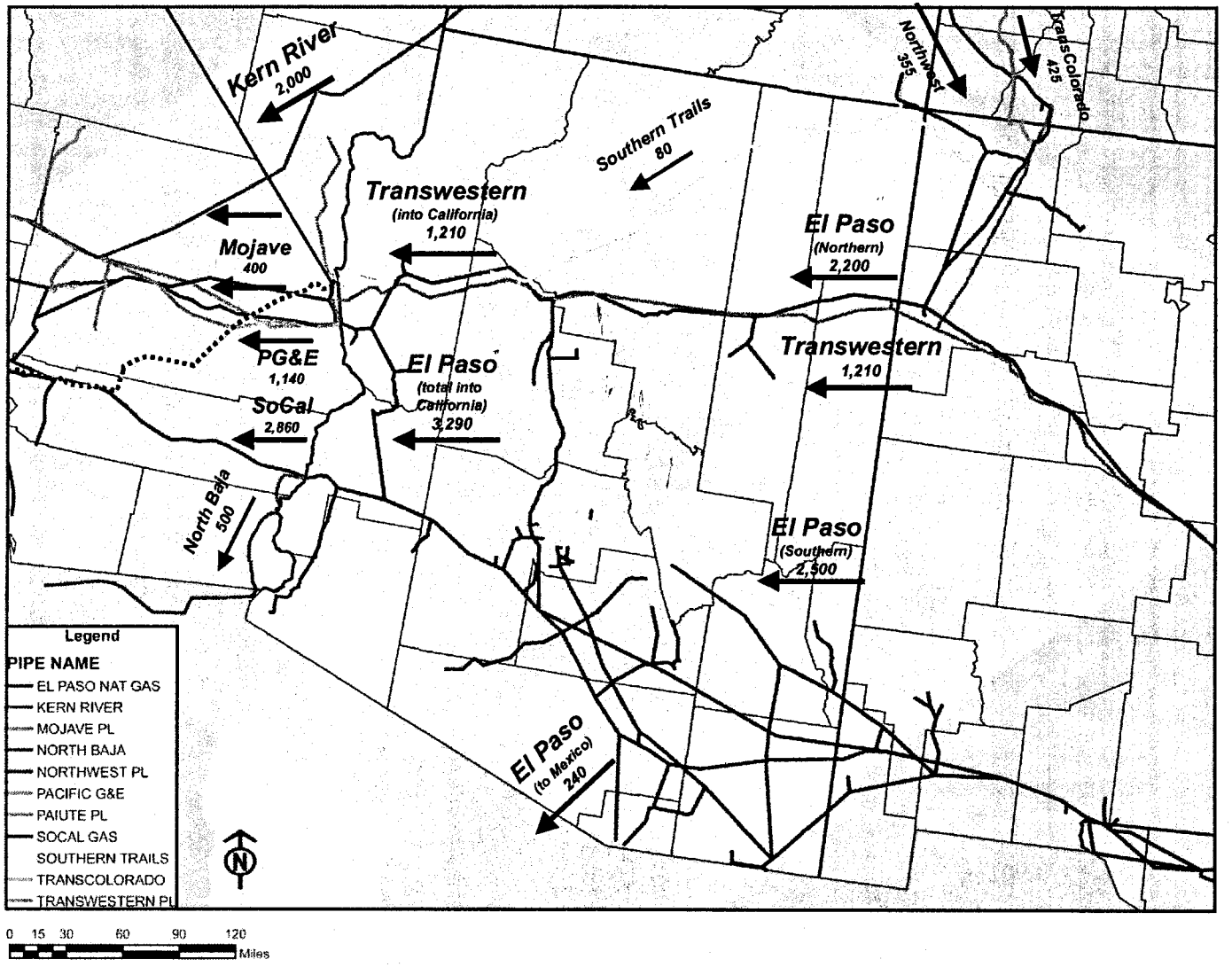
Source: U.S. Department of Energy, Energy Information Administration

Arizona Delivered Volumes by Sector - 2007



Source: U.S. Department of Energy, Energy Information Administration

Natural Gas Pipelines In Arizona and Surrounding States



Source: Arizona Natural Gas Market and Infrastructure Study, EEA, January 5, 2006

The Coolidge Generating Station Project

- The project could access natural gas supplies via El Paso's southern system as well as Transwestern's Phoenix Expansion pipeline, both of which are nearby
- Salt River Project would be responsible for providing the natural gas supply for the plant
- The application indicates the plant will use 5,113 MMBtus of natural gas per hour or 122,700 MMBtus per day.

Recent Natural Gas Market Developments in Arizona

- On June 30, 2008, El Paso filed a new general rate case proceeding at the Federal Energy Regulatory Commission (FERC). FERC issued an initial order on August 5, 2008. The rate case is now in the technical conference phase.
- The Transwestern Phoenix Expansion project, which terminates near Coolidge, Arizona, is currently under construction and it is expected to begin service in late 2008
- The Costa Azul liquid natural gas import facility in Baja Mexico began operation in the spring of 2008
- Several parties continue to pursue possible construction of a natural gas storage facility in Arizona, but at this time it is unclear if or when a natural gas storage facility will be constructed in Arizona
- In June 2008 Southern California Gas Company filed with the California Public Utilities Commission to open its southern California natural gas storage facilities to access for interstate purposes

Policy Issues Related to Additional Gas-Fired Generation in Arizona

- Arizona's growing dependence on natural gas to meet its electricity needs reflects a broader national trend, with natural gas-fired generation representing the path of least resistance to meet growing electricity demand
- The lack of market area natural gas storage in Arizona leads to operational and reliability concerns
- Despite recent discoveries of prolific natural gas supplies in shale formations in North America, over a long term timeframe Arizona, and the United States, is expected to become more dependent on natural gas imports in a pattern broadly mirroring our nation's growing dependence on imported oil

Summary

- Salt River Project has contracted for pipeline capacity on the Transwestern and El Paso pipeline systems to meet its natural gas supply needs for a number of generating stations in central Arizona
- Staff believes that Salt River Project can meet the natural gas supply needs of the Coolidge generating station as part of its overall natural gas supply portfolio
- As a matter of general policy, Commission Staff continues to be concerned with Arizona's growing reliance on natural gas for electric generation
- However, given the peaking nature of this project, which is a role traditionally served in large part by natural gas-fired generating units, Staff's concern in this particular case are lessened in comparison to a situation where further baseload natural gas generation would be proposed

Proposed Conditions

If the application in this case is approved, Staff recommends adoption of the following natural gas-related conditions:

- Applicant will participate in good faith in Arizona and regional workshops and other assessments of the natural gas infrastructure and market.
- Applicant shall pursue all necessary commercially reasonable steps to ensure a reliable supply and delivery of natural gas for the Project.

These conditions have been adopted in a number of other recent siting cases for natural gas-fired electric generation stations, including Case No. 134 for the proposed Northern Arizona Energy generating facility, Case No. 116 for the proposed La Paz generating facility, and Case No. 114 for the proposed Wellton-Mohawk generating facility.

Proposed Conditions, continued

If the application in this case is approved, Staff recommends adoption of the following natural gas-related condition:

"Before commencing construction of Project facilities located parallel to and within 100 feet of any existing natural gas or hazardous liquid pipeline, the Applicant shall:

(a) Perform the appropriate grounding and cathodic protection studies to show that the Project's location parallel to and within 100 feet of such pipeline results in no material adverse impacts to the pipeline or to public safety when both the pipeline and the Project are in operation. If material adverse impacts are noted in the studies, Applicant shall take appropriate steps to ensure that such material adverse impacts are mitigated. Applicant shall provide to Commission Staff reports of studies performed; and

(b) Perform a technical study simulating an outage of the Project that may be caused by the collocation of the Project parallel to and within 100 feet of the existing natural gas or hazardous liquid pipeline. This study should either: i) show that such outage does not result in customer outages; or ii) include operating plans to minimize any resulting customer outages. Applicant shall provide a copy of this study to Commission Staff."

Arizona Corporation Commission

Docket No. L-00000HH-08-0422-00141

Coolidge Generating Station

Prem K. Bahl, ACC Staff

Presented to
The Power Plant & Line Siting Committee
September 30 & October 1, 2008

ALL-STATE LEGAL®
EXHIBIT
CC-2
admitted

ACC Staff Witness

Name: **Prem Bahl**

Title: **Electric Utilities Engineer**

Employer: **Arizona Corporation Commission**

Address: **Utilities Division**
1200 W. Washington
Phoenix, AZ 85007

Professional Background

- M.S.E.E. – South Dakota State University (1972)
- Registered P.E. (Arizona) – Electrical (1978)
- Professional Experience:
  - 16 Years as Staff Engineer with the Arizona Corporation Commission (since 1988); two years as Chief Engineer with RUCO; twenty years with Electric Utility industry in U.S. and India; and five years with Consulting Engineering firms

Presentation Overview

- Project Description
- Project Need and Benefits
- System Impact Study ("SIS" or "Study")
- System Impact Study Results
  - Power Flow Study
  - Short Circuit Study
  - Transient Stability Study
- Conclusions & Recommendations

Project Description

- **On August 8, 2008, Coolidge Power Corporation ("Coolidge Power" or "Applicant"), applied to the Arizona Corporation Commission ("Commission") for a Certificate of Environmental Compatibility ("CEC") for the construction of the Coolidge Generating Station ("CSG," "Plant" or "Project").**

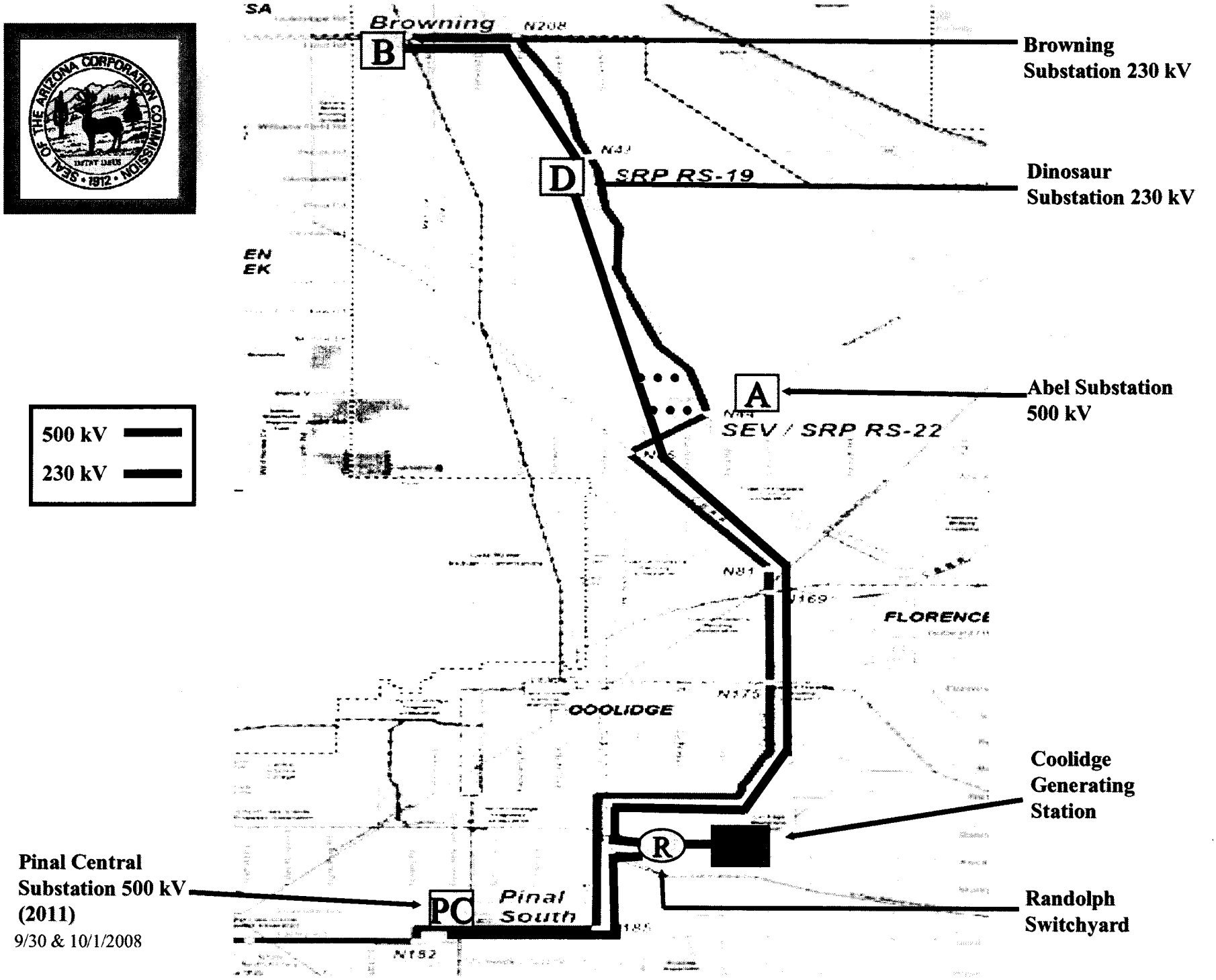
- **The Project consists of twelve simple cycle gas fired GE LM6000 combustion turbine generators ("CTs"), with a total plant capacity ranging from a minimum of 25 MW to a maximum of 575 MW (495 MW in summer).**

- **SRP has entered into a long-term (20-year) contract with Coolidge Power to receive the full output of the Plant, and to act as Control Area Operator for the Plant.**

Project Description

- **The CGS will be interconnected with the 230 kV line between Pinal Central ("PC") and Dinosaur ("DIN") Substations through a 230 kV Randolph ("RAN") switchyard.**

- **PC-RAN-DIN 230 kV line will be constructed in two phases:**
  - **Phase I ~ RAN-DIN 230 kV (will be energized on September 1, 2010)**
  - **Phase II ~ RAN-PC 230 kV (will be energized on May 1, 2011)**


Browning
B
Browning
Substation 230 kV
D
SRP RS-19
Dinosaur
Substation 230 kV
A
Abel Substation
500 kV
SEV / SRP RS-22
500 kV
230 kV
FLORENCE
COOLIDGE
Coolidge
Generating
Station
R
Pinal Central
Substation 500 kV
(2011)
PC
Pinal
South
Randolph
Switchyard

9/30 & 10/1/2008

Project Need and Benefits

- **Coolidge Power proposed the Project in response to a request for proposal ("RFP") from Salt River Project ("SRP").**
- **SRP's rapidly growing load in the Pinal County needs a generation resource under peak load conditions.**
- **The 230 kV transmission line from Pinal Central to Abel to Dinosaur, which will receive output from CGS, was included in the Central Arizona Transmission System High Voltage ("CATS-HV") Saturated Load and Transmission Study Final Report issued on September 21, 2006, and later in SRP's 10-year Plan 2007-2016, filed with the Commission in January 2007.**

Project Need and Benefits

- **The benefit of the Project is that it is a peaking plant that provides not only load serving requirement but also spinning reserve requirement, as it can be brought on line at full capacity within ten minutes.**

System Impact Study

- **Pursuant to the Arizona State statute 40-360.02(B), Coolidge Power filed the Interconnection System Impact Study ("SIS") in Docket Control on March 20, 2008.**

Components of System Impact Study

- Power flow analysis
- Short circuit analysis
- Transient stability analysis

WECC Reliability Criteria and NERC Planning Standards

- **SRP technical study criteria were based on WECC[1] Reliability criteria and NERC[2] Planning Standards:**

  - **N-0 (Base Case – no contingency)**
  - **N-1 (Single contingency)**
  - **N-1-1 (Non-simultaneous double contingency)**
  - **N-2 (Simultaneous double contingency)**

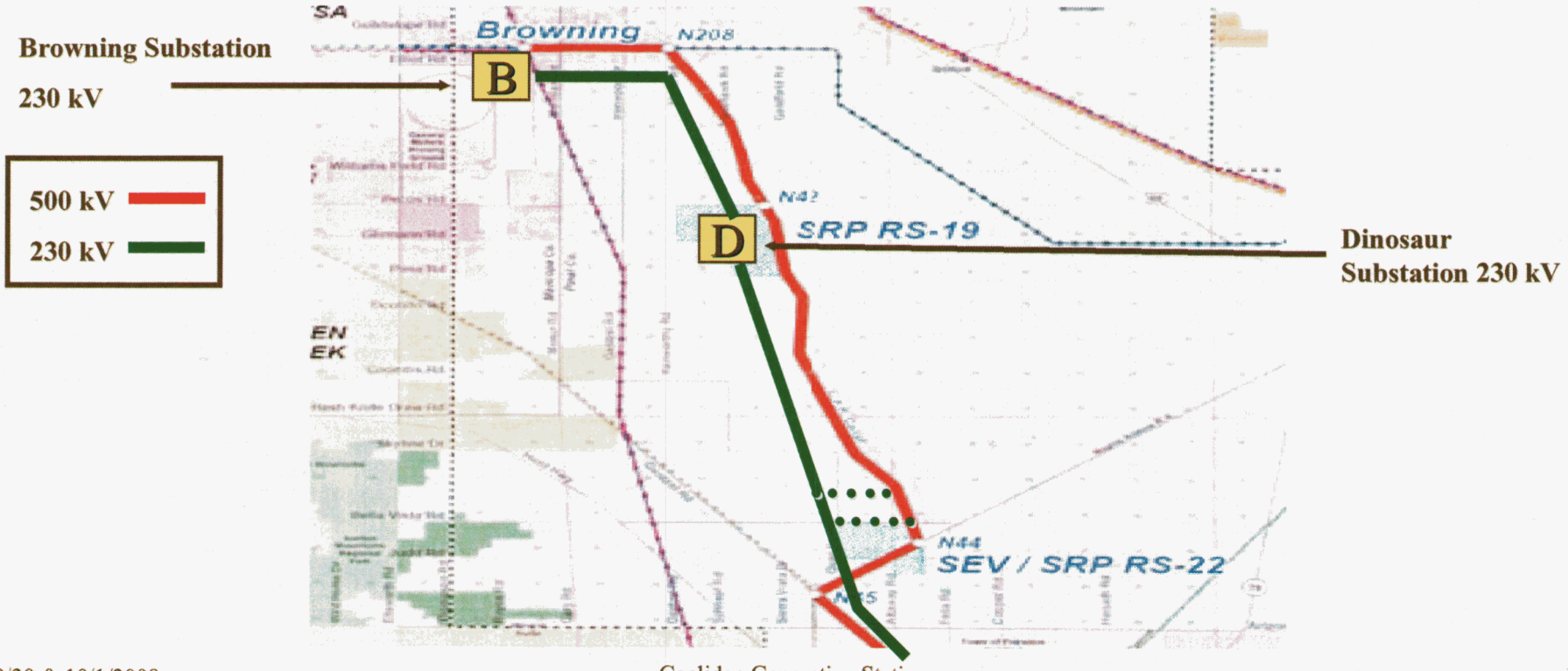
Notes: 1) Western Electricity Coordinating Council
2) North American Reliability Corporation

Power Flow Study Results

- **Several Power Flow scenarios were developed to simulate various potential transmission schedules with the following results. Temporary Remedial Action Scheme ("RAS") for N-1 contingencies will be implemented until 4-30-11.**
  - **2011 Summer peak load conditions were studied**
  - **Plant output 100 MW from 9-1-10 to 9-30-10**
  - **N-1 Contingency (before 10-1-10) ~ Browning to Dinosaur 230 kV outage → Reduce Plant output to 95 MW ~ temporary RAS**

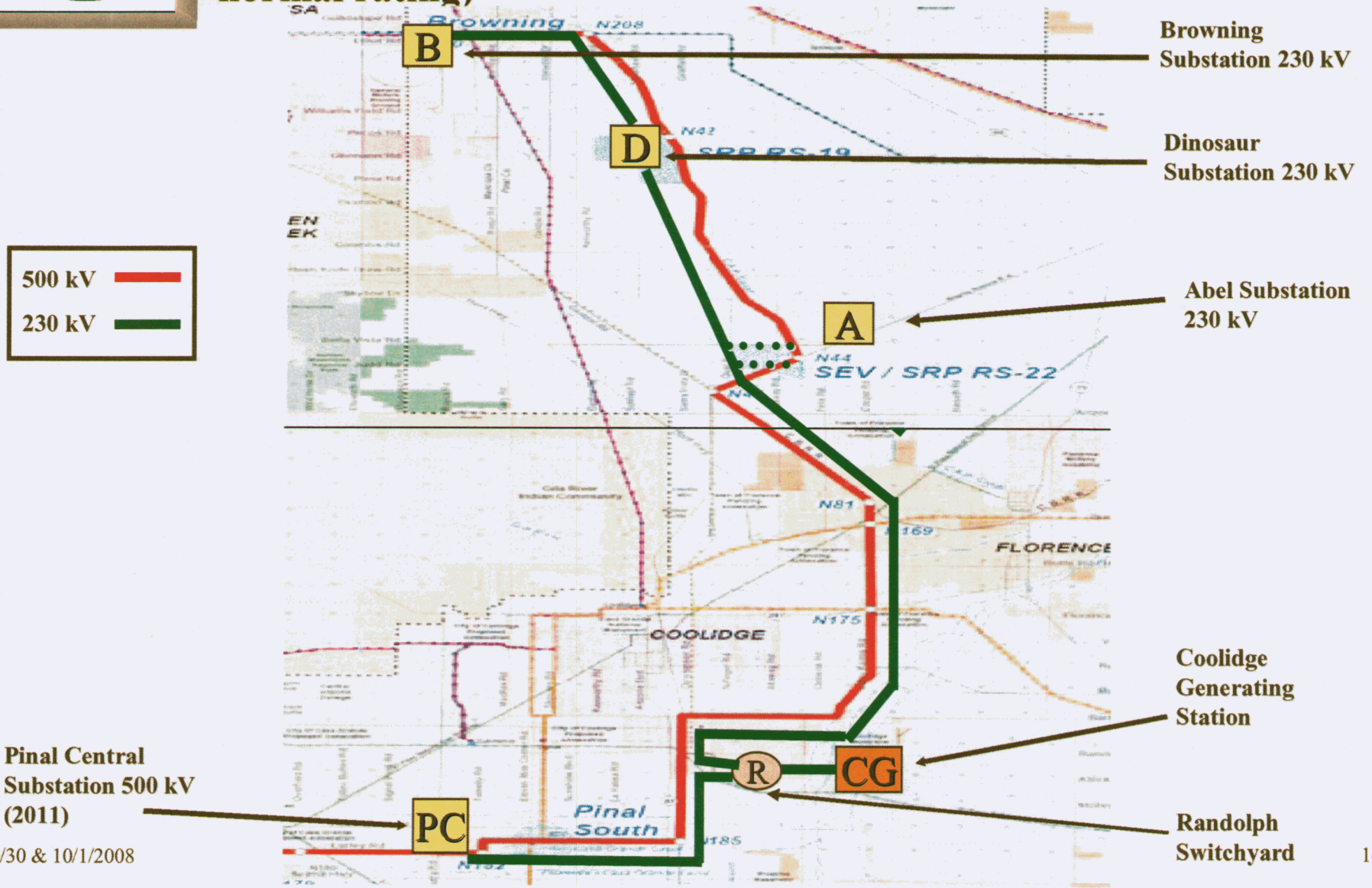
Power Flow Study Results

N-1 Contingency (10-1-10 to 4-30-11) ~ Browning to Dinosaur 230 kV outage → Reduce Plant output to 360 MW (emergency rating of the Dinosaur 230/69 kV transformer), and, within half hour to 280 MW (Dinosaur 230/69 kV transformer normal rating) ~ temporary RAS



- **N-1 (10-1-10 to 4-30-11) ~ Randolph to Dinosaur 230 kV (radial line) outage→ the Plant shuts down through operational procedures (power has nowhere to go)**

N-2 or N-1-1 ~ Randolph to Pinal Central 230 kV and Abel to Dinosaur 230 kV outages → Plant generation will be reduced down to 280 MW by operational procedures (Abel 230/69 kV transformer normal rating)



Power Flow Study Results

- **Micromill One to Germann 69 kV line (approximately one mile long) gets overloaded for the Browning 230/69 kV transformer outage to 102% of its emergency rating. SRP will upgrade this line to mitigate this overloading at an estimated cost of $350,000.**

- **SRP's Santan to Thunderstone 230 kV line will be upgraded prior to 2010 to mitigate overloading of this line to 114% of its emergency rating for the Silver King 500/230 kV transformer outage.**

Power Flow Study Results

- **APS Casa Grande 230/69 kV transformer was overloaded to 112.5% of its emergency limit as a result of Milligan 230/69 kV transformer outage. This transformer had a pre-TransCanada loading of 109.3% of its emergency limit.**

- **(According to APS' Jason Spitzkoff, 230/69 kV transformers are designed for overloading up to 120% of their emergency limit.)**

Short Circuit Study Results

- SRP conducted the short circuit analysis using the ASPEN OneLiner program employing an SRP 2011 planning model.

- Post-Plant fault current level increases (a difference greater than 500 A) at the busses close to the CGS are below the breaker interrupting limits.

Transient Analysis Results

- **The transient stability analysis was performed by selecting contingencies involving fault locations having the largest impact on the transmission system surrounding the Plant.**

- **Modified 2011 Heavy Summer WECC base case and a sensitivity base case were selected. The sensitivity base case included the 230 kV Pinal Central to Sundance and 500 kV Pinal Central to Tortolita lines.**

Transient Analysis Results

- **An additional base case scenario was considered when the Plant may be radially connected to Dinosaur Substation. An assumption of in-service date for the Abel 230/69 kV transformer prior to May 1, 2011, with the contingencies of Browning to Dinosour and Dinosour to Abel 230 kV lines would have the most severe impact on the system.**

- **For the above worst-case scenario, as with the other cases, no transient stability violations were noted.**

Conclusions

- **Based on the analysis of the Application and results of SIS, Staff concludes as follows:**
  - **The Applicant has established need and benefits of the Project.**
  - **Power flow analysis indicates that certain SRP facilities that were overloaded as a result of certain contingencies would be upgraded prior to May 1, 2011, when the Plant would be interconnected to the Pinal Central to Dinosaur 230 kV line.**
  - **There is no negative reliability impact to non-SRP facilities.**

Conclusions

- **Temporary RAS required for N-1 contingencies from September 1, 2010, to April 30, 2011, is acceptable since it is not cost effective to upgrade the system, such as adding the second Dinosaur 230/69 kV transformer, for less than one year of operation until Randolph to Pinal Central 230 kV line is completed by May 1, 2011.**

- **The cost to implement temporary RAS is $75,000. The Project will pay for it.**

- **The cost of putting in a second transformer at Dinosaur or at Abel would be $5 million, which is not cost effective.**

Conclusions

- **The SIS indicates no change in the short circuit duty of equipment in the interconnected transmission grid under all contingency scenarios.**

- **The Study indicates no system stability violations under all contingency scenarios.**

Recommendations

- **Based on Staff's review of the Applicant's request to receive CEC for the Plant, and on the analysis of the SIS, Staff makes the following recommendations.**
  - **The Applicant shall file with ACC Docket Control confirmation of the completion of all required transmission upgrades at least thirty days before commercial operation of the Plant.**

Recommendations

- **Approval of Applicant's plan to employ temporary RAS for the period between September 1, 2010, and April 30, 2011, be granted because the mitigation measures for such a short period of time are not cost effective.**

- **No RAS should be employed for any N-1 contingencies after April 30, 2011, for either load dropping or generation tripping.**

Questions ?

Questions ?

BEFORE THE ARIZONA POWER PLANT AND TRANSMISSION LINE SITING COMMITTEE

IN THE MATTER OF THE APPLICATION OF **COOLIDGE POWER CORPORATION**, IN CONFORMANCE WITH THE REQUIREMENTS OF ARIZONA REVISED STATUTES 40-360.03 AND 40-360.06, FOR A CERTIFICATE OF ENVIRONMENTAL COMPATABILITY AUTHORIZING CONSTRUCTION OF A NOMINAL 575 MW NATURAL GAS-FIRED, SIMPLE CYCLE GENERATING FACILITY LOCATED WITHIN THE CITY OF COOLIDGE IN PINAL COUNTY, ARIZONA	Case No. L-00000HH-08-0422-00141 Decision No. _____

EXHIBIT CC-3 admitted

DECISION
of the
ARIZONA POWER PLANT AND TRANSMISSION LINE SITING COMMITTEE
and
CERTIFICATE OF ENVIRONMENTAL COMPATIBILITY

Pursuant to notice given as provided by law, the Arizona Power Plant and Transmission Line Siting Committee ("Committee") held public hearings at the Coolidge Youth Center, September 30 and October 1, 2008, in conformance with the requirements of Arizona Revised Statutes Section 40-360, *et seq.*, for the purpose of receiving public comment and evidence and deliberating on the Application of Coolidge Power Corporation ("Applicant") for a Certificate of Environmental Compatibility in the above-captioned case.

The following members or designees of members of the Committee were present for some or all of the hearings on the Application:

John Foreman	Chairman, Designee for the Arizona Attorney General.
Paul W. Rasmussen	Designee for the Director of the Arizona Department of Environmental Quality
David Eberhart	Designee for the Chairman of the Arizona Corporation Commission

Gregg Houtz	Designee for the Director of the Arizona Department of Water Resources
Jack Haenichen	Appointed Member, Energy Office, Arizona Department of Commerce
Jeff Maguire	Appointed Member, Agriculture
Patricia Noland	Appointed Member, Counties
Mike Whalen	Appointed Member, Cities
Mike Biesemeyer	Appointed Member
Mike Palmer	Appointed Member
Barry Wong	Appointed Member

Jay Moyes of Moyes Sellers & Sims Ltd. represented Applicant. Arizona Corporation Commission ("Commission") Utilities Division Staff ("Staff") noticed its intervention as a party, and was represented by Nancy Scott, Esq. and Janice Alward, Esq. All public comments were made part of the record. There were no other interventions or limited appearances.

At the conclusion of the hearings and deliberations, the Committee, (i) having received and considered the Application, the appearances of Applicant and the intervenor; the evidence, testimony and exhibits presented by Applicant and the intervenor, respectively; and the public comments; (ii) being advised of the legal requirements of Arizona Revised Statutes Sections 40-360 to 40-360.13; (iii) upon consideration of the factors identified in Arizona Revised Statutes Section 40-360.06; and (iv) in accordance with A.A.C. R14-3-213, upon motion duly made and seconded, voted to make the following findings and to grant Applicant the following Certificate of Environmental Compatibility ("Certificate"):

The Committee finds that there is a need for an adequate, economical and reliable supply of electric power within the Western Electricity Coordinating Council ("WECC") and the State of Arizona, and that Applicant's proposed Coolidge Generating Station

("CGS") would contribute towards satisfaction of such need without causing material adverse impact to the environment, as mitigated by compliance with the conditions attached to the issuance of the Certificate.

The Committee finds that under the facts of this case, as reflected by the record, the Committee has jurisdiction to consider the Application and to grant the Certificate, and Applicant is legally entitled to receive the following Certificate for the Project upon the conditions set forth therein.

Coolidge Power Corporation, and its assignee(s), are hereby granted this Certificate of Environmental Compatibility authorizing construction of a nominal 575 MW natural gas-fired, simple-cycle generating facility and associated generation intertie ("gen-tie") transmission line interconnecting the generating facility (collectively the "Project") to a new switchyard to be separately constructed, owned and operated by Salt River Project ("SRP"). As depicted on the attached Exhibit A, the Project will be constructed on an approximately 100 acre parcel of industrially-zoned land in the City of Coolidge, legally described as the East ½ and the East ½ of the West ½ of Section 10, Township 6 South, Range 8 East of the Gila and Salt River Base and Meridian, Pinal, County, Arizona (the "Project Site"). The Project will include up to twelve (12) General Electric LM6000 PC SPRINT NxGen individual simple-cycle natural gas combustion turbine generator units, each producing up to approximately 48 MWs under optimal conditions, for an aggregate generating output range from approximately 25 MW to approximately 575 MW. The Project will interconnect at the 230kV voltage level with the certificated Pinal West to Southeast Valley/Browning 500/230kV transmission line to be constructed by SRP between the Pinal Central (formerly Pinal South) substation and the Dinosaur (formerly RS-19) substation (the "PC-DIN Circuit"), via a new Randolph switchyard to be constructed, owned and operated by SRP at the Project Site. The PC-DIN Circuit will run adjacent to, and the new switchyard will be constructed on, the western portion of the Project Site. The switchyard will lie within a single span of conductors from the Pinal Central-Dinosaur 230kV line. The Project gen-tie transmission line will not exceed

approximately 3000 feet in total length, and will be constructed using tubular steel monopole tower structures of the type generally depicted on the attached Exhibit B, approximately 100-145 feet in height, in total numbers and spacing to be determined in accordance with applicable interconnection standards and applicable safety and reliability standards.

This Certificate is granted upon the following conditions:

1. This authorization to construct the Project will expire five (5) years from the date this Certificate is approved by the "Commission" unless the Project is capable of operation within the five-year time frame. If the Project is not capable of operation within the five-year time frame, the Applicant, or its assignee(s), may apply to the Commission for an extension of time.
2. The Project shall comply with all existing applicable air and water pollution control standards and regulations, and with all existing applicable ordinances, master plans and regulations of the State of Arizona, Pinal County, the United States, and any other governmental entities having jurisdiction, including but not limited to the following:
    a. all applicable land use regulations;
    b. all applicable zoning stipulations and conditions, including but not limited to landscaping and dust control requirements;
    c. all applicable air quality control standards and regulations, and permit conditions of the Pinal County Air Quality Control District, the Arizona Department of Environmental Quality and/or Federal agencies having jurisdiction; and the Applicant, or its assignee(s), shall install and operate selective catalytic reduction and oxidation catalyst emission control technologies, as required by the air permit;
    d. all applicable water use, discharge and/or disposal requirements of the Arizona Department of Water Resources and the Arizona Department of Environmental Quality;

e. all applicable noise control standards;

f. all applicable regulations and permits governing storage and handling of chemicals and petroleum products;

g. all other applicable federal and state regulations and standards.

3. Applicant, or its assignee(s), will provide to the Commission copies of the Project's executed interconnection agreement with SRP, and the technical operating studies which will be performed by SRP prior to actual physical interconnection of the Project to the SRP transmission system.

4. At least 30 days prior to commercial operation of the Project, Applicant, or its assignee(s), will file with Commission Docket Control a letter from SRP confirming the completion of all required transmission system upgrades, and the compliance by Applicant, or its assignee(s), with all requirements of SRP to interconnect the Project with the SRP switchyard and transmission system and to ensure compliance with all applicable WECC/NERC standards, without the implementation of an automated Remedial Action Scheme ("RAS") to mitigate any N-1 contingencies, except as a temporary measure until completion of the permanent in/out interconnection of the Pinal Central to Dinosaur 230kV line. The Project may rely upon a temporary RAS to mitigate impacts of an outage on the Dinosaur to Browning 230kV transmission line and, should one occur, will ramp down generation to below 360MW immediately and to below 280MW within thirty (30) minutes. The Project may rely upon a temporary RAS to mitigate impacts of an outage on the Randolph to Dinosaur 230kV transmission line and, should one occur, will shut down generation. The temporary RAS will not be employed to mitigate any N-1 contingency after completion of the permanent in/out interconnection of the Pinal Central to Dinosaur 230kV line or after April 30, 2011, whichever is earlier. If the permanent in/out interconnection of the Pinal Central to Dinosaur 230kV line will not be completed by April 30, 2011, the Applicant, or its assignee(s), may apply to the Commission for an

extension of time.

5. Applicant, or its assignee(s), shall document and make reasonable efforts to respond to each complaint made to Applicant, or its assignee(s), of alleged interference with radio or television signals from the operation of the Project. Applicant, or its assignee(s), shall maintain written records for a period of five years of all such complaints including the date of the alleged interference, the name and identifying information of the complaining party, the response made, and the results of the corrective action taken or an explanation of why no action was taken, as applicable.

6. The Project will be designed and constructed to incorporate reasonable measures to minimize impact upon raptors.

7. Non-specular conductor and dulled surfaces shall be used for the gen-tie transmission line structures.

8. Applicant, or its assignee(s), or its affiliate company, or its customer will become a member of the WECC (or its successor), and will file with the Commission a copy of its executed WECC Membership Agreement.

9. Before commencing construction of Project facilities located within 100 feet of any existing natural gas or hazardous liquid pipeline, the Applicant, or its assignee(s), shall:

    h. Perform the appropriate grounding and cathodic protection studies to show that the Project's location parallel to and within 100 feet of such pipeline results in no material adverse impacts to the pipeline or to public safety when both the pipeline and the Project are in operation. If material adverse impacts are noted in the studies, Applicant, or its assignee(s), shall take appropriate steps to ensure that such material adverse impacts are mitigated. Applicant, or its assignee(s), shall file in Commission Docket Control reports of the studies performed; and;

i. Perform a technical study simulating an outage of the Project that may be caused by the collocation of the Project parallel to and within 100 feet of the existing natural gas or hazardous liquid pipeline. This study should either: (i) show that such outage does not result in customer outages; or (ii) include operating plans to minimize any resulting customer outages. Applicant, or its assignee(s), shall file a copy of this study in Commission Docket Control.

10. Applicant, or its assignee(s), and/or its affiliate company and/or SRP, will participate in good faith in Arizona and regional workshops and other assessments of the natural gas infrastructure and market.

11. Applicant, or its assignee(s), and/or its affiliate company and/or SRP, will take commercially reasonable steps to ensure a reliable supply and delivery of natural gas for the Project.

12. Within 30 days of the Commission decision authorizing construction of the Project, Applicant, or its assignee(s), will erect and maintain at the site a sign of not less than 4 feet by 8 feet dimensions, advising:

j. that the site has been approved for the construction of a 575 megawatt generating facility and associated gen-tie transmission line interconnecting the generating facility to a new switchyard;

k. the expected date of completion of the Project;

l. the phone number and address of a Project representative; and

m.a website where the public may access public information about the Project.

13. To the extent applicable, Applicant, or its assignee(s), will comply with the notice and salvage requirements of the Arizona Native Plant Law (A.R.S. §§ 3-901 et seq.) and will, to the extent feasible, minimize the destruction of native plants during the construction and operation of the Project.

14. During the construction and maintenance of the Project, to the extent practicable,

the Applicant, or its assignee(s), will use existing roads for construction and access, and to the extent applicable taking into account that the Project Site lies within a designated industrial use area, minimize impacts to wildlife and vegetation outside of the Project Site.

15. If any archaeological, paleontological, or historical site or object that is at least fifty years old is discovered on state, county, or municipal land during the construction or operation of the Project, Applicant, or its assignee(s), will promptly report the discovery to the Director of the Arizona State Museum and, in consultation with the Director, take all reasonable steps to secure and maintain the preservation of the discovery in accordance with A.R.S. § 41-844.

16. If human remains or funerary objects are encountered during the course of any ground disturbing activities related to the development of the Project, Applicant, or its assignee(s), will cease work and notify the Director of the Arizona State Museum in accordance with A.R.S. § 41-865.

17. Within 120 days after the approval of this Certificate by the Commission, Applicant, or its assignee(s), will provide the following information to all persons who have filed with the City of Coolidge or Pinal County any official master plan and/or subdivision plat for residential home development on property within one mile from the center of the Project Site: (i) a copy of this Certificate, (ii) a map showing the location of the Project, (iii) a pictorial representation of the Project, and (iv) a request that developers and homebuilders include this information in their disclosure statements to prospective buyers.

18. Applicant, or its assignee(s), will provide copies of this Certificate to the City of Coolidge, Pinal County, the Arizona State Land Department, and the State Historic Preservation Office.

19. On or before March 1 of each year, beginning in 2010, Applicant, or its assignee(s), will submit a self-certification letter identifying progress made with respect to each condition of this Certificate, including which conditions have

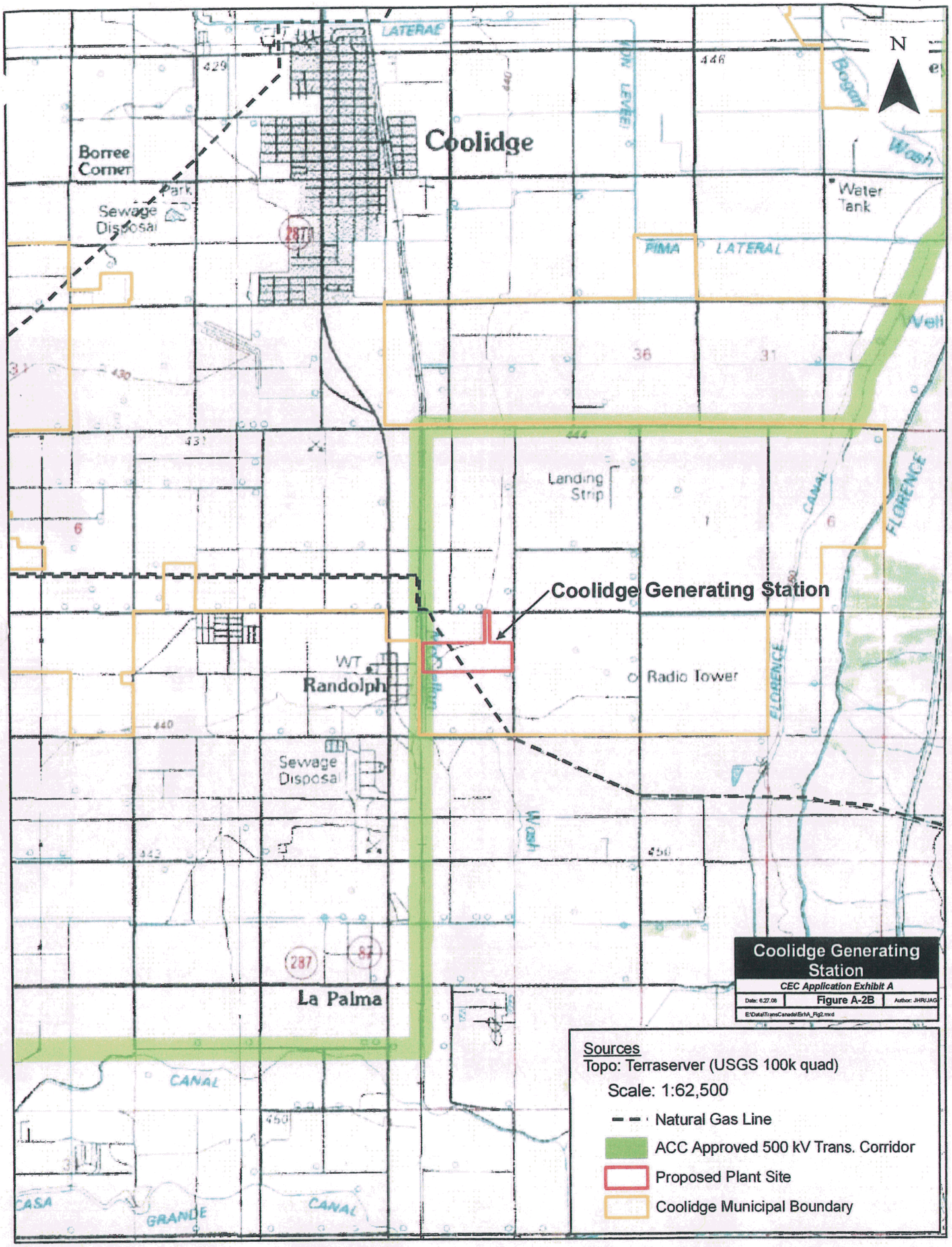
been met. Each letter, together with reasonably detailed supporting documentation, will be filed with Commission Docket Control, with copies to the Arizona Attorney General and the Department of Commerce Energy Office. This requirement will expire on the date the Project is placed into commercial operation or the Certificate expires.

GRANTED this _____ day of October, 2008.

ARIZONA POWER PLANT AND
TRANSMISSION LINE SITING COMMITTEE

By_____
John Foreman, Chairman

Ex. A


Coolidge
Borree Corner
Park
Sewage Disposal
LATERAL
MAIN LEVEE
Bogart Wash
Water Tank
PIMA LATERAL
Well
Landing Strip
CANAL
FLORENCE
Coolidge Generating Station
WT
Randolph
Radio Tower
Sewage Disposal
Wash
La Palma
CANAL
CASA GRANDE
CANAL
N
Coolidge Generating Station
CEC Application Exhibit A
Date: 6.27.08
Figure A-2B
Author: JHR/JAG
E:\Data\TransCanada\Exh\A_Fig2.mxd
Sources
Topo: Terraserver (USGS 100k quad)
Scale: 1:62,500
Natural Gas Line
ACC Approved 500 kV Trans. Corridor
Proposed Plant Site
Coolidge Municipal Boundary

Ex. B

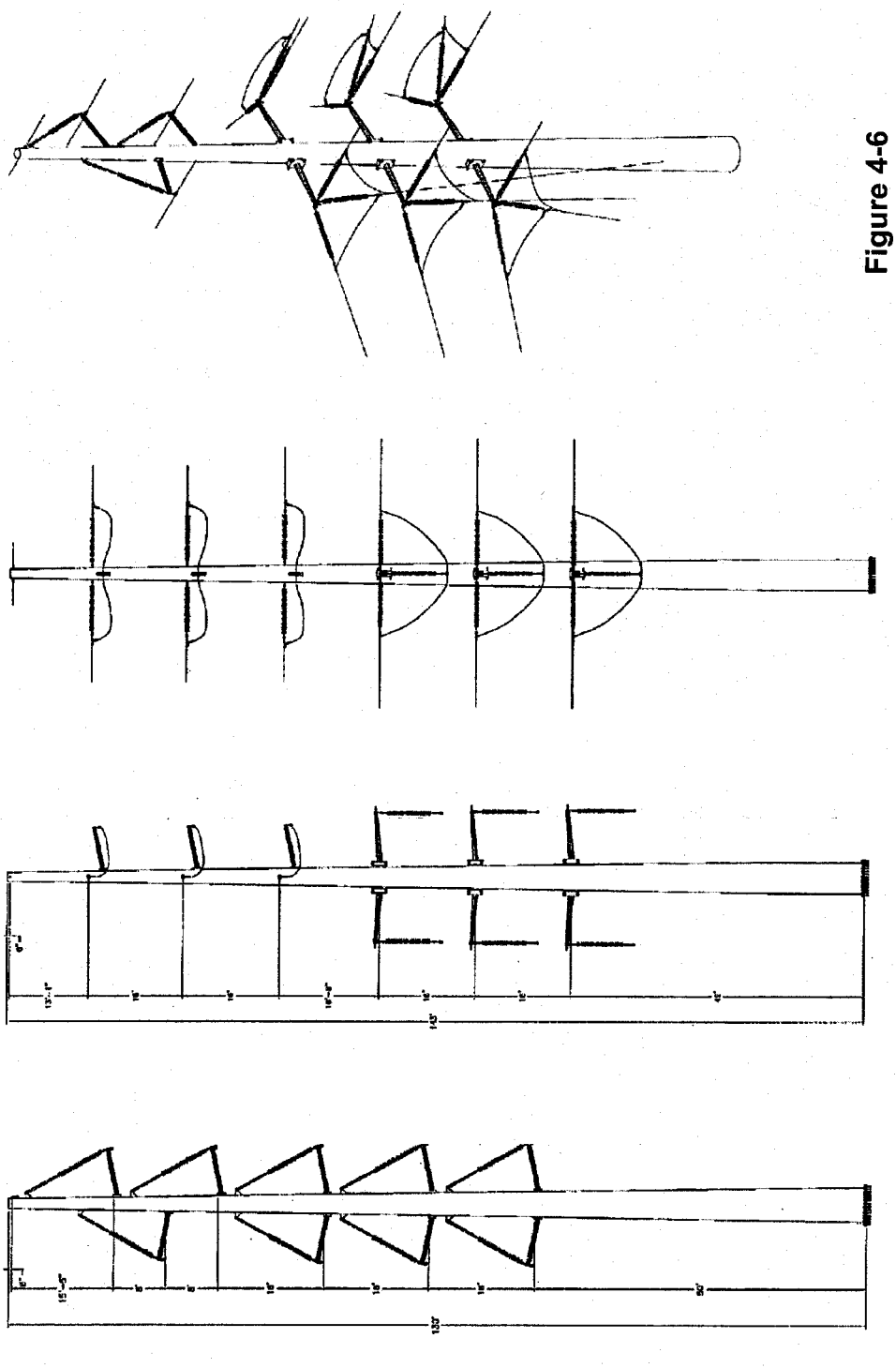


Figure 4-6

Transmission Interconnection Structures
GSU to Switchyard

Viad Corporate Center
1850 North Central Avenue
Suite 1100
Phoenix, Arizona 85004
www.lawms.com

MOYES STOREY

LAW OFFICES

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April 22, 2008

RECEIVED

2008 APR 25 P 4:16

AZ CORP COMMISSION
DOCKET CONTROL

Arizona Corporation Commission
1200 W. Washington
Phoenix, AZ 85007
Attn: Legal Division and Docket Control

RE: Docket No. E-00000M-08-0170; 90-day Plan Filing

Ladies and Gentlemen:

On March 20, 2008, Coolidge Power Corporation (Applicant) filed with the Arizona Corporation Commission (Commission) the "Plan" for the Coolidge Generating Station, pursuant to A.R.S. 40-360.02. Attached as Exhibit A to the Plan was an "Interconnection System Impact Study" (SIS) required to be filed as part of the Plan.

When the Plan was filed on March 20, 2008, the Commission did not have a specific docket for receiving such filings. Subsequently, the Commission legal division notified us that it has opened a generic docket, as captioned above, for such purpose.

Additionally, when the Plan was filed the SIS was labeled as "confidential information", resulting in concerns in the Commission legal division regarding the appropriate docketing and public distribution of its content.

Since making the filing, it has been determined by the Applicant that the SIS does not need to be kept confidential. Therefore, an additional 25 copies of the Plan, including the SIS *without* any confidentiality designation, are being delivered under cover of this letter, for docketing and further distribution as the Commission deems useful. Persons to whom the earlier filed copies of the Plan were distributed are authorized to treat the SIS as non-confidential, and may mark out the confidential label if they wish.

Please feel free to contact the undersigned if there are any questions in this regard, or with respect to the Plan itself. Thank you for your continued assistance.

Very truly yours,

Jay I. Moyes

JIM/lkk
Enclosures
cc: Janice Alward
Peter Lund
John Cashin

EXHIBIT
A-1
admitted

PLAN
for the
Coolidge Generating Station

Submitted by Coolidge Power Corporation
March 20 , 2008

Pursuant to A.R.S. 40-360.02, Coolidge Power Corporation ("Applicant") hereby submits the plan ("Plan") for the Coolidge Generating Station ("CGS" or "Project").

Applicant is a wholly-owned affiliate of TransCanada Pipeline USA, Ltd. Applicant proposes to construct a nominal 575 MW peaking electric generating facility comprised of twelve individual simple-cycle gas turbine generators capable of producing approximately 48 MW each. The Project will be located within the annexed corporate limits of the City of Coolidge, in Pinal County, Arizona.

A.R.S. 40-360.02(B) requires a party contemplating construction of an electric generating plant to file a plan with the Commission at least 90 days prior to filing an application for a Certificate of Environmental Compatibility for such plant. Applicant intends to file such an application during the summer of 2008 and, therefore, files this Plan at least 90 days in advance of filing such application.

Project Overview

The planned CGS will be comprised of twelve individual General Electric LM6000 PC SPRINT NxGen simple-cycle natural gas combustion turbine generators ("Units") with inlet air chillers. The Project will be designed to produce aproximately 575 MW of net electrical output under optimal ambient temperature and humidity conditions. The Units are capable of rapid start-up, allowing the Project to meet standby capacity reserve requirements and to respond within ten minutes to meet fluctuations in peak electric demand. Each Unit will be capable of operating independent of the other Units, allowing the Project to efficiently produce an aggregate generating output ranging from approximately 25 MW to approximately 575 MW as needed to accommodate peak load following.

The Project will be operated pursuant to an air quality permit issued by Pinal County. Emissions from the Units will be controlled by a combination of water injection and selective catalytic reduction to reduce nitrogen oxides emissions, and an oxidation catalyst to reduce carbon monoxide and volatile organic compound emissions.

The CGS will interconnect at the 230kV voltage level with the new Pinal West to Southeast Valley/Browing "Southeast Valley" 500/230 kV transmission line to be constructed by Salt River Project ("SRP") between the Pinal Central (formerly Pinal South) substation and the Dinosaur substation (the "PC-DIN Circuit"), through a new switchyard to be constructed at the CGS site. The Project will include six GSU

transformers each mated to two Units, from which will emanate six short 230kV transmission ties connecting to the new switchyard; and those GSU-to-switchyard transmission ties are covered by this Plan. The interconnection of the switchyard to the PC-DIN Circuit is not anticipated to require more than two new transmission structures. Accordingly, no CEC will be required for these interconnection facilities. Instead, the switchyard and interconnection facilities will be described in the CEC application for the CGS for informational purposes only. SRP will build, own and maintain the switchyard and interconnection structures.

SRP will purchase 100% of the electricity generated by the Project pursuant to a power purchase agreement between SRP and Applicant. SRP will be responsible for purchase and delivery of the natural gas fuel supply to the Project, and for transmission of the electricity generated by the Project to SRP's service territory loads primarily in Pinal and Maricopa Counties. TransCanada will maintain and operate the CGS; however, SRP will have exclusive control of the dispatch of the output of the CGS.

Specific Plan Information

In compliance with A.R.S. 40-360.02(C), the specific information required to be provided in the Plan for the CGS, to the extent that it is known, is set forth below:

1. **The location of any plant proposed to be constructed.**

   The Project site is located in Pinal County Arizona, on the east side of Highway 87, approximately three miles south of the center of the City of Coolidge, immediately south of the existing inactive oil refinery site.

   The Project will be located on an approximately one hundred acre parcel located within that portion of Section 10, Township 6 South, Range 8 East, lying East of and adjacent to the Southern Pacific Railroad right-of-way. The GSU-to-switchyard transmission ties also will be located wholly within such parcel, their exact location to be determined by the final placement of the GSUs and the switchyard within the parcel.

2. **The purpose to be served by each proposed plant.**

   The Project will supply peaking power to Salt River Project.

3. **The estimated date by which the plant will be in operation.**

   It is estimated that the Project will be energized and commissioned by October 1, 2010, and will begin commercial operation on May 1, 2011.

4. **The average and maximum power output measured in megawatts of each plant to be installed.**

The Project will be designed to produce between 25 and 575 MW of net nominal electrical output depending upon the ambient temperature and humidity conditions and the amount of peaking power that SRP requires from the dispatch of the individual generating units, which can be operated in any combination between one and twelve units.

5. **The expected capacity factor for each proposed plant.**

The number of operating hours and startups for any individual simple cycle unit will vary with the needs of SRP. It is anticipated that a typical operating profile for the CGS will be approximately 400-600 operating hours per Unit per year, even though the Project will be designed and maintained so as to be available for reliable, full capacity production approximately 98% of the summer hours (June – September) and 96% of the non-summer hours, up to the limits of the facility's environmental permits. The actual capacity factor of the Units will be determined by the economic dispatch of each unit as determined by the needs of SRP, the exclusive recipient of all generation by any and all Units.

6. **The type of fuel to be used for each proposed plant.**

The CGS will be fueled solely by natural gas.

7. **The plans for any new facilities shall include a power flow and stability analysis report showing the effect on the current Arizona electric transmission system. Transmission owners shall provide the technical reports, analysis or basis for projects that are included for serving customer load growth in their service territories.**

Attached as Exhibit A to this Plan is the System Impact Study conducted by SRP showing the effect of the CGS on the current Arizona electric transmission system.

Delivering More Than Power.®

Interconnection System Impact Study

for the

TransCanada Coolidge Generating Station

- FINAL REPORT -

Prepared by:

Salt River Project

For

TransCanada Pipeline USA Ltd.

Prepared by Jose Silva & Jeff Loehr, SRP Transmission System Planning

December 13, 2007

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ATTACHMENT 1	SRP Planned Transmission Facilities Map
ATTACHMENT 2	Interconnection System Impact Study Plan
ATTACHMENT 3	Power Flow Study Overload Result
ATTACHMENT 4	WECC Performance Parameters
ATTACHMENT 5	Interconnection Facilities and Costs

I. Executive Summary

This Interconnection System Impact Study ("ISIS") was done in response to the TransCanada Pipeline USA, Ltd ("TransCanada") request to provide interconnection service for a proposed new generation facility to be called TransCanada Coolidge Generating Station. The requested in-service date for the interconnection is September 2010, requested initial synchronization date is October 2010, and the estimated commercial operation date for the generation facility is May 2011. This new generation facility will interconnect with a new proposed Pinal South to Dinosaur 230kV transmission line. The study goals were to determine the impact on surrounding transmission and generation and identify the 230kV substation configuration that would preserve the reliability of the SRP transmission system. A 2011 Southwest Area Transmission (SWAT) case was used as the starting point for power flow and transient stability studies. The 2011 SWAT case is a detail case built from the Western Electricity Coordinating Council (WECC) 2011 heavy summer bulk case. As a starting point, the latest 2011 SRP planning model was used for short circuit studies.

The conclusions of this study are that the TransCanada Coolidge Generating Station interconnection:

1. Requires an upgrade on the SRP 69kV transmission system.
2. Does not produce transient stability violations.
3. Does not increase fault current levels above acceptable limits.
4. Has a negligible impact on the short circuit duty at 500kV busses in the area.

The construction cost to build facilities needed to provide interconnection service is estimated to be either $6,750,000 or $8,850,000 (depending on substation configuration) and is estimated to take a minimum of 12 months to build. Additionally, if requested, it will cost an estimated $75,000 to implement a RAS for maximum station output during the time period of October 2010 through May 2011.

II. Introduction

An interconnection request application was submitted by TransCanada on May 17, 2007. An Interconnection System Impact Study Agreement was entered into by SRP and TransCanada on July 26, 2007 and provides the requirements for the Interconnection System Impact Study. The interconnection request was for a proposed new generation facility to be called the TransCanada Peaking Facility with a Point of Interconnection on the high-side of the generator step-up transformers in the new substation (Randolph) on the generator plant site. (The name has since been changed by TransCanada to the Coolidge Generating Station.) The generation facility consists of the installation of twelve GE LM6000 plants, rated at 60.5MVA each. The plants will be paired (6 pairs) and each pair connected to a single 230/13.8kV GSU transformer. For the purpose of the study, generic transformers based upon a similar generation facility were modeled. The new generation facility is to be located south of the former Valero

Refinery site (Gila & Salt River Meridian, Township 6 south, Range 8 East, Section 10 in Pinal County, Arizona). This location is east of the proposed new Pinal South to Dinosaur 230kV transmission circuit (ATTACHMENT 1). A proposed new 230kV substation will provide loop service for interconnection of the TransCanada Coolidge Generating Station. The new substation will be approximately 6.6 miles from the 230kV Pinal South substation. For the purpose of this study it was assumed that the name of this new 230kV substation is "Randolph" due to the proximity of the community of that name. It was assumed that the new station will be located within one span of the existing transmission line.

As outlined in the interconnection study plan, SRP and TransCanada agreed that the ISIS analyses would include power flow, transient stability, and short circuit studies (ATTACHMENT 2). As stated in the study plan, the power flow and transient stability studies would model forecasted 2011 summer peak loads. Future generation expansion of the TransCanada Coolidge Generating Station would not be included in this study. Sensitivity studies with known planned transmission facilities in the area would be done. The studies would monitor the impact on SRP and neighboring utility transmission facilities. All generator model parameters were provided by TransCanada Pipeline USA, Ltd. The maximum output of each generator unit, based on the generator model parameters provided by TransCanada, was assumed to be approximately 46.8MW for a total net plant output of 562MW winter and 495MW summer.

III. Study Methodology

The 2011 SWAT base case used in the study is the "11hs1b_area14detail_8c.sav" base case that was finalized August 23, 2007. The SWAT base case is an area 14 detail base case of the 2011 WECC heavy summer base case "2011hs1b.sav". The detail base case used in the ISIS also includes the SRP 69kV transmission system. The detail base case allowed for monitoring of lower voltage systems in the area. The study included using pre-and post- new generation facility base cases to measure the impact on the surrounding transmission system. Both the pre-and post- base cases included the proposed new 230kV Pinal South to Dinosaur transmission circuit. The pre-base case served as a benchmark for noting pre-existing problems. Sensitivity studies were done to monitor the effects of the TransCanada interconnection on other planned transmission additions which included the proposed APS Pinal South to Sundance 230kV line and the proposed TEP Pinal South to Tortolita 500kV line.

For the purpose of this ISIS and to simplify the 2011 WECC Heavy Summer base case dynamic file conversion to a detail base case, the Transient Stability studies used a modified WECC "2011hs1b.sav" heavy summer base case and dynamic file. Zones 892, 811, and portions of 813 were extracted from the 2011 SWAT detail base case and inserted into the 2011 WECC heavy summer base case. Sensitivity studies were also done to determine the sensitivity of planned transmission circuits by other utilities.

IV. Study Assumptions

See ATTACHMENT 2 for the complete Interconnection System Impact Study Plan. The following additional assumptions were made:

a. The 230kV Pinal South to Dinosaur circuit will be in-service prior to the commercial operation of the TransCanada generators. The planned in-service date of this circuit is May 1, 2011.
b. Loop service will be provided to the high side of the generator step-up transformers of the TransCanada Coolidge Generating Station at Randolph from the proposed 230kV Pinal South to Dinosaur line at the proposed site (Gila & Salt River Meridian, Township 6 south, Range 8 East, Section 10 in Pinal County, Arizona), which is approximately 6.6 miles from the proposed 230kV Pinal South substation.
c. TransCanada requested interconnection in-service date is September 1, 2010.
d. TransCanada request for synchronizing date is October 1, 2010.
e. TransCanada requested commercial operation date (full output) of May 1, 2011.
f. SRP voltage criteria is 5% deviation from pre-outage voltage for n-1 contingencies.
g. Short circuit studies were performed using the available models.
h. Mitigation of pre-existing conditions will not be addressed by this study.

V. Power Flow Results

The 2011 SWAT base case that was used for the thermal and voltage studies contained a large number of pre-existing N-1 violations. These pre-existing violations are assumed to be the responsibility of the owning utility and are not due to the TransCanada generation facility interconnection. The 2011 SWAT base case included a 230kV line from Pinal South to Sundance and a 500kV line from Pinal South to Tortolita. Due to the timing and interconnection order of these lines it was assumed that neither line is in-service for the base study. A sensitivity was run with both lines in-service to determine the impact of the TransCanada generation interconnection.

To determine the impact of the new TransCanada generation a comparison was made between the loading and voltages in the pre-generation case and the post-generation case for all outages. Any increase of 1% or more from the pre-case to the post-case, when the highest loading is above 100% of stated emergency rating, will be noted for the results. Elements that show a significant increase in loading but do not exceed their emergency limit will not be noted.

V.I. Impact on SRP Transmission System

The study results showed the following elements on the SRP transmission system being impacted by the addition of TransCanada generation.

	Pre-TransCanada loading (% of emergency rating)	Post-TransCanada loading (% of emergency rating)
Santan – Thunderstone 230kV line for Silver King 500/230kV transformer outage	107%	114%
Micromill One – Germann 69kV line for Browning 230/69kV transformer outage	94.6%	102%

As shown in the table the Santan – Thunderstone 230kV line was overloaded for the critical outage in the pre-case. After the 2011 SWAT base case was developed, it was determined that the Santan – Thunderstone 230kV line will be upgraded prior to 2010 and will not be overloaded for this outage.

The only negative impact on the SRP transmission system for the addition of the TransCanada generation is the resulting overload on the Micromill One – Germann 69kV line for the outage of the Browning 230/69kV transformer. Due to the overload, this 69kV line will need to be upgraded to accommodate the interconnection of this new generation. The length of this line requiring upgrade is approximately one mile long and would cost an estimated $350,000 to upgrade.

There are no significant (>1%) changes to voltage results for the SRP transmission system with TransCanada generation online.

The addition of the APS Pinal South – Sundance 230kV line and the TEP Pinal South – Tortolita 500kV line do not change impacts of TransCanada generation on the SRP system significantly.

V.II. Impact on Affected Systems

The study results showed the following elements of the Affected Systems (non-SRP) transmission system being impacted by the addition of TransCanada generation.

	Pre-TransCanada loading (% of emergency rating)	Post-TransCanada loading (% of emergency rating)
APS Casa Grande 230/69kV transformer for Milligan 230/69kV transformer outage	109.3%	112.5%

As shown in the table the APS Casa Grande transformer was overloaded for the same outage in the base case. APS will be responsible for fixing this pre-existing condition with or without TransCanada generation being constructed. APS was consulted on this

issue to coordinate a solution and APS indicated that this is an acceptable loading for this case.

There are not significant (>1%) changes to voltage results for the non-SRP transmission system with TransCanada generation online.

The addition of the APS Pinal South – Sundance 230kV line and the TEP Pinal South – Tortolita 500kV line do not change impacts of TransCanada generation on the non-SRP systems significantly. The addition of the APS Pinal South – Sundance 230kV line (with and without TransCanada generation) does increase the loading on the WAPA Sundance – Coolidge 230kV circuits significantly but does not overload them.

In addition, the 230kV interconnection to the Pinal South facility will need to be coordinated with the owners of that facility and their Affected Systems. SRP will be coordinating that interconnection as part of the Southeast Valley Project.

V.III. Impact on SRP Transmission System October 2010 through April 2011

The Pinal South to Dinosaur 230kV line is scheduled to be completed May 1, 2011. To accommodate construction and start-up activities, TransCanada has requested the maximum output limit of the TransCanada Coolidge Generating Station for the time from October 1, 2010 to May 1, 2011. During this time it is planned that the TransCanada site will be temporarily fed off only the 230kV line from Dinosaur to the generation facility (Randolph). Since the complete 230kV line from Dinosaur to Pinal South (Randolph to Pinal South segment) is not scheduled for completion until May 1, 2011, the radial feed from Dinosaur was studied. During the study timeframe it is anticipated that the SRP system load will not exceed 80% of the forecasted 2010 summer peak load. For this configuration and load level, the maximum net generation output of the TransCanada Coolidge Generating Station is limited to 360MW. This limit is the emergency rating of the Dinosaur 230/69kV transformer for the outage of the Browning to Dinosaur 230kV line. In this configuration any outage of the 230kV line from Dinosaur to Randolph will interrupt interconnection service and prohibit generation at the TransCanada Coolidge Generating Station. This time period is generally the time when SRP conducts most construction and maintenance activities and these activities may further limit plant output for short periods of time.

ATTACHMENT 3 contains system load flow drawings (pre- and post- contingency) showing the overload of local areas. The first drawing ("Normal") shows the 2010 radial configuration with no outages and loadings as a percent of continuous rating (all system out of service is not yet in service for that case). The second drawing ("Emergency") shows the case with the Dinosaur - Browning 230kV line out of service and the loading on the Dinosaur 230/69kV transformer as a percent of the emergency rating. The low side of the transformer, where actual rating is determined, is at 100.4% of the emergency rating.

V.IV. Remedial Action Scheme Option for October 2010 through April 2011

In order to accommodate the testing of the TransCanada Coolidge Generating Station at full generation capability, a remedial action scheme (RAS) could be installed. A RAS should allow full output of TransCanada generation during normal transmission system conditions during the October 2010 through April 2011 timeframe.

In the event of an outage of the Dinosaur to Browning 230kV line, the RAS would immediately reduce TransCanada generation to below 360 MW. In addition, TransCanada generation would need to be reduced to below 280 MW within a time period specified by SRP operations (typically 30 minutes) in order to lower the loading of the Dinosaur 230/69kV transformer to below the continuous rating of 280 MVA.

The cost to implement a RAS for the time period when the TransCanada Coolidge Generating Station is connected via radial to Dinosaur (October 2010 through May 2011) is estimated to be $75,000. This cost estimate assumes existing redundant communication paths are available.

Any outage of the 230kV line from Dinosaur to Randolph will interrupt interconnection service and prohibit any generation at the TransCanada Coolidge Generating Station. This time period is generally the time when SRP conducts most construction and maintenance activities and these activities may further limit plant output for short periods of time.

VI. Short Circuit Analysis

The short circuit analysis was conducted using the ASPEN OneLiner program using an SRP 2011 planning model. Single phase and 3-phase faults where studied at nearby transmission busses and any significant difference between the pre-generation and post-generation model was noted. Significant fault current level increases (a delta greater than 500A) occur at 230kV busses close to the new proposed TransCanada generation facility. All of these sites are newer (or yet to be built) locations and fault levels are below breaker interrupting limits.

The addition of the APS Pinal South – Sundance 230kV line will increase fault levels near Sundance and Coolidge both with and without TransCanada generation. Due to modeling limitations this sensitivity was not run for fault current levels.

VII. Transient Stability

Transient stability analysis is a time-based simulation that assesses the ability of a power system to maintain synchronism during a disturbance. Transient stability studies were performed to verify the system's stability following a critical fault on the system.

For the purpose of this ISIS, the 2011 WECC Heavy summer power flow base case and dynamic file were modified to include detail of the lower voltage facilities (69kV) of SRP's system in the surrounding area. Power flow simulations were performed to verify convergence of the modified base case. A flat run test transient stability simulation was also performed on the modified base case and dynamic file to assure no anomalies were present before the transient stability studies were performed with contingencies. The power flow simulation showed that an SVD model located at Bus 33210 POT SVC was causing a divergence in the power flow analysis. This bus provided 31 MVAR in the Pacific Gas & Electric area. The SVD was turned off in the simulation to resolve the problem. This device was considered too remote to have a significant impact on the transient stability results.

Transient stability analysis was performed based on WECC Disturbance-Performance Criteria for selected system contingencies. Initial transient stability contingencies were simulated out to 20 seconds. The fault simulations were all assumed to be zero impedance three phase faults placed at substation busses. Fault clearing at the substation busses initiated the dropping of selected circuit elements. Fault durations were assumed to be 4 cycles for 500kV faults and 4.5 cycles for 230kV faults. All transient simulations use WECC Standard "epcl" programs "alldyns.p", "ocsgov.p" and "pv10_run.p". The dynamic models for GE LM6000 used were developed from generator parameters provide by TransCanada. The models developed were the solid state rotor model (genrou), excitation system model (esac7b), and Power System Stabilize model (PSS2a). The governor model (ggov1) was provided by TransCanada.

The transient stability contingencies were selected by the fault locations that would have the largest impact on the surrounding transmission system with the new generation facility in-service. The contingencies were studied for modified 2011 Heavy Summer WECC base case and a transmission sensitivity base case that included the 230kV Pinal South to Sundance and 500kV Pinal South to Tortolita lines. The following are the four contingencies selected for these transient stability studies:

230kV Pinal South to Randolph,
230kV Randolph to Southeast Valley (SEV),
230kV Pinal South to Randolph & 500kV Pinal South to Southeast Valley (SEV), and
230kV Randolph to Southeast Valley (SEV) & 500kV Pinal South to Southeast Valley (SEV)

An additional scenario base case was developed for the time period that the new generation facility may be connected via radial to the 230kV Dinosaur substation. Although the 230/69kV transformer at Southeast Valley substation is not scheduled to be in-service prior to May 1, 2011, an in-service 230/69kV transformer at Southeast Valley with the contingencies of 230kV Browning to Dinosaur and Dinosaur to Southeast Valley would have the most severe impact on the system. For this worst-case scenario, no transient stability violations were observed.

Study results were evaluated using WECC Reliability Criteria, and the North American Electric Reliability Council (NERC) Planning Standards shown in ATTACHMENT 4 (Table W-1 and Figure W-1). The transient voltage, frequency and rotor angle were monitored at the following busses:

Randolph 230kV	Desert Basin 230kV	Sundance 230kV	Kyrene 230kV
Santan 230kv	Westwing 230kV	Silver King 230kV	Pinnacle Peak APS 230KV
Coronado 500kV	Cholla 500kV	Silver King 500kV	Springervillle 345kV

The bus voltage plots are used to measure the transient voltage, the duration of the maximum voltage dip, and the duration of the voltage oscillations before the voltage reaches a steady state condition. Bus frequency plots are used to measure frequency fluctuations post-fault that are caused by system imbalance between generation and load. Rotor angle plots are used to measure the potential to go out-of-step from the rest of the system following a disturbance.

Using the WECC criteria for a single element contingency (NERC/WECC Category 'B'), the new generation facility did not violate transient voltage dip percentages at any load or non-load bus. There were no violations for frequency dipping below 59.6HZ over 6 cycles. For the WECC criteria for a two element contingency (NERC/WECC Category 'C'), there were no voltage or frequency violations.

VIII. Interconnection Facilities

The following is an estimate of the Interconnection Facilities needed to facilitate the interconnection of the TransCanada Coolidge Generating Station to the Pinal South to Dinosaur 230kV line. One-line diagrams of the proposed interconnection configurations can be found in ATTACHMENT 5. The following Interconnection Facilities shall be installed on the 230kV line or in the Randolph substation and shall include, but not be limited to, the items described below:

- Transmission Structures, including tower foundations and structures, conductor, and associated hardware.
- Bus Facilities:
    - Structures and equipment foundations, conduit, lighting, and grounding.
    - Bus supports, line dead-ends, equipment and conductor support structures.
    - 230kV circuit breakers and 230kV disconnect switches and associated equipment
    - Conductor and associated hardware.
    - Breaker protective equipment, control and monitoring, communications and control, and power cable.
- SCADA and associated communications equipment including cabinets and cable
- Communication equipment
- Metering Equipment

- Control House building including batteries, line relaying equipment, and cabling.
- Site Security equipment

The estimated costs for the Interconnection Facilities are as follows:

- TransCanada Proposal ("Randolph")
  Construction Costs = $ 8.5 million
  Annual O&M Costs = $ 95,000

- SRP Proposal ("Randolph")
  Construction Costs = $ 6.4 million
  Annual O&M Costs = $ 70,000

The estimated time to complete construction of the interconnection facilities is 12 months. A more detailed schedule will be provided in the Interconnection Facilities Study report.

The estimated costs for the 69kV transmission system upgrades are $350,000.

The estimated construction cost to provide interconnection service is $6,750,000 or $8,850,000; depending upon which proposed substation configuration is accepted. Additionally, if requested, it will cost an estimated $75,000 to implement a RAS for the October 2010 through May 2011 time period.

IX. Conclusions

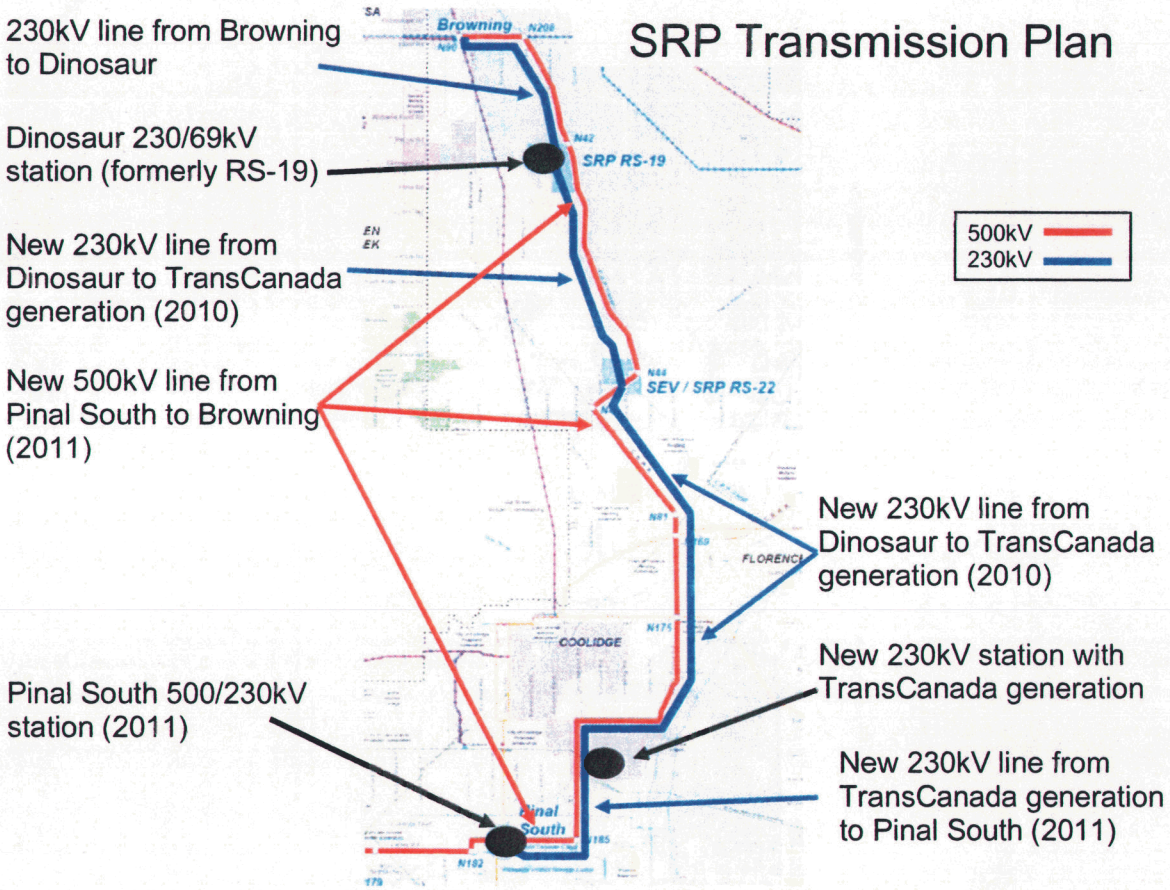
The conclusions of this study are that the TransCanada Coolidge Generating Station interconnection:

1. Requires an upgrade on the SRP 69kV transmission system.
2. Does not produce transient stability violations.
3. Does not increase fault current levels above acceptable limits.
4. Has a negligible impact on the short circuit duty at 500kV busses in the area.

The construction cost to build facilities needed to provide interconnection service is estimated to be either $6,750,000 or $8,850,000 (depending on substation configuration) and is estimated to take a minimum of 12 months to build. Additionally, if requested, it will cost an estimated $75,000 to implement a RAS for maximum station output during the time period of October 2010 through May 2011.

ATTACHMENT 1

SRP Planned Transmission Facilities Map



ATTACHMENT 2

INTERCONNECTION SYSTEM IMPACT STUDY PLAN
TRANSCANADA PEAKING FACILITY
July 19, 2007

OBJECTIVE:

Determine the requirements for providing Generating Facility Interconnection Service for a proposed new TransCanada Peaking Facility that will interconnect to the future SRP Pinal South/Dinosaur Transmission Line.

GOALS:

- Identify power flow, short circuit, and stability impacts of this Interconnection on SRP's Transmission System and Affected Systems.
- Identify potential substation configuration to be used at the generator substation to preserve the reliability of the SRP Transmission System. For example, looped configuration with single breaker versus looped configuration with breaker and a half versus double breaker configuration, etc....
- Preliminary identification of facilities required to complete the Interconnection.
- Estimate costs, cost responsibility and time to construct facilities required to complete the Interconnection.

ASSUMPTIONS:

- TransCanada requested interconnection in-service date is September 1, 2010 to accommodate station service power.
- TransCanada requested initial synchronization date is October 1, 2010.
- TransCanada requested commercial operation date (full output) of May 1, 2011.
    - Sensitivity study to determine maximum allowed generation from October 1, 2010 to May 1, 2011.
- Point of Interconnection to be studied is on the high-side of the generator step-up (GSU) transformers in the new substation on the generator plant site. The generator plant site is located in Township 6 South, Range 8 East, Section 10; approximately 5 miles south of the town of Coolidge in Pinal County, Arizona.
    - Proposed GSU Transformers high-side is 230kV
    - The Point(s) of Interconnection will connect to the future Pinal South/Dinosaur 230kV line near Coolidge in Pinal County, AZ.
- Interconnection consists of a 230kV switchyard connected to six 230/13.8kV generator step-up transformers and 12 LM 6000 generators.
    - The new substation will be located on the east side of the 230kV corridor.
- No future generation expansion will be studied.
- SRP voltage criteria is 5% deviation from nominal system voltage for n-1 contingencies on 230kV or higher.

- Potential impacts of the proposed generating facility and interconnection on the 69kV system and distribution system will be studied.
- Potential impacts of the proposed generating facility and interconnection on Affected Systems will be studied.
- Potential Affected Systems: Pinal County transmission system, PVTS, SEVP, Valley Transmission System, other Affected Systems
- TransCanada will site, purchase and acquire any permits required for the substation site.
- The facilities and costs identified in this study shall include only the 230kV switchyard facilities, which may include the bus work, breakers, switches, relaying, metering, ground grid, control house, site preparation, and drops. SRP will not be responsible for the generator step-up transformers or any portion of the generating facility.
- NERC, WECC and other regional planning criteria will be followed.
- No transmission service will be studied as part of this Interconnection Request.
- Base Cases used will be the 2008 SRP plan and the 2011 SWAT case.

POWER FLOW, SHORT CIRCUIT, & STABILITY IMPACT:

- TransCanada will provide generator data for use in this study.
    - In addition to the Interconnection Request form, generator PSS data is needed (if available).
- Power Flow consideration
    - Determine all N-0 and N-1 conditions
    - Study N-2 conditions as sensitivities
    - Determine post-transient sensitivity on valley transmission system.
- Short Circuit consideration
    - Determine the short circuit impact on the Pinal County area transmission system, PVTS, SEVP transmission system, Valley Transmission System, and other Affected Systems.
- Stability consideration
    - Determine if the transmission system is stable under all N-1 conditions with the addition of TransCanada generation.

SUBSTATION CONFIGURATION:

- Protection consideration
    - Determine acceptable breaker/relaying schemes conforming to SRP's protection standards.

COST:

- Develop a preliminary cost estimate for the interconnection facilities.
    - Cost estimate will include capital cost to construct and annual cost to maintain the 230kV facilities. The estimate will include itemized costs to the extent possible. TransCanada will be responsible for these costs.
    - Cost estimate will not include any siting, land purchasing, permitting, or right-of-way acquisition costs.

- All costs will be in 2007 dollars with no escalation to the projected in-service date of 2010.

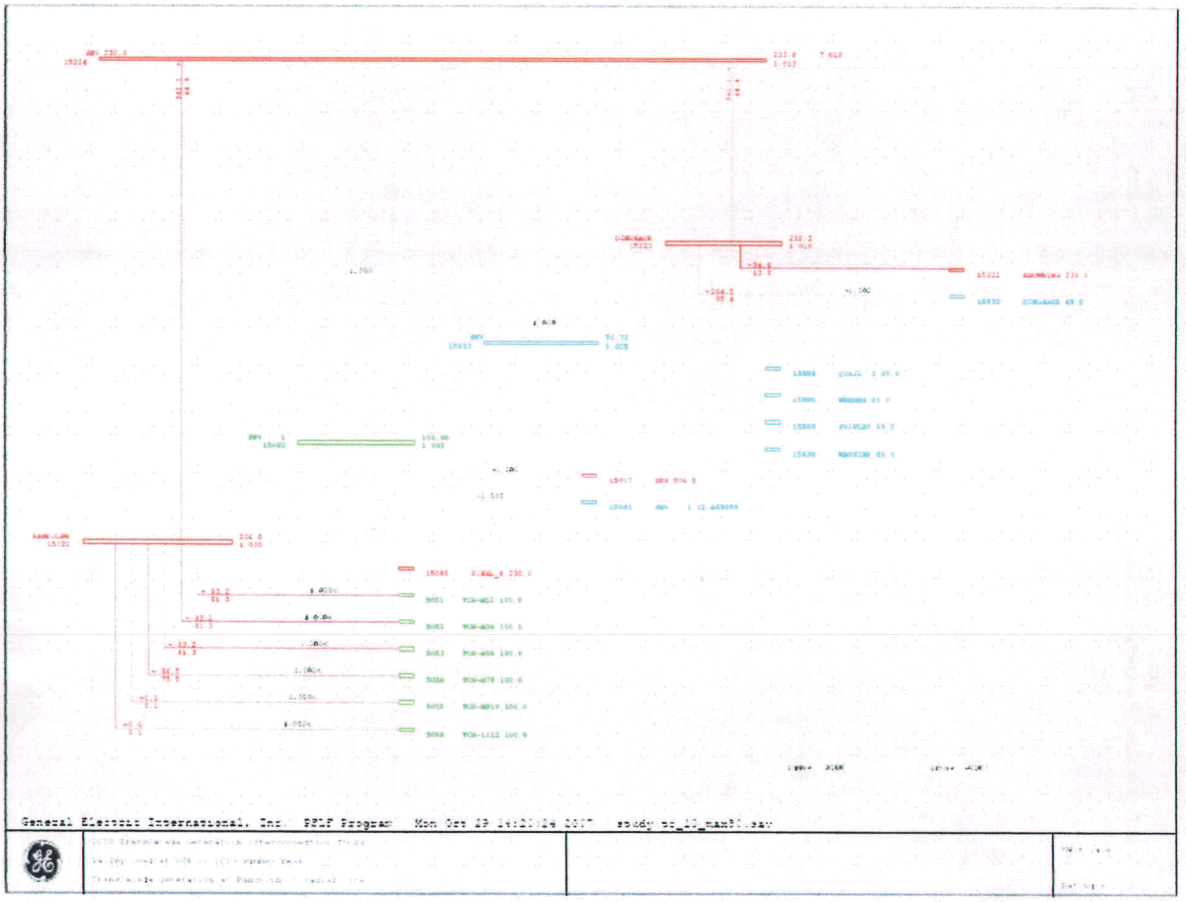
SCHEDULE:

- Develop a preliminary estimate for the time to construct the interconnection facilities.

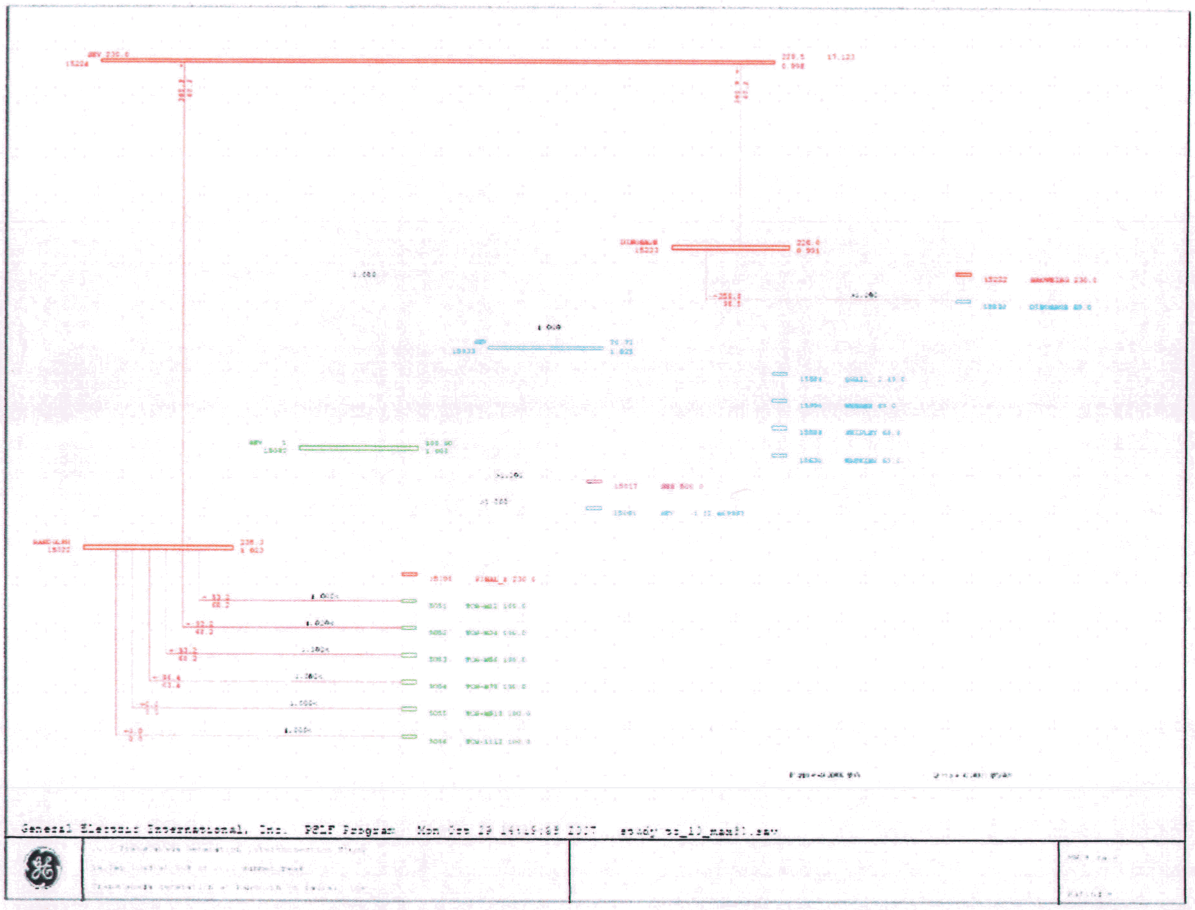
ATTACHMENT 3

Power Flow Study Overload Result

"Normal"



"Emergency"



ATTACHMENT 4

WECC Performance Parameters

WECC DISTURBANCE-PERFORMANCE TABLE
OF ALLOWABLE EFFECTS ON OTHER SYSTEMS

NERC and WECC Categories	Outage Frequency Associated with the Performance Category (outage/year)	Transient Voltage Dip Standard	Minimum Transient Frequency Standard	Post Transient Voltage Deviation Standard (See Note 2)
A	Not Applicable	Nothing in addition to NERC		
B	≥ 0.33	Not to exceed **25%** at load buses or **30%** at non-load buses. Not to exceed **20% for more than 20 cycles** at load buses.	Not below **59.6** Hz for 6 cycles or more at a load bus.	Not to exceed **5%** at any bus.
C	0.033 – 0.33	Not to exceed **30%** at any bus. Not to exceed **20% for more than 40 cycles** at load buses.	Not below **59.0** Hz for 6 cycles or more at a load bus.	Not to exceed **10%** at any bus.
D	< 0.033	Nothing in addition to NERC		

Notes:

1. *The WECC Disturbance-Performance Table applies equally to either a system with all elements in service, or a system with one element removed and the system adjusted.*

2. *As an example in applying the WECC Disturbance-Performance Table, a Category B disturbance in one system shall not cause a transient voltage dip in another system that is greater than 20% for more than 20 cycles at load buses, or exceed 25% at load buses or 30% at non-load buses at any time other than during the fault.*

3. *Additional voltage requirements associated with voltage stability are specified in Standard I-D. If it can be demonstrated that post transient voltage deviations that are less than the values in the table will result in voltage instability, the system in which the disturbance originated and the affected system(s) should cooperate in mutually resolving the problem.*

Table W-1

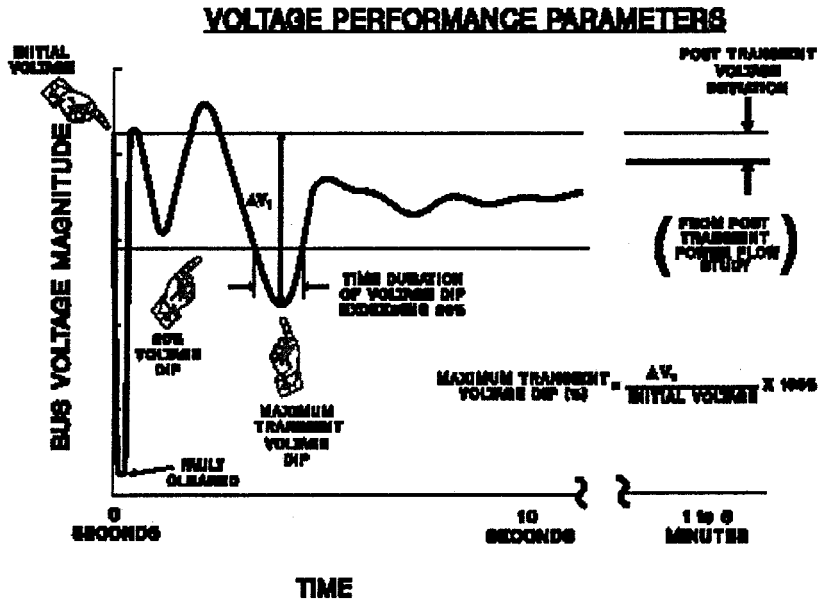

VOLTAGE PERFORMANCE PARAMETERS
INITIAL VOLTAGE
POST TRANSIENT VOLTAGE DEVIATION
BUS VOLTAGE MAGNITUDE
ΔV1
(FROM POST TRANSIENT POWER FLOW STUDY)
TIME DURATION OF VOLTAGE DIP
STEADY VOLTAGE DIP
MAXIMUM TRANSIENT VOLTAGE DIP
FAULT CLEARED
MAXIMUM TRANSIENT VOLTAGE DIP (%) = ΔV1 / INITIAL VOLTAGE X 100%
0 SECONDS
10 SECONDS
1 to 5 MINUTES
TIME

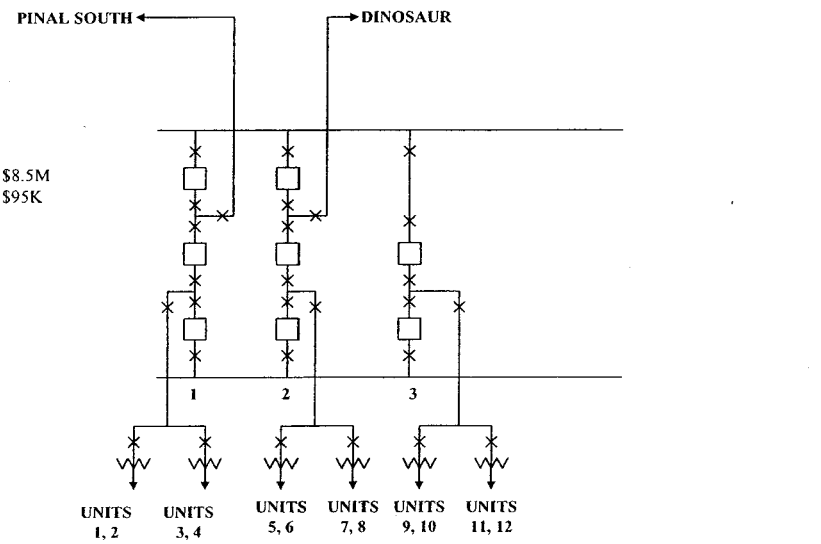
Figure W-1

ATTACHMENT 5

Interconnection Facilities and Costs

TransCanada Proposed Switchyard Diagram ("Randolph"):

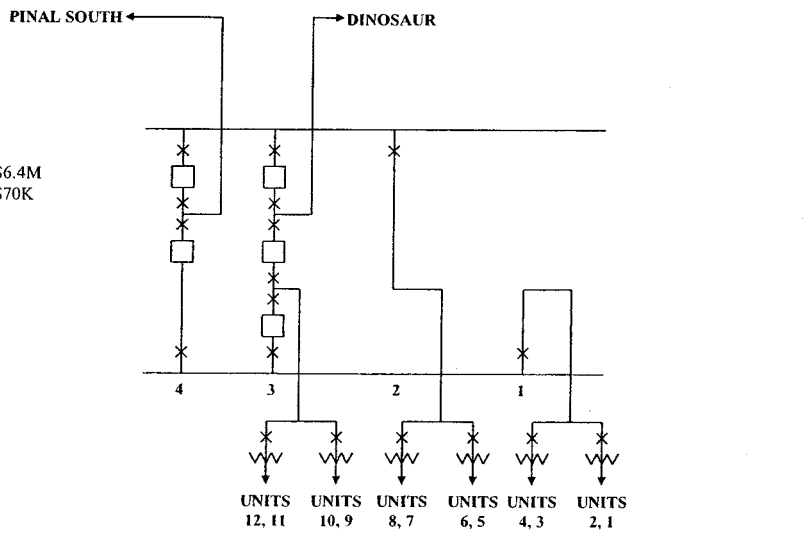
Randolph 230kV Switchyard Initial
TransCanada Proposal



Construction Estimate	$8.5M
Annual O&M Estimate	$95K

SRP Proposed Switchyard Diagram A (Randolph):

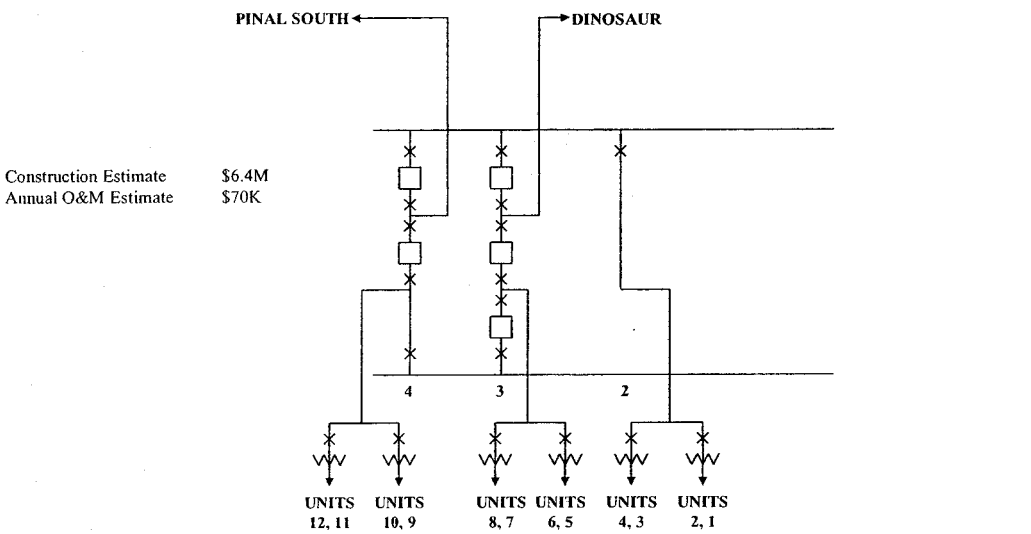
Randolph 230kV Switchyard
SRP Proposal A



Construction Estimate	$6.4M
Annual O&M Estimate	$70K

SRP Proposed Switchyard Diagram B (Randolph):

Randolph 230kV Switchyard
SRP Proposal B

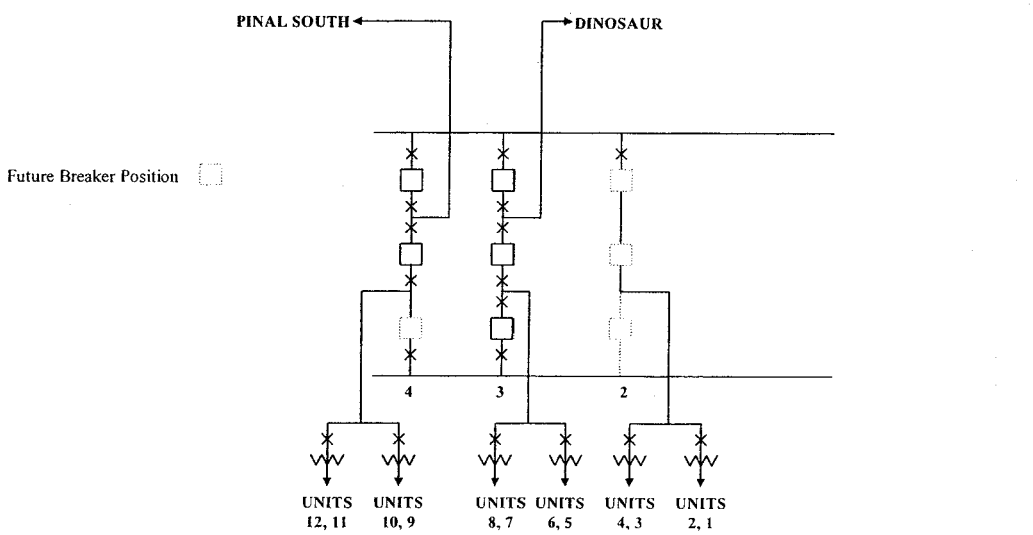


Construction Estimate $6.4M
Annual O&M Estimate $70K

SRP Proposed Switchyard Diagram (Randolph), possible expansion:

Randolph 230kV Switchyard

Possible Expansion: Breaker and a half Configuration



a

Confidential Information

Optional Interconnection Study

for the

TransCanada Coolidge Generating Station

- FINAL REPORT -

Prepared by:

Salt River Project

For

TransCanada Coolidge Power Corporation

June 30, 2008

Jeff Loehr, Transmission System Planning

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I. Executive Summary

The original Interconnection Facilities Study ("IFAS") was done in response to the Coolidge Power Corporation (a subsidiary of TransCanada Pipeline USA, Ltd) ("TransCanada") request to provide interconnection service for a proposed new generation facility to be called TransCanada Coolidge Generating Station. The requested in-service date for the interconnection is September 1, 2010 with an initial synchronization date of October 1, 2010. The estimated commercial operation date for the generation facility is May 1, 2011. This new generation facility will interconnect with a new proposed Randolph Switchyard..

The goal of this optional study is to determine any system impacts and required action to accommodate up to 100MW of net generation output from the TransCanada Coolidge Generating Station beginning September 1, 2010.

Due to the relatively short time period (September 1, 2010 to October 1, 2010) and the level of impact of this change on the electrical system it is recommended that an operating procedure be used, rather than system additions, to mitigate loading problems.

There are no Interconnection Facilities and Network Upgrades identified from this study for the September 1, 2010 Randolph Switchyard energizing date, therefore, the original cost estimate provided in the Interconnection Facilities Studies is still valid.

II. Introduction

Following completion of the Interconnection Facilities Study but prior to the finalization of the Interconnection Facilities Study Report, TransCanada requested SRP perform an Optional Interconnection Study, as is provided for in Section 10 of SRP's Large Generator Interconnection Procedures. TransCanada requested this Optional Interconnection Study to consider a change in synchronization date. Study assumptions and results in this Optional Interconnection Study Report supersede and replace in their entirety, as appropriate, the prior relevant assumptions and results in the Interconnection Facilities Study Report.

III. Study Methodology

The Optional Interconnection Study Procedures followed were:

- SRP utilized existing studies to the extent practicable in performing the Optional Interconnection Study, including the original Interconnection System Impact Study.
- Only the timeframe from September 1, 2010 through October 1, 2010 was evaluated. The original Interconnection Facilities Study results for the October 1, 2010 through May 1, 2011 timeframe does not change.

IV. Study Assumptions

For this study the following assumptions were used:

a. TransCanada modified requested interconnection in-service date and synchronization date for up to 100MW is September 1, 2010.
b. Due to construction and equipment schedules, it is not possible to advance any scheduled system additions to mitigate loading problems on the 230kV and 500kV systems.
c. While it is possible for 100% of forecasted system peak loading to occur in early September, the time period is short and the risk is moderate and therefore a build option is not preferred.

V. Transmission System Impacts

The impacts to the SRP Transmission System with 100MW of generation at the TransCanada Coolidge Generating Station between September 1, 2010 and October 1, 2010 are as follows:

1. At forecasted summer 2010 peak loads, the Dinosaur 230/69kV transformer is loaded to 100.6% of the continuous rating of 280MVA for no outages.
2. At 99% of forecasted summer 2010 peak load, the Dinosaur 230/69kV transformer it loaded to 99.6% of the continuous rating of 280MVA for no outages.
3. No N-1 outages cause overloads due to TransCanada generation being online.

VI. Conclusions

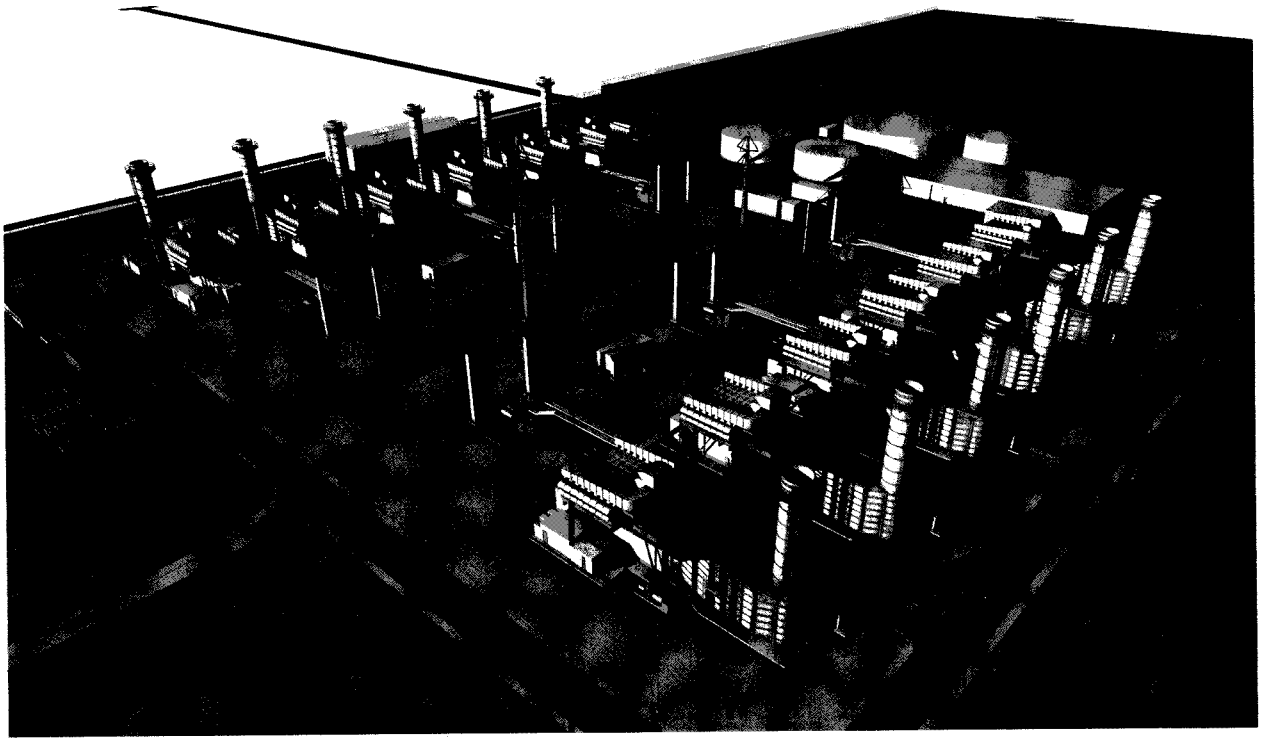
Due to the low probability of a system peak loading day occurring on or after September 1st, the recommended solution to the potential continuous overload of the Dinosaur 230/69kV transformer is to limit TransCanada generation during times of high loads. For the loads used in this study, limiting TransCanada generation net output to below 95MW would reduce loading to an acceptable level. As this limit is due to system load the actual limit will be determined by System Operations on a real time basis. SRP System Operating personnel will instruct TransCanada generation personnel to reduce generation to an acceptable level as system loading dictates.

Based on the results of this Optional Study, it is permissible for the TransCanada Coolidge Generation Station to synchronize generators and export up to 100MW of generation commencing September 1, 2010. System overloads due to real-time conditions will be managed by SRP System Operations on a real time basis and may include reducing the TransCanada Coolidge Generation Station output to below 100 MW.

EXHIBIT
A-2
admitted

APPLICATION
for a
CERTIFICATE OF ENVIRONMENTAL COMPATIBILITY

COOLIDGE GENERATING STATION



Prepared for:

State of Arizona
Power Plant and Transmission Line Siting Committee

Submitted by:

Coolidge Power Corporation

L-00000HH-08-0422-00141

BEFORE THE
ARIZONA POWER PLANT AND TRANSMISSION LINE SITING COMMITTEE

In the matter of the Application of Coolidge Power Corporation in conformance with the requirements of Arizona Revised Statutes 40-360.03 and 40-360.06, for a Certificate of Environmental Compatibility authorizing construction of a nominal 575 MW natural gas-fired, simple cycle generating facility located within the City of Coolidge in Pinal County, Arizona.	))))))))))	Case No. _____

APPLICATION FOR
CERTIFICATE OF ENVIRONMENTAL COMPATIBILITY

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ACRONYMS

ACC - Arizona Corporation Commission

ADA - Arizona Department of Agriculture

ADEQ - Arizona Department of Environmental Quality

ADWR - Arizona Department of Water Resources

AGFD - Arizona Game and Fish Department

APLIC - Avian Power Line interaction Committee

APP - Aquifer Protection Permit

ASM - Arizona State Museum

ASTM - American Society for Testing Materials

BACT - Best Available Control Technology

BADCT - Best Available Demonstrated Control Technology

CEC - Certificate of Environmental Compatibility

CEMS - Continuous Emissions Monitoring Systems

CGS - Coolidge Generating Station

CO - Carbon Monoxide

CTG - Combustion Turbine Generator

dBA - A-weighted decibels

EPA - Environmental Protection Agency

EPC - Engineering, Procurement and Construction firm

ESA - Endangered Species Act

FAA - Federal Aviation Administration

gpm - Gallons per minute

GSU - Generator Step-Up (transformers)

KOP - Key Observation Point

kV - Kilovolt

Ldn - day/night sound level

Leq - average sound level

MW - Megawatt

NO_x - Nitrogen Oxides

NPL - Arizona Native Plant Law

NR - Noise Receptors

PEP - Project Evaluation Program

PADs - Planned Area Developments

PCAQCD - Pinal County Air Quality Control District

PM_{10} - Particulate Matter < 10 microns

RO - Reverse Osmosis

RMU - Regional Mixed Use

SCR - Selective Catalytic Reduction

SLM - Sound Level Meter

SO_x - Sulfur Oxides

SPRINT - SPRay INTer-cooling system

SR - State Highway Route

UPRR - Union Pacific Railroad

USFWS - United States Fish and Wildlife Service

VC - Visual Concern

VE - Visual Exposure

VOC - Volatile Organic Compound

VQ - Visual Quality

WSCA - Wildlife of Special Concern in Arizona

EXECUTIVE SUMMARY

EXECUTIVE SUMMARY

Coolidge Power Corporation (Applicant) requests a Certificate of Environmental Compatibility (CEC) from the Arizona Power Plant and Transmission Line Siting Committee (Committee) for construction of the Coolidge Generating Station (CGS or Project), a natural gas fired, simple-cycle power plant.[1] The Applicant is a wholly-owned affiliate of TransCanada Pipeline USA, Ltd.

The CGS Project will be located within the City of Coolidge in Pinal County. **Figure ES-1** shows the general location of the Project.

The Project will supply power to Salt River Project (SRP), a load serving entity in Arizona, for the purpose of serving its customers during periods of peak electricity demand. SRP will purchase 100% of the electricity generated by the Project pursuant to a twenty (20) year Power Purchase Agreement (PPA) between the two parties. TransCanada will maintain and operate the CGS; however, SRP will have exclusive dispatch control of the output of the CGS.

The Project will include 12 General Electric (GE) LM6000 PC SPRINT NxGen combustion turbine generators (CTG). The Project will be designed to produce approximately 575 MW^2 of net electrical output under optimal ambient temperature and humidity conditions. The CTGs or "Units" are capable of rapid start-up, allowing the Project to meet standby capacity reserve requirements and to respond within ten minutes to meet fluctuations in peak electric demand. Each Unit will be capable of operating independent of the other Units, allowing the Project to efficiently produce an aggregate generating output ranging from approximately 25 MW to approximately 575 MW as needed to accommodate peak load following. The Project will also be capable of providing utility operating reserves because of its rapid 10 minute start-up capability.

Emissions from the CTGs will be controlled by the Units' low emission combustion systems that use a combination of water injection and selective catalytic reduction (SCR) to reduce nitrogen oxides (NOx) emissions, and an oxidation catalyst to reduce carbon monoxide (CO) and volatile organic compound (VOC) emissions. PM_{10} and ozone emissions will be below any significant levels as will the emissions of greenhouse gases.

The site for the CGS Project (Project Site) contains approximately 100 acres that is currently being used for irrigated agriculture. **Figure ES-2** shows a close-up aerial view of the 100-acre Project Site. The gas and electric interconnections will be made on or adjacent to the Project Site thereby minimizing the environmental impacts associated with the Project.

---

[1] *Coolidge Power Corporation notes that ARS § 40-360(9) defines a "plant" as "each separate thermal electric, nuclear or hydroelectric generating unit with a nameplate rating of one hundred megawatts or more..." and that accordingly, it is not clear that a Certificate of Environmental Compatibility is required for the proposed facility with respect to which this application is filed, as such facility will consist of 12 thermal electric units, each with a nameplate rating less than one hundred megawatts. Nevertheless, Applicant requests a Certificate of Environmental Compatibility and affirms that this Application is not being filed in the alternative under Rule 14-3-203 D.*

The water required for the Project will be supplied from wells located on the Project Site. Although the Project has rights to pump groundwater through the conversion of irrigation rights obtained with the purchase of the land, the groundwater will be replenished using renewable Central Arizona Project (CAP) water recharged into the local groundwater basin to offset the Project's withdrawal of groundwater. Also, if needed to operate the facility up to the limit of its regulatory permits, SRP may provide to the Project long term storage credits banked by recharging CAP water in the Pinal AMA.

The Project will interconnect at the 230kV voltage level with the certificated Pinal West to Southeast Valley / Browning "Southeast Valley" 500/230 kV transmission line to be constructed by SRP between the Pinal Central (formerly Pinal South) substation and the Dinosaur (formerly RS-19) substation (the "PC-DIN Circuit"), via a new switchyard to be constructed by SRP at the CGS site. The PC-DIN Circuit will run adjacent to, and the new switchyard will be constructed on, the western edge of the Project Site.

The Project will include six generator step-up (GSU) transformers each mated to two CTG Units, from which three short 230kV transmission ties, spanning four tower structures, will connect the Units to the new SRP switchyard. The GSU-to-switchyard transmission ties are integral components of the Project and are included in this Application.

Conversely, the new SRP switchyard and the interconnection of the switchyard to the PC-DIN Circuit, while described in this Application, are not part of this Project or Application. The switchyard and interconnection facilities are described in this Application for informational purposes only. SRP will build, own and maintain the switchyard and interconnection facilities. Further, the switchyard and the interconnection to the PC-DIN are not anticipated to require more than a single span between two new structures, so no CEC will be required for these facilities.

SRP will be responsible for the purchase and delivery of the natural gas fuel supply for the Project. It is expected that natural gas will be transported to the Project through the existing El Paso gas pipelines that cross the Project Site and/or the TransWestern Pipeline system that is being extended to a location proximate to the Project Site.

This Application includes evaluation of relevant environmental issues associated with the proposed Plant Site and certain related actions. The analysis of the Coolidge Generating Station Project concludes that no significant impacts will result from the Project. This conclusion was reached after analyzing the environmental elements specified in Arizona Corporation Commission Rules of Practice and Procedure R14-3-219.

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[2] *Electrical output from a power generating facility such as the CGS Project is largely dependent upon three site specific variables; elevation, temperature, and relative humidity. In general, electrical output from this type of facility increases as elevation and temperature decrease and relative humidity increases. Based upon the Project Site elevation, and assuming ambient conditions most favorable to electrical output, a maximum nominal output of 575 MW is expected for the CGS Project.*

The Project site was selected for the following reasons:

- The Project is located on private land within an area previously planned and recently zoned by the City of Coolidge for industrial uses. The area around the Project Site contains other industrial development including an existing refinery, as well as highways, railroads, gas pipelines and compression facilities, and electric transmission lines.

- The infrastructure for transmission and gas to which the Project will be interconnected is located less than 1000 feet from the Project Site (or will be as a result of other approved, independent projects currently underway by third parties) avoiding the need for the CGS Project to construct significant off-site transmission lines or pipelines.

- The water needed for this simple-cycle Project will be supplied from groundwater wells located on the Project Site, using rights converted from agricultural irrigation to industrial use. However, the local groundwater basin will be replenished with recharged CAP water to offset the withdrawal of groundwater for the Project's anticipated operating regime.

- The nearest existing residences are located approximately 500 feet from the Project Site boundary and 1500 feet from the CTGs. No new residential development is planned within 2 miles of the Project Site.

- No critical habitat will be affected by the Project because all construction will occur on the 100-acre Project Site, which is all currently and historically cultivated agricultural land that contains no habitats. Likewise, there will be no significant impacts to any threatened or endangered species.

The analyses for this Application also show that several critical elements of concern are not present or will not be affected by the siting, construction, or operation of the Project, including: wild and scenic rivers, areas of critical environmental concern (ACEC), wetlands or riparian areas, or solid and hazardous waste.

The analyses also show there will be no significant direct, indirect or cumulative adverse effects on land use, cultural resources, wilderness areas, biological resources, special interest wildlife and plant species, ground or surface water quality, earth and soil resources, air quality, or noise. Consultation with tribes regarding Native American concerns or traditional cultural properties have been initiated and will continue, but no specific conflicts have been identified. No significant impacts to minority or low income populations are expected to occur.

There will be socioeconomic benefits derived from the Project. In the short-term, the construction work force will increase revenues in the retail and service sectors of the economy. In the long-term, the available power interconnecting to the local electric grid will provide a more robust and reliable electric service system. This Project's peaking resource with quick start capability will offer ancillary service benefits to SRP and the control area to adjust to shifts in demand due to fluctuations in ambient conditions or generation outage scenarios. The Project will require approximately 13 operations and maintenance workers and will offer attractive long-term compensation for these personnel.

The Applicant therefore requests approval of this Application and submits that the Project and its location are environmentally compatible.

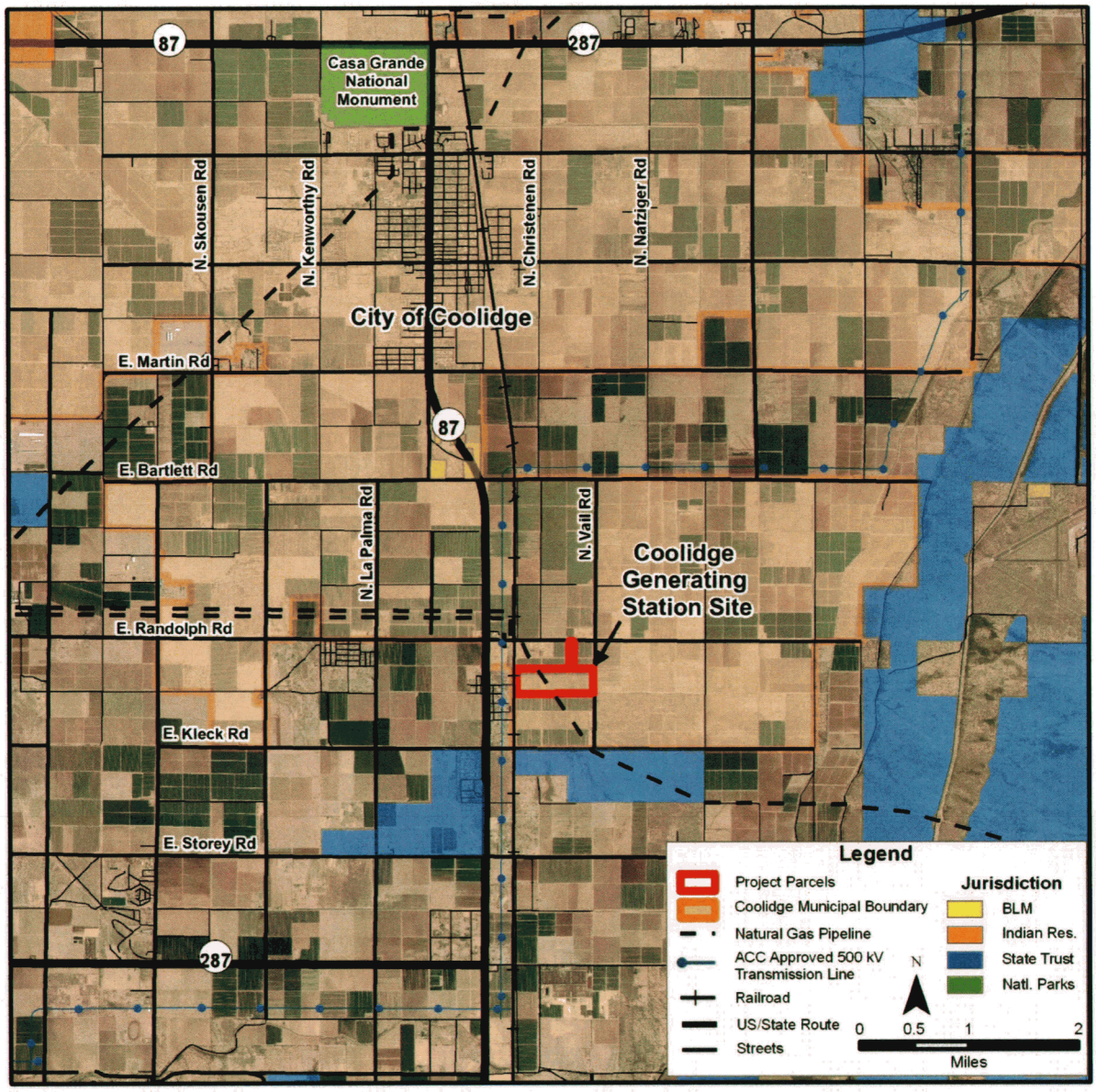

Figure ES-1

General Location of CGS Project

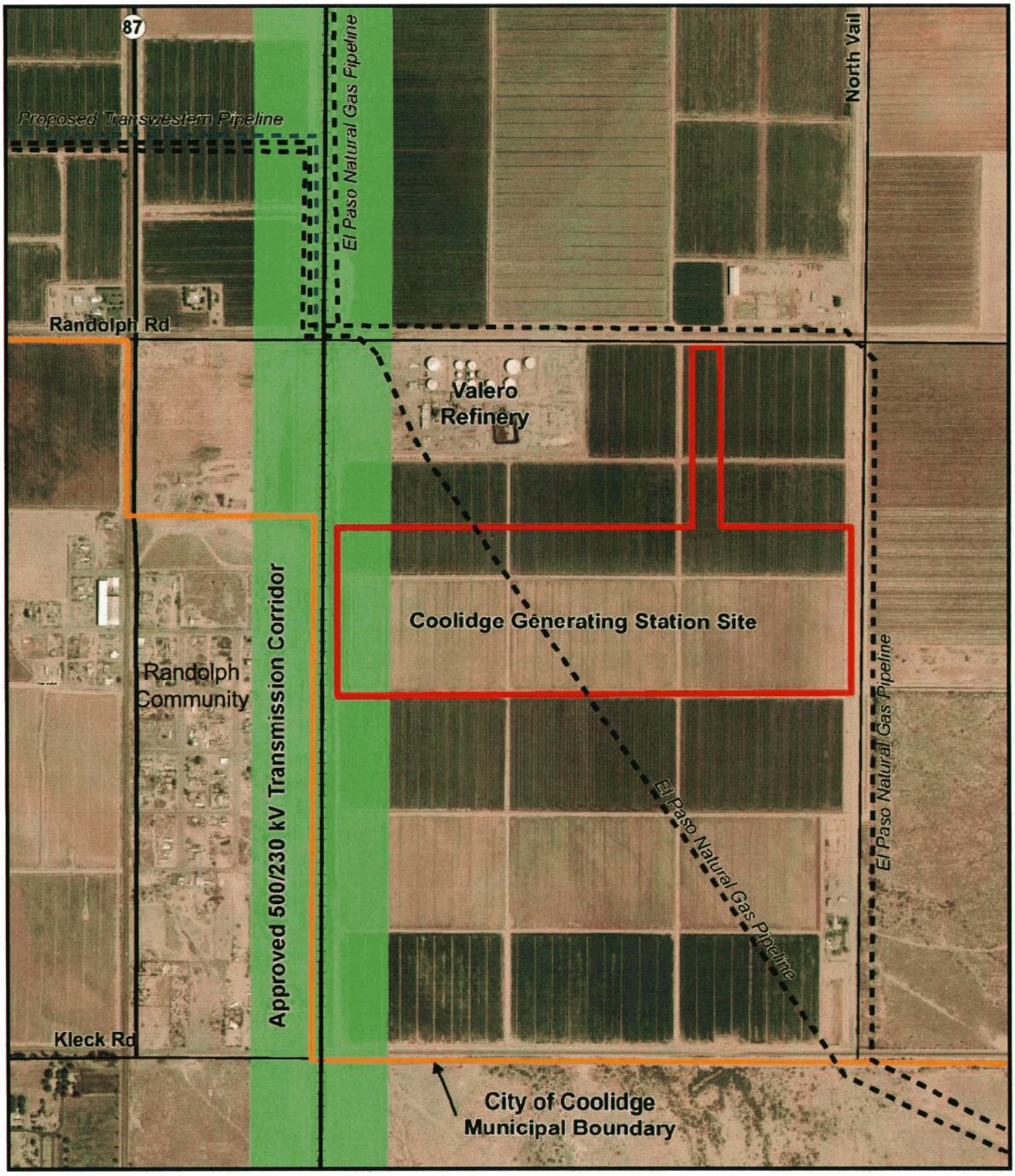

Figure ES-2

Aerial View of CGS Project Site

APPLICATION

APPLICATION

1. NAME AND ADDRESS OF THE APPLICANT:

Coolidge Power Corporation
450 1st Street S.W.
Calgary, Alberta T2P 5H1

2. NAME, ADDRESS, AND TELEPHONE NUMBER OF A REPRESENTATIVE OF THE APPLICANT 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. Brad Howard
Coolidge Power Corporation
450 1st Street S.W.
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Email: brad_howard@transcanada.com

With a copy to:

Mr. Jason Schulz
450 1st Street S.W.
Calgary, Alberta T2P 5H1
Phone: (403) 920-2238
Email: jason_schulz@transcanada.com

3. DATE ON WHICH THE APPLICANT FILED A PLAN IN COMPLIANCE WITH ARS §40-360.02, IN WHICH THE FACILITIES FOR WHICH THIS APPLICATION IS MADE WERE DESCRIBED:

Applicant filed the Plan on March 20, 2008.

4. DESCRIPTION OF PROPOSED FACILITY

a. ELECTRIC GENERATING PLANT

i) TYPE OF GENERATING FACILITY

The Coolidge Generating Station is a natural gas fired, simple-cycle power plant that will supply power during periods of peak electricity demand. The Project will be designed for daily start-stop peaking operation; however, if needed, the Project will also be able to operate continuously up to the limits of its regulatory permits. The Project will also be capable of providing utility operating reserves because of its rapid ten-minute start-up capability.

ii) NUMBER / SIZE OF PROPOSED UNITS

The Project will include twelve (12) General Electric (GE) LM6000 PC SPRINT NxGen combustion turbine generators (CTG). The Project will be designed to produce up to 575 megawatts (MW) [1] of net electrical output based upon the optimal coincident ambient air conditions of temperature and relative humidity (RH). The CTGs are capable of rapid start-up, allowing the Project to respond to fluctuations in electric demand within ten minutes.

Each of the 12 CTGs can produce up to approximately 48 MWs under optimal conditions referenced above. The Project will be designed to operate at output levels ranging from minimum turndown (50%) of a single CTG, through any combination of CTGs, up to all 12 generators in operation using full power augmentation. Therefore, the Project is expected to supply between approximately 25 and 575 MWs of power output under optimal conditions. When the Project's generation is most likely to be needed (during hot, dry summer conditions), however, the actual maximum net output would be lower.

Site Layout and Arrangement

Figure 4-1 depicts the proposed site layout and arrangement of the Coolidge Generation Station. The layout shows the relative sizes and locations of the proposed equipment and improvements on the Project Site, including access roads, the gas meter station, the 230kV electrical connection, the switchyard, the construction lay down area, and ponds for wastewater discharge and storm water management.

The generation facilities (commonly referred to as the "power island") will occupy approximately 30 acres of the 100-acre Site. A network of roads for fire equipment and maintenance access surrounds the generation equipment. The western ponds will occupy

[1] *Electrical output from a power generating facility such as the CGS Project is largely dependent upon three site specific variables; elevation, temperature, and relative humidity. In general, electrical output from this type of facility increases as elevation and temperature decrease, and relative humidity increases. Based upon the Project Site elevation, and assuming ambient conditions most favorable to electrical output, a maximum nominal output of 575 MW is expected for the CGS Project.*

approximately 25 acres. The temporary construction area for contractor facilities, construction parking, and equipment and material lay down (Temporary Construction Area) will be located in the area where the eastern ponds, if required, will be ultimately located and will cover a total of 30 acres.

Combustion Turbine Equipment

The LM6000 combustion turbines are two-shaft gas turbine engines derived from the core of the CF6-80C2 engine, which is GE's high thrust, high efficiency aircraft engine. The CF6-80C2 engine has logged more than 30,000,000 flight hours in the Boeing 747 and other wide-body aircraft.

These CTGs use state-of-the-art technology to efficiently burn clean natural gas with reduced nitrogen oxides (NO_x) and carbon monoxide (CO) emissions. Each CTG is equipped with water injection to the combustors to minimize the production of NO_x. In addition, selective catalytic reduction (SCR) systems will further reduce NO_x and CO emissions using a combination of catalysts and injection of 19 percent aqueous ammonia solution.

Each CTG will utilize power augmentation technology using GE's SPRINT (SPRay INTer-cooling) system, which enhances the efficiency and output of the LM6000 gas turbine engine by spraying micro-droplets of atomized water into the inter-stage air stream between the low pressure and high pressure compressors. The water is atomized to a droplet diameter of less than 20 microns by using inter-stage bleed air and special nozzles. As the droplets evaporate, the inter-stage air temperature is reduced and the mass flow is increased. This results in greater power output and better fuel efficiency.

The CTGs are housed in a metal enclosure to protect the units from the elements and reduce noise.

Air Intake System

The air intake system provides filtered air to the combustion turbine compressors. Inlet air evaporative cooling will be used to enhance gas turbine performance during times of high ambient air temperatures. Cooling and increasing the RH of the inlet air improves fuel efficiency and increases electrical output from the Units.

Performance and Operations Profiles

The CGS Project will provide power to SRP when other generation can not meet system demands. This typically occurs during periods of peak system electrical load or in the event existing generating resources are unavailable. As a peaking facility, the CGS Project will have the ability to dispatch any combination of the 12 independent CTGs in an hourly and/or daily start-stop mode. Unit start times are short, with each CTG capable of achieving full load output within ten (10) minutes of a Unit start. Each CTG will be independently controlled to produce from approximately 50 to 100 percent of full load.

The Project's design performance is presented as follows:

Condition	Temperature (F)	Relative Humidity (%)	Net Plant Output (MW)	Net Plant Heat Rate (Btu/kWh) (HHV)
Design Basis	103	17	512	9,987
High Temperature Day (w/ evap on)	122	11	495	9,964
Average Ambient Conditions (for max annual operating hours w/ evap enhancement on)	68	47	553	9,774
1% Probability Design Case	34	59	575	9,551

The amount of operating hours and startups for any individual Unit will depend upon the load and dispatch profiles of SRP, the customer for the entire output of the Project. Subject to the regulatory permits, the actual hours and startups occurring in a given year will be determined by SRP's need for peak power during that year. For purposes of predicting potential impacts, the analyses used a projected "worst case" operating profile for the CGS Project that assumes each CTG could operate up to approximately 3,200 hours per year at 100 percent load, as limited by the conditions of the regulatory permits. These annual hours along with the anticipated corresponding number of startups for each of the 12 units were used as the basis for air quality impact assessments.

Instrumentation and Controls

The Project will be operated from the on-site central control room using state-of-the-art monitoring and control systems. Each CTG will be controlled via the standard digital process control system provided by the CTG supplier, GE. The balance of plant systems will be controlled by a distributed control system (DCS). The DCS will interface with the control systems furnished by GE in order to provide supervisory remote control capabilities, as well as data acquisition, annunciation, and historical storage of Project operating information.

Operations and Maintenance Personnel

Project maintenance will be provided by Project operations and maintenance (O&M) personnel and major maintenance activities will be supported by contracted labor services or original equipment manufacturers' personnel. The Applicant will employ approximately 13 personnel for O&M services.

Emissions Control Equipment

Emissions from the CTGs will be controlled by use of clean burning natural gas, good operating combustion practices, and a combination of water injection, selective catalytic reduction (SCR) and an oxidation catalyst. Water is injected into the CTG combustion chamber to prevent the formation of NO_x. The SCR and oxidation catalyst are equipment designed to reduce the levels of NO_x and CO prior to the release of the exhaust gases to the atmosphere. After passing through these emission control systems, the exhaust gases will exit through the attached stack approximately 85 feet high.

The combustion gases exit the turbine at approximately 850°F under the design case; however, exhaust temperatures will range from approximately 660°F to 875°F depending on plant operations. The combustion gases then pass through the SCR system to reduce NO_x emissions and an oxidization catalyst to reduce CO and volatile organic compound (VOC) emissions. A19 percent aqueous ammonia (NH_3) solution by weight is injected into the CTG exhaust gas stream, which passes over a catalyst bed that reduces NO_x to inert nitrogen. The diluted NH_3 vapor will be injected into the exhaust gas stream via a grid of nozzles located upstream of the catalyst module. The subsequent chemical reaction on the catalyst will reduce NO_x to nitrogen and water. The SCR equipment includes a reactor chamber, catalyst modules, NH_3 storage system, NH_3 vaporization and injection system, and monitoring equipment and sensors. The NH_3 storage tank will be located within a concrete spill secondary containment berm.

Emissions Profile

The CGS Project will meet or exceed all applicable air quality requirements. Applicant is filing an application for an air permit from the Pinal County Air Quality Control District (PCAQCD). The information below is a summary of the information contained in that application. The permit application is attached as an appendix to **Exhibit B-1**.

As discussed above, the Project will control NO_x formation through water injection into the CTG combustors and reduce NO_x emissions through the use of an SCR system. CO and VOC emissions will be controlled through the use of an oxidation catalyst. Sulfur oxides (SO_x) and particulate matter less than 10 microns in size (PM_{10}) emissions are limited because the Project will use only pipeline quality natural gas.

The Project will comply with all permit conditions including annual emission limits prescribed for a synthetic minor air emission source. As per the regulations (PCAQCD Code of Regulations 3-3-203.2), as a minor source, the Project will be subject to the annual emission limit of 250 tons/year, for each of the priority pollutants (NO_x, CO, VOC, SO_x, PM_{10}). The Project will be operated within these annual emission limits and Applicant will operate with respect to full load and part load operating hours and startup and shutdown emissions all within these annual emission limits. More detail regarding the expected emissions from the CGS Project are provided in **Exhibit B-1**.

Noise Profile

The primary noise sources anticipated for the Project include the CTG air inlet, the CTG compartments, the exhaust ductwork, the stack, and the fuel gas compressors. Secondary noise sources are anticipated to include the generator step up (GSU) transformers and miscellaneous pumps, fans, and compressors. All equipment sound levels are estimated based on data available from the equipment manufacturers.

A detailed noise analysis was conducted to determine any potential noise impact from the Project. This noise analysis is presented in **Exhibit I**. The noise analysis demonstrates minimal impacts to the nearest residents.

Electrical Systems

The Project is designed to interconnect with the 230kV circuit of the certificated Pinal West to SEV / Browning 500/230 kV transmission line via a new switchyard to be constructed at the CGS Site.[2] The switchyard and interconnection to that transmission line will be constructed by Salt River Project (SRP). The overall electrical one-line diagram for the Project and the SRP switchyard and interconnection is shown on **Figure 4-2.**

Additional detail on the switchyard and transmission interconnection is discussed in section 4.b below.

Generator Output and Voltage Step-up Equipment

Each CTG will have an associated 13.8kV generator switchgear module. Each switchgear bus will have a generator circuit breaker, an auxiliary circuit breaker, and a direct connection to a GSU transformer. The Project will have six 230-13.8kV three-winding GSUs, which will each be connected directly to two CTG switchgear buses. The high-voltage side of the GSU transformers will connect to the new 230kV switchyard via overhead transmission lines described further in section 4.b, below.

Auxiliary Electric System

A 4160V electrical enclosure will house the 4160V motor control center (MCC) along with two 480V MCCs. The 4160V electrical enclosure will have two associated 13.8-4.16kV unit auxiliary transformers feeding the double-ended 4160V MCC and two associated 4160-480V station service transformers to feed the two 480V MCCs. A 480V electrical enclosure will house the 480V switchgear DCS, and battery and uninterrupted power supply (UPS) system. The 480V electrical enclosure will have two associated 4160-480V station service transformers to feed the double-ended 480V switchgear.

Power for starting the CTGs will be provided to the 480V level by back-feeding power from the switchyard via the Project's GSUs and auxiliary transformers.

Stormwater Management / Grading and Drainage

The existing Project Site is relatively flat. It contains two slope breaks creating three terraced elevations sloping down-gradient from east to west. During construction, excavated material from the wastewater ponds, stormwater pond, and major equipment excavations will be used to raise the general Site as needed to affect proper stormwater surface flow to the new on-site stormwater pond. The existing soils will be able to be ultimately reused on site as engineered fill. Imported fill is not anticipated to be needed. If needed, up to 10 acres of land owned by

[2] ***In order for SRP to construct the new 230kV circuit, the ACC must approve an updated study filing required by Condition 23 of the CEC issued for the PV-SEV 500/230kV transmission project in Docket No. L-00000B-04-0126, Decision No. 68093. That required study was filed by SRP on June 30, 2008, covering the above-identified segment of the new line to which CGS will interconnect. (That filing is in the same form and substance as a similar filing that SRP previously made pursuant to Condition 23 for another segment of the same transmission line, which analogous filing the ACC has approved.)***

Applicant's affiliated company and lying immediately adjacent to and south of the Project Site may be used for temporary excavated soils storage or related temporary construction facilitation.

On-site stormwater runoff will be routed to an on-site stormwater pond shown on **Figure 4-1** to prevent stormwater from leaving the Project Site. Runoff will be directed to the pond by swales, culverts, and sheet flow. Culverts will be used to carry stormwater under on-site traffic areas. Offsite runoff will be routed around the Project Site using berms and ditches if needed, consistent with existing off-site drainage patterns. Because no water from the Project will leave the Site, the Project will not require an AzPDES permit.

Balance of Plant

The sections below describe the balance of plant equipment and other primary systems for the Project. The fuel and water systems are described in separate sections 4.a.iii) and 4.a.v), below.

Fire Protection System

The Project will include a fire protection system that will employ an electric firewater pump with a diesel backup firewater pump. The firewater pumps discharge into an underground firewater loop that will circle the Project and provide water to fire hydrants and the fire suppression systems. The firewater pumps will be capable of supplying up to 2,000 gpm at 100 psig of water to the firewater loop. The project design will include a 2,300,000 gallon on-site raw water storage tank. A total of 240,000 gallons of water, or about 10% of the tank is dedicated to fire protection. This volume provides two hours of water supply, in compliance with NFPA guidelines.

The CTG enclosures will be protected by a carbon dioxide (CO_2)-based fire suppression system as supplied by the manufacturer, which includes excess heat and natural gas leak detection devices.

Ammonia Receiving and Storage System

An aqueous ammonia (NH_3) system will provide for the receipt, storage and delivery of 19 percent by weight aqueous NH_3 to the SCRs to reduce NO_x emissions. Aqueous NH_3 will be delivered to the Project Site via tanker trucks and deposited in an above-ground stainless steel 30,000 gallon storage tank. The NH_3 storage tank will be located within a concrete spill containment berm. From the tank, aqueous NH_3 will be pumped to each SCR where it will be vaporized and injected into the CTG exhaust flow up-stream of the oxidation catalyst to reduce plant emissions, as detailed in the emissions controls discussions.

Compressed Air

A compressed air system will provide both service air and instrument air throughout the Project. Service air is used primarily for maintenance activities. The instrument air system is used for the operation of control systems, primarily pneumatic valves. Three compressors will provide compressed air for the Project.

Turbine Inlet Air Anti-Icing System

During the winter months the potential exists for icing conditions as the inlet air enters the turbine compressor. Ice crystals entering the turbine intake could damage the turbine. Therefore, the Project will be provided with a closed loop hot water circulating system that will be used to provide heat to the turbine inlet air when needed to prevent ice formation. The system will use a bank of electric water heaters and circulation pumps. A 20% propylene glycol solution will be used for system freeze protection.

Turbine-Generator Lube Oil Cooling System

The turbine generators will be provided with a mechanical refrigeration lube oil cooling system. This system will also cool the plant air compressors. The refrigerant used will be either R123 or R134A, which are CFC-free refrigerants. A 20% propylene glycol solution is used for system freeze protection in this closed-loop system.

Lighting Systems

Outdoor area lighting for the Project will consist of permanently mounted fixtures secured to structures, equipment, walls and poles as required to provide safety lighting for plant operations and maintenance. This lighting will consist of efficient, high-pressure sodium (HPS) fixtures located throughout the facility, mounted on pendants, poles, stanchions, building columns, or walls. Outdoor lights will be automatically controlled by photocells with manual override capability.

The outdoor lighting system will be designed to provide nighttime lighting levels consistent with the Illuminating Engineering Society (IES) safety standards to allow basic operator movement throughout the power block. All outdoor lighting will also meet the dark-sky requirements of the City of Coolidge.

Site Access

Access to the Project Site will be via Highway 87 which runs north-south through the City of Coolidge. From Highway 87, the Project Site access road entrance is approximately 0.5 miles east on Randolph Road. Access to the Project will be controlled through a security gate located along the north boundary of the Project Site. A secondary access road will also be provided off North Vail Road that could be used for construction and fire safety access.

Transportation

All equipment, permanent materials and commodities for the Project will be transported to the Site via highways and local roads that are designed for the appropriate truckload designation. All equipment and material deliveries will utilize the Project Site access points described above.

Truck deliveries of equipment and materials will occur throughout the construction period and will continue to a much lesser extent over the life of the Project. Starting with the

commencement of construction, most truck deliveries will consist of construction equipment such as excavation equipment and cranes and materials including concrete and steel. Near the mid point of construction, truck deliveries will also include major plant components and heavy load equipment such as the 12 CTGs and six GSUs.

Interior Roads and Fencing

The finish surface on roadways and parking areas located within the Project Site will be pavement. Unpaved ground surfaces in and around the main equipment area will be covered with crushed stone or gravel. An eight foot, metal fabric security fence topped with barbed wire will enclose the entire Project Site and temporary construction areas.

iii) Source / Type of Fuel

The CGS will be fueled solely by pipeline quality natural gas. SRP will be responsible for the purchase and delivery of the natural gas fuel supply to the Project. Natural gas will be provided by the existing El Paso gas pipeline that crosses the Project Site (via a new compressor site being constructed just north of the Project Site) and the TransWestern Pipeline system that is being extended to a location proximate to the Project Site. Two independent fuel gas interconnection and measurement facilities will be constructed, each capable of providing fuel gas supply for the full range of Project operation, from standby to operation of a single unit at minimum turndown, to operation of all 12 units at full augmented power output. Gas quality and heating value at the Site boundary will meet all pipeline tariff requirements. The Project will include gas meters and controls to enable the simultaneous delivery of gas from both pipelines.

A metering station to serve the Project will be located west of the power island. From the metering station, gas will be piped to the gas conditioning and compressor equipment skids. The gas conditioning skids will filter gas particulates and remove moisture contained in the gas. The natural gas system line pressure is expected to range between 600 psig and 900 psig at the Project Site boundary. The combustion turbines require a minimum fuel supply pressure of 655 psig for full load operation. Gas compressors will be located on site and will be required to operate if the incoming fuel pressure drops below approximately 725 psig. Pressure reduction and control valves are used to regulate fuel pressure to the CTGs during periods of high incoming gas line pressure.

iv) Amount of Fuel Utilized

The Project will utilize an average of approximately 5,113 Million British Thermal Units (MMBtu) (HHV) of gas per hour; 81,800 MMBtu per 16-hour day, and 122,700 MMBtu per 24-hour day.

v) Type of Cooling / Source of Water

As a simple-cycle gas-fired generating facility providing peak power during times of high demand, the CGS Project will have no steam cycle and will, therefore, utilize only a relatively small amount of water.

Type of Cooling

The 12 LM6000 CTGs will be air-cooled. The closed-loop lube oil cooling system described in Section 4.a.ii above will use a glycol-based coolant, circulated through a mechanical chiller which cools the glycol and exhausts the heat to the atmosphere. The balance of plant equipment will also be air-cooled.

Water Use Requirements

Water will be used by the CGS Project for two primary purposes:

- Preventing the formation of air emissions:
  - Water will be injected into the CTG combustors to prevent the formation of air emissions (specifically to prevent the formation of NO_x)

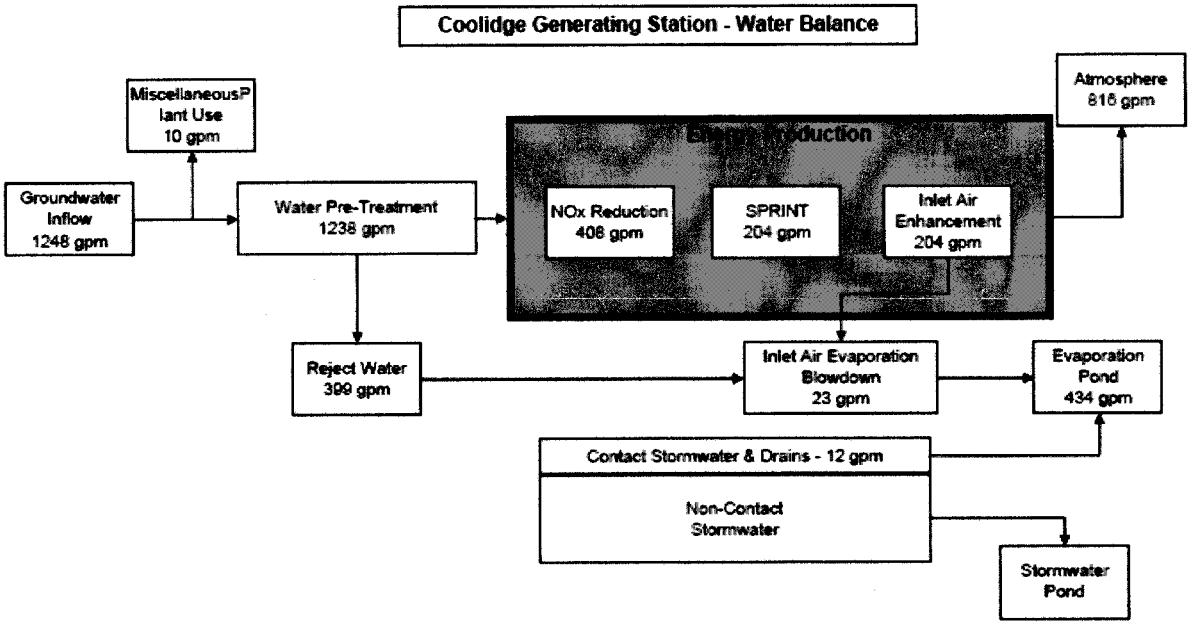
- Increasing fuel efficiency and power output of the CTGs:
  - Water will be used in an evaporative system to increase the humidity and reduce the temperature of the inlet air stream into the turbine combustors. The resultant increase in mass flow to the turbine combustion stage increases fuel efficiency of the turbines and electrical output of the generators.
  - Water will also be used in the SPRINT system, which sprays micro-droplets of water into the inter-stage air stream where the droplets will evaporate, reducing the air temperature and increasing the mass flow of air through the turbine, thereby also increasing the electrical output of the generators.

At the design ambient temperature of 103°F, approximately 1,250 gpm of raw water will be required for process water supply if all 12 CTGs are running at full capacity. Based on theoretical projected Unit-hours of operation consistent with the anticipated limitations of the regulatory permits, the Project could theoretically require up to 736 acre-feet/year; however, at a more likely annual operating profile, the water requirement is expected to be approximately 140 acre-feet /year.

Below is a water balance diagram that illustrates the anticipated water uses and corresponding flow rates to various components in the CGS Project if all Units are operating at full output as discussed above.

Source of Water

Water for the Project will be provided from wells to be drilled on the Project Site. The on-site wells are expected to be approximately 500 feet deep, cased to a depth of approximately 350 feet, and capable of each producing approximately between 1,200 and 1,500 gpm of continuous



flow. The Project will have rights to approximately 276 acre-feet/year of Type 1 grandfathered groundwater rights created by conversion of the irrigation grandfathered rights appurtenant to the irrigated farmland comprising the Project Site. If SRP's dispatch of the CTGs in any calendar year requires additional water beyond that allowable to be pumped under the Type 1 Rights, SRP will provide the necessary additional water in the form of the recovery of long-term storage credits banked by recharging Central Arizona Project (CAP) water in the Pinal AMA. In any event, the Project's entire use of groundwater will be offset with a portfolio of renewable water consisting of banked CAP water.

Water Treatment

The water injected into the CTG for NO_x control and SPRINT power augmentation must be demineralized water and be free of contaminants. Well water will be filtered and further treated by 2-stage reverse osmosis (RO) and final mixed bed demineralizers, then sent to two demineralized water storage tanks. The mixed bed demineralizers will be leased from a vendor who will replace the equipment, when the mixed beds have become exhausted, and remove and regenerate the equipment at a licensed commercial facility.

Makeup water to the turbine inlet air evaporative cooling system must also be of high quality. . The product water from the first stage RO units will be sent to a dedicated water storage tank from which the makeup water will be supplied. The following water treatment related chemicals are anticipated to be used on the Site:

Chemical	Use	Amount Stored	Storage Method
Sodium hypochlorite	Biocide addition to well water storage tank	200 gallons	Portable tank
Polymer	Injection upstream of multi media filters to aid in filtration	200 gallons	Portable tank
Coagulant	Injection upstream of multi media filters to aid in filtration	200 gallons	Portable tank
Potassium permanganate	Injection upstream of multi media filters to aid in filtration	200 gallons	Portable tank
Anti-Scalant	Injection upstream of RO units for scale control	200 gallons	Portable tank
Sulfuric acid	Injection upstream of RO units for scale control	200 gallons	Portable tank
Sodium bisulfite	Injection upstream of RO units for chlorine removal	200 gallons	Portable tank
Caustic	Injection upstream of second pass RO units for CO2 control	200 gallons	Portable tank
RO membrane cleaning chemical	Injection upstream of RO units for membrane de-scaling	200 gallons	Portable tank

Wastewater

There will be process wastewater streams from the Project's RO system reject and the CTG inlet air evaporative cooler system blowdown. The wastewater will be piped to the wastewater evaporation ponds located on the Site.

The wastewater ponds will have sufficient storage and evaporating capacity to accommodate the Project's wastewater expected over the design life of the Project. The initial evaporation pond system will have a total capacity of 31,600,000 gallons (4,226,200 cubic feet) split between two 5-acre ponds, each 12 feet deep, on the western portion of the Site. Additional wastewater ponds have been designed and may be constructed on the eastern portion of the Site, if needed. The location and size of the wastewater ponds is shown on the Site Layout on **Figure 4-1**.

The pond design will meet the Best Available Demonstrated Control Technology (BADCT) requirements associated with the Aquifer Protection Permit (APP) that will be issued by the Arizona Department of Environmental Quality (ADEQ) for the Project. The ponds will double lined using a 60 mils thickness HDPE for both the primary and secondary liners. The design will also include a leak detection system using the leak detection sump method with an observation well.

The maximum flow to the ponds while operating is expected to be approximately 434 gpm. Applying the maximum flow rate to the expected range of annual operations (600-1200 hours per year) the facility would produce between 15,600,000 and 31,200,000 million gallons of wastewater per year. The Project will also generate a negligible waste stream from plant drains that will be directed to the oil/water separator, and then discharged to the wastewater system. Wastewater generated from CTG compressor washing will be collected in an underground tank before it is trucked off-site for disposal at a licensed facility.

vi) Proposed Height / Number of Stacks

There will be 12 exhaust stacks, one for each of the 12 CTGs. Each of the stacks will be approximately 85 feet in height above power island grade level and 10.5 feet in diameter. The stacks will be equipped with continuous emissions monitors (CEMS) and test connections for performance monitoring.

vii) Dates for Scheduled Start-up / Operation

It is estimated that the Project will start commissioning September 1, 2010, and will begin full commercial operation on May 1, 2011.

The field construction schedule from site mobilization to commercial operation for the CGS Project is expected to be 17 months. The key Project schedule milestones are presented in **Table 4-1**.

TABLE 4-1
ANTICIPATED PROJECT SCHEDULE

Action	Date
Submit Application for CEC	August 2008
All Permits Complete	3rd Quarter 2009
Onsite Construction	3rd Quarter 2009 through 2nd Quarter 2010
Commissioning	3rd Quarter 2010 through 1st Quarter 2011
Commercial Operation	May 2011

The monthly construction labor force requirements for the Project are presented on **Table 4-2.** This projection includes all personnel, including owner's representatives, required to complete construction of the Project, including overall Project and site management, laborers, skilled craft, and startup personnel. Reasonable effort will be made to draw skilled craft and laborers from the local area to the extent available, with construction management and startup functions provided by relocated personnel from the Engineering, Procurement and Construction (EPC) contracting firm.

viii) Estimated Costs of Facilities / Site

Facilities Cost

The CGS Project will cost approximately $500 million. This includes the price of the land (see below), CTGs and associated emissions control and power augmentation systems, gas compressors, transformers, gas, water and electric interconnection facilities and all ancillary balance of plant equipment, as well as all civil works, construction labor, construction materials, and engineering. In addition, the Project cost includes the cost estimates for gas and electric interconnections performed by the interconnecting utilities and Applicant's costs for development and insurance.

Site Cost

The cost of the 100-acre Site for the CGS Project was $5 million and is included in the total Project cost of $500 million above. This price includes the appurtenant water rights acquired with the land.

ix) LEGAL DESCRIPTION OF PROPOSED SITE

The Project will be located on an approximately one hundred (100) acre parcel located within the East ½ and East ½ of the West ½ of Section 10, Township 6 South, Range 8 East, G&SRB&M, lying east of and adjacent to the Southern Pacific Railroad right-of-way. The GSU-to-switchyard electrical interconnection, and the switchyard to be constructed by SRP, also will be located wholly within this parcel referred to as the Project Site.

b. ELECTRICAL INTERCONNECTION

The CGS will interconnect electrically to the 230kV circuit on SRP's certificated Pinal West -- SEV/ Browning 500/230 kV transmission line.

The electrical interconnection lines and associated tower structures spanning from the Project GSU transformers to the switchyard will be developed by Applicant as further described in subsections 4.b.i – v, below, and are included in the Project CEC requested by this Application.

The switchyard and the interconnection from the switchyard to the Pinal West – SEV/Browning transmission system, however, will be developed by SRP. Those SRP-owned facilities are not covered by the CEC requested by this Application. Nevertheless, Applicant provides some general description of those facilities for the information of the Committee and the Commission.

A 230 kV switchyard, to be named the Randolph Switchyard, will be constructed by SRP on approximately 7.5 acres within the western-most portion of the CGS Project Site, as depicted on the Project Site Layout, **Figure 4-1**. The switchyard will lie within a single span of conductors from the Pinal Central-Dinosaur 230 kV line. Because the switchyard will be connected to the transmission system by a single-span in/out loop between a drop pole and an end structure, the SRP switchyard and connection facilities do not require a CEC.

The Randolph Switchyard is scheduled to be in service on September 1, 2010, for 100MW of export capacity, and October 1, 2010 for full export of CGS testing power subject to a temporary Remedial Action Scheme (RAS). The switchyard interconnection will initially be configured as a temporary radial feed from the Dinosaur 230kV substation. The permanent in/out interconnection of the Randolph Switchyard is scheduled to take place prior to May 1, 2011 to facilitate the construction and 2011 in-service date of the remaining portion of the Pinal Central -- Dinosaur transmission line, (approved as part of the Pinal West – SEV/Browning line, Case 126, CEC Decision Nos. 68093 and 68291). The temporary RAS will not be required after completion of the permanent in/out interconnection.

The switchyard will include six 230kV breakers, switching equipment, buswork, control building and other related 230kV switchyard components, arranged in a breaker-and-a-half configuration and enclosed within a high-security fence.

All of the facilities comprising the switchyard, and the single-span, loop-in-and-out of the Pinal Central-Dinosaur 230kV line connecting to the switchyard, will be constructed, owned and maintained by SRP, independent from the CGS Project.

Figures 4-3 through **4-5** illustrate the proposed structures, relative positions and alignments of the switchyard and the interconnecting loop of the future Pinal Central -- Dinosaur 230 kV line. **Figure 4-3** depicts the drop pole structure from which the Pinal Central -- Dinosaur 230kV line will loop in and out of the switchyard. **Figure 4-4** depicts the proposed general arrangement of the switchyard. **Figure 4-5** is an elevation drawing depicting the switchyard, drop pole, and single-span loop of the 230kV lines.

These depictions are representative of the site, structures, and arrangement at the time of this Application. Detailed engineering analysis and final design of the facilities may require changes to the structures and arrangements to meet clearance, safety, and other industry accepted standards.

i) Nominal Voltage

The interconnection between the Project GSUs and SRP's switchyard will be made at 230kV. The location of this interconnection line is shown on the Site Layout plan (**Figure 4-1**). The interconnection will include three 230kV circuits constructed on triple-circuit single tubular steel pole structures. The representative configurations of the proposed structures are shown on **Figure 4-6**.

ii) Description of Endpoints

The two endpoints for this short interconnection line are the collection point for the 6 GSUs within the Project's power island and the new switchyard that will be built by SRP at the western edge of the Project Site. The straight-line distance between these two points is approximately 1400 feet. The length of the interconnection line is approximately 1500 feet.

iii) Right-of-Way Width

No right-of-way will be required for the lines connecting the GSU to the switchyard because these facilities will be located wholly on the Project Site.

There will be four (4) structures associated with this interconnection line – a structure where the generator output from the 6 GSUs is collected, two triple-circuit 230kV structures, and a structure located at the switchyard from which the lines will drop into the switchyard. The longest span is approximately 700 feet.

The triple-circuit structures will be tubular steel poles about 100 to 130 feet tall. They will have multiple arms on each side, approximately 17 feet apart to support the conductors, and will also utilize an overhead ground wire used for lightning protection. **Figure 4-6** shows a schematic of the pole structure.

The conductors will be a minimum of 50 feet above ground.

iv) Estimated Costs

The costs for these interconnection lines are included in the overall Project costs provided in section 4.a.viii above.

v) Description of proposed route and switchyard locations

The route for the interconnection line is located wholly on the Project Site and is shown on **Figure 4-1**. The switchyard is located on the western side of the Project Site.

vi) Ownership percentages of land traversed by the route

All land crossed by the electrical interconnection line between the GSU and the switchyard is on the Project Site and is owned by Applicant.

5. *Areas of Jurisdiction*

This section describes the areas of jurisdiction (as defined in ARS §40-360) that would be affected by the CGS Project Site. The Project is located wholly within the City of Coolidge on private lands within an area that the City recently rezoned for industrial uses. This zoning designation is consistent with the proposed use for electric generation facilities. Because the Project Site is adjacent to unincorporated areas, Pinal County and individual residents of these nearby areas have also been consulted.

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

Applicant has engaged expert consultants who have conducted field studies and impact evaluation of the proposed Project. Evaluation of the existing environment was conducted for land use, air quality, visual resources, soils, biological resources, cultural resources, and noise. Potential environmental effects of implementation of the Project were also assessed for each of these resources.

Environmental studies of the Project area began with the collection of existing environmental data including literature, maps, and other agency data. Interviews were conducted with appropriate agencies and organizations. Scoping to identify issues was conducted with the public and interested agencies. Field studies on the Project Property were conducted by several resource specialists.

Potential environmental effects from construction and operation of the CGS Project are discussed in **Exhibits A through F and Exhibit I**.

Several individuals and agencies identified in **Exhibit J** were contacted to solicit input on the Project. Some agencies and individuals have provided written comments on the Project. A list of all entities that were provided briefings about the Project is provided in **Appendix J-1. Appendix J-2** provides information about the two stakeholder workshops that were conducted to discuss the Project. **Appendix J-3** contains copies of the materials provided and input received during the two open houses that were conducted to solicit input from the public. **Appendix J-4** describes the door-to-door outreach that was conducted in the immediate vicinity of the Project.

The analyses of the CGS Project determined that the following critical elements are not present or will not be affected by the proposed action: wild and scenic rivers, areas of critical environmental concern (ACEC), wetlands or riparian areas, floodplains, and hazardous or solid wastes.

The environmental analysis of the Project indicates there will be no significant direct, indirect, or cumulative impacts on land use, cultural resources, wilderness, and biological resources including any species of special concern, earth resources, air quality, or noise as a result of implementation of the CGS Project. The Project will not have negative effects upon sensitive airsheds such as non-attainment and Class 1 areas. Consultation concerning Native American concerns or traditional cultural properties has been conducted and no concerns have been identified. No significant impact to minority or low-income communities has been identified.

Coolidge Power Corporation therefore affirms, upon thorough, expert scientific environmental investigation and analysis, that the Coolidge Generating Station and its site are environmentally compatible, and respectfully requests the Committee to issue its Certificate of Environmental Compatibility for the Project at the proposed Project Site.

Coolidge Power Corporation

By: Joe Cash

Mr. John Cashin
Authorized Officer

ORIGINAL and 24 copies of the foregoing hand delivered and filed with the Director of Utilities, Arizona Corporation Commission, this 8th day of August, 2008.

Table 4-2
Construction Workforce Projection

Year	2009					2010												2011				
Month	**A**	**S**	**O**	**N**	**D**	**J**	**F**	**M**	**A**	**M**	**J**	**J**	**A**	**S**	**O**	**N**	**D**	**J**	**F**	**M**	**A**	**M**
Manpower Estimate																						
EPC Contractor																						
• Directs	5	10	22	53	67	61	108	139	149	165	170	164	149	154	144	125	86	35	10	10	5	5
• Indirects	5	31	30	42	42	43	43	41	41	41	41	41	41	41	41	41	41	41	54	54	54	19
• Subs	15	15	15	15	10	10	10	10	10	5	5	5	5	6	6	6	5	5	5	5		
Owner / Operator Staff																						
• Construction Staff	8	8	8	8	8	8	8	8	10	10	10	10	10	10	10	10	10	10	12	12	12	12
• Commissioning Staff														1	1	1	1	1	1	1	1	1
• Operations Staff						1	1	1	1	5	5	5	5	5	5	5	5	5	5	5	5	5
Total	33	64	75	118	127	123	170	199	211	226	231	225	210	217	207	188	148	97	87	87	77	42

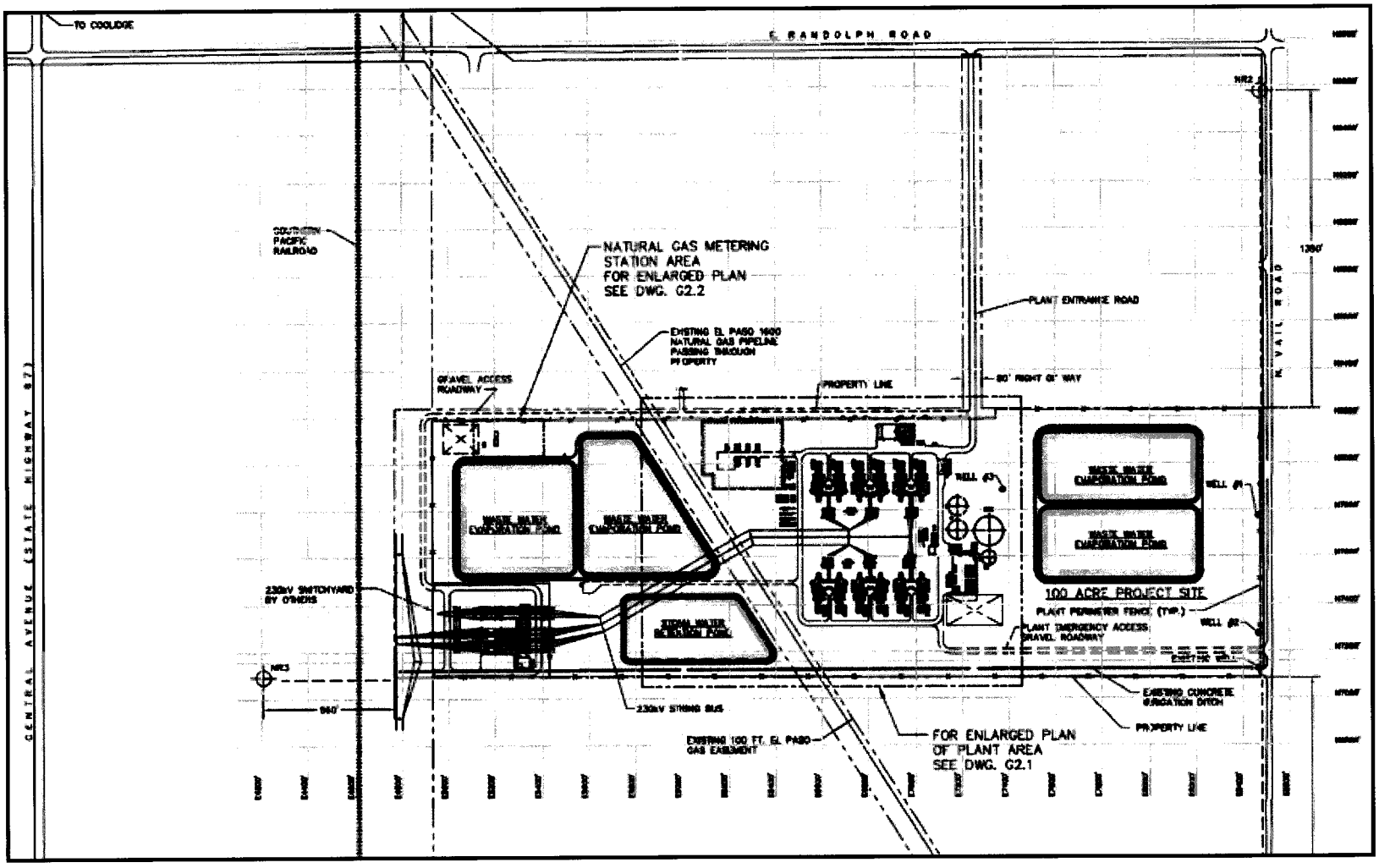


Figure 4-1

Coolidge Generating Station

Site Layout

TRANSFORMER TABLE	
0XT701 – 0XT706	230–13.8KV, Y–Δ, 90/120/150MVA X: 45/60/75MVA, Y: 45/60/75MVA ONAN/ONAF/ONAF, 65°C, 3ϕ, 60HZ
0XT711 – 0XT761	13.8–0.48KV, Δ–Y, 3500KVA, ONAN, 65°C, 3ϕ, 60HZ
00T701 & 00T702	13.8–4.16KV, Δ–Y, 5000/7500KVA, ONAN/ONAF 65°C, 3ϕ, 60HZ
00T771 & 00T781	13.8–0.48KV, Δ–Y, 3500KVA, ONAN, 65°C, 3ϕ, 60HZ
00T772 & 00T782	4.16–0.48KV, Δ–Y, 2500/2875KVA, ONAN/ONAF 65°C, 3ϕ, 60HZ
00T773 & 00T783	13.8–0.48KV / 0.48KV, Δ–Y, 4700/5200/6800KVA, ONAN 55/ONAN 65/ONAF 65

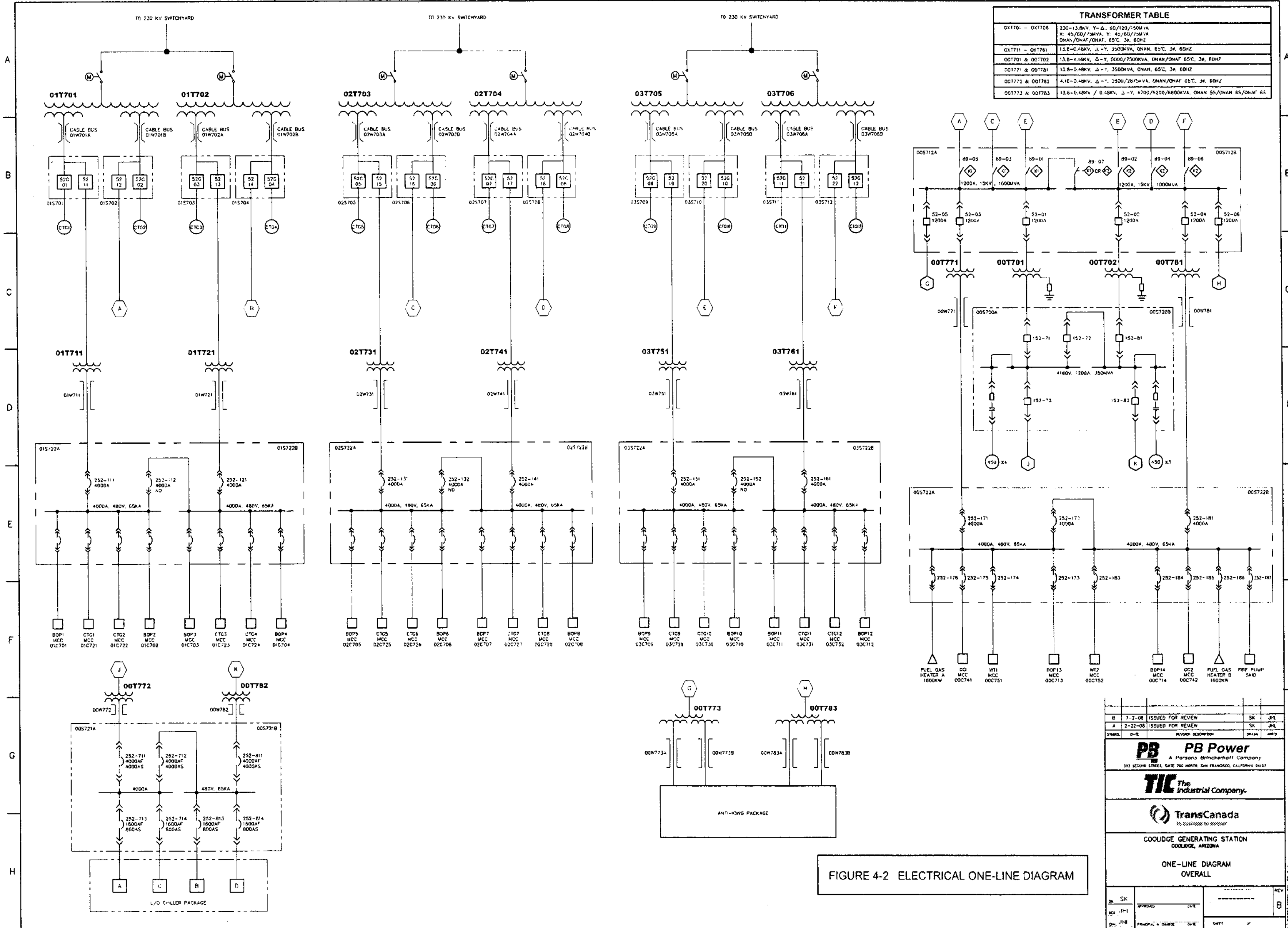


FIGURE 4-2 ELECTRICAL ONE-LINE DIAGRAM

B	7-2-08	ISSUED FOR REVIEW	SK	JHL
A	2-22-08	ISSUED FOR REVIEW	SK	JHL

PB Power
A Parsons Brinckerhoff Company

TIC The Industrial Company

TransCanada

COOLIDGE GENERATING STATION
COOLIDGE, ARIZONA

ONE-LINE DIAGRAM
OVERALL

REV B

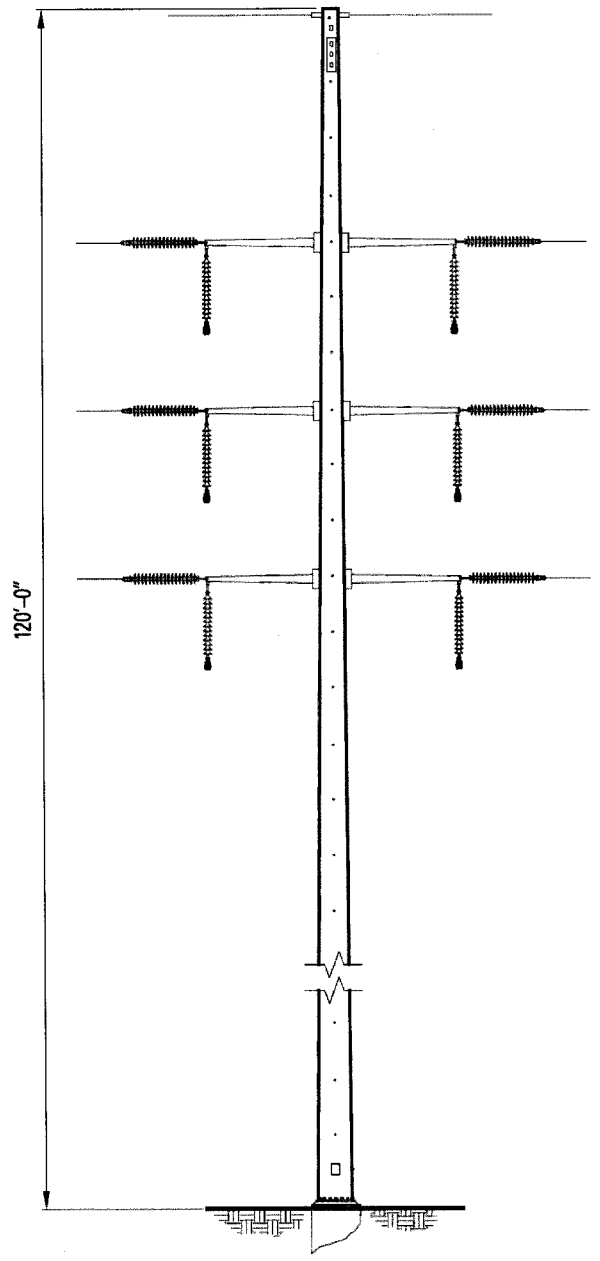


Figure 4-3

Drop Pole Structure

Pinal Central-Dinosaur 230kV Line to Randolph Switchyard

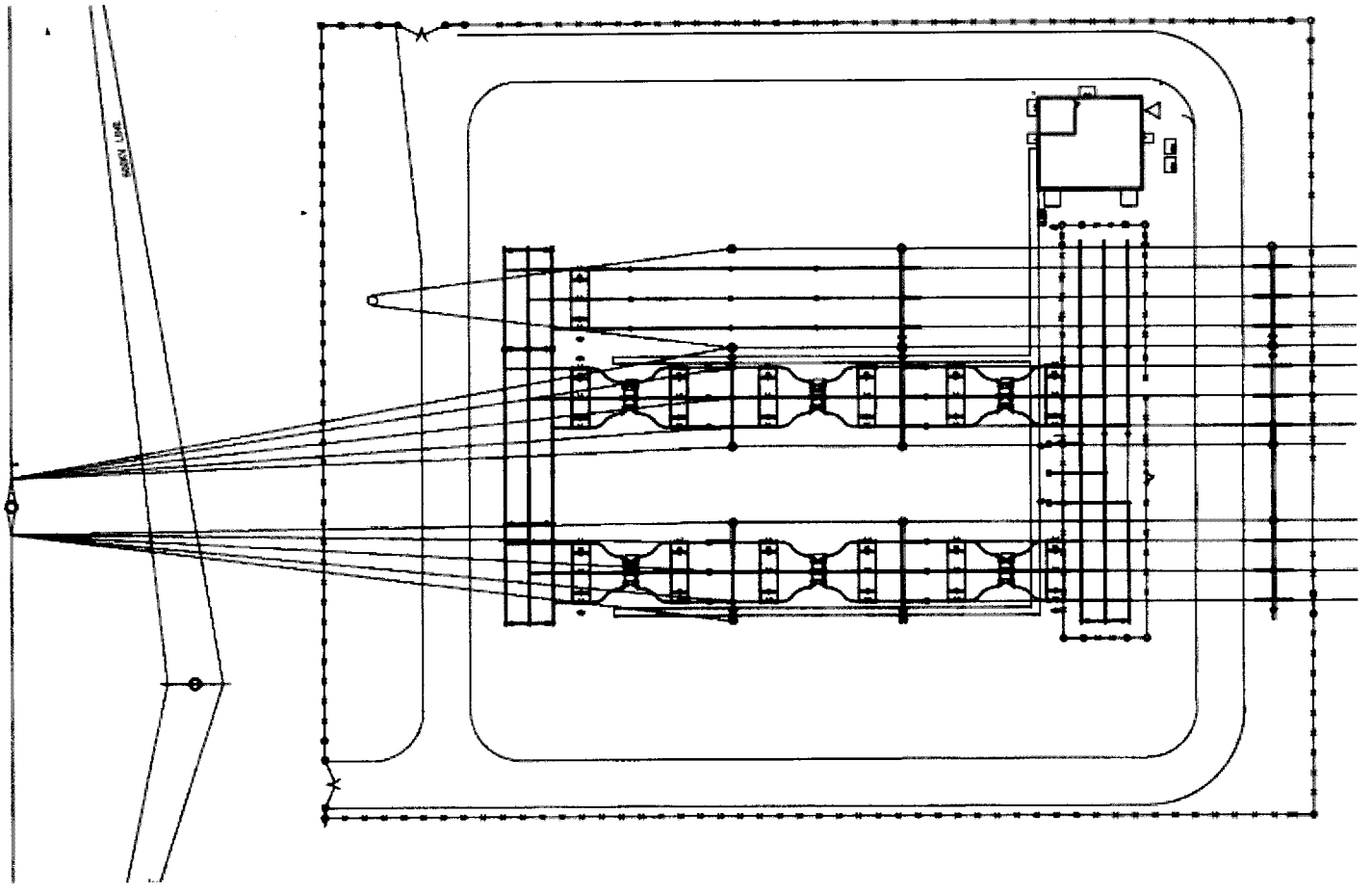
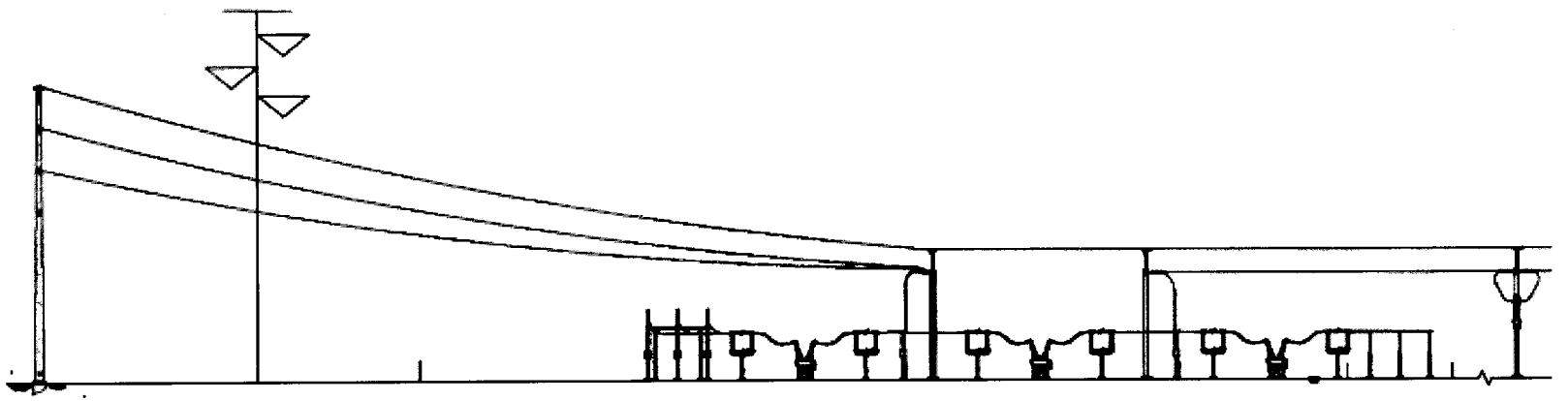


Figure 4-4

General Arrangement of Randolph Switchyard



Elevation Looking North

Figure 4-5

Elevation Drawing

Randolph Switchyard and Transmission Interconnection

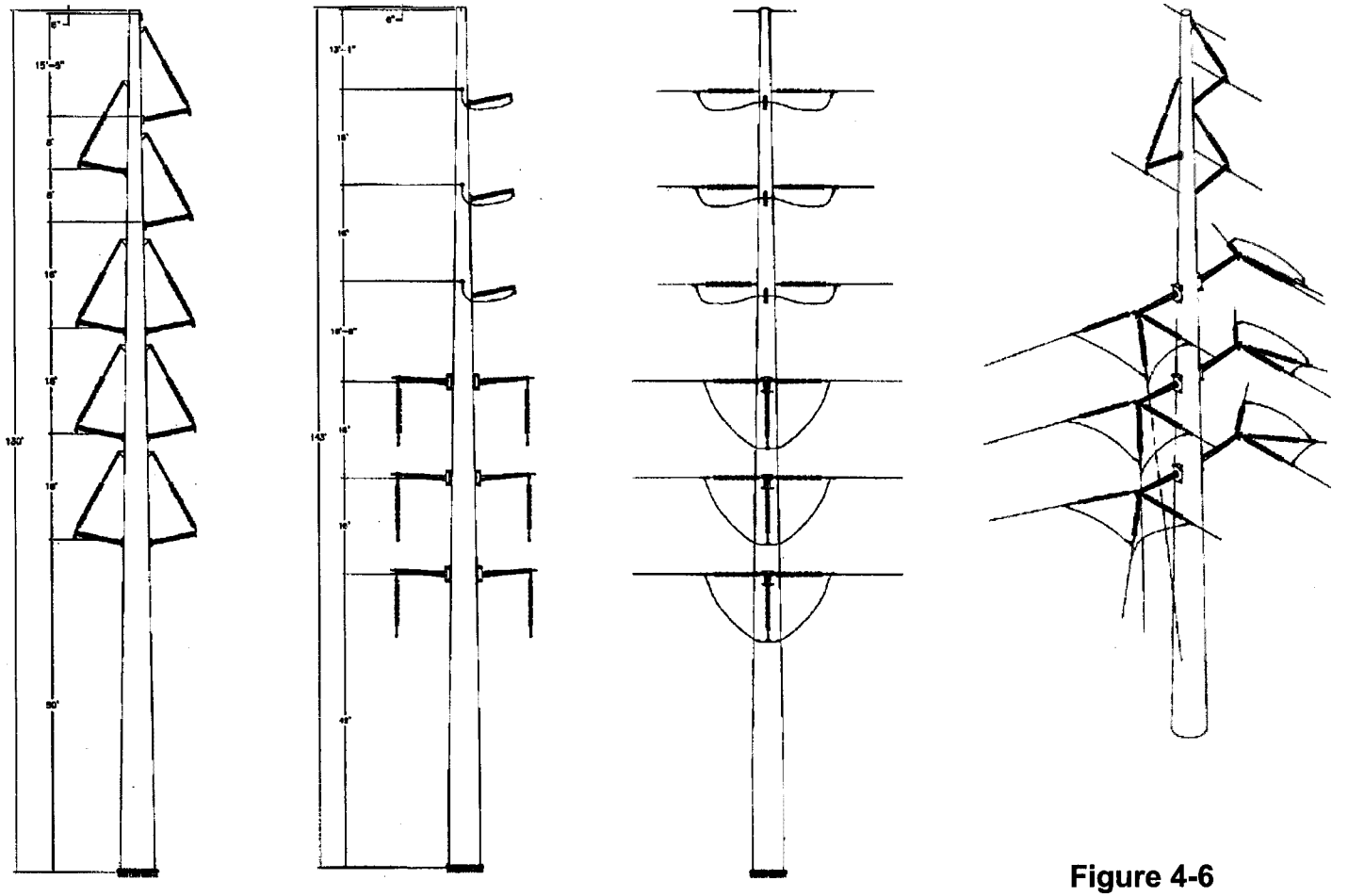


Figure 4-6

Transmission Interconnection Structures
GSU to Switchyard

EXHIBIT
A

EXHIBIT A – PROJECT LOCATION AND LAND USE

As stated in Arizona Administrative Code R14-3-219:

> *"Where commercially available, a topographic map, 1:250,000 scale, showing the proposed plant site and the adjacent area within 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 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."*

PROJECT LOCATION

Figure A-1 depicts the Project Site and jurisdictions within a 20 mile area.

Figure A-2A depicts the Project location on a topographic map (1:62,500 scale) within a 20 mile area and **Figure A-2B** depicts the Project location within a larger area.

Figure A-3 depicts land use plans within two miles of the Project Site (1:62,500 scale).

Figure A-4 depicts land use plans within two miles of the Project Site (1:62,500 scale) on an aerial photograph.

The Coolidge Generating Station is located within the corporate limits of the City of Coolidge, which is located within Pinal County. **Figures A-1 and A-2** depict the regional area and specifically the location of the CGS Project and the municipal jurisdiction boundaries within 20 miles of the Project Site.

Existing land uses within two miles of the Site include existing industrial uses and medium density residential and mixed use west of the Site, which is the unincorporated community of Randolph. Other additional land uses within two miles of the Site include agricultural lands (both inactive and active), vacant land, and scattered low density residential.

Major transportation corridors include the Union Pacific Railroad (UPRR) rail line that runs north-south immediately west and adjacent to the Site's western boundary, and State Highway Route (SR) 87 that also runs north-south a short distance west of the UPRR. North Vail Road is a north-south local road located at the eastern edge of the Project Site. The east-west local roads near the Site are Randolph Road, located to the north of the Project Site, and Kleck Road, to the south.

The Project will interconnect with the recently certificated SRP double-circuit 500/230kV transmission line located along the UPRR alignment. The SRP line was certificated by the ACC Decision No. 68093.

JURISDICTIONS / LAND OWNERSHIP

Jurisdictions regulating land use within the vicinity of the Project include the City of Coolidge and Pinal County. The Project Site is private land owned by the Applicant. As indicated above, the Site and all interconnections are located immediately proximate to the site and entirely within the City of Coolidge. Downtown Coolidge is located approximately four miles north of the Project Site.

Pinal County has jurisdiction within the vicinity of the Project, south of Kleck Road and west of the UPRR.

The City of Coolidge has a current population of approximately 8,000 people. Pinal County has an estimated population of over 270,000. Both the City of Coolidge and Pinal County have experienced significant growth in the past 10 years.

A portion of the unincorporated community of Randolph is located west of the Project Site between the UPRR and SR 87. During the public outreach process for the CGS Project, team staff went door to door to discuss the Project and invite the residents of that area to the Open House held in June. During this effort, close to 100 possible dwelling units were counted. Because the Randolph community is unincorporated, there are no published population numbers; but it is estimated the community has approximately 200 to 250 residents based on conversations with City and County officials.

LAND USE PLANS

Land use information was gathered from the City of Coolidge and Pinal County for the area near the CGS Project. The following summarizes the General Plan land use designations within and adjacent to the Project Site. This discussion includes the land use designations reflected in the most currently available land use plans from each affected jurisdiction.

CITY OF COOLIDGE

Land use guidelines for lands within the incorporated and planning area boundaries of Coolidge are included in the Coolidge General Plan (City of Coolidge 2007). As depicted on **Figure A-3**, the land use elements designated by Coolidge within the boundary of the Project Site are:

- *Industrial – Denotes areas that may include service, office, manufacturing, distribution, wholesale or commercial and utility employment centers. Limited retail is allowed as an accessory use. Industrial land use districts are generally located along the Southern Pacific Railroad or arterial streets along regional transportation routes.*

- *Commerce Park – Denotes areas for office and light industrial uses, including high technology and research and development firms. This classification encourages an attractive campus-style environment. Developments within this classification may include employee-oriented, on-site amenities and accessory uses.*

Other Land Uses within the vicinity of the CGS Project that are administered by the City of Coolidge include:

- *Low Density Single-Family Residential – Denotes areas where large lot single family residential development is suitable, based upon location, improved access and available infrastructure. Gross residential densities will be limited from one to four dwelling units/acre (1-4 du/acre), with the desired average density of 2.5 du/ac.*

- *Medium Density Single-Family Residential – Denotes areas where smaller lot single-family and townhouse development is suitable. These districts are located in proximity to schools, shopping and employment. Gross residential densities will range from four to eight dwelling units/acre (4-8 du/ac), with the desired average density of 6 du/ac.*

- *Regional Mixed Use – Denotes areas that are appropriate for development as Regional Mixed Use (RMU). RMU areas typically comprise 200 acres or more and are located outside of the traditional central business district. The intent of RMU is to allow for large scale projects that will attract Coolidge residents, residents within Pinal County and the entire region between the Phoenix and Tucson metropolitan areas. The designation is intended to accommodate a wide range of developments and uses including, but not limited to, those department stores or other uses commonly referred to as Power Center/Big Box retail users of a type and size typically located within a regional commercial shopping area, retail outlets and other complementary and ancillary uses.*

- *Neighborhood Commercial – Designates areas for limited shopping and basic services for the immediate neighborhood, and are generally no larger than five (5) acres. Neighborhood Commercial uses are typically, but not always, located along minor or major arterials. Small scale retail and service uses, under 25,000 square feet per user or stand-alone building, are permitted.*

In addition to its current municipal boundary, the City of Coolidge has a planning area boundary that denotes future land uses. **Figure A-4** shows the land use designations for the City of Coolidge Planning Area within two miles of the Project Site.

PINAL COUNTY

Land use guidelines for private lands within the unincorporated portions of the area around the CGS Site are included in the Pinal County Comprehensive Plan (2001). As depicted on **Figure A-3**, the land use elements within the area administered by Pinal County as follows:

- *Rural Community – The Rural Community Area designation is a growth area that currently maintains a rural lifestyle which will provide goods, services and increased residential uses. Growth of these areas tends to be slow to moderate, and should be based on the availability and capacity of public services, facilities, and infrastructure.*

- *Transitional Area – The Transitional Area designation is for those areas currently rural in character but which are anticipated for growth in the future. These areas could sustain uses consistent with the Urban, Industrial, Rural, Foothills, or Rural Community designations. The purpose of the Transitional Area designation is to encourage the retention of existing parcels of land in large tracts for potential development. Until further development, these areas will retain their rural lifestyle. Current activity may include farming, grazing or vacant land.*

POTENTIAL EFFECTS

Generally, the CGS Project would be consistent with the existing and future land use designations for the Project Site and the surrounding area. The City of Coolidge land use designation for the Site and the immediately surrounding area is Industrial and Commerce Park. Additionally, the City of Coolidge recently approved a planned change (2003 General Use Plan) in the zoning for the Project Site and the immediately surrounding area to Industrial Zoning to facilitate the development of an industrial park in this location. Therefore, the Project is an allowable use compliant with all land use designations and zoning.

The closest residential community is the unincorporated community of Randolph and more specifically the eastern portion of Randolph located west of the Site between SR 87 and the UPRR. The existence of the UPRR between the Project Site and the community serves to lessen the direct impacts to the community from the Project. The long-term presence of existing industrial and mixed uses in the immediate area also minimizes the direct impact of an additional industrial use in the area. Impacts from the Project to this community (visual, air, noise) would be minimized by the proposed design and site layout of the Project and are described thoroughly in other sections of this Application.

REFERENCES

Personal Communication. from Sue Laybourn, Senior Planner, Coolidge Planning Department. Re: Land Use definitions and planned area developments. July 7 and 27, 2008

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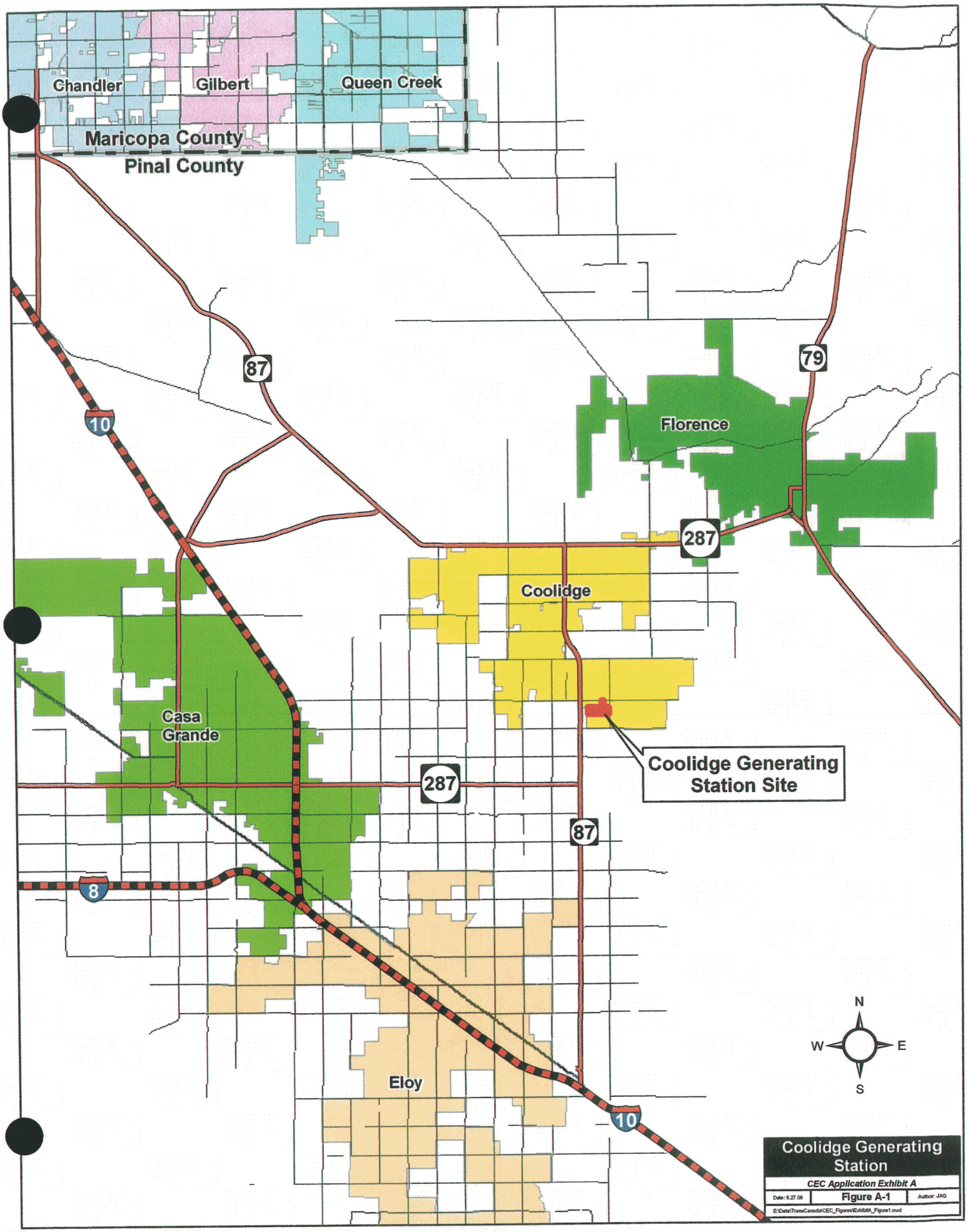
US Census Bureau, Census 2006.


Chandler
Gilbert
Queen Creek
Maricopa County
Pinal County
87
10
79
Florence
287
Coolidge
Casa Grande
Coolidge Generating Station Site
287
87
8
Eloy
10
N
W
E
S
Coolidge Generating Station
CEC Application Exhibit A
Date: 6.27.08
Figure A-1
Author: JAG
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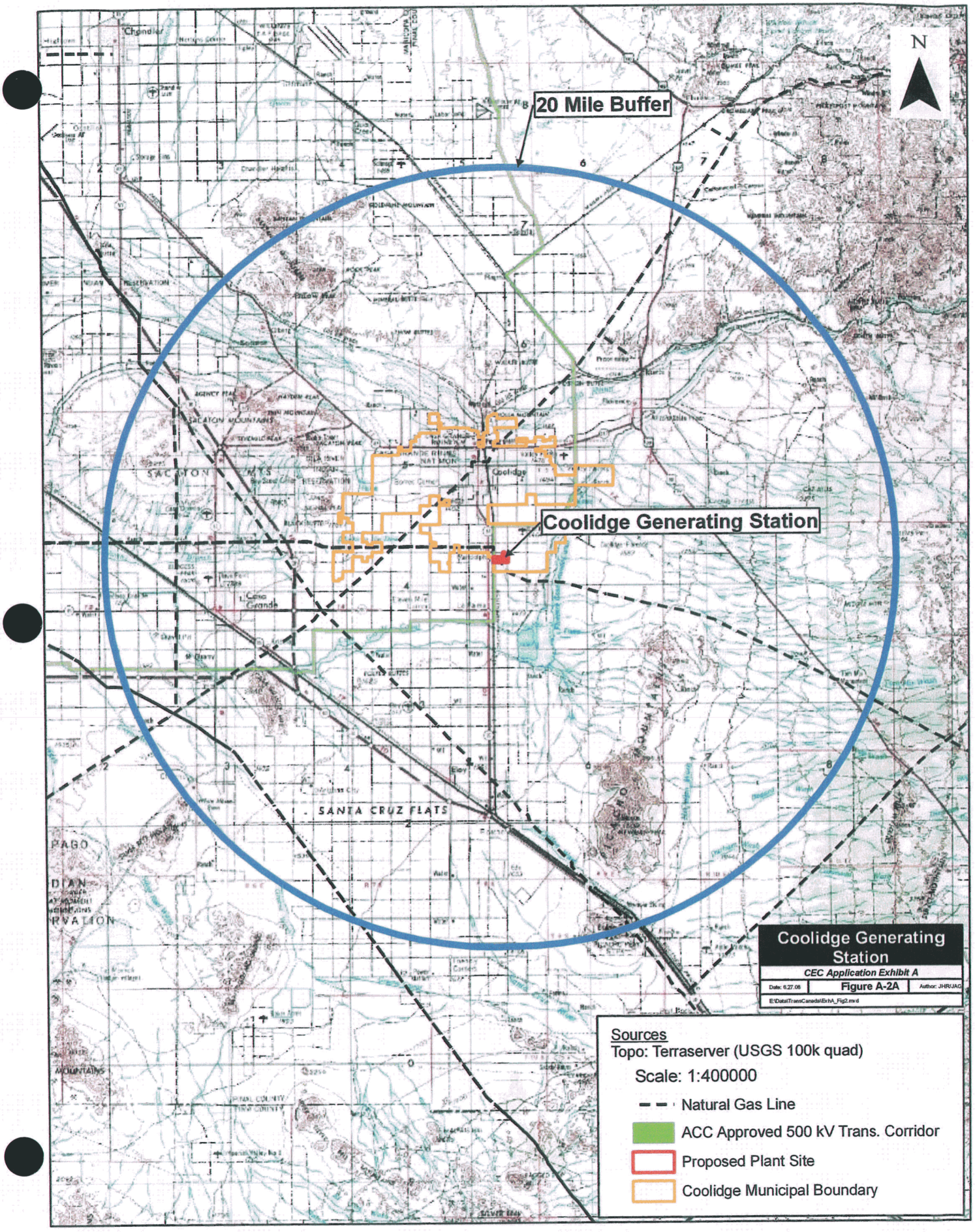
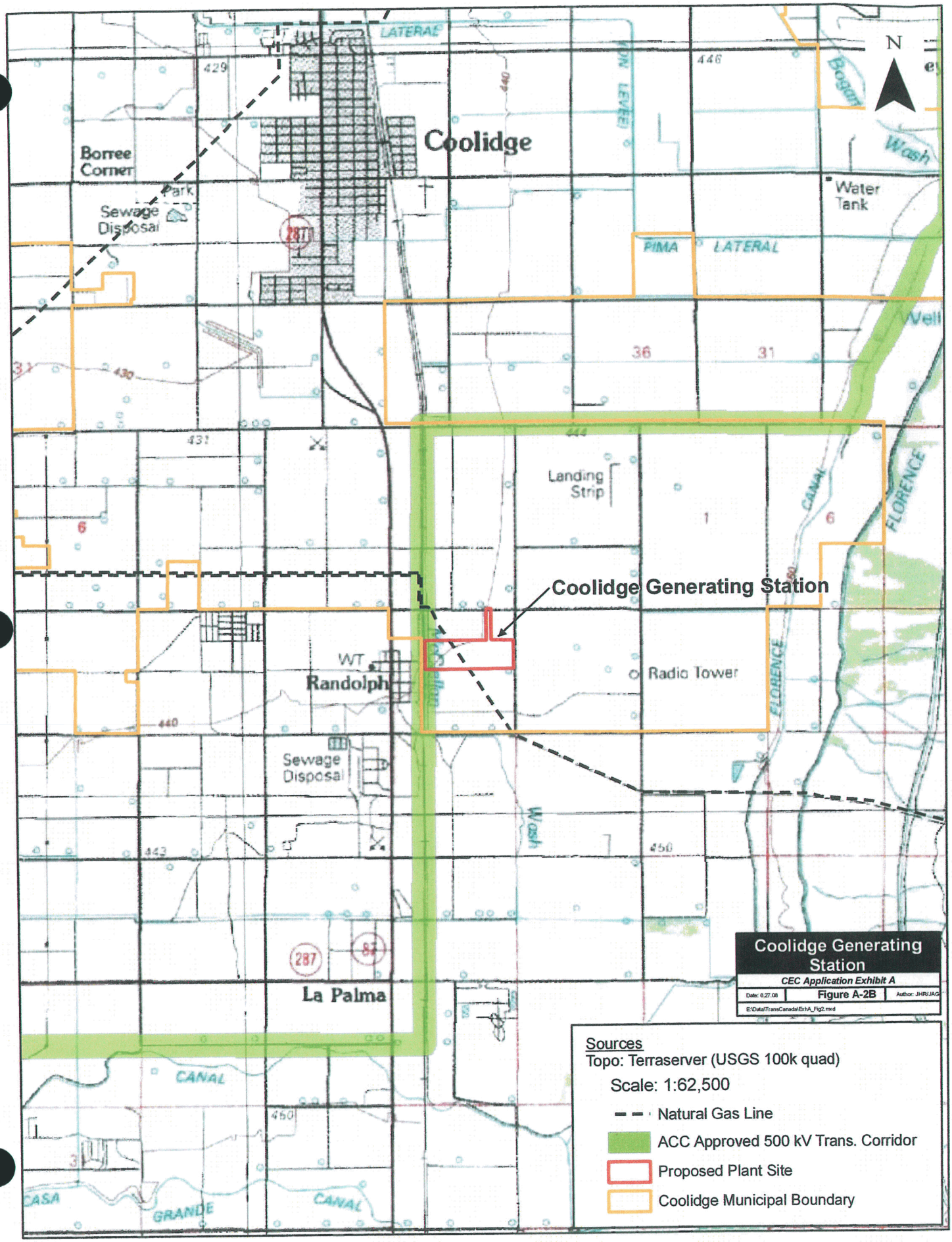
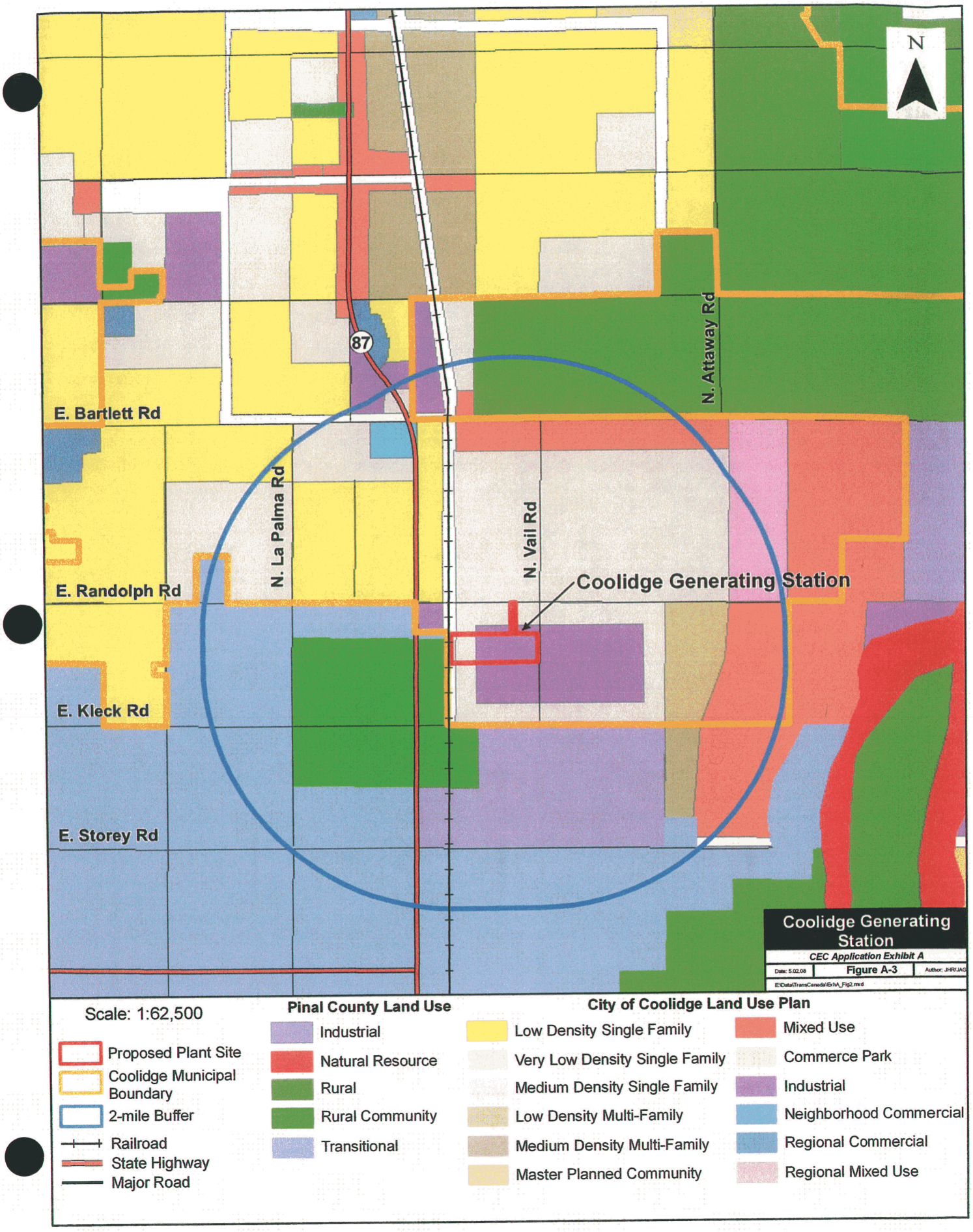

N
20 Mile Buffer
Coolidge Generating Station
Chandler
Coolidge
SACATON MTS
SANTA CRUZ FLATS
PAGO
RVATION
Coolidge Generating Station
CEC Application Exhibit A
Date: 6.27.08
Figure A-2A
Author: JHR/JAC
E:\Data\TransCanada\Exh\A_Fig2.mxd
Sources
Topo: Terraserver (USGS 100k quad)
Scale: 1:400000
Natural Gas Line
ACC Approved 500 kV Trans. Corridor
Proposed Plant Site
Coolidge Municipal Boundary


Coolidge
Borree Corner
Park
Sewage Disposal
LATERAL
PIMA LATERAL
Water Tank
Wash
Landing Strip
Coolidge Generating Station
WT
Randolph
Radio Tower
Sewage Disposal
La Palma
CANAL
CASA GRANDE CANAL
FLORENCE CANAL
N
Coolidge Generating Station
CEC Application Exhibit A
Figure A-2B
Sources
Topo: Terraserver (USGS 100k quad)
Scale: 1:62,500
Natural Gas Line
ACC Approved 500 kV Trans. Corridor
Proposed Plant Site
Coolidge Municipal Boundary


N
87
E. Bartlett Rd
E. Randolph Rd
E. Kleck Rd
E. Storey Rd
N. La Palma Rd
N. Vail Rd
N. Attaway Rd
Coolidge Generating Station
Coolidge Generating Station
CEC Application Exhibit A
Date: 5.02.08
Figure A-3
Author: JHR/JAG
E:\Data\Trans Canada\Exh A_Fig2.mxd
Scale: 1:62,500
Proposed Plant Site
Coolidge Municipal Boundary
2-mile Buffer
Railroad
State Highway
Major Road
Pinal County Land Use
Industrial
Natural Resource
Rural
Rural Community
Transitional
City of Coolidge Land Use Plan
Low Density Single Family
Very Low Density Single Family
Medium Density Single Family
Low Density Multi-Family
Medium Density Multi-Family
Master Planned Community
Mixed Use
Commerce Park
Industrial
Neighborhood Commercial
Regional Commercial
Regional Mixed Use

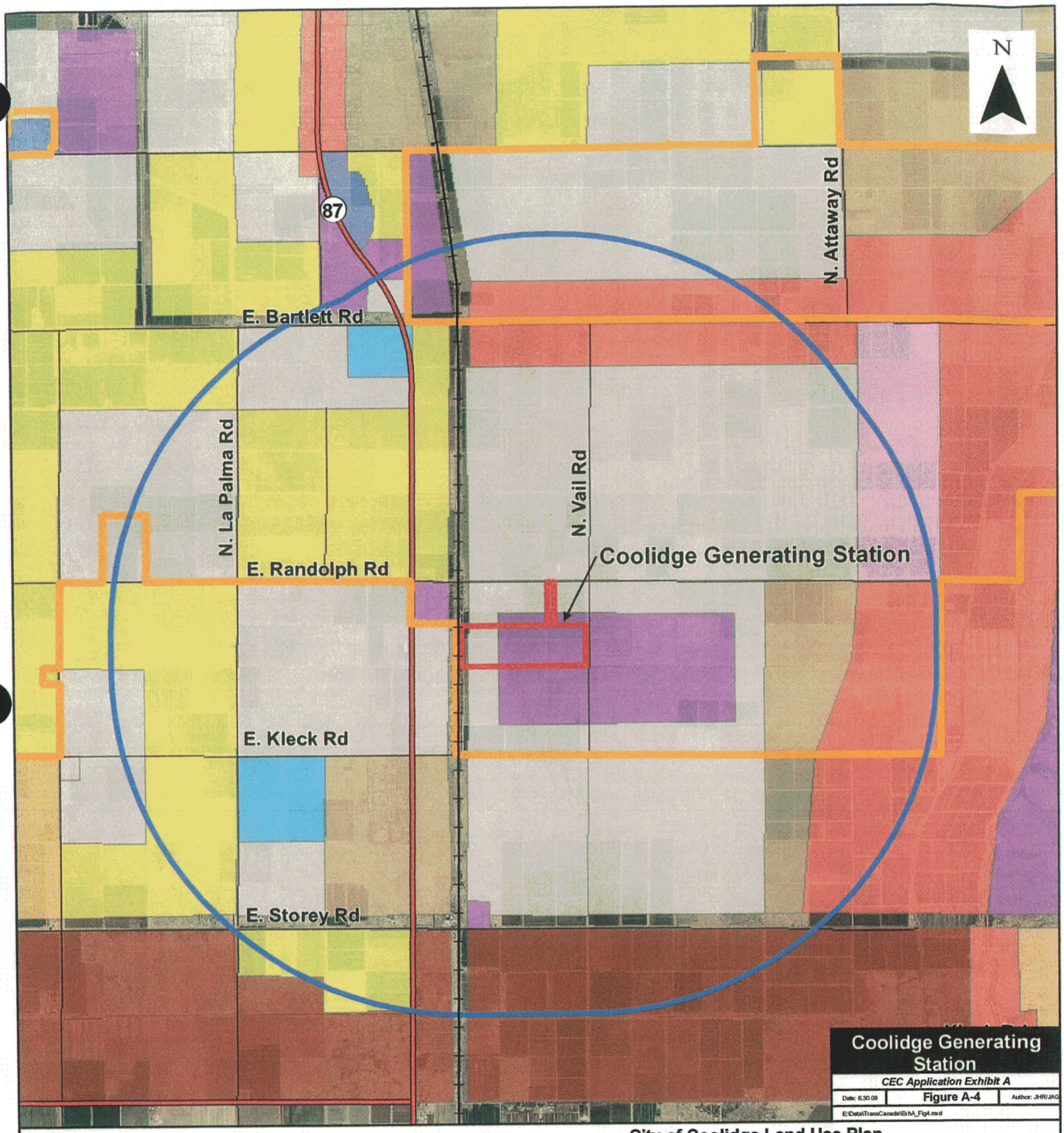

N
87
N. Attaway Rd
E. Bartlett Rd
N. La Palma Rd
N. Vail Rd
Coolidge Generating Station
E. Randolph Rd
E. Kleck Rd
E. Storey Rd
Coolidge Generating Station
CEC Application Exhibit A
Figure A-4
Scale: 1:50,000
Proposed Plant Site
Coolidge Municipal Boundary
2-mile Buffer
Railroad
State Highway
Major Road
City of Coolidge Land Use Plan
Low Density Single Family
Very Low Density Single Family
Medium Density Single Family
Low Density Multi-Family
Medium Density Multi-Family
Master Planned Community
Mixed Use
Commerce Park
Industrial
Neighborhood Commercial
Regional Commercial
Regional Mixed Use

EXHIBIT B

EXHIBIT B – ENVIRONMENTAL STUDIES

As stated in Arizona Corporation Commission Rules of Practice and Procedure R14-3-219:

> *"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."*

The Applicant has applied or is preparing applications for other permits needed for the CGS Project. These permits are listed in **Table B-1**.

One of the required permits is the air quality permit from the Pinal County Air Quality Control District (PCAQCD). As part of that process, an initial air quality impact analysis report was prepared to address potential impacts of the Project. A copy of the report is included as **Exhibit B-1**.

In addition, a detailed hydrology and water quality assessment was conducted to determine the potential effects from the Project on water resources. This report is included as **Exhibit B-2**.

The results of other site surveys and environmental studies are discussed in subsequent exhibits of this application. **Exhibit A** describes land use; **Exhibit C** addresses potential impacts to sensitive biological resources in the Project area; **Exhibit D** discusses potential impacts to other biological resources in the area; **Exhibit E** summarizes the potential effects on the area's scenic quality and cultural resources; **Exhibit H** describes how the Project could affect local plans; and **Exhibit I** discusses the noise impacts that are expected.

Table B-1
Coolidge Generating Station Project
Major Environmental / Regulatory Requirements

Authorizing Agency	Law or Regulation	Type of Permit/ Approval/Action/Constraint	Purpose of Permit/Regulated Project Component
Arizona Corporation Commission	Arizona Revised Statutes	Certificate of Environmental Compatibility	Siting of power plant
Pinal County Air Quality Control District	Clean Air Act	Air Quality Permits to Construct and Operate (PSD/Title V) Title IV Acid Rain Permit	Control of emissions of regulated pollutants from plant
Arizona Department of Environmental Quality	Arizona Revised Statutes	Aquifer Protection Permit (APP)	Regulation of design of evaporation pond and minimization of impacts to groundwater
	Clean Water Act	Stormwater Discharge Permit	Separate permits for construction and operation at plant site.
		Spill Prevention Control and Countermeasure Plan	Separate plans for construction and operation.
	SARA Title III	Community Right-to-Know Reporting	Chemical storage and use during operations.
	Resource Conservation and Recovery Act (RCRA)	Hazardous Waste and Hazardous Materials Storage and Handling Permits	Chemical storage and use during operations.
Arizona Department of Water Resources	Arizona Revised Statutes	Non-Exempt Well Permit	Construction of water wells in an AMA
City of Coolidge	City Code	Zoning	Appropriate land use
City of Coolidge	City Code	Fugitive Dust Permit	Construction dust control
Pinal County	County Code	Septic Permit	Construction and operation of septic system
U.S. Fish & Wildlife Service	Endangered Species Act	Endangered species consultation	Comments on potential for impacts to T&E species and mitigation, if needed
Arizona State Historic Preservation Office	National Historic Preservation Act	Cultural Resources Consultation	Comments on cultural resource plans and mitigation, if needed
Arizona Game and Fish Department	Arizona Revised Statutes		Comments on potential impacts to biological resources and mitigation, if needed
City of Coolidge	City Ordinances	- Building Permit - Excavation Permit - Grading Permit	Approvals for power plant and infrastructure

EXHIBIT B-1 – AIR QUALITY ANALYSIS

The CGS Project is a gas-fired, simple-cycle generation facility that will run to provide power during times of peak demand or as reserve capacity, as required. The Project configuration includes 12 LM6000 PC combustion turbines that can be run at various loads and in various combinations to provide up to 575 MWs of power. As a peaking facility, it will run only a limited amount of time when needed, up to the limit of its operating permits, to supplement base-load generation resources or firm renewable generation resources.

The Project will operate at output levels ranging from minimum turndown (50%) of a single combustion turbine generator (CTG) up to all 12 generators in operation using full power augmentation. Therefore, the Project can supply between approximately 25 and 575 MWs of power output under optimal conditions. At those times when the Project is most likely to be needed (during hot, dry summer conditions), the actual maximum output would be lower.

This Exhibit summarizes the air quality impacts that would result from the operation of the CGS Project. It describes the existing climate and air quality conditions in the area, the expected air emissions from the Project, and the potential impacts that would result from those emissions as predicted by detailed air quality modeling.

Additional details are included in the air permit application that has been filed for this Project with the Pinal County Air Quality Control District (PCAQCD) and is attached to this Exhibit as **Appendix B.1-1**. Please refer to the air permit application for detailed tables, figures, and supporting information.

EXISTING CLIMATE AND AIR QUALITY

TEMPERATURE AND PRECIPITATION

The CGS Project will be located at the southern end of the City of Coolidge in Pinal County, Arizona. The general area is predominantly arid desert characterized by very hot temperatures, large daily temperature range, and sparse precipitation. The mean annual temperature is 69°F with average maximum temperatures ranging from 76 to 106°F and average minimum temperatures from 34 to 74°F. Average annual precipitation is only nine inches. Most of the precipitation occurs during the winter from December through March and during the "monsoonal" months of July and August. A summary table of local temperature and precipitation is included in the attached air permit application.

WIND

National Climatic Data Center surface data set from Phoenix, Arizona and upper air data from Tucson, Arizona were used to perform the AERMOD dispersion modeling. The most recent five full years of data (2003 - 2007) were obtained for the surface and upper air data. A wind rose for the surface station is presented in the attached air permit application. A wind rose is a graphical depiction of the frequency of occurrence of wind direction and wind speed. For the five-year average, the data shows a predominant wind flow from the east and southeast and a secondary wind flow from the west.

BASELINE AIR QUALITY

Pinal County is in attainment status; i.e., ambient air concentrations are all below the federal, state, and county standards established to protect public health and welfare within an adequate margin of safety, for all Criteria Air Pollutants.

The most significant air pollutants in Pinal County are PM_{10} and $PM_{2.5}$ caused primarily by agricultural activities and naturally occurring windblown dust due to arid conditions.

Maximum and annual 2007 ambient air quality data for the EPA monitoring stations are included in **Table B.1-1** below. These stations were selected as those closest to the Project Site for the respective pollutants. This table also presents the relevant Pinal County and National Ambient Air Quality Standard (PCAAQS/NAAQS) and the Significant Impact Levels (SILs) for each pollutant and averaging period. The location of each of the monitoring stations is shown in the air permit application.

EMISSIONS

In Pinal County, air quality is managed by the Pinal County Air Quality Control District (PCAQCD). Criteria pollutants that are regulated by PCAQCD include:

- Carbon monoxide (CO);
- Nitrogen oxides (NO_x);
- Sulfur dioxide (SO_2);
- Particulate matter ($PM_{10}/PM_{2.5}$);
- Ozone; and
- Lead.

This assessment considers each of the above pollutants, except for ozone and lead. PCAQCD also regulates hazardous air pollutants (HAPs), and an evaluation of these has been included in this analysis.

Table B.1-1
Representative Air Quality near Coolidge Generating Station

Pollutant	Averaging Period	Maximum (µg/m³)	PCAAQS /NAAQS	SILs	EPA Station ID	City	County
CO	1-Hour	3,078	40,000[a]	2,000	40134004	Chandler	Maricopa Co
CO	8-Hour	1,824	10,000[a]	500	40134004	Chandler	Maricopa Co
NO_x	Annual	30	100	1	40133003	Scottsdale	Maricopa Co
PM_{10}	24-Hour	82	150[b]	5	40213004	Coolidge	Pinal Co
PM_{10}	Annual	36	50	1	40213004	Coolidge	Pinal Co
$PM_{2.5}$	24-Hour	27	35[c]	NA	40210001	Casa Grande	Pinal Co
$PM_{2.5}$	Annual	10	15[d]	NA	40210001	Casa Grande	Pinal Co
SO_2	3-Hour	26	1,305[a]	25	40212001	San Manuel	Pinal Co
SO_2	24-Hour	10	365[a]	5	40212001	San Manuel	Pinal Co
SO_2	Annual	5	78	1	40212001	San Manuel	Pinal Co
Ozone	8-Hour	139	147[e]/157[f]		40213003	Casa Grande	Pinal Co

Source: EPA Air Data, Monitor Values Report - Criteria Air Pollutants, http://www.epa.gov/oar/data/monvals.html?st~AZ~Arizona
a - Not to be exceeded more than once per year.
b - Not to be exceeded more than once per year on average over 3 years.
c - To attain this standard, the 3-year average of the 98th percentile of 24-hour concentrations at each population-oriented monitor within an area must not exceed 35 µg/m3 (effective December 17, 2006).
d - To attain this standard, the 3-year average of the weighted annual mean PM2.5 concentrations from single or multiple community-oriented monitors must not exceed 15.0 µg/m3
e – 2008 standard. To attain this standard, the 3-year average of the fourth-highest daily maximum 8-hour average ozone concentrations measured at each monitor within an area over each year must not exceed 0.075 ppm. (effective May 27, 2008)
f – 1997 standard.
(1) To attain this standard, the 3-year average of the fourth-highest daily maximum 8-hour average ozone concentrations measured at each monitor within an area over each year must not exceed 0.08 ppm.
(2) The 1997 standard—and the implementation rules for that standard—will remain in place for implementation purposes as EPA undertakes rulemaking to address the transition from the 1997 ozone standard to the 2008 ozone standard..

Formation of ozone is related to the complex interaction of air pollutants from regional emission sources and regional meteorological conditions. Thus, performing complex cumulative regional emissions and meteorological modeling for ozone for a single project is extremely difficult and is beyond the scope of the analysis required for the air permit. The inherent nature of the combustion of natural gas in CTGs does not result in lead emissions; therefore, lead emissions from the Project will be negligible and well below all regulatory thresholds. In addition, emissions of non-criteria pollutants (i.e., asbestos, mercury, fluorides, and hydrogen sulfide) from the Project will also be well below all regulatory thresholds. The CTGs use state-of-the-art technology to efficiently burn clean natural gas with reduced NO_x and CO emissions. Each CTG is equipped with water injection to the combustors to reduce flame temperature and minimize the formation of NO_x. The SCR system further reduces NO_x and CO emissions using a combination of catalysts and injection of 19 percent aqueous ammonia solution.

SO_2 and PM_{10} emissions are controlled through the use of pipeline quality natural gas and best combustion practices. Pipeline quality natural gas will be supplied from two separate pipelines in the area. Pipeline tariffs indicate the sulpfur content of the natural gas will not exceed 5 grains

per 100 dry standard cubic feet. The tariff specification is a very conservative value to account for rare anomalies in gas quality. Concentrations of sulfur are typically significantly lower and in the range of 0.75 to 2.0 grains per 100 dry standard cubic feet. As a result of using the 5 grains per 100 dry standard cubic feet specification, modeled SO_2 and PM_{10} emissions for the Project are very conservative.

CRITERIA POLLUTANTS

The CGS Project will include 12 LM6000PC SPRINT CTGs. Emissions from the CTGs will be controlled by use of clean burning natural gas, good operating combustion practices, and a combination of water injection and selective catalytic reduction (SCR) to prevent and reduce NO_x emissions respectively and an oxidation catalyst to reduce CO and VOC emissions. SO_2 and PM_{10} emissions are controlled through the use of pipeline quality natural gas and best combustion practices.

Emission rates were evaluated for these CTGs over the range of ambient conditions and operating variables that are anticipated at the CGS Project. The estimated annual emissions are based on an evaluation of operating and emissions data over the following ambient conditions:

Temperature (°F)	Associated Relative Humidity
15	60%
70	35%
122	10%

Estimated emissions also include startup and shutdown emissions that have been combined with normal emissions. Normal emissions are defined as those occurring between generating loads of 50 to 100 percent. **Table B.1-2** below provides a summary of the hourly and annual emissions that are expected for the CGS Project. To maintain synthetic minor source status, CGS will be permitted to operate until any of the criteria air pollutants in this table approach an emission threshold near 250 tons per year. For the purposes of this table it is assumed that this limit will be near 245 tons per year.

Table B.1-2
Coolidge Generating Station
Hourly and Annual Emissions

Air Contaminant	Emission Rate		
	Maximum Hourly Normal Emissions per Unit (lb/hr)	Startup/Shutdown Emissions per Unit[1] (lb/hr)	Annual Total (12 Units) (tpy)
NO_x	9	33	<245
CO	17	63	<245
VOC	2	1	<245
SO_2	7	7	<245
PM_{10}	7	7	<245

1 Each startup/shutdown emissions event lasts approximately 40 minutes combined; however, these values have been conservatively scaled up to an assumed one-hour period per event.

2 $PM_{10/2.5}$ emissions include both non-condensable and condensable (front-half and back-half) particulate matter.

Continuous emissions monitoring systems (CEMS) and stack testing will be performed to determine compliance with any emission limits and to track annual emissions. Monitoring and testing methods will be consistent with EPA standards. The estimated CTG performance and emission calculation sheets are shown in the air permit application.

Emergency Fire Pump

A secondary emission source is the diesel-fired 200-horsepower pump engine that will be located on the CGS Site to provide firewater during emergency situations. Information regarding the emissions from this engine is included in the air permit application

Hazardous Air Pollutants

The annual emissions of any hazardous air pollutant (HAP) for the CGS Project will be well below 10 tons per year, and the total HAPs emissions will be well below 25 tons per year, qualifying this Project as a minor source of HAPs. As a minor source of HAPs, CGS will not be subject to the federal NESHAP rules under 40 CFR Part 63 Subpart YYYY. In addition, the sources at this facility are not included in the source categories listed in Chapter 7, Article 2, Table 1 of the PCAQCD rules. Therefore, no HAP regulations apply to this Project.

AMBIENT AIR QUALITY IMPACTS

Air quality impacts from the CGS Project were assessed by comparing ambient air quality standards and significance levels to the modeled Project ambient air concentrations plus the existing baseline ambient pollutant concentrations in the Project area. Modeling was conducted using EPA-approved air dispersion modeling procedures. The air dispersion model that was used in the modeling is described in this section. Based on the modeling analysis, the CGS Project emissions will not exceed the PCAQCD, State, or federal ambient air quality standards.

The PCAQCD is currently designated as attainment for all criteria pollutants (NO_x, CO, PM_{10}, SO_2, ozone, and lead). A discussion of the baseline air quality in the general area was described earlier in this exhibit.

AIR QUALITY DISPERSION MODEL SELECTION

The EPA AERMOD (Version 07026) dispersion model was used to evaluate Class II air quality impacts. The AERMOD model is the latest generation of the EPA's short-term model that is recommended for predicting impacts from industrial-point sources as well as area and volume sources.

MODEL INPUT DEFAULTS/OPTIONS

The AERMOD model was used with regulatory default options as recommended in the EPA Guideline on Air Quality Models. The technical options selected for the AERMOD model include:

- Regulatory default control options;
- Rural dispersion mode; and
- Receptor elevations and controlling hill heights obtained from AERMAP output.

NO_x to NO_2 conversion is evaluated using the conservative assumption that modeled emissions of NO_x will completely convert to NO_2.

LAND USE / CLASSIFICATION

The AERMOD model was run in the rural dispersion mode because land use within 3 km of the Project Site is primarily classified as rural (Auer Method).

BUILDING DOWNWASH AND GOOD ENGINEERING PRACTICE

Building wake effects were included for all point sources and all structures and buildings at the Project. The AERMOD building wake effect inputs were generated using the Building Profile Input Program with Plume Rise Model Enhancements (BPIP-PRIME) based upon the Project configurations shown in the Application.

RECEPTOR GRID

Receptors at 25-meter intervals were placed around the Project Site boundary. Outside this fence line, receptors were placed at 100-meter intervals from the fence line out to 3 kilometers (km), at 500-meter intervals from 3 to 5 km out, and at 1,000-meter intervals from 5 to 25 km. The elevations of each receptor, and the elevation of controlling terrain within the domain, were determined from U.S.G.S. Digital Elevation Model electronic files. The modeling grid and associated topography is shown in the attached air permit application.

STACK PARAMETERS

Stack and exhaust parameters used as inputs for the dispersion modeling are presented in the attached air permit application. Each CTG was modeled for 30 different operating scenarios that represented the range of ambient conditions and CTG operations between 50 and 100 percent load.

MODELING EMISSION RATES

Emissions were evaluated for the full range of operating scenarios and applicable averaging periods. The Project, as a synthetic minor source, will not operate throughout the year. To be conservative, the emission rates that were used to model annual ambient concentrations were based on continuous annual operations. This was necessary to account for the variable meteorological conditions that could occur at any time during the year. Example calculations for maximum emissions as well as for those emissions that correspond to the maximum ambient impacts are presented in the air permit application.

DISPERSION MODELING RESULTS

CRITERIA POLLUTANT ANALYSIS

Table B.1-3 presents the results of the criteria pollutant AERMOD analysis. The results are compared to the PCAAQS/NAAQS and to federal SILs. The SIL values are compared to the modeled Project impacts, and the PCAAQS values are compared to the modeled Project impacts combined with the 2007 baseline data discussed earlier.

Table B.1-3
Coolidge Generating Station
Predicted Maximum Air Quality Impacts

Pollutant	Averaging Period	Modeled Impact (µg/m³)	SIL (µg/m³)	Percent of SIL (%)	2007 Monitored Baseline (µg/m³)	Modeled Impact with Baseline (µg/m³)	PCAAQS/NAAQS (µg/m³)
NO_2	Annual	0.694	1	69.4	30	31	100
CO	1-Hour	311	2,000	15.6	3,078	3,389	40,000
CO	8-Hour	41.8	500	8.4	1,824	1,866	10,000
PM_{10}	24-Hour	4.57	5	91.4	82	87	150
PM_{10}	Annual	0.666	1	66.6	36	37	50
$PM_{2.5}$	24-Hour	4.57	NA	NA	27	32	35
$PM_{2.5}$	Annual	0.666	NA	NA	10	11	15
SO_2	3-Hour	14.1	25	56.4	26	40	1,305
SO_2	24-Hour	2.69	5	53.8	10	13	365
SO_2	Annual	0.480	1	48.0	5	6	78

These results demonstrate that the maximum ambient air impacts resulting from the CGS Project would be well below the PCAAAQS and SILs for all pollutants.

CLASS I AREA ANALYSIS

Although not required for a minor source analysis, air quality impacts at two nearby Class I areas (Superstition Wilderness and Saguaro West National Park) were evaluated relative to Class I PSD increments. Superstition Wilderness is located approximately 53 kilometers north-northeast of the Project, and the Saguaro West National Park is located approximately 108 kilometers southeast of the Project.

This analysis shows that the maximum criteria pollutant concentrations at these Class I areas would consume only a small fraction (0.03 – 7.1 %) of the Class I increments. More information on this analysis in included in the attached air permit application.

GREENHOUSE GAS EMISSIONS

The emission of greenhouse gases (GHG) by electric power plants is not currently controlled, other than as an indirect benefit of emission control systems that primarily target reduction of other specific pollutants, and no standards or required reductions currently exist. The options to limit the emission of GHG from electricity generation are to encourage reduction of the overall consumption of electricity through demand side management, to improve combustion efficiency at existing plants or to install new units (such as the CGS Project) that employ current, more efficient technologies and lower carbon-intensity fuels.

Not only is this Project using highly efficient LM6000 turbine technology, but it is also using the least carbon-intensive fossil fuel source (natural gas). The most prevalent GHG emitted from the Project is carbon dioxide (CO_2). Assuming complete conversion of natural gas (as methane [CH_4]) to CO_2 and water, maximum emission rates of CO_2 would be approximately 1.5 pounds per kilowatt-hour (lb/kWh) at 50 percent load and 1.3 lb/kWh at 100 percent load. To put that data into context, the average CO_2 emission rates for other fossil fueled power plants are approximately 2.1 lb/kWh for coal-fired power plants and 2.0 lb/kWh for oil-fired power plants (DOE 1999).

As a quick-response peaking resource, this Project could displace less responsive and efficient resources from having to operate to meet peak power demands and/or maintain reserve capacity, thereby potentially reducing net GHG emissions.

CONCLUSION

The air pollutant emissions estimates and ambient air quality analyses presented in this section and the attached air permit application demonstrate that the CGS Project will operate in compliance with Pinal County, State of Arizona, and federal air quality rules.

REFERENCES

DOE 2000. Carbon Dioxide Emissions from the Generation of Electric Power in the United States. July 2000. Department of Energy, Washington, DC 20585, Environmental Protection Agency Washington DC 20460.

EPRI 2004. Formaldehyde and VOC Emissions from GE Turbines with Lean Pre-Mix Combustors and SCR and CO Catalysts.

APPENDIX B.1-1

Air Permit Application

Coolidge Generating Station
Application for a
Class I Air Quality Construction and
Operating Permit

Submitted by

Coolidge Power Corporation

Submitted to

Pinal County Air Quality Control District

August 2008

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1.0 INTRODUCTION

Coolidge Power Corporation presents this permit application for a Class I air quality permit for the Coolidge Generating Station (CGS) Project. The primary air pollutant emission sources located at the Project will be twelve natural gas-fired combustion turbine generators (CGTs) operating in simple cycle peaking mode. The CGS Project will be constructed and operated within the City of Coolidge in Pinal County, Arizona. **Figure 1-1** shows the location of the Project and **Figure 1-2** shows the Project Site location relative to local roads and intersections.

Pinal County is in attainment with the federal, state, and county air quality standards established to protect public health and welfare within an adequate margin of safety for all criteria pollutants.

The CGS Project is under the jurisdiction of the Pinal County Air Quality Control District (PCAQCD). The CGS Project will be classified as a synthetic minor source, relative to the requirements of a Prevention of Significant Deterioration (PSD) construction permit; but it will meet the requirements to obtain a Title V operating permit and a Title IV Acid Rain permit.

The CGS Project will be subject to Title V requirements for NO_x, CO, PM_{10} and VOCs with potential annual emissions for these pollutants of 100 tons per year or more. As an electricity generating station with the potential to generate more than 25 MWs, the CGS Project will also be subject to the requirements of the Title IV Acid Rain Program. The PCAQCD has been delegated full authority for Title V and Title IV permit issuance and will serve as the primary authority for the air permit approvals.

This application is presented pursuant to Chapter 3 of the PCAQCD Code of Regulations as amended July 13, 2007. The permit application forms are included in **Appendix A**. This application meets the requirements of a complete permit application and has been certified by a responsible official of Coolidge Power Corporation. This application is organized in the following manner:

Section 1 – Introduction and Permit Forms;

Section 2 – Project Description;

Section 3 – Maximum Potential Hourly and Annual Emissions;

Section 4 – Ambient Air Quality Impacts; and

Section 5 – Applicable Requirements.

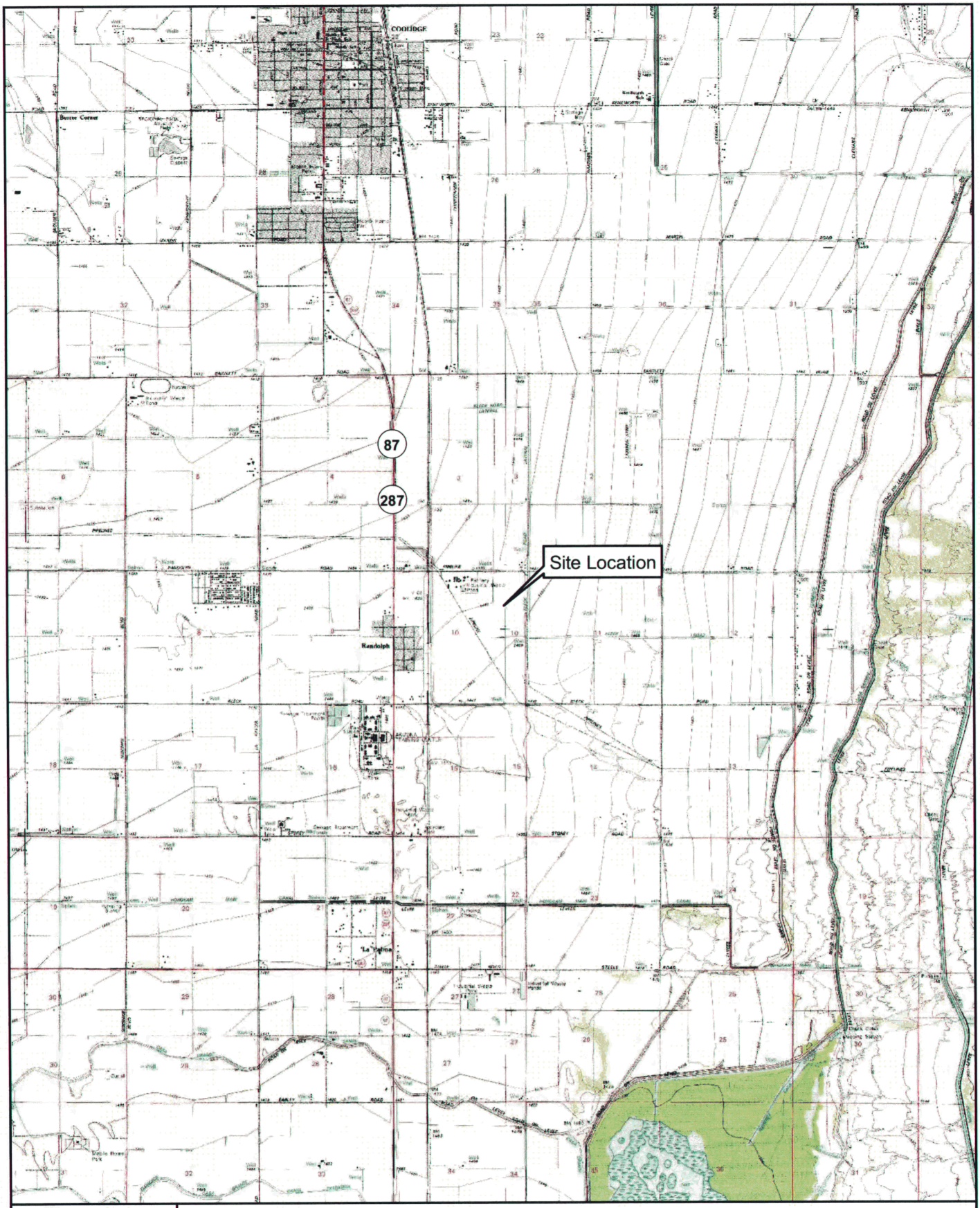

FIGURE 1-1
Site Location Map
Coolidge Generating Station
Coolidge, AZ

CH2MHILL

\\COBRA\GIS\PROJECTS\AIR\COOLIDGE\MAPFILES\FIGURE_1-1_LOCATION.MXD 7/9/2008 09:31:06

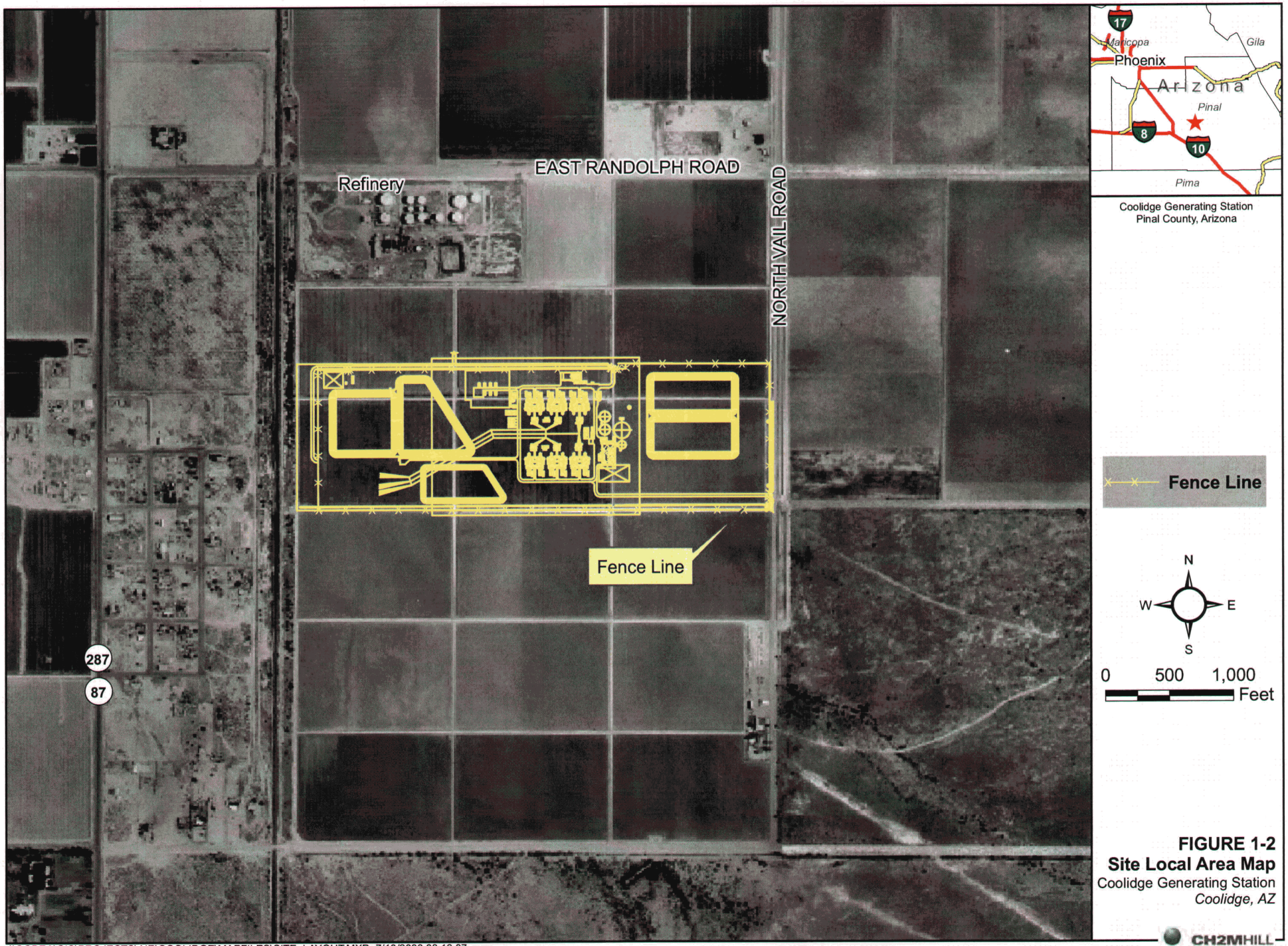

FIGURE 1-2
Site Local Area Map
Coolidge Generating Station
Coolidge, AZ

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2.0 PROJECT DESCRIPTION

The CGS Project is a gas-fired, simple-cycle generating plant (Standard Industrial Classification Code 4911) that will provide reserve capacity and will run only when needed during times of peak power demand. The Project configuration includes twelve individual General Electric LM6000 PC Sprint NXGEN combustion turbines. As a peaking plant, it will run only a limited amount of time as needed, potentially up to the limit of its operating permits.

The Project will operate at output levels ranging from minimum turndown (50 %) of a single combustion turbine generator (CTG) up to all twelve Generators in operation using full power augmentation. Therefore, the Project can supply between approximately 25 and 575 MWs of power output under optimal conditions. The actual maximum output will be lower during hot, dry summer conditions when the peaking power is most likely to be needed.

The Project configuration will consist of twelve CTGs in two rows aligned east-west. There will be a total of six generator step-up transformers (GSU) for the twelve LM6000 CTG generator units, arranged in sets of two CTG generators per GSU.

Figure 2-2 shows the general layout arrangement of the Project's components, including the supporting infrastructure. This figure shows the major equipment, which includes:

- Twelve LM6000 type CTG generator set and auxiliaries;
- Twelve emission control systems;
- Six GSUs for the twelve LM6000 units;
- Seven fuel gas booster compressors;
- Water treatment plant; and
- Auxiliary and ancillary equipment for the balance of the Plant systems, including administration and support buildings, fire detection and suppression systems, switchyard, etc.

The LM6000 CTGs will be provided with the SPRINT system (SPRayINTercooling). SPRINT enhances the efficiency and output of the LM6000 gas CTG engine by spraying micro-droplets of atomized water into the interstage air stream between the low-pressure compressor and the high pressure compressor. Inlet air evaporative cooling will also be used to enhance the CTGs' performance.

Emissions from the CTGs will be controlled by use of clean burning natural gas, good operating combustion practices, and a combination of water injection and selective catalytic reduction (SCR) to prevent and reduce nitrogen oxides (NO_x) emissions and an oxidation catalyst to reduce carbon monoxide (CO) and volatile organic compound (VOC) emissions. After passing through the SCR system, the exhaust gases exit through an attached 85-foot tall stack. Each exhaust stack will be provided with continuous emissions monitoring system (CEMS) and test connections for performance monitoring.

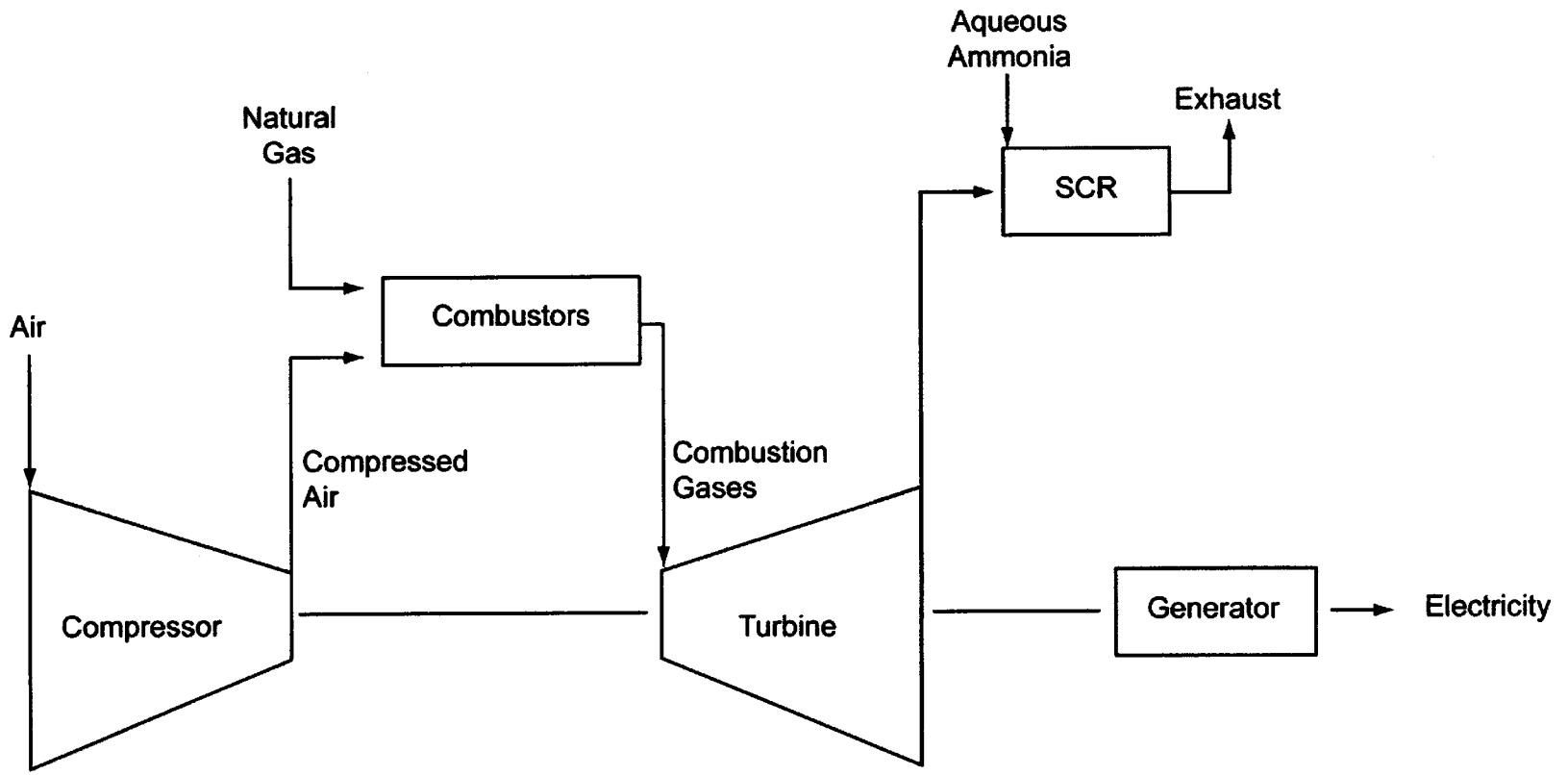

FIGURE 2-1
Process Flow Diagram
Coolidge Generating Station
Coolidge, AZ

Admin Building

Stack1 Stack2 Stack3 Stack4 Stack5 Stack6

CT1 CT2 CT3 CT4 CT5 CT6

Inlet1 Inlet2 Inlet3 Inlet4 Inlet5 Inlet6

DI Water Tank 1
41Ft. Diameter

DI Water Tank 2
41Ft. Diameter

Raw Water Tank
63Ft. Diameter

Softened
Water Tank
31Ft. Diameter

Electrical
Service
Building

Water
Treatment
Building

Inlet7 Inlet8 Inlet9 Inlet10 Inlet11 Inlet12

CT7 CT8 CT9 CT10 CT11 CT12

Stack7 Stack8 Stack9 Stack10 Stack11 Stack12

N
W E
S

0 50 100
Feet

FIGURE 2-2
General Arrangement
Coolidge Generating Station
Coolidge, AZ

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3.0 EMISSIONS

Criteria pollutants that are regulated by PCAQCD include:

- Carbon monoxide (CO);
- Nitrogen oxides (NO_x);
- Sulfur dioxide (SO_2);
- Particulate matter ($PM_{10}/PM_{2.5}$);
- Ozone; and
- Lead.

This assessment considers each of the above pollutants, except for ozone and lead. PCAQCD also regulates hazardous air pollutants (HAPs), and an evaluation of these has been included in this analysis.

Ozone is not a regulated emission and is not permitted for individual sources because ozone is formed through the chemical interaction of other air pollutants in the atmosphere (primarily VOC and NO_x). As stated above, VOC and NO_x are regulated for this Project. Due to the inherent nature of burning natural gas in CTGs, emissions of lead and non-criteria pollutants (i.e., asbestos, mercury, fluorides, and hydrogen sulfide) from the Project are negligible and well below all regulatory thresholds.

The CTGs use state-of-the-art technology to efficiently burn clean natural gas with reduced NO_x and CO emissions. Each CTG is equipped with water injection to the combustors to reduce flame temperature and minimize the formation of NO_x. The SCR system further reduces NO_x and CO emissions using a combination of catalysts and injection of 19 percent aqueous ammonia solution converting those pollutants to more benign constituents of nitrogen and water and CO_2 and water, respectively.

SO_2 and PM_{10} emissions are controlled through the use of pipeline quality natural gas and best combustion practices.

Pipeline quality natural gas will be supplied from two separate pipelines in the area. This natural gas will have a sulfur concentration less than 5 grains per 100 dry standard cubic feet based on FERC tariffs from each supplier.

3.1 Criteria Pollutants

Emissions rates were evaluated for the LM6000PC SPRINT CTGs over the range of ambient conditions and operating variables that are anticipated at the CGS Project. The estimated annual emissions are based on an evaluation of operating and emissions data at the projected extremes and one mid-point of potential ambient conditions and presented in **Table 3-1** below.

TABLE 3-1
Ambient Conditions Evaluated in Emissions Analysis

Ambient Dry Bulb Temperature (°F)	Associated Ambient Relative Humidity
15	60%
70	35%
122	10%

Estimated emissions also include startup and shutdown emissions that have been combined with normal emissions. The estimated CTG performance and emission calculation sheets are shown in **Appendix B**.

Normal emissions are defined as those occurring between generating loads of 50 to 100 percent. The proposed normal emissions of NO_x, CO, and VOC for the CGS CTGs are:

- NO_x = 5 parts per million corrected to 15 percent oxygen (ppmvd @ 15 percent O_2);
- CO = 7.5 ppmvd @ 15 percent O_2 above 59° F and 15 ppmvd @ 15 percent O_2 below 59° F; and
- VOC = 3 ppmvd @ 15 percent O_2.

These above emission rates are the same as those permitted for the Sundance Energy Project, a generation project located four miles west of the Project in Pinal County that uses the same CTGs, same emission control technology, and is similarly operated in simple-cycle mode to provide peaking power. The only significant difference between the two facilities is the Sundance Energy Project is permitted as a major source and, therefore, was subject to additional requirements including but not limited to BACT.

SO_2 emissions were conservatively estimated by assuming all the sulfur in the natural gas fuel would be converted to SO_2.

PM_{10} and $PM_{2.5}$ emissions were estimated using the CTG manufacturer guaranteed emission rate combined with estimated ammonium sulfate emissions. Emissions of ammonium sulfate were added to account for the condensable particulate fraction. To be conservative in the analysis, a slightly higher value was selected for this condensable fraction of ammonium sulfate; and the emission rate used for PM_{10} was the same as that used for $PM_{2.5}$.

To maintain synthetic minor source status, the CGS Project will be permitted to operate until the emissions of any of the criteria air pollutants represented in **Table 3-2** approach an emission threshold near 250 tons per year. For the purposes of this table it is assumed the ceiling value will be approximately 245 tons per year.

TABLE 3-2
Coolidge Generating Station Hourly and Annual Emissions

Air Contaminant	Emission Rate		
	Maximum Hourly Normal Emissions per Unit (lb/hr)	Startup/Shutdown Emissions per Unit[1] (lb/hr)	Annual Total (12 Units) (tons/yr)
NO_x	9	33	<245
CO	17	63	<245
VOC	2	1	<245
SO_2	7	7	<245
$PM_{10/2.5}$[2]	7	7	<245

1 Each startup/shutdown emissions event lasts approximately 40 minutes combined; however, these values have been conservatively scaled up to a one-hour period.

2 $PM_{10/2.5}$ emissions include both non-condensable and condensable (front-half and back-half) particulate matter.

3.1.1 Recent Major Source Emission Limit Determinations

Although the CGS Project will be a minor source and will not be subject to Best Available Control Technology (BACT) requirements, proposed normal load NO_x, CO, and VOC emissions from CGS were compared to recent BACT determinations for similar sources.

As stated earlier, the emission rates for the CGS Project are the same as those permitted for the Sundance Energy Project which was permitted as a major source and subject to BACT. The review of recent BACT determinations shows that the proposed CGS Project emission rates are consistent with the most current BACT determinations for natural gas-fired CTGs operating in simple-cycle . The review of recent BACT determinations also confirmed that post-combustion controls for PM_{10} and SO_2 have never been required for natural gas-fired simple cycle CTGs.

3.1.2 Emergency Fire Pump

A diesel fuel-fired 200-horsepower fire suppression water pump will be installed at the Project for emergency situations. The pump will be tested for a one-hour period once per week; however, for analysis purposes it was conservatively estimated to operate approximately 200 hours per year. Although a specific engine has not been selected, the Clarke Model JU6H-UF58 is a typical example of the type of pump that will be used. This turbo charged model uses direct fuel injection and consumes approximately 17.5 gallons of diesel fuel per hour. Emissions from this unit are shown in **Table 3-3**.

TABLE 3-3
Coolidge Generating Station Emergency Fire Pump Emissions

Air Contaminant	Emission Rate	
	Maximum Hourly (lb/hr)	(tpy)
NO_x	2.1	0.2
CO	0.2	0.02
VOC	0.1	0.01
SO_2	0.4	0.04
PM_{10}	0.1	0.01

3.1.3 Aqueous Ammonia

The SCR will use 19 percent by weight aqueous ammonia for the control of NO_x emissions. The aqueous ammonia will be stored on the Project site in a 30,000 gallon storage tank at a concentration below the listed applicability level of 40 CFR Part 68 (Chemical Accident Prevention Provisions). A Risk Management Plan is not required for the low quantity and concentration of aqueous ammonia to be stored at the Project. A Material Data Safety Sheet (MSDS) for aqueous ammonia is provided in Appendix B.

3.2 Hazardous Air Pollutants

HAP emissions from natural gas combustion were calculated using EPA emission factors in AP-42 Chapter 3-1. Formaldehyde emissions were calculated using published Electric Power Research Institute (EPRI) test data (EPRI 2004). To ensure conservatism, the maximum turbine exhaust (before controls) emission rate of 47 parts per billion (ppb) (or .047 ppm) from this data was used in this analysis.

Emission calculations show that the annual emissions of any HAP will be well below 10 tons per year, and the total HAPs emissions for the plant will be well below 25 tons per year as shown in **Table 3-4** below.

TABLE 3-4
Coolidge Generating Station Annual HAP Emissions

Substance	CAS	Emission Rate (lb/MMBtu)	Average Hourly per Unit (lb/hr)	Annual Total (12 Units)[2] (tons/yr)
1,3 Butadiene	106-99-1	4.3E-07	0.0002	0.01
Acetaldehyde	75-07-0	4.0E-05	0.0180	0.95
Acrolein	107-02-8	6.4E-06	0.0029	0.15
Benzene	71-43-2	1.2E-05	0.0054	0.28
Ethylbenzene	100-41-4	3.2E-05	0.0144	0.76
Formaldehyde	50-00-0	0.047 ppm	0.0585	3.07
Naphthalene	91-20-3	1.3E-06	0.0006	0.03
Propylene Oxide	75-56-9	2.9E-05	0.0131	0.69
Toluene	108-88-3	1.3E-04	0.0586	3.08
Xylenes	1330-20-7	6.4E-05	0.0289	1.52
Total				10.54

4.0 AMBIENT AIR QUALITY IMPACTS

Air quality impacts from the CGS Project were assessed by comparing ambient air quality standards and significance levels to the modeled ambient air concentrations combined with the existing baseline ambient pollutant concentrations in the Project area. This portion of Pinal County is designated as attainment for all criteria pollutants (NO_x, CO, PM_{10}, SO_2, ozone, and lead).

As described in this section, modeling was conducted using EPA-approved air dispersion modeling software and procedures. Based on the analysis, the modeled Project emissions will not exceed the PCAQCD or federal ambient air quality standards. A discussion of the air quality in the general Project area is included in this section.

4.1 Existing Climate and Air Quality

4.1.1 Temperature and Precipitation

The CGS Project will be located at the southern end of the City of Coolidge in Pinal County, Arizona. The general area is predominantly arid desert characterized by very hot temperatures, large daily temperature range, and sparse precipitation (see **Table 4-1**). The mean annual temperature is 69°F with average maximum temperatures ranging from 76 to 106°F and average minimum temperatures from 34 to 74°F.

Annual precipitation averages approximately nine inches per year. Most of the precipitation occurs during the winter from December through March and during the "monsoonal" months of July and August.

4.1.2 Wind

The most recent five full years of meteorological data (2002-2007) from the National Climatic Data Center were used to perform the AERMOD dispersion modeling. The surface data were from Phoenix, Arizona, and upper air data were from Tucson, Arizona. The modeling demonstrated the CGS Project will be in compliance with all applicable air quality rules, regulations, and standards.

A wind rose for the surface station is presented in **Figure 4-1**. A wind rose is a graphical depiction of the frequency of occurrence of wind direction and wind speed, and indicates the direction from which the wind is blowing. For the five-year average, the predominant wind flow is from the east and southeast with a secondary maximum from the west.

TABLE 4-1
Temperature Climatology for Coolidge Generating Station

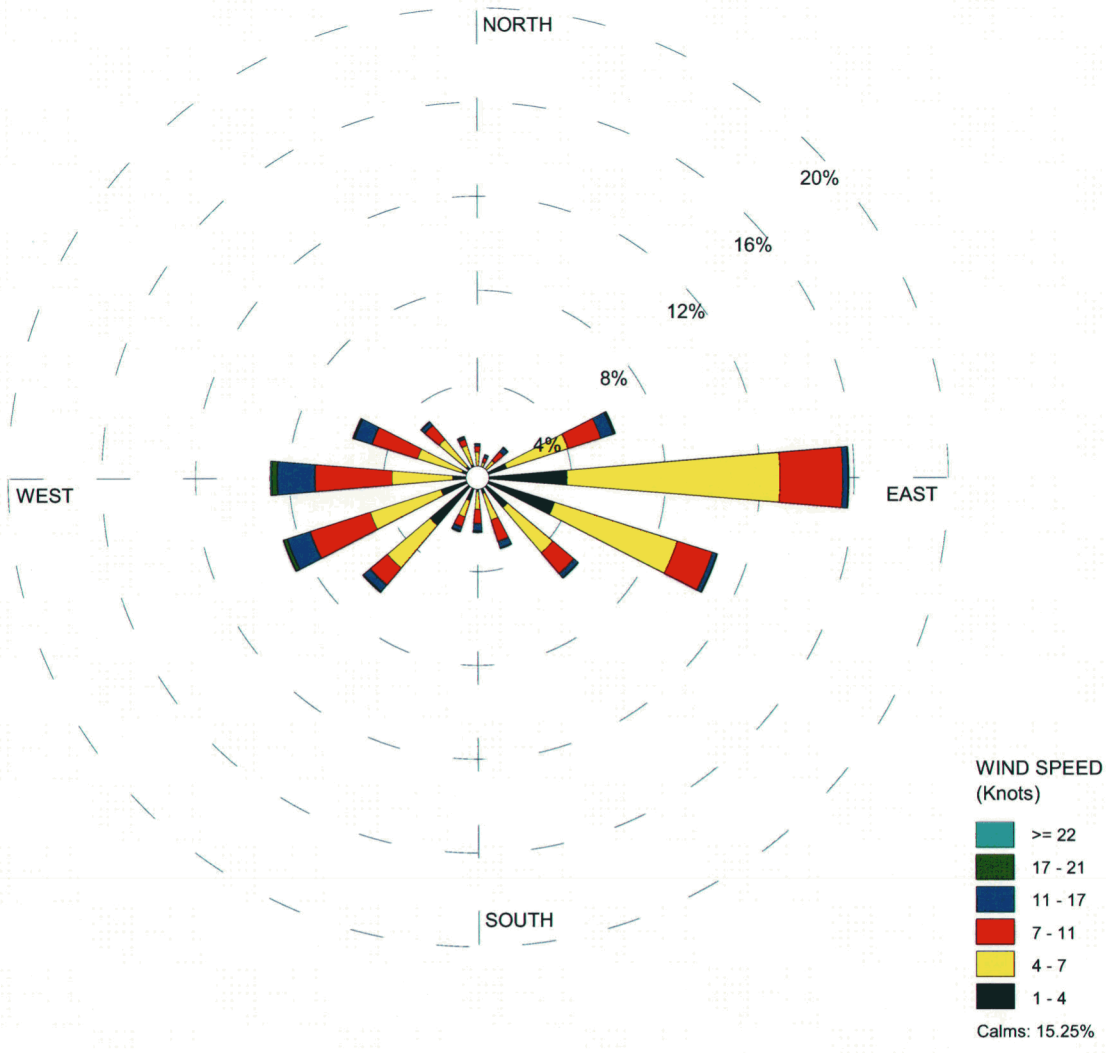
Month	Average Maximum Temperature (°F)	Average Minimum Temperature (°F)	Average Daily Temperature Range (°F)	Average Mean Temperature (°F)	Average Precipitation (inches)
January	67.1	34.1	33	50.6	0.89
February	71.7	36.8	34.9	54.3	0.85
March	77.5	412	36.3	59.4	0.92
April	86.5	46.7	39.8	66.6	0.33
May	95.4	54.3	41.1	74.9	0.15
June	104.8	63.5	41.3	84.2	0.14
July	106.7	73.9	32.8	90.3	1.10
August	104.6	72.8	31.8	88.7	1.28
September	100.6	65.4	35.2	83.0	0.79
October	89.8	52.4	37.4	71.1	0.71
November	76.6	40.2	36.4	58.4	0.74
December	67.4	34.6	32.8	51.0	1.19
Annual Average/Total	87.4	51.3		69.4	9.08

Based on data collected at Casa Grande National Monument, 5 miles north of Coolidge Generating Station
Source: Western Regional Climate Center, Internet www.wrcc.dri.edu

Period of Record: 3-1-1904 to 4-30-2000

WIND ROSE PLOT:
Station #722780

DISPLAY:
Wind Speed
Direction (blowing from)



COMMENTS:	DATA PERIOD:	COMPANY NAME:	
	2003 2004 2005 2006 2007 **Jan 1 - Dec 31** **00:00 - 23:00**	MODELER:	
	CALM WINDS: **15.25%**	TOTAL COUNT: **39935 hrs.**	
	AVG. WIND SPEED: **5.81 Knots**	DATE: **7/6/2008**	PROJECT NO.:

Figure 4-1
Phoenix Meteorological Data Wind Rose
Coolidge Generating Station
Coolidge, AZ

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\\COBRA\GIS\PROJECTS\AIR\COOLIDGE\MAPFILES\FIGURE4-1_WINDROSE.MXD 7/8/2008 12:40:02

4.1.3 Baseline Air Quality

Pinal County is in attainment with the federal, state, and county air quality standards for all criteria pollutants. The most significant air pollutants in this portion of Pinal County are PM_{10} and $PM_{2.5}$ resulting primarily from agricultural activities and naturally occurring wind blown dust due to the arid conditions.

Table 4-2 presents maximum and annual 2007 ambient air quality for the EPA monitoring stations in the general Project area representing the most recent full year of air quality. These stations were selected as they were closest to the proposed Project Site and, therefore, most representative for each of the respective pollutants. This table also presents the relevant Pinal County and National Ambient Air Quality Standard (PCAAQS/NAAQS) and the Significant Impact Levels (SILs) for each pollutant and averaging period. **Figure 4-2** shows the location of each of the monitoring stations.

4.2 Air Quality Dispersion Model Selection

The EPA AERMOD (Version 07026) dispersion model was used to evaluate Class II air quality impacts. The AERMOD model is the latest generation of the EPA's short-term model that is recommended for predicting impacts from industrial-point sources as well as area and volume sources.

4.2.1 Model Input Defaults/Options

The AERMOD model was used with regulatory default options as recommended in the EPA Guideline on Air Quality Models. The following supporting pre-processors for AERMOD were also used:

- BPIP-PRIME (Version 04274);
- AERMET (Version 06341); and
- AERMAP (Version 06341).

The technical options selected for the AERMOD model include:

- Regulatory default control options;
- Rural dispersion mode; and
- Receptor elevations and controlling hill heights obtained from AERMAP output.

The model assumes that the modeled emissions of NO_x will completely convert to NO_2.

4.2.2 Land Use / Classification

AERMOD was run in the rural dispersion mode since land use within 3 km of the proposed Project site is primarily classified as rural (Auer Method).

TABLE 4-2
Representative Air Quality near Coolidge Generating Station

Pollutant	Averaging Period	Maximum (µg/m³)	NAAQS	SILs	EPA Station ID	City	County
CO	1-Hour	3,078	40,000 [A]	2,000	40134004	Chandler	Maricopa Co
CO	8-Hour	1,824	10,000 [A]	500	40134004	Chandler	Maricopa Co
NO_x	Annual	30	100	1	40133003	Scottsdale	Maricopa Co
PM_{10}	24-Hour	82	150 [B]	5	40213004	Coolidge	Pinal Co
PM_{10}	Annual	36	50	1	40213004	Coolidge	Pinal Co
$PM_{2.5}$	24-Hour	27	35 [C]	NA	40210001	Casa Grande	Pinal Co
$PM_{2.5}$	Annual	10	15 [D]	NA	40210001	Casa Grande	Pinal Co
SO_2	3-Hour	26	1,305 [A]	25	40212001	San Manuel	Pinal Co
SO_2	24-Hour	10	365 [A]	5	40212001	San Manuel	Pinal Co
SO_2	Annual	5	78	1	40212001	San Manuel	Pinal Co
Ozone	8-Hour	139	147 [E] 157 [F]		40213003	Casa Grande	Pinal Co

Source: EPA Airdata, Monitor Values Report - Criteria Air Pollutants, http://www.EPA.GOV/OAR/DATA/MONVALS.html?St~Az~Arizona

A - Not to be exceeded more than once per year.

B - Not to be exceeded more than once per year on average over 3 years.

C - To attain this standard, the 3-Year Average of the 98th Percentile of 24-hour concentrations at each population-oriented monitor within an area must not exceed 35 µg/m³ (Effective December 17, 2006).

D - To attain this standard, the 3-Year Average of the weighted annual mean PM2.5 concentrations from single or multiple community-oriented monitors must not exceed 15.0 µg/m³.

E – 2008 Standard. To attain this standard, the 3-Year Average of the fourth-highest daily maximum 8-hour average ozone concentrations measured at each monitor within an area over each year must not exceed 0.075 ppm. (Effective May 27, 2008)

F – 1997 Standard.

(1) To attain this standard, the 3-Year Average of the fourth-highest daily maximum 8-hour average ozone concentrations measured at each monitor within an area over each year must not exceed 0.08 ppm.

(2) The 1997 Standard—and the implementation rules for that standard—will remain in place for implementation purposes as EPA undertakes rulemaking to address the transition from the 1997 ozone standard to the 2008 ozone standard.

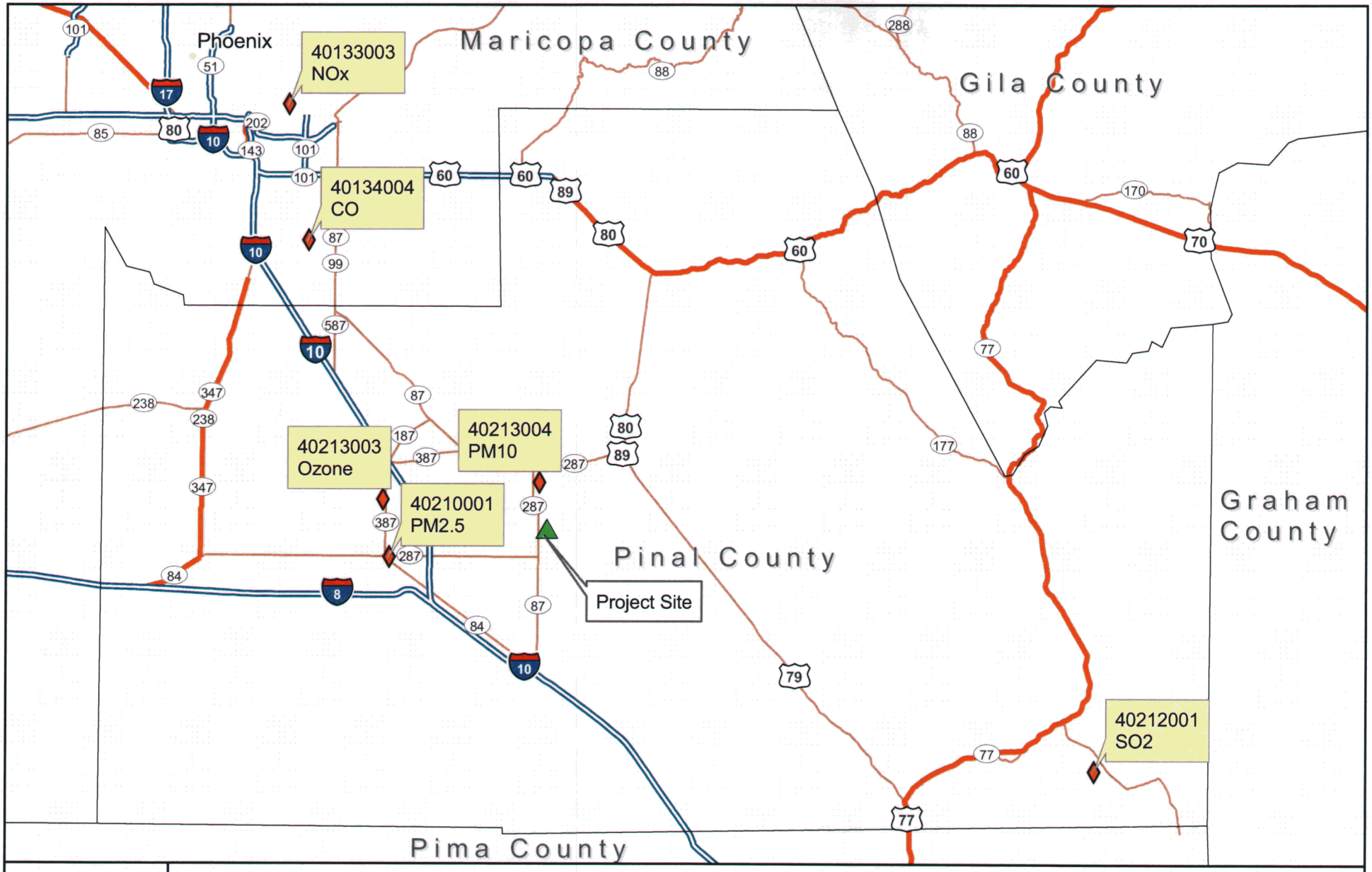

FIGURE 4-2
Ambient Air Monitor Locations
Coolidge Generating Station
Coolidge, AZ

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4.2.3 Building Downwash and Good Engineering Practice

Building wake effects were included for all point sources and all structures and buildings at the Project. The AERMOD building wake effect inputs were generated using the Building Profile Input Program with Plume Rise Model Enhancements (BPIP-PRIME) based on the Project layout configurations shown on **Figure 2-2**.

The BPIP processor was also used to analyze Good Engineering Practice (GEP) stack heights for the point sources. The purpose is to demonstrate the modeled stack heights do not exceed GEP limits.

4.2.4 Receptor Grid

Receptors at 25 meter intervals were placed around the Project Site boundary. Outside the boundary fence line, receptors were placed as follows:

- 100-meter intervals from fence line to 3 kilometers (km);
- 500-meter intervals from 3 to 5 km; and
- 1,000-meter intervals from 5 to 25 km.

The elevation of each receptor, as well as the elevations of controlling terrain, was determined from US Geological Survey Digital Elevation Model electronic files. The modeling grid and associated topography are shown on **Figure 4-3**.

4.2.5 Stack Parameters

Stack and exhaust parameters used as inputs for the dispersion modeling are presented in **Appendix B**. Each CTG was modeled for 30 different operating scenarios that represented the range of ambient conditions and CTG operations between 50 and 100 percent load.

4.2.6 Modeling Emission Rates

Emissions were evaluated for the full range of operating scenarios and applicable averaging periods. By including the full range of operating conditions for all pollutants and averaging periods, potential maximum impacts are accounted for in the analysis. Example calculations for maximum emissions as well as for those emissions that correspond to the maximum ambient impacts (which are not necessarily the same as the maximum emissions) are presented in **Appendix B**.

The Project could be required to operate any time during the year, but as a synthetic minor source, its operations are limited and it would not be able to operate continuously on an annual basis. To capture all potential ambient conditions represented in each year of the meteorological data, as well as to include operations that may occur at any time during the year, the annual modeling results were based on continuous year-round operations. An outcome of this modeling decision is the estimates of annual ambient concentrations are very conservative.

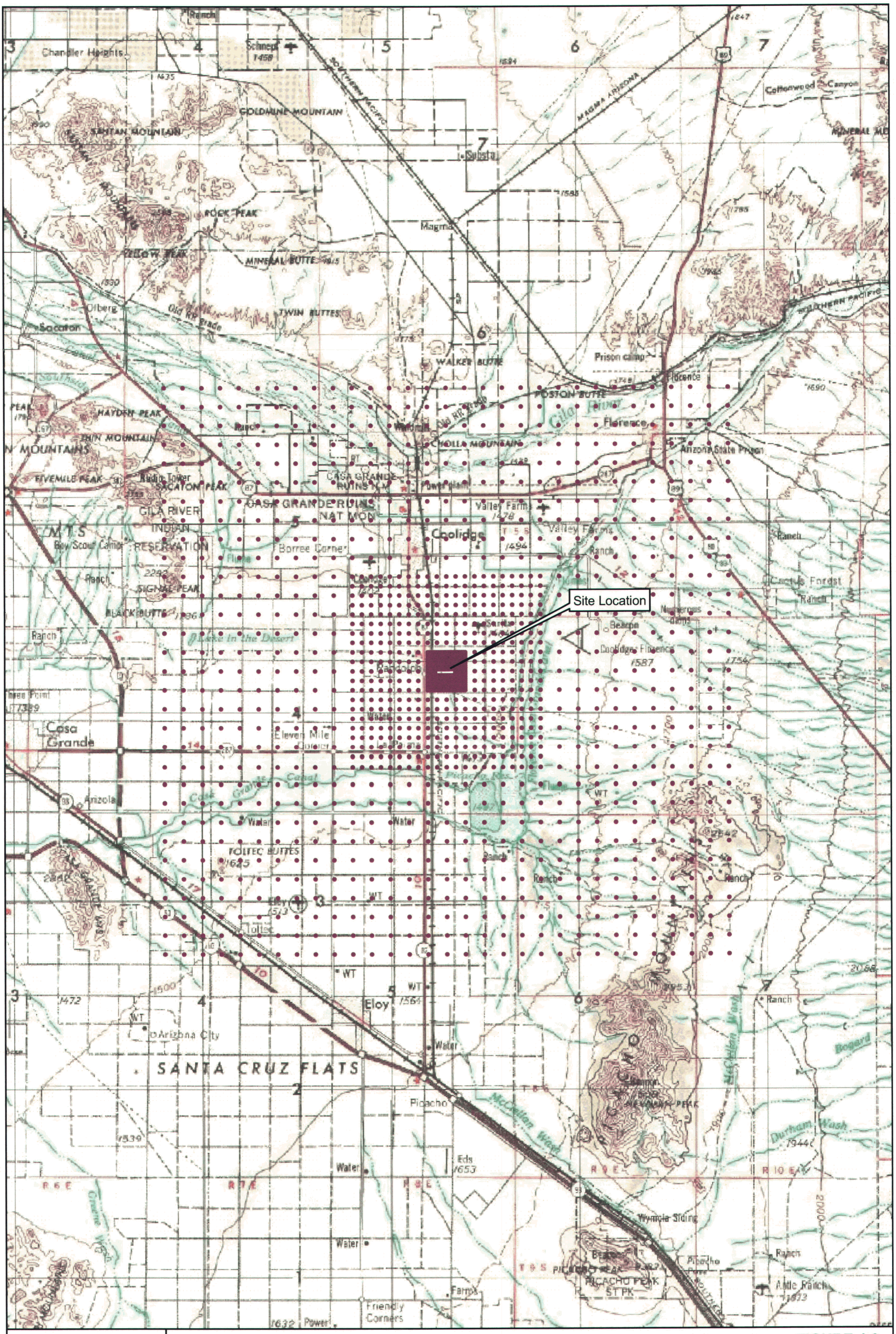

FIGURE 4-3
Dispersion Modeling Receptor Grid
Coolidge Generating Station
Coolidge, AZ

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4.2.7 Criteria Pollutant Analysis

Table 4-3 presents the results of the criteria pollutant AERMOD analysis. The results are compared to the PCAAQS and to federal Class II SILs. The SIL values are compared to the modeled Project impacts, and the PCAAQS values are compared to the modeled Project impacts combined with the 2007 background data presented on **Table 4-2**.

The results demonstrate that maximum ambient air impacts from CGS would be well below the PCAAQS and SILs for all pollutants.

TABLE 4-3
Coolidge Generating Station Predicted Maximum Air Quality Impacts

Pollutant	Averaging Period	Maximum Modeled Impact (µg/m³)	SIL (µg/m³)	Percent of SIL (%)	2007 Monitored Background (µg/m³)	Modeled Impact with Background (µg/m³)	PCAAQS (µg/m³)
NO_2	Annual	0.694	1	69.4	30	31	100
CO	1-Hour	311	2,000	15.6	3,078	3,389	40,000
CO	8-Hour	41.8	500	8.4	1,824	1,866	10,000
PM_{10}	24-Hour	4.57	5	91.4	82	87	150
PM_{10}	Annual	0.666	1	66.6	36	37	50
$PM_{2.5}$	24-Hour	4.57	NA	NA	27	32	35
$PM_{2.5}$	Annual	0.666	NA	NA	10	11	15
SO_2	3-Hour	14.1	25	56.4	26	40	1,305
SO_2	24-Hour	2.69	5	53.8	10	13	365
SO_2	Annual	0.480	1	48.0	5	6	78

Table 4-4 presents the operating and ambient conditions that were used as inputs to generate the maximum impacts shown in **Table 4-3**. Some of the conditions that produce the worst-case emissions, such as annual impacts at 15 °F, are not a good representation of ambient conditions that could reasonably be expected to occur at this location. This results in an overestimate of impacts. The results also show that higher emission rates (as would occur for CO emissions at low temperatures over a 1-hour period) are not necessarily related to maximum impacts. Stack exhaust and ambient conditions are also significant factors is determining maximum impacts.

TABLE 4-4
Coolidge Generating Station Operating Conditions Related to Maximum Air Quality Impacts

Pollutant	Averaging Period	Operating Scenario Case Number	Load (%)	Ambient Temperature (°F)	Relative Humidity (%)	Evaporative Cooler
NO_2	Annual	01	100	15	60	off
CO	1-Hour	36	50	122	10	off
CO	8-Hour	06	50	15	60	off
PM_{10}	24-Hour	36	50	122	10	off
PM_{10}	Annual	36	50	122	10	off
$PM_{2.5}$	24-Hour	36	50	122	10	off
$PM_{2.5}$	Annual	36	50	122	10	off
SO_2	3-Hour	01	100	15	60	off
SO_2	24-Hour	06	50	15	60	off
SO_2	Annual	01	100	15	60	off

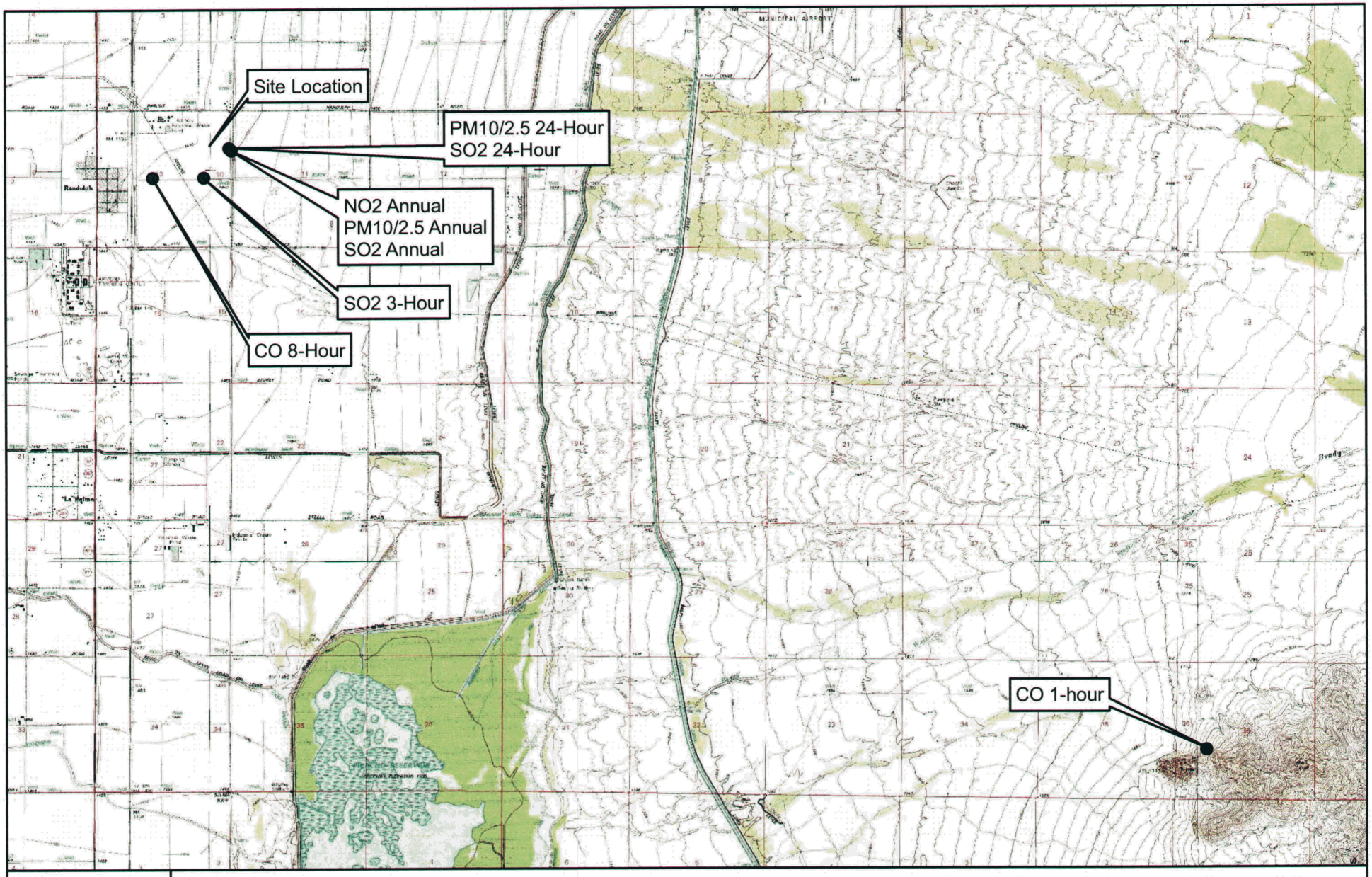

FIGURE 4-4
Maximum Ambient Air Quality Impact Locations
Coolidge Generating Station
Coolidge, AZ

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4.2.8 Class I Area Analysis

Class I Area Analyses are not required for minor source permitting, but the Applicant elected to evaluate air quality impacts at two nearby Class I areas (Superstition Wilderness and Saguaro National Park) relative to Class I PSD increments.

Superstition Wilderness is located approximately 53 kilometers north-northeast of the Project site, and the Saguaro West National Park is located approximately 108 kilometers southeast of the Project site.

Tables 4-5 and 4-6 present the results of this analysis. This analysis shows that the maximum criteria pollutant concentrations at either of these two Class I areas would consume only a small fraction (0.03 – 7.1 percent) of the Class I increments.

TABLE 4-5
Saguaro National Park Ambient Air Quality Analysis

Pollutant	Averaging Period	Modeled Impact ($\mu g/m^3$)	Proposed Class I Increment	Percent of Increment (%)
NO_2	Annual	0.002	2.5	0.1
PM_{10}	24-Hour	0.018	8	0.2
PM_{10}	Annual	0.001	4	0.03
SO_2	3-Hour	0.144	25	0.6
SO_2	24-Hour	0.024	5	0.5
SO_2	Annual	0.002	2	0.1

TABLE 4-6
Superstition Wilderness Ambient Air Quality Analysis

Pollutant	Averaging Period	Modeled Impact ($\mu g/m^3$)	Proposed Class I Increment	Percent of Increment (%)
NO_2	Annual	0.011	2.5	0.5
PM_{10}	24-Hour	0.224	8	2.8
PM_{10}	Annual	0.006	4	0.2
SO_2	3-Hour	1.775	25	7.1
SO_2	24-Hour	0.299	5	6.0
SO_2	Annual	0.008	2	0.4

5.0 APPLICABLE REQUIREMENTS

5.1 Application and Permit Requirements

The applicable requirements for the CGS Project are those requirements for sources regulated under PCAQCD Code of Regulations Chapter 3, Article 1 (General Provisions Relating to Permits and Permit Revisions).

Applicable federal requirements are described in CFR 40 (Protection of the Environment), Subchapter C (Air Programs), Parts 50 through 99. **Table 5-1** describes the applicable federal requirements for the CGS Project.

TABLE 5-1
Federal Rules, Regulations and Standards Applicable to Coolidge Generating Station

Federal Citation	Title
40 CFR 50	National Primary and Secondary Air Quality Standards
40 CFR 60	Standards of Performance of New Stationary Sources (subpart GG)
40 CFR 64	Compliance Assurance Monitoring
40 CFR 70	Operating Permits
40 CFR 72	Acid Rain Program
40 CFR 73	Sulfur Dioxide Allowance System
40 CFR 75	Continuous Emissions Monitoring

5.2 HAP Non-Applicability

The CGS Project will be a minor source of HAPs, and will not be subject to the federal NESHAP rules under 40 CFR Part 63 Subpart YYYY. Sources at this Project are not included in the source categories listed in Chapter 7, Article 2, Table 1 of the PCAQCD rules. Based on the above facts, HAP regulations do not apply to this Project.

5.3 Conclusion

The air pollutant emissions estimates and ambient air quality analyses presented in this air permit application demonstrate that the CGS Project will operate in compliance with all applicable Pinal County, State of Arizona, and federal air quality rules.

APPENDIX A

Application Forms

PERMIT APPLICATION

(As required by A.R.S. §49-480, and Chapter 3, Article I, Pinal County Air Quality Control District Code of Regulations)

PINAL COUNTY AIR QUALITY CONTROL DISTRICT
P.O. BOX 987 · FLORENCE, AZ 85232 · PHONE (520) 866-6929

1. **Permit to be issued to: (Name and legal status (e.g. corporation or proprietorship) or organization that is to receive permit):**

   Coolidge Power Corporation

2. **Mailing Address:** 450 1st Street S.W.

   City: Calgary **State:** Alberta, Canada **Zip:** T2P 5H1

   Billing Address (if different from above): Same

   City: _____ **State:** _____ **Zip:** _____

3. **Plant Name (if different from #1 above):** Coolidge Generation Station

4. **Name(s) of Owner or Operator:** Coolidge Power Corporation **Phone:** 403-920-7762

5. **Plant/Site Manager:** TBD **Phone:** _____ **Fax:** _____

6. **Contact Person:** Brad Howard **Phone:** 403-920-7762 **Fax:** _____

7. **Equipment/Plant Location or Proposed Location Address:** N. Vail Road and E. Randolph Road

   City: Randolph **Zip:** 85228 **Assessor's Parcel Number:** TBD

   Section/Township/Range: S10 T6S R8E

   Latitude/Longitude, Elevation: 32.9200 N/11.5041 W, 1440

8. **General Nature of Business:** Electric Power Generation **Standard Industrial Classification Code:** 4911

9. **Type of Organization:**
   ☒ Corporation **State of Incorporation:** _____ ☐ Individual Owner ☐ Partnership
   ☐ Arizona Limited Liability ☐ Government Entity (Government Facility Code): _____
   ☐ Other (Specify): _____

10. **Permit Application Basis: (Check all that apply)**
    ☒ New Source ☐ Permit Revision ☐ Renewal of Existing Permit
    ☐ Portable Source ☐ General Permit ☐ Permit Transfer

    For renewal or modification, include existing permit number: _____

    Date of Commencement of Construction or Modification: August 1, 2009

    Is any of the equipment to be leased to another individual or entity? ☐ Yes ☒ No

11. **If necessary to preserve this source's status as a less-than-major source, the undersigned agrees that the permit or this source *SHOULD* ☐ *SHOULD NOT* ☒ include Federally Enforceable Provisions in accord with Code §3-1-084.**

12. **The undersigned states and certifies that, based on information and belief formed after reasonable inquiry, the statements and information in this document and supporting materials are true, accurate and complete. To the extent that this application pertains to an assignment of an existing permit, the undersigned further agrees to comply with and accept each and every obligation associated with that existing permit. *Knowingly presenting a false certification constitutes a criminal offense under A.R.S. §13-2704.***

13. **The undersigned applicant states that he/she currently has, or at the time construction and/or operation begins will have, legal authority to enter upon and use the premises upon which this source will be operated.**

14. **Attachments describing the process to be permitted or revised including a process description, a list of equipment, capacities, MSDS sheets and anticipated production or throughput should be submitted with the application.**

15. **For new sources, an application filing deposit fee must be included with the application.**

Signature of Responsible Official of Organization: _____

Typed or Printed Name of Signer: John B. Cashin

Official Title of Signer: Assistant Secretary

Date: August 7, 2008

COMPANY NAME Coolidge Power Corporation

EMISSION SOURCES

DATE_____

Estimated Potential to Emit as per ' 1-3-140.
Review of applications and issuance of permits will be expedited by supplying all necessary information on this Table.

REGULATED AIR POLLUTANT DATA					EMISSION POINT DISCHARGE PARAMETERS										
EMMISSION POINT (1)		CHEMICAL COMPOSITION OF TOTAL STREAM	R. AIR POLLUTANT EMISSION RATE		UTM COORDIANTES OF EMISSION PT (5)			STACK SOURCES (6)					NONPOINT SOURCES (7)	
NUMBER	NAME	REGULATED AIR POLLUTANT NAME (2)	#/ HR. (3)	TONS/ YEAR (4)	ZONE	EAST (Mtrs)	NORTH (Mtrs)	HEIGHT ABOVE GROUND /feet	HEIGHT ABOVE STRUC. /feet	EXIT DATA			LENGTH (ft.)	WIDTH (ft.)
										DIA (ft.)	VEL (fps.)	TEMP. (EF)		
0001	LM6000 Turbine 1	NOx	33	20	12	452862	3642336	85	48.5	10.5	110	853.4	N/A	N/A
0001	LM6000 Turbine 1	CO	63	20	12	452862	3642336	85	48.5	10.5	110	853.4	N/A	N/A
0001	LM6000 Turbine 1	PM10	7	9	12	452862	3642336	85	48.5	10.5	110	853.4	N/A	N/A
0001	LM6000 Turbine 1	SO2	7	12	12	452862	3642336	85	48.5	10.5	110	853.4	N/A	N/A
0001	LM6000 Turbine 1	VOC	2	4	12	452862	3642336	85	48.5	10.5	110	853.4	N/A	N/A

GROUND ELEVATION OF FACILITY ABOVE MEAN SEA LEVEL1440_ feet
STANDARD CONDITIONS ARE 293K AND 101.3 KILOPASCALS (' 1-3-140)

General Instructions:

1. Identify each emission point with a unique number for this plant site, consistent with emission point identification used on plot plan, previous permits, and Emissions Inventory Questionnaire. Include fugitive emissions. Limit emission point number to eight (8) character spaces. For each emission point use as many lines as necessary to list regulated air pollutant data. Typical emission point names are: heater, vent, boiler, tank, reactor, separator, baghouse, fugitive, etc. Abbreviations are O.K.
2. Components to be listed include regulated air pollutants as defined in ' 1-3-140. Examples of typical component names are: Carbon Monoxide (CO), Nitrogen Oxides (NO_X), Sulfur Dioxide (SO_2), Volatile Organic Compounds (VOC), particulate matter (PM), particulate less than 10 microns (PM_{10}), etc. Abbreviations are O.K.
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4. Tons per year is annual maximum potential emission expected by applicant, which takes into account process operating schedule.
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6. Supply additional information as follows if appropriate:
   (a) Stack exit configuration other than a round vertical stack. Show length and width for a rectangular stack. Indicate if horizontal discharge with a note.
   (b) Stack's height above supporting or adjacent structures if structure is within 3 "stack height above the ground" of stack.
7. Dimensions of nonpoint sources as defined in ' 1-3-140.

[Adopted effective November 3, 1993

COMPANY NAME Coolidge Power Corporation

EMISSION SOURCES

DATE_____

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										DIA (ft.)	VEL (fps.)	TEMP. (EF)		
0002	LM6000 Turbine 2	NOx	33	20	12	452888	3642336	85	48.5	10.5	110	853.4	N/A	N/A
0002	LM6000 Turbine 2	CO	63	20	12	452888	3642336	85	48.5	10.5	110	853.4	N/A	N/A
0002	LM6000 Turbine 2	PM10	7	9	12	452888	3642336	85	48.5	10.5	110	853.4	N/A	N/A
0002	LM6000 Turbine 2	SO2	7	12	12	452888	3642336	85	48.5	10.5	110	853.4	N/A	N/A
0002	LM6000 Turbine 2	VOC	2	4	12	452888	3642336	85	48.5	10.5	110	853.4	N/A	N/A

GROUND ELEVATION OF FACILITY ABOVE MEAN SEA LEVEL1440_ feet
STANDARD CONDITIONS ARE 293K AND 101.3 KILOPASCALS (' 1-3-140)

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[Adopted effective November 3, 1993]

COMPANY NAME Coolidge Power Corporation

EMISSION SOURCES

DATE_____

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										DIA (ft.)	VEL (fps.)	TEMP. (EF)		
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0003	LM6000 Turbine 3	CO	63	20	12	452915	3642336	85	48.5	10.5	110	853.4	N/A	N/A
0003	LM6000 Turbine 3	PM10	7	9	12	452915	3642336	85	48.5	10.5	110	853.4	N/A	N/A
0003	LM6000 Turbine 3	SO2	7	12	12	452915	3642336	85	48.5	10.5	110	853.4	N/A	N/A
0003	LM6000 Turbine 3	VOC	2	4	12	452915	3642336	85	48.5	10.5	110	853.4	N/A	N/A

GROUND ELEVATION OF FACILITY ABOVE MEAN SEA LEVEL1440_ feet
STANDARD CONDITIONS ARE 293K AND 101.3 KILOPASCALS (' 1-3-140)

General Instructions:

1. Identify each emission point with a unique number for this plant site, consistent with emission point identification used on plot plan, previous permits, and Emissions Inventory Questionnaire. Include fugitive emissions. Limit emission point number to eight (8) character spaces. For each emission point use as many lines as necessary to list regulated air pollutant data. Typical emission point names are: heater, vent, boiler, tank, reactor, separator, baghouse, fugitive, etc. Abbreviations are O.K.
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   (b) Stack's height above supporting or adjacent structures if structure is within 3 "stack height above the ground" of stack.
7. Dimensions of nonpoint sources as defined in ' 1-3-140.

[Adopted effective November 3, 1993]

COMPANY NAME Coolidge Power Corporation

EMISSION SOURCES

DATE_____

Estimated Potential to Emit as per ' 1-3-140.
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REGULATED AIR POLLUTANT DATA					EMISSION POINT DISCHARGE PARAMETERS									
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										DIA (ft.)	VEL (fps.)	TEMP. (EF)		
0004	LM6000 Turbine 4	NOx	33	20	12	452942	3642336	85	48.5	10.5	110	853.4	N/A	N/A
0004	LM6000 Turbine 4	CO	63	20	12	452942	3642336	85	48.5	10.5	110	853.4	N/A	N/A
0004	LM6000 Turbine 4	PM10	7	9	12	452942	3642336	85	48.5	10.5	110	853.4	N/A	N/A
0004	LM6000 Turbine 4	SO2	7	12	12	452942	3642336	85	48.5	10.5	110	853.4	N/A	N/A
0004	LM6000 Turbine 4	VOC	2	4	12	452942	3642336	85	48.5	10.5	110	853.4	N/A	N/A

GROUND ELEVATION OF FACILITY ABOVE MEAN SEA LEVEL1440 feet
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COMPANY NAME Coolidge Power Corporation

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0005	LM6000 Turbine 5	PM10	7	9	12	452969	3642336	85	48.5	10.5	110	853.4	N/A	N/A
0005	LM6000 Turbine 5	SO2	7	12	12	452969	3642336	85	48.5	10.5	110	853.4	N/A	N/A
0005	LM6000 Turbine 5	VOC	2	4	12	452969	3642336	85	48.5	10.5	110	853.4	N/A	N/A

GROUND ELEVATION OF FACILITY ABOVE MEAN SEA LEVEL1440 feet
STANDARD CONDITIONS ARE 293K AND 101.3 KILOPASCALS (' 1-3-140)

General Instructions:

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[Adopted effective November 3, 1993]

COMPANY NAME Coolidge Power Corporation

EMISSION SOURCES

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GROUND ELEVATION OF FACILITY ABOVE MEAN SEA LEVEL1440_ feet
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EMMISSION POINT (1)		CHEMICAL COMPOSITION OF TOTAL STREAM	R. AIR POLLUTANT EMISSION RATE		UTM COORDIANTES OF EMISSION PT (5)			STACK SOURCES (6)					NONPOINT SOURCES (7)	
NUMBER	NAME	REGULATED AIR POLLUTANT NAME (2)	#/ HR. (3)	TONS/ YEAR (4)	ZONE	EAST (Mtrs)	NORTH (Mtrs)	HEIGHT ABOVE GROUND /feet	HEIGHT ABOVE STRUC. /feet	EXIT DATA			LENGTH (ft.)	WIDTH (ft.)
										DIA (ft.)	VEL (fps.)	TEMP. (EF)		
0008	LM6000 Turbine 8	NOx	33	20	12	452888	3642146	85	48.5	10.5	110	853.4	N/A	N/A
0008	LM6000 Turbine 8	CO	63	20	12	452888	3642146	85	48.5	10.5	110	853.4	N/A	N/A
0008	LM6000 Turbine 8	PM10	7	9	12	452888	3642146	85	48.5	10.5	110	853.4	N/A	N/A
0008	LM6000 Turbine 8	SO2	7	12	12	452888	3642146	85	48.5	10.5	110	853.4	N/A	N/A
0008	LM6000 Turbine 8	VOC	2	4	12	452888	3642146	85	48.5	10.5	110	853.4	N/A	N/A

GROUND ELEVATION OF FACILITY ABOVE MEAN SEA LEVEL1440_ feet
STANDARD CONDITIONS ARE 293K AND 101.3 KILOPASCALS (' 1-3-140)

General Instructions:

1. Identify each emission point with a unique number for this plant site, consistent with emission point identification used on plot plan, previous permits, and Emissions Inventory Questionnaire. Include fugitive emissions. Limit emission point number to eight (8) character spaces. For each emission point use as many lines as necessary to list regulated air pollutant data. Typical emission point names are: heater, vent, boiler, tank, reactor, separator, baghouse, fugitive, etc. Abbreviations are O.K.
2. Components to be listed include regulated air pollutants as defined in ' 1-3-140. Examples of typical component names are: Carbon Monoxide (CO), Nitrogen Oxides (NO_X), Sulfur Dioxide (SO_2), Volatile Organic Compounds (VOC), particulate matter (PM), particulate less than 10 microns (PM_{10}), etc. Abbreviations are O.K.
3. Pounds per hour (#/HR) is maximum potential emission rate expected by applicant.
4. Tons per year is annual maximum potential emission expected by applicant, which takes into account process operating schedule.
5. As a minimum applicant shall furnish a facility plot plan as described in the filing instructions. UTM coordinates are required only if the source is a major source or is required to perform refined modeling for the purposes of demonstrating compliance with ambient air quality guidelines.
6. Supply additional information as follows if appropriate:
   (a) Stack exit configuration other than a round vertical stack. Show length and width for a rectangular stack. Indicate if horizontal discharge with a note.
   (b) Stack's height above supporting or adjacent structures if structure is within 3 "stack height above the ground" of stack.
7. Dimensions of nonpoint sources as defined in ' 1-3-140.

[Adopted effective November 3, 1993

COMPANY NAME Coolidge Power Corporation

EMISSION SOURCES

DATE_____

Estimated Potential to Emit as per ' 1-3-140.
Review of applications and issuance of permits will be expedited by supplying all necessary information on this Table.

REGULATED AIR POLLUTANT DATA					EMISSION POINT DISCHARGE PARAMETERS									
EMMISSION POINT (1)		CHEMICAL COMPOSITION OF TOTAL STREAM	R. AIR POLLUTANT EMISSION RATE		UTM COORDIANTES OF EMISSION PT (5)			STACK SOURCES (6)					NONPOINT SOURCES (7)	
NUMBER	NAME	REGULATED AIR POLLUTANT NAME (2)	#/ HR. (3)	TONS/ YEAR (4)	ZONE	EAST (Mtrs)	NORTH (Mtrs)	HEIGHT ABOVE GROUND /feet	HEIGHT ABOVE STRUC. /feet	EXIT DATA			LENGTH (ft.)	WIDTH (ft.)
										DIA (ft.)	VEL (fps.)	TEMP. (EF)		
0009	LM6000 Turbine 9	NOx	33	20	12	452915	3642146	85	48.5	10.5	110	853.4	N/A	N/A
0009	LM6000 Turbine 9	CO	63	20	12	452915	3642146	85	48.5	10.5	110	853.4	N/A	N/A
0009	LM6000 Turbine 9	PM10	7	9	12	452915	3642146	85	48.5	10.5	110	853.4	N/A	N/A
0009	LM6000 Turbine 9	SO2	7	12	12	452915	3642146	85	48.5	10.5	110	853.4	N/A	N/A
0009	LM6000 Turbine 9	VOC	2	4	12	452915	3642146	85	48.5	10.5	110	853.4	N/A	N/A

GROUND ELEVATION OF FACILITY ABOVE MEAN SEA LEVEL1440_ feet
STANDARD CONDITIONS ARE 293K AND 101.3 KILOPASCALS (' 1-3-140)

General Instructions:

1. Identify each emission point with a unique number for this plant site, consistent with emission point identification used on plot plan, previous permits, and Emissions Inventory Questionnaire. Include fugitive emissions. Limit emission point number to eight (8) character spaces. For each emission point use as many lines as necessary to list regulated air pollutant data. Typical emission point names are: heater, vent, boiler, tank, reactor, separator, baghouse, fugitive, etc. Abbreviations are O.K.
2. Components to be listed include regulated air pollutants as defined in ' 1-3-140. Examples of typical component names are: Carbon Monoxide (CO), Nitrogen Oxides (NO_X), Sulfur Dioxide (SO_2), Volatile Organic Compounds (VOC), particulate matter (PM), particulate less than 10 microns (PM_{10}), etc. Abbreviations are O.K.
3. Pounds per hour (#/HR) is maximum potential emission rate expected by applicant.
4. Tons per year is annual maximum potential emission expected by applicant, which takes into account process operating schedule.
5. As a minimum applicant shall furnish a facility plot plan as described in the filing instructions. UTM coordinates are required only if the source is a major source or is required to perform refined modeling for the purposes of demonstrating compliance with ambient air quality guidelines.
6. Supply additional information as follows if appropriate:
   (a) Stack exit configuration other than a round vertical stack. Show length and width for a rectangular stack. Indicate if horizontal discharge with a note.
   (b) Stack's height above supporting or adjacent structures if structure is within 3 "stack height above the ground" of stack.
7. Dimensions of nonpoint sources as defined in ' 1-3-140.

[Adopted effective November 3, 1993

COMPANY NAME Coolidge Power Corporation

EMISSION SOURCES

DATE_____

Estimated Potential to Emit as per ' 1-3-140.
Review of applications and issuance of permits will be expedited by supplying all necessary information on this Table.

REGULATED AIR POLLUTANT DATA					EMISSION POINT DISCHARGE PARAMETERS									
EMMISSION POINT (1)		CHEMICAL COMPOSITION OF TOTAL STREAM	R. AIR POLLUTANT EMISSION RATE		UTM COORDIANTES OF EMISSION PT (5)			STACK SOURCES (6)					NONPOINT SOURCES (7)	
NUMBER	NAME	REGULATED AIR POLLUTANT NAME (2)	#/ HR. (3)	TONS/ YEAR (4)	ZONE	EAST (Mtrs)	NORTH (Mtrs)	HEIGHT ABOVE GROUND /feet	HEIGHT ABOVE STRUC. /feet	EXIT DATA			LENGTH (ft.)	WIDTH (ft.)
										DIA (ft.)	VEL (fps.)	TEMP. (EF)		
0010	LM6000 Turbine 10	NOx	33	20	12	452942	3642146	85	48.5	10.5	110	853.4	N/A	N/A
0010	LM6000 Turbine 10	CO	63	20	12	452942	3642146	85	48.5	10.5	110	853.4	N/A	N/A
0010	LM6000 Turbine 10	PM10	7	9	12	452942	3642146	85	48.5	10.5	110	853.4	N/A	N/A
0010	LM6000 Turbine 10	SO2	7	12	12	452942	3642146	85	48.5	10.5	110	853.4	N/A	N/A
0010	LM6000 Turbine 10	VOC	2	4	12	452942	3642146	85	48.5	10.5	110	853.4	N/A	N/A

GROUND ELEVATION OF FACILITY ABOVE MEAN SEA LEVEL1440 feet
STANDARD CONDITIONS ARE 293K AND 101.3 KILOPASCALS (' 1-3-140)

General Instructions:

1. Identify each emission point with a unique number for this plant site, consistent with emission point identification used on plot plan, previous permits, and Emissions Inventory Questionnaire. Include fugitive emissions. Limit emission point number to eight (8) character spaces. For each emission point use as many lines as necessary to list regulated air pollutant data. Typical emission point names are: heater, vent, boiler, tank, reactor, separator, baghouse, fugitive, etc. Abbreviations are O.K.
2. Components to be listed include regulated air pollutants as defined in ' 1-3-140. Examples of typical component names are: Carbon Monoxide (CO), Nitrogen Oxides (NO_X), Sulfur Dioxide (SO_2), Volatile Organic Compounds (VOC), particulate matter (PM), particulate less than 10 microns (PM_{10}), etc. Abbreviations are O.K.
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4. Tons per year is annual maximum potential emission expected by applicant, which takes into account process operating schedule.
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6. Supply additional information as follows if appropriate:
   (a) Stack exit configuration other than a round vertical stack. Show length and width for a rectangular stack. Indicate if horizontal discharge with a note.
   (b) Stack's height above supporting or adjacent structures if structure is within 3 "stack height above the ground" of stack.
7. Dimensions of nonpoint sources as defined in ' 1-3-140.

[Adopted effective November 3, 1993

COMPANY NAME Coolidge Power Corporation

EMISSION SOURCES

DATE_____

Estimated Potential to Emit as per ' 1-3-140.
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REGULATED AIR POLLUTANT DATA					EMISSION POINT DISCHARGE PARAMETERS										
EMMISSION POINT (1)		CHEMICAL COMPOSITION OF TOTAL STREAM	R. AIR POLLUTANT EMISSION RATE		UTM COORDIANTES OF EMISSION PT (5)			STACK SOURCES (6)					NONPOINT SOURCES (7)	
NUMBER	NAME	REGULATED AIR POLLUTANT NAME (2)	#/ HR. (3)	TONS/ YEAR (4)	ZONE	EAST (Mtrs)	NORTH (Mtrs)	HEIGHT ABOVE GROUND /feet	HEIGHT ABOVE STRUC. /feet	EXIT DATA			LENGTH (ft.)	WIDTH (ft.)
										DIA (ft.)	VEL (fps.)	TEMP. (EF)		
0011	LM6000 Turbine 11	NOx	33	20	12	452969	3642146	85	48.5	10.5	110	853.4	N/A	N/A
0011	LM6000 Turbine 11	CO	63	20	12	452969	3642146	85	48.5	10.5	110	853.4	N/A	N/A
0011	LM6000 Turbine 11	PM10	7	9	12	452969	3642146	85	48.5	10.5	110	853.4	N/A	N/A
0011	LM6000 Turbine 11	SO2	7	12	12	452969	3642146	85	48.5	10.5	110	853.4	N/A	N/A
0011	LM6000 Turbine 11	VOC	2	4	12	452969	3642146	85	48.5	10.5	110	853.4	N/A	N/A

GROUND ELEVATION OF FACILITY ABOVE MEAN SEA LEVEL1440_ feet
STANDARD CONDITIONS ARE 293K AND 101.3 KILOPASCALS (' 1-3-140)

General Instructions:

1. Identify each emission point with a unique number for this plant site, consistent with emission point identification used on plot plan, previous permits, and Emissions Inventory Questionnaire. Include fugitive emissions. Limit emission point number to eight (8) character spaces. For each emission point use as many lines as necessary to list regulated air pollutant data. Typical emission point names are: heater, vent, boiler, tank, reactor, separator, baghouse, fugitive, etc. Abbreviations are O.K.
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   (b) Stack's height above supporting or adjacent structures if structure is within 3 "stack height above the ground" of stack.
7. Dimensions of nonpoint sources as defined in ' 1-3-140.

[Adopted effective November 3, 1993

COMPANY NAME Coolidge Power Corporation

EMISSION SOURCES

DATE____

Estimated Potential to Emit as per ' 1-3-140.
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REGULATED AIR POLLUTANT DATA					EMISSION POINT DISCHARGE PARAMETERS									
EMMISSION POINT (1)		CHEMICAL COMPOSITION OF TOTAL STREAM	R. AIR POLLUTANT EMISSION RATE		UTM COORDIANTES OF EMISSION PT (5)			STACK SOURCES (6)					NONPOINT SOURCES (7)	
NUMBER	NAME	REGULATED AIR POLLUTANT NAME (2)	#/ HR. (3)	TONS/ YEAR (4)	ZONE	EAST (Mtrs)	NORTH (Mtrs)	HEIGHT ABOVE GROUND /feet	HEIGHT ABOVE STRUC. /feet	EXIT DATA			LENGTH (ft.)	WIDTH (ft.)
										DIA (ft.)	VEL (fps.)	TEMP. (EF)		
0012	LM6000 Turbine 12	NOx	33	20	12	452996	3642146	85	48.5	10.5	110	853.4	N/A	N/A
0012	LM6000 Turbine 12	CO	63	20	12	452996	3642146	85	48.5	10.5	110	853.4	N/A	N/A
0012	LM6000 Turbine 12	PM10	7	9	12	452996	3642146	85	48.5	10.5	110	853.4	N/A	N/A
0012	LM6000 Turbine 12	SO2	7	12	12	452996	3642146	85	48.5	10.5	110	853.4	N/A	N/A
0012	LM6000 Turbine 12	VOC	2	4	12	452996	3642146	85	48.5	10.5	110	853.4	N/A	N/A

GROUND ELEVATION OF FACILITY ABOVE MEAN SEA LEVEL1440 feet
STANDARD CONDITIONS ARE 293K AND 101.3 KILOPASCALS (' 1-3-140)

General Instructions:

1. Identify each emission point with a unique number for this plant site, consistent with emission point identification used on plot plan, previous permits, and Emissions Inventory Questionnaire. Include fugitive emissions. Limit emission point number to eight (8) character spaces. For each emission point use as many lines as necessary to list regulated air pollutant data. Typical emission point names are: heater, vent, boiler, tank, reactor, separator, baghouse, fugitive, etc. Abbreviations are O.K.
2. Components to be listed include regulated air pollutants as defined in ' 1-3-140. Examples of typical component names are: Carbon Monoxide (CO), Nitrogen Oxides (NO_X), Sulfur Dioxide (SO_2), Volatile Organic Compounds (VOC), particulate matter (PM), particulate less than 10 microns (PM_{10}), etc. Abbreviations are O.K.
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   (b) Stack's height above supporting or adjacent structures if structure is within 3 "stack height above the ground" of stack.
7. Dimensions of nonpoint sources as defined in ' 1-3-140.

[Adopted effective November 3, 1993

COMPANY NAME Coolidge Power Corporation

EMISSION SOURCES

DATE_____

Estimated Potential to Emit as per ' 1-3-140.
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REGULATED AIR POLLUTANT DATA					EMISSION POINT DISCHARGE PARAMETERS									
EMMISSION POINT (1)		CHEMICAL COMPOSITION OF TOTAL STREAM	R. AIR POLLUTANT EMISSION RATE		UTM COORDIANTES OF EMISSION PT (5)			STACK SOURCES (6)					NONPOINT SOURCES (7)	
NUMBER	NAME	REGULATED AIR POLLUTANT NAME (2)	#/ HR. (3)	TONS/ YEAR (4)	ZONE	EAST (Mtrs)	NORTH (Mtrs)	HEIGHT ABOVE GROUND /feet	HEIGHT ABOVE STRUC. /feet	EXIT DATA			LENGTH (ft.)	WIDTH (ft.)
										DIA (ft.)	VEL (fps.)	TEMP. (EF)		
0013	Diesel Fire Pump	NOx	2.1	0.2	12	453084	3642248	20	14	1	19.6	1124	N/A	N/A
0013	Diesel Fire Pump	CO	0.2	0.02	12	453084	3642248	20	14	1	19.6	1124	N/A	N/A
0013	Diesel Fire Pump	PM10	0.1	0.01	12	453084	3642248	20	14	1	19.6	1124	N/A	N/A
0013	Diesel Fire Pump	SO2	0.4	0.04	12	453084	3642248	20	14	1	19.6	1124	N/A	N/A
0013	Diesel Fire Pump	VOC	0.1	0.01	12	453084	3642248	20	14	1	19.6	1124	N/A	N/A

GROUND ELEVATION OF FACILITY ABOVE MEAN SEA LEVEL1440 feet
STANDARD CONDITIONS ARE 293K AND 101.3 KILOPASCALS (' 1-3-140)

General Instructions:

1. Identify each emission point with a unique number for this plant site, consistent with emission point identification used on plot plan, previous permits, and Emissions Inventory Questionnaire. Include fugitive emissions. Limit emission point number to eight (8) character spaces. For each emission point use as many lines as necessary to list regulated air pollutant data. Typical emission point names are: heater, vent, boiler, tank, reactor, separator, baghouse, fugitive, etc. Abbreviations are O.K.
2. Components to be listed include regulated air pollutants as defined in ' 1-3-140. Examples of typical component names are: Carbon Monoxide (CO), Nitrogen Oxides (NO_X), Sulfur Dioxide (SO_2), Volatile Organic Compounds (VOC), particulate matter (PM), particulate less than 10 microns (PM_{10}), etc. Abbreviations are O.K.
3. Pounds per hour (#/HR) is maximum potential emission rate expected by applicant.
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6. Supply additional information as follows if appropriate:
   (a) Stack exit configuration other than a round vertical stack. Show length and width for a rectangular stack. Indicate if horizontal discharge with a note.
   (b) Stack's height above supporting or adjacent structures if structure is within 3 "stack height above the ground" of stack.
7. Dimensions of nonpoint sources as defined in ' 1-3-140.

[Adopted effective November 3, 1993]

APPENDIX B

Data and Example Calculations

Coolidge Generating Station
Sample Emission Calculation

Sample Exhaust Flow and NOx Mass Emission Rate Calculation
Based on EPA Method 19

Case	Load	Amb Temp (F)	RH (%)	Evap Cooler
1	100%	15	60%	off

Fuel Flow Rate	450	MMBtu/hr
NOx Emissions	5.0	ppm
Ideal Gas Density	335.6	scf/lb-mol
NOx Mol Weight	46.01	lbm/lb-mol
Method 19 F Factor	8710	dscf/MMBtu

Emission Rate (lb/hr) =

Concentration (lb/dscf) * F Factor (dscf/MMBtu) * Fuel Flow Rate (MMBtu/hr) * (20.9/(20.9-15))

Calculation

NOx Emissions = 5.0 ppmvd @ 15% O2

$$\frac{5 \text{ dscf NOx}}{1.00E+06 \text{ dscf Exhaust}} * \frac{1 \text{ lb-mol NOx}}{335.6 \text{ dscf NOx}} = 1.49E-08 \frac{\text{lb-mol NOx}}{\text{dscf Exhaust}}$$

$$\frac{1.49E-08 \text{ lb-mol NOx}}{1 \text{ dscf Exhaust}} * \frac{46.01 \text{ lbm}}{1 \text{ lb-mol}} = 6.85E-07 \frac{\text{lbm NOx}}{\text{dscf Exhaust}}$$

$$\frac{6.85E-07 \text{ lbm NOx}}{1 \text{ dscf Exhaust}} * \frac{8710 \text{ dscf}}{1 \text{ MMBtu}} = 5.97E-03 \frac{\text{lbm NOx}}{\text{MMBtu}}$$

$$\frac{5.97E-03 \text{ lbm NOx}}{1 \text{ MMBtu}} * \frac{450 \text{ MMBtu}}{1 \text{ hr}} = 2.69 \frac{\text{lbm NOx}}{\text{hr}}$$

$$\frac{2.69 \text{ lbm NOx}}{1 \text{ hr}} * \frac{20.9}{20.9 - 15.0} = 9.5 \frac{\text{lb NOx}}{\text{hr}}$$

Coolidge Generating Station
Sample Emission Calculation

Sample Exhaust Flow and CO Mass Emission Rate Calculation
Based on EPA Method 19

Case	Load	Amb Temp (F)	RH (%)	Evap Cooler
1	100%	15	60%	off

Fuel Flow Rate	450	MMBtu/hr
CO Emissions	15.0	ppm
Ideal Gas Density	335.6	scf/lb-mol
CO Mol Weight	28.01	lbm/lb-mol
Method 19 F Factor	8710	dscf/MMBtu

Emission Rate (lb/hr) =

Concentration (lb/dscf) * F Factor (dscf/MMBtu) * Fuel Flow Rate (MMBtu/hr) * (20.9/(20.9-15))

Calculation

CO Emissions = 15.0 ppmvd @ 15% O2

$$\frac{15 \text{ dscf CO}}{1.00\text{E+}06 \text{ dscf Exhaust}} * \frac{1 \text{ lb-mol CO}}{335.6 \text{ dscf CO}} = 4.47\text{E-}08 \frac{\text{lb-mol CO}}{\text{dscf Exhaust}}$$

$$\frac{4.47\text{E-}08 \text{ lb-mol CO}}{1 \text{ dscf Exhaust}} * \frac{28.01 \text{ lbm}}{1 \text{ lb-mol}} = 1.25\text{E-}06 \frac{\text{lbm CO}}{\text{dscf Exhaust}}$$

$$\frac{1.25\text{E-}06 \text{ lbm CO}}{1 \text{ dscf Exhaust}} * \frac{8710 \text{ dscf}}{1 \text{ MMBtu}} = 1.09\text{E-}02 \frac{\text{lbm CO}}{\text{MMBtu}}$$

$$\frac{1.09\text{E-}02 \text{ lbm CO}}{1 \text{ MMBtu}} * \frac{450 \text{ MMBtu}}{1 \text{ hr}} = 4.91 \frac{\text{lbm CO}}{\text{hr}}$$

$$\frac{4.91 \text{ lbm CO}}{1 \text{ hr}} * \frac{20.9}{20.9 - 15.0} = 17.4 \frac{\text{lb CO}}{\text{hr}}$$

Coolidge Generating Station
Sample Emission Calculation

Sample Exhaust Flow and VOC Mass Emission Rate Calculation
Based on EPA Method 19

Case	Load	Amb Temp (F)	RH (%)	Evap Cooler
1	100%	15	60%	off

Fuel Flow Rate	450	MMBtu/hr
VOC Emissions	3.0	ppm
Ideal Gas Density	335.6	scf/lb-mol
VOC Mol Weight	16.04	lbm/lb-mol
Method 19 F Factor	8710	dscf/MMBtu

Emission Rate (lb/hr) =

Concentration (lb/dscf) * F Factor (dscf/MMBtu) * Fuel Flow Rate (MMBtu/hr) * (20.9/(20.9-15))

Calculation

VOC Emissions = 3.0 ppmvd @ 15% O2

$$\frac{3 \text{ dscf VOC}}{1.00\text{E+}06 \text{ dscf Exhaust}} * \frac{1 \text{ lb-mol VOC}}{335.6 \text{ dscf VOC}} = 8.94\text{E-}09 \frac{\text{lb-mol VOC}}{\text{dscf Exhaust}}$$

$$\frac{8.94\text{E-}09 \text{ lb-mol VOC}}{1 \text{ dscf Exhaust}} * \frac{16.04 \text{ lbm}}{1 \text{ lb-mol}} = 1.43\text{E-}07 \frac{\text{lbm VOC}}{\text{dscf Exhaust}}$$

$$\frac{1.43\text{E-}07 \text{ lbm VOC}}{1 \text{ dscf Exhaust}} * \frac{8710 \text{ dscf}}{1 \text{ MMBtu}} = 1.25\text{E-}03 \frac{\text{lbm VOC}}{\text{MMBtu}}$$

$$\frac{1.25\text{E-}03 \text{ lbm VOC}}{1 \text{ MMBtu}} * \frac{450 \text{ MMBtu}}{1 \text{ hr}} = 0.56 \frac{\text{lbm VOC}}{\text{hr}}$$

$$\frac{0.56 \text{ lbm VOC}}{1 \text{ hr}} * \frac{20.9}{20.9 - 15.0} = 2.0 \frac{\text{lb VOC}}{\text{hr}}$$

Coolidge Generating Station
Sample Emission Calculation

Sample PM10 Calculation

Case	Load	Amb Temp (F)	RH (%)	Evap Cooler
1	100%	15	60%	off

Manufacturer Spec	4.00	lb/hr
(NH4)2SO4 Emissions	1.46	lb/hr
Total PM10/PM2.5	5.46	lb/hr

Coolidge Generating Station
Sample Emission Calculation

Sample SO2 Calculation

Case	Load	Amb Temp (F)	RH (%)	Evap Cooler
1	100%	15	60%	off

Fuel Sulfur Concentration =	5	gr/100dscf	
Fuel Heat Content (LHV) =	906.0	Btu/scf	
Fueling Rate per CT =	450	MMBtu/hr	Engineering Data
S Mol Weight	32.07	lbm/lb-mol	
SO2 Mol Weight	64.06	lbm/lb-mol	

Calculate Fuel Flow

$$450{,}445{,}071\ \frac{\text{BTU}}{\text{hr}} * \frac{1\ \text{scf}}{906\ \text{BTU}} = 497{,}180\ \frac{\text{scf}}{\text{hr}}$$

$$497{,}180\ \frac{\text{scf}}{\text{hr}} * \frac{1\ \text{100scf}}{100\ \text{scf}} = 4{,}972\ \frac{\text{100scf}}{\text{hr}}$$

Calculate Sulfur Emissions

$$4{,}972\ \frac{\text{100scf}}{\text{hr}} * \frac{5.00\ \text{gr S}}{\text{100scf}} = 24{,}859\ \frac{\text{gr S}}{\text{hr}}$$

$$24{,}859\ \frac{\text{gr}}{\text{hr}} * \frac{1\ \text{lb}}{7{,}000\ \text{gr}} = 3.5513\ \frac{\text{lb S}}{\text{hr}}$$

$$3.5513\ \frac{\text{lb S}}{\text{hr}} * \frac{64\ \text{lb SO2}}{32\ \text{lb S}} = 7.10\ \frac{\text{lb SO2}}{\text{hr}}$$

Coolidge Generating Station
Sample Emission Calculation

Sample (NH4)2SO4 Calculation

Case	Load	Amb Temp (F)	RH (%)	Evap Cooler
21	100%	70	35%	on/n/a

SO2 Emission Rate	7.10	lb/hr
SO2 Mol Weight	64.06	lbm/lb-mol
(NH4)2SO4 Mol Weight	132.14	lbm/lb-mol
SO2 Conversion Percentage	10	percent

Calculate (NH4)2SO4 Emissions

$$7.10\ \frac{\text{lb SO2}}{\text{hr}} * \frac{10\ \text{lb}}{100\ \text{lb}} = 0.71\ \frac{\text{lb SO2}}{\text{hr}}$$

$$0.71\ \frac{\text{lb SO2}}{\text{hr}} * \frac{132\ \text{lb (NH4)2SO4}}{64\ \text{lb SO2}} = 1.46\ \frac{\text{lb (NH4)2SO4}}{\text{hr}}$$

Coolidge Generating Station
Sample Emission Calculation

Sample Exhaust Flow and Formaldehyde Mass Emission Rate Calculation
Based on EPA Method 19

Reference Formaldehyde and VOC Emissions from Siemens-Westinghouse 501F Combustion Turbine with Lean Pre-Mix Combustors and SCR and CO Catalysts
EPRI Product 1005408, January 2004, 66 pages

Case	Load	Amb Temp (F)	RH (%)	Evap Cooler
21	100%	70	35%	on/n/a

Fuel Flow Rate	451	MMBtu/hr
CHOH Emissions	0.047	ppm
Ideal Gas Density	335.6	scf/lb-mol
CHOH Mol Weight	30.03	lbm/lb-mol
Method 19 F Factor	8710	dscf/MMBtu

Emission Rate (lb/hr) =

Concentration (lb/dscf) * F Factor (dscf/MMBtu) * Fuel Flow Rate (MMBtu/hr) * (20.9/(20.9-15))

Calculation

CHOH Emissions = 0.047 ppmvd @ 15% O2

$$\frac{0.047 \text{ dscf CHOH}}{1.00E+06 \text{ dscf Exhaust}} * \frac{1 \text{ lb-mol CHOH}}{335.6 \text{ dscf CHOH}} = 1.40E-10 \frac{\text{lb-mol CHOH}}{\text{dscf Exhaust}}$$

$$\frac{1.40E-10 \text{ lb-mol CHOH}}{1 \text{ dscf Exhaust}} * \frac{30.03 \text{ lbm}}{1 \text{ lb-mol}} = 4.21E-09 \frac{\text{lbm CHOH}}{\text{dscf Exhaust}}$$

$$\frac{4.21E-09 \text{ lbm CHOH}}{1 \text{ dscf Exhaust}} * \frac{8710 \text{ dscf}}{1 \text{ MMBtu}} = 3.66E-05 \frac{\text{lbm CHOH}}{\text{MMBtu}}$$

$$\frac{3.66E-05 \text{ lbm CHOH}}{1 \text{ MMBtu}} * \frac{451 \text{ MMBtu}}{1 \text{ hr}} = 0.02 \frac{\text{lbm CHOH}}{\text{hr}}$$

$$\frac{0.02 \text{ lbm CHOH}}{1 \text{ hr}} * \frac{20.9}{20.9 - 15.0} = 0.06 \frac{\text{lb CHOH}}{\text{hr}}$$

Coolidge Generating Station
Sample Emission Calculation

Model Input
Sample Calculation for Combined Normal and Startup Emissions
Annual NOx Calculations

NOx Continuous Steady State Emissions

Case	Load	Amb Temp (F)	RH (%)	Evap Cooler
1	100%	15	60%	off

9.5 lb/hr * 454 gm/lb / 3600 s/hr = 1.20 gm/s

8760 Hour Nox

Normal Emmision Rate = 9.53 lb/hr
Startup = 32.62 lb/hr for 0.53 hrs
Shutdown = 21.00 lb/hr for 0.13 hrs

Assume 400 startups

Startups	32.62	*	0.53	*	400	=	6850.98	lbs
Shutdowns	21.00	*	0.13	*	400	=	1120.00	lbs
Total					263.33	hrs	7970.98	lbs

Downtime Startups 400 * 0 hrs = 0 hrs / 0 hrs

Normal 9.53 * (8760 - 263.33 - 0.00) = 80945.87 lbs

Result (7970.98 + 80945.87) / 8760 = 10.15 lb/hr

10.15 * 454 gm/lb / 3600 s/hr = 1.28 gm/s

Coolidge Generating Station
Sample Emission Calculation

Model Input
Sample Calculation for Combined Normal and Startup Emissions
1-Hour CO Calculations

CO Continuous Steady State Emissions

Case	Load	Amb Temp (F)	RH (%)	Evap Cooler
36	50%	122	10%	off

4.0 lb/hr * 454 gm/lb / 3600 s/hr = 0.50 gm/s

1 Hour CO

Normal Emmision Rate = 3.99 lb/hr
Startup = 62.82 lb/hr for 0.53 hours
Shutdown = 38.25 lb/hr for 0.13

Assume 2 startups

Startups	62.82	*	0.53	*	2	=	65.96
Shutdowns	38.25	*	0.13	*	2	=	10.20
Total					1.32	hrs	76.16

Normal 3.99 * (1 - 1.00) = 0.00

Result (76.16 + 0.00) / 1.32 = 57.84 lb/hr

57.84 * 454 gm/lb / 3600 s/hr = 7.29 gm/s

Coolidge Generating Station
Sample Emission Calculation

Model Input
Sample Calculation for Combined Normal and Startup Emissions
8-Hour CO Calculations

CO Continuous Steady State Emissions

Case	Load	Amb Temp (F)	RH (%)	Evap Cooler
6	50%	15	60%	off

$$10.5 \text{ lb/hr} \times \frac{454 \text{ gm/lb}}{3600 \text{ s/hr}} = 1.33 \text{ gm/s}$$

8 Hour CO

Normal Emmision Rate = 10.54 lb/hr
Startup = 62.82 lb/hr for 0.53 hours
Shutdown = 38.25 lb/hr for 0.13

Assume 6 startups

Startups	62.82	*	0.53	*	6	=	197.88
Shutdowns	38.25	*	0.13	*	6	=	30.60
Total					3.95 hrs		228.48 lbs

Normal 10.54 * (8 - 3.95) = 42.70 lbs

$$\text{Result} \quad \frac{228.48 + 42.70}{8} = 33.90 \text{ lb/hr}$$

$$33.90 \times \frac{454 \text{ gm/lb}}{3600 \text{ s/hr}} = 4.27 \text{ gm/s}$$

Coolidge Generating Station
Sample Emission Calculation

Model Input
Sample Calculation for Combined Normal and Startup Emissions
24-Hour PM10 Calculations

PM10 Continuous Steady State Emissions

Case	Load	Amb Temp (F)	RH (%)	Evap Cooler
36	50%	122	10%	off

$$4.7 \text{ lb/hr} \times \frac{454 \text{ gm/lb}}{3600 \text{ s/hr}} = 0.59 \text{ gm/s}$$

24 Hour PM10

Normal Emmision Rate = 4.67 lb/hr
Startup = 7.00 lb/hr for 0.53 hours
Shutdown = 7.00 lb/hr for 0.13

Assume 16 startups

Startups	7.00	*	0.53	*	16	=	58.80	
Shutdown	7.00	*	0.13	*	16	=	14.93	
Total					10.53	hrs	73.73	lbs

Normal 4.67 * (24 - 10.53) = 62.90 lbs

$$\text{Result} \quad \frac{73.73 + 62.90}{24} = 5.69 \text{ lb/hr}$$

$$5.69 \times \frac{454 \text{ gm/lb}}{3600 \text{ s/hr}} = 0.72 \text{ gm/s}$$

Coolidge Generating Station
Sample Emission Calculation

Model Input
Sample Calculation for Combined Normal and Startup Emissions
Annual PM10 Calculations

PM10 Continuous Steady State Emissions

Case	Load	Amb Temp (F)	RH (%)	Evap Cooler
36	50%	122	10%	off

$$4.7 \text{ lb/hr} \times \frac{454 \text{ gm/lb}}{3600 \text{ s/hr}} = 0.59 \text{ gm/s}$$

8760 Hour PM10

Normal Emmision Rate = 4.67 lb/hr
Startup = 7.00 lb/hr for 0.53 hrs
Shutdown = 7.00 lb/hr for 0.13 hrs

Assume 400 startups

Startups	7.00	*	0.53	*	400	=	1470.00	lbs
Shutdowns	7.00	*	0.13	*	400	=	373.33	lbs
Total					263.33	hrs	1843.33	lbs

Downtime Startups 400 * 0 hrs = 0 hrs
0 hrs

Normal 4.67 * (8760 - 263.33 - 0.00) = 39688.95 lbs

$$\text{Result} \quad \frac{1843.33 + 39688.95}{8760} = 4.74 \text{ lb/hr}$$

$$4.74 \times \frac{454 \text{ gm/lb}}{3600 \text{ s/hr}} = 0.60 \text{ gm/s}$$

Coolidge Generating Station
Sample Emission Calculation

Model Input
Sample Calculation for Combined Normal and Startup Emissions
3-Hour SO2 Calculations

SO2 Continuous Steady State Emissions

Case	Load	Amb Temp (F)	RH (%)	Evap Cooler
1	100%	15	60%	off

$$7.1 \text{ lb/hr} * \frac{454 \text{ gm/lb}}{3600 \text{ s/hr}} = 0.89 \text{ gm/s}$$

3 Hour SO2

Normal Emmision Rate = 7.10 lb/hr
Startup = 7.10 lb/hr for 0.53 hours
Shutdown = 7.10 lb/hr for 0.13 hours

Assume 4 startups

Startups	7.10	*	0.53	*	4	=	14.90	
Shutdown	7.10	*	0.13	*	4	=	3.78	
Total					2.63	hrs	18.68	lbs
Normal	7.10	*	(3	-	2.63)	=	2.60	lbs

$$\text{Result} \quad \frac{18.68 + 2.60}{3} = 7.10 \text{ lb/hr}$$

$$7.10 * \frac{454 \text{ gm/lb}}{3600 \text{ s/hr}} = 0.89 \text{ gm/s}$$

Coolidge Generating Station
Sample Emission Calculation

Model Input
Sample Calculation for Combined Normal and Startup Emissions
24-Hour SO2 Calculations

SO2 Continuous Steady State Emissions

Case	Load	Amb Temp (F)	RH (%)	Evap Cooler
6	50%	15	60%	off

$$4.3 \text{ lb/hr} \times \frac{454 \text{ gm/lb}}{3600 \text{ s/hr}} = 0.54 \text{ gm/s}$$

24 Hour SO2

Normal Emmision Rate = 4.30 lb/hr
Startup = 7.10 lb/hr for 0.53 hours
Shutdown = 7.10 lb/hr for 0.13

Assume 16 startups

Startups	7.10	*	0.53	*	16	=	59.60	
Shutdown	7.10	*	0.13	*	16	=	15.14	
Total					10.53	hrs	74.74	lbs

Normal 4.30 * (24 - 10.53) = 57.89 lbs

$$\text{Result} \quad \frac{74.74 + 57.89}{24} = 5.53 \text{ lb/hr}$$

$$5.53 \times \frac{454 \text{ gm/lb}}{3600 \text{ s/hr}} = 0.70 \text{ gm/s}$$

Coolidge Generating Station
Sample Emission Calculation

Model Input
Sample Calculation for Combined Normal and Startup Emissions
Annual SO2 Calculations

SO2 Continuous Steady State Emissions

Case	Load	Amb Temp (F)	RH (%)	Evap Cooler
1	100%	15	60%	off

$$7.1 \text{ lb/hr} \times \frac{454 \text{ gm/lb}}{3600 \text{ s/hr}} = 0.89 \text{ gm/s}$$

8760 Hour SO2

Normal Emmision Rate = 7.10 lb/hr
Startup = 7.10 lb/hr for 0.53 hrs
Shutdown = 7.10 lb/hr for 0.13 hrs

Assume 400 startups

Startups	7.10	*	0.53	*	400	=	1489.98 lbs
Shutdowns	7.10	*	0.13	*	400	=	378.41 lbs
Total					263.33	hrs	1868.39 lbs

Downtime Startups 400 * 0 hrs = 0 hrs
0 hrs

Normal 7.10 * (8760 - 263.33 - 0.00) = 60285.13 lbs

$$\text{Result} \quad \frac{1868.39 + 60285.13}{8760} = 7.10 \text{ lb/hr}$$

$$7.10 \times \frac{454 \text{ gm/lb}}{3600 \text{ s/hr}} = 0.89 \text{ gm/s}$$

Coolidge Generating Station
Sample Emission Calculation

Emergency Fire Pump Sample NOx Calculation

Horsepower	183	Manufacturer Specification
Hours per Day	2	
Hours per Year	200	

NOx emissions = 5.29 gm/hp-hr Manufacturer Data

Instantaneous Emissions

$$5.29\ \frac{gm}{hp\text{-}hr} * \frac{183\ hp\text{-}lb}{454\ gm} = 2.1323\ \frac{lb}{hr}$$

$$2.13\ \frac{lb}{hr} * \frac{454\ gm\text{-}hr}{3600\ lb\text{-}s} = 0.2689\ \frac{gm}{s}$$

Daily Emissions

$$0.27\ \frac{gm}{s} * \frac{2\ hr}{24\ hr} = 0.0224\ \frac{gm}{s}$$

Annual Emissions

$$0.27\ \frac{gm}{s} * \frac{200\ hr}{8760\ hr} = 0.0061\ \frac{gm}{s}$$

$$0.0061\ \frac{gm}{s} * \frac{31{,}536{,}000\ s}{1\ yr} * \frac{1\ ton}{908{,}000\ gm} = 0.2132\ \frac{ton}{yr}$$

Coolidge Generating Station
Sample Emission Calculation

Emergency Fire Pump Sample CO Calculation

Horsepower	183	Manufacturer Specification
Hours per Day	2	
Hours per Year	200	
CO emissions =	0.39 gm/hp-hr	Manufacturer Data

Instantaneous Emissions

$$0.39\ \frac{gm}{hp\text{-}hr} * \frac{183\ hp\text{-}lb}{454\ gm} = 0.1572\ \frac{lb}{hr}$$

$$0.16\ \frac{lb}{hr} * \frac{454\ gm\text{-}hr}{3600\ lb\text{-}s} = 0.0198\ \frac{gm}{s}$$

8-Hour Emissions

$$0.02\ \frac{gm}{s} * \frac{2\ hr}{8\ hr} = 0.0050\ \frac{gm}{s}$$

Daily Emissions

$$0.02\ \frac{gm}{s} * \frac{2\ hr}{24\ hr} = 0.0017\ \frac{gm}{s}$$

Annual Emissions

$$0.02\ \frac{gm}{s} * \frac{200\ hr}{8760\ hr} = 0.0005\ \frac{gm}{s}$$

$$0.0005\ \frac{gm}{s} * \frac{31{,}536{,}000\ s}{1\ yr} * \frac{1\ ton}{908{,}000\ gm} = 0.0157\ \frac{ton}{yr}$$

Coolidge Generating Station
Sample Emission Calculation

Emergency Fire Pump Sample VOC Calculation

Horsepower	183	Manufacturer Specification
Hours per Day	2	
Hours per Year	200	

VOC emissions = 0.16 gm/hp-hr Manufacturer Data

Instantaneous Emissions

$$0.16\ \frac{gm}{hp\text{-}hr} * \frac{183\ hp\text{-}lb}{454\ gm} = 0.0645\ \frac{lb}{hr}$$

$$0.06\ \frac{lb}{hr} * \frac{454\ gm\text{-}hr}{3600\ lb\text{-}s} = 0.0081\ \frac{gm}{s}$$

Daily Emissions

$$0.01\ \frac{gm}{s} * \frac{2\ hr}{24\ hr} = 0.0007\ \frac{gm}{s}$$

Annual Emissions

$$0.01\ \frac{gm}{s} * \frac{200\ hr}{8760\ hr} = 0.0002\ \frac{gm}{s}$$

$$0.0002\ \frac{gm}{s} * \frac{31{,}536{,}000\ s}{1\ yr} * \frac{1\ ton}{908{,}000\ gm} = 0.0064\ \frac{ton}{yr}$$

Coolidge Generating Station
Sample Emission Calculation

Emergency Fire Pump Sample PM10 Calculation

Horsepower	183	Manufacturer Specification
Hours per Day	2	
Hours per Year	200	

PM10 emissions = 0.17 gm/hp-hr Manufacturer Data

Instantaneous Emissions

$$0.17\ \frac{gm}{hp\text{-}hr} * \frac{183\ hp\text{-}lb}{454\ gm} = 0.0685\ \frac{lb}{hr}$$

$$0.07\ \frac{lb}{hr} * \frac{454\ gm\text{-}hr}{3600\ lb\text{-}s} = 0.0086\ \frac{gm}{s}$$

Daily Emissions

$$0.01\ \frac{gm}{s} * \frac{2\ hr}{24\ hr} = 0.0007\ \frac{gm}{s}$$

Annual Emissions

$$0.01\ \frac{gm}{s} * \frac{200\ hr}{8760\ hr} = 0.0002\ \frac{gm}{s}$$

$$0.0002\ \frac{gm}{s} * \frac{31{,}536{,}000\ s}{1\ yr} * \frac{1\ ton}{908{,}000\ gm} = 0.0069\ \frac{ton}{yr}$$

Coolidge Generating Station
Sample Emission Calculation

Emergency Fire Pump Sample SO2 Calculation

Horsepower	183	Manufacturer Specification
Hours per Day	2	
Hours per Year	200	
Fuel Rate	16.5	gal/hr

SO2 emissions = 2.05E-03 lb/hp-hr AP-42 Table 3.3-1

Instantaneous Emissions

$$2.05E\text{-}03 \frac{lb}{hp\text{-}hr} * 183 \ hp = 0.3752 \frac{lb}{hr}$$

$$0.38 \frac{lb}{hr} * \frac{454 \ gm\text{-}hr}{3600 \ lb\text{-}s} = 0.0473 \frac{gm}{s}$$

$$2.05E\text{-}03 \frac{lb}{hp\text{-}hr} * \frac{454 \ gm}{1 \ lb} = 0.9307 \frac{gm}{hp\text{-}hr}$$

3-Hour Emissions

$$0.05 \frac{gm}{s} * \frac{2 \ hr}{3 \ hr} = 0.0315 \frac{gm}{s}$$

Daily Emissions

$$0.05 \frac{gm}{s} * \frac{2 \ hr}{24 \ hr} = 0.0039 \frac{gm}{s}$$

Annual Emissions

$$0.05 \frac{gm}{s} * \frac{200 \ hr}{8760 \ hr} = 0.0011 \frac{gm}{s}$$

$$0.0011 \frac{gm}{s} * \frac{31{,}536{,}000 \ s}{1 \ yr} * \frac{1 \ ton}{908{,}000 \ gm} = 0.0375 \frac{ton}{yr}$$

Coolidge Generating Station
Sample Emission Calculation

Constants

Gas Constant	0.73	atm*scf/lbmol*R
Standard Temperature	459.69	deg R
Standard Pressure	1.0	atm 14.696 psia
Ideal Gas Volume	335.6	scf/lb mol
CH4 MW	16.04	lbm/lb-mol
Natural Gas Density	0.0478	lbm/scf
Method 19 Fd Factor	8710	dscf/MMBtu
Natural Gas Heating Value (LHV)	18,951	Btu/lbm
Natural Gas Heating Value (HHV)	21,001	Btu/lbm
Natural Gas Heating Value (LHV)	906	Btu/scf
Exhaust Gas Constituents MW		
O2	32	lb/lb mol
CO2	44	lb/lb mol
H2O	18	lb/lb mol
N2	28	lb/lb mol
Pollutant MW		
NOx (NO2)	46	lb/lb mol
CO	28	lb/lb mol
VOC	16	lb/lb mol
S	32	lb/lb mol
SO2	64	lb/lb mol
NH3	17	lb/lb mol
CHOH	30	lb/lb mol
H2SO4	98	lb/lb mol
(NH4)2SO4	132	lb/lb mol
H2S in natural gas	5	grains/100 scf
Site Elevation	1,476	feet

Coolidge G[illegible]ating Station
Sample Emission Calculation

Case	Load (fraction)	Ambient Temp (deg F)	RH (%)	Evap Cooler	Steam Injection	0 HHV	CT Std Exhaust Rate (scf/hr)	CT Actual Exhaust Rate (acfm)	Exhaust Velocity (ft/s)	Exhaust Velocity (m/s)	Stack Diameter (ft)	Stack Diameter (m)	Stack Height (ft)	Stack Height (m)	Exhaust Temp (deg F)
1	1.00	15	60%	off	0	9,430	12,805,419	574,260	111	34	10.5	3	85	26	777.2
2	0.90	15	60%	off	0	9,606	12,325,598	541,794	104	32	10.5	3	85	26	752.7
3	0.80	15	60%	off	0	9,885	11,765,074	509,520	98	30	10.5	3	85	26	734.8
4	0.70	15	60%	off	0	10,221	11,305,416	478,587	92	28	10.5	3	85	26	707.9
5	0.60	15	60%	off	0	10,709	10,770,950	446,823	86	26	10.5	3	85	26	684.5
6	0.50	15	60%	off	0	11,422	10,106,844	412,384	79	24	10.5	3	85	26	665.7
7	0.40	15	60%	off	0	12,474	9,442,634	377,443	73	22	10.5	3	85	26	642.8
8	0.30	15	60%	off	0	14,291	8,672,102	341,109	66	20	10.5	3	85	26	625.2
9	0.20	15	60%	off	0	18,212	7,772,486	305,978	59	18	10.5	3	85	26	626.1
10	0.10	15	60%	off	0	29,570	6,751,841	267,291	51	16	10.5	3	85	26	632.2
11	1.00	70	35%	off	0	9,709	11,677,171	555,925	107	33	10.5	3	85	26	853.4
12	0.90	70	35%	off	0	9,896	11,264,404	525,328	101	31	10.5	3	85	26	826.6
13	0.80	70	35%	off	0	10,186	10,762,595	494,473	95	29	10.5	3	85	26	807.5
14	0.70	70	35%	off	0	10,562	10,255,071	463,124	89	27	10.5	3	85	26	785.9
15	0.60	70	35%	off	0	11,008	9,569,840	435,163	84	26	10.5	3	85	26	794.5
16	0.50	70	35%	off	0	11,787	8,952,770	402,332	77	24	10.5	3	85	26	779.8
17	0.40	70	35%	off	0	12,917	8,290,838	367,565	71	22	10.5	3	85	26	763.1
18	0.30	70	35%	off	0	14,877	7,601,849	333,491	64	20	10.5	3	85	26	750.3
19	0.20	70	35%	off	0	19,028	6,779,601	299,435	58	18	10.5	3	85	26	758.5
20	0.10	70	35%	off	0	30,918	5,823,323	260,767	50	15	10.5	3	85	26	775.4
21	1.00	70	35%	on/n/a	0	9,623	12,044,660	570,276	110	33	10.5	3	85	26	846.2
22	0.90	70	35%	on/n/a	0	9,762	11,663,406	537,593	103	32	10.5	3	85	26	811.6
23	0.80	70	35%	on/n/a	0	10,036	11,147,069	505,509	97	30	10.5	3	85	26	791.1
24	0.70	70	35%	on/n/a	0	10,313	10,519,064	477,525	92	28	10.5	3	85	26	792.4
25	0.60	70	35%	on/n/a	0	10,803	9,959,844	444,664	86	26	10.5	3	85	26	771.7
26	0.50	70	35%	on/n/a	0	11,516	9,364,735	411,236	79	24	10.5	3	85	26	751.5
27	0.40	70	35%	on/n/a	0	12,620	8,644,383	374,871	72	22	10.5	3	85	26	736.4
28	0.30	70	35%	on/n/a	0	14,455	7,913,804	338,454	65	20	10.5	3	85	26	719.9
29	0.20	70	35%	on/n/a	0	18,407	7,061,005	303,160	58	18	10.5	3	85	26	724.5
30	0.10	70	35%	on/n/a	0	29,842	6,071,535	263,869	51	15	10.5	3	85	26	739.0
31	1.00	122	10%	off	0	10,991	9,168,261	440,270	85	26	10.5	3	85	26	864.8
32	0.90	122	10%	off	0	11,413	8,780,572	419,807	81	25	10.5	3	85	26	859.0
33	0.80	122	10%	off	0	11,983	8,319,883	398,293	77	23	10.5	3	85	26	860.7
34	0.70	122	10%	off	0	12,682	7,875,972	376,643	72	22	10.5	3	85	26	859.3
35	0.60	122	10%	off	0	13,616	7,447,115	355,432	68	21	10.5	3	85	26	856.7
36	0.50	122	10%	off	0	14,873	7,007,608	339,105	65	20	10.5	3	85	26	875.0
37	0.40	122	10%	off	0	16,944	6,524,650	317,887	61	19	10.5	3	85	26	884.1
38	0.30	122	10%	off	0	20,290	6,016,693	295,298	57	17	10.5	3	85	26	894.0
39	0.20	122	10%	off	0	26,747	5,460,683	270,425	52	16	10.5	3	85	26	906.2
40	0.10	122	10%	off	0	44,359	5,128,823	246,906	48	14	10.5	3	85	26	868.1
41	1.00	122	10%	on/85	0	9,772	11,270,017	541,158	104	32	10.5	3	85	26	864.7
42	0.90	122	10%	on/85	0	9,974	10,872,380	511,934	99	30	10.5	3	85	26	839.0
43	0.80	122	10%	on/85	0	10,292	10,362,814	482,042	93	28	10.5	3	85	26	823.3
44	0.70	122	10%	on/85	0	10,682	9,865,367	451,641	87	26	10.5	3	85	26	803.0
45	0.60	122	10%	on/85	0	11,174	9,197,359	424,894	82	25	10.5	3	85	26	814.5
46	0.50	122	10%	on/85	0	11,967	8,633,130	393,664	76	23	10.5	3	85	26	798.0
47	0.40	122	10%	on/85	0	13,162	7,985,537	360,052	69	21	10.5	3	85	26	783.9
48	0.30	122	10%	on/85	0	15,287	7,329,620	328,697	63	19	10.5	3	85	26	777.2
49	0.20	122	10%	on/85	0	19,636	6,547,461	295,971	57	17	10.5	3	85	26	787.1

Coolidge G[illegible]ating Station
Sample Emission Calculation

Case	Load (fraction)	Ambient Temp (deg F)	RH (%)	Evap Cooler	Exhaust Temp (deg K)	CT Fuel Flow (MMscf/hr)	CT uel Flow HHV (MMBtu/hr)	HRSG Fuel Flow (MMscf/hr)	HRSG uel Flow HHV (MMBtu/hr)	Total Fuel Flow (MMscf/hr)	Total uel Flow HH (MMBtu/hr)
1	1.00	15	60%	off	687	0.497	450	0.000	0	0.497	450.445
2	0.90	15	60%	off	673	0.456	413	0.000	0	0.456	413.040
3	0.80	15	60%	off	663	0.417	378	0.000	0	0.417	377.833
4	0.70	15	60%	off	649	0.377	342	0.000	0	0.377	341.843
5	0.60	15	60%	off	636	0.339	307	0.000	0	0.339	307.037
6	0.50	15	60%	off	625	0.301	273	0.000	0	0.301	272.935
7	0.40	15	60%	off	612	0.263	239	0.000	0	0.263	238.518
8	0.30	15	60%	off	603	0.226	205	0.000	0	0.226	205.062
9	0.20	15	60%	off	603	0.193	174	0.000	0	0.193	174.486
10	0.10	15	60%	off	606	0.158	143	0.000	0	0.158	142.852
11	1.00	70	35%	off	729	0.479	434	0.000	0	0.479	434.326
12	0.90	70	35%	off	714	0.440	398	0.000	0	0.440	398.466
13	0.80	70	35%	off	704	0.402	365	0.000	0	0.402	364.603
14	0.70	70	35%	off	692	0.365	331	0.000	0	0.365	330.821
15	0.60	70	35%	off	697	0.326	296	0.000	0	0.326	295.582
16	0.50	70	35%	off	688	0.291	264	0.000	0	0.291	263.776
17	0.40	70	35%	off	679	0.255	231	0.000	0	0.255	231.337
18	0.30	70	35%	off	672	0.221	200	0.000	0	0.221	199.949
19	0.20	70	35%	off	677	0.189	171	0.000	0	0.189	170.799
20	0.10	70	35%	off	686	0.155	140	0.000	0	0.155	140.118
21	1.00	70	35%	on/n/a	725	0.498	451	0.000	0	0.498	450.854
22	0.90	70	35%	on/n/a	706	0.454	412	0.000	0	0.454	411.662
23	0.80	70	35%	on/n/a	695	0.415	376	0.000	0	0.415	376.228
24	0.70	70	35%	on/n/a	695	0.373	338	0.000	0	0.373	338.297
25	0.60	70	35%	on/n/a	684	0.335	304	0.000	0	0.335	303.794
26	0.50	70	35%	on/n/a	673	0.298	270	0.000	0	0.298	269.892
27	0.40	70	35%	on/n/a	664	0.261	237	0.000	0	0.261	236.683
28	0.30	70	35%	on/n/a	655	0.225	203	0.000	0	0.225	203.444
29	0.20	70	35%	on/n/a	658	0.191	173	0.000	0	0.191	172.975
30	0.10	70	35%	on/n/a	666	0.156	141	0.000	0	0.156	141.481
31	1.00	122	10%	off	736	0.337	305	0.000	0	0.337	304.911
32	0.90	122	10%	off	732	0.315	285	0.000	0	0.315	285.080
33	0.80	122	10%	off	733	0.294	266	0.000	0	0.294	266.071
34	0.70	122	10%	off	733	0.272	246	0.000	0	0.272	246.454
35	0.60	122	10%	off	731	0.250	227	0.000	0	0.250	226.856
36	0.50	122	10%	off	741	0.228	207	0.000	0	0.228	206.566
37	0.40	122	10%	off	746	0.208	188	0.000	0	0.208	188.415
38	0.30	122	10%	off	752	0.187	169	0.000	0	0.187	169.479
39	0.20	122	10%	off	759	0.165	150	0.000	0	0.165	149.650
40	0.10	122	10%	off	738	0.141	127	0.000	0	0.141	127.488
41	1.00	122	10%	on/85	736	0.456	413	0.000	0	0.456	413.291
42	0.90	122	10%	on/85	721	0.419	380	0.000	0	0.419	379.744
43	0.80	122	10%	on/85	713	0.384	348	0.000	0	0.384	348.299
44	0.70	122	10%	on/85	701	0.349	316	0.000	0	0.349	316.347
45	0.60	122	10%	on/85	708	0.313	284	0.000	0	0.313	283.665
46	0.50	122	10%	on/85	699	0.279	253	0.000	0	0.279	253.216
47	0.40	122	10%	on/85	691	0.246	223	0.000	0	0.246	222.864
48	0.30	122	10%	on/85	687	0.214	194	0.000	0	0.214	194.278
49	0.20	122	10%	on/85	693	0.184	167	0.000	0	0.184	166.690

Coolidge Generating Station
Sample Emission Calculation

Engine	Load fractio	Ambient Ambient Te (deg F)	RH (%)	0% rap Cool	Steam injectio	NOx (ppmvd @15% O2)	CO (ppmvd @15% O2)	VOC (as CH4) (ppmvd @15% O2)	NH3 (ppmvd @15% O2)	CHOH (ppmvd @15% O2)	NOx (lb/hr)	CO (lb/hr)	VOC (lb/hr)
1	100%	15	60%	off	0%	5.0	15.0	3.0	10.0	0.047	9.527	17.401	1.993
2	90%	15	60%	off	0%	5.0	15.0	3.0	10.0	0.047	8.736	15.956	1.828
3	80%	15	60%	off	0%	5.0	15.0	3.0	10.0	0.047	7.991	14.596	1.672
4	70%	15	60%	off	0%	5.0	15.0	3.0	10.0	0.047	7.230	13.206	1.513
5	60%	15	60%	off	0%	5.0	15.0	3.0	10.0	0.047	6.494	11.861	1.359
6	50%	15	60%	off	0%	5.0	15.0	3.0	10.0	0.047	5.772	10.544	1.208
7	40%	15	60%	off	0%	5.0	15.0	3.0	10.0	0.047	5.045	9.214	1.055
8	30%	15	60%	off	0%	5.0	15.0	3.0	10.0	0.047	4.337	7.922	0.907
9	20%	15	60%	off	0%	5.0	15.0	3.0	10.0	0.047	3.690	6.741	0.772
10	10%	15	60%	off	0%	5.0	15.0	3.0	10.0	0.047	3.021	5.519	0.632
11	100%	70	35%	off	0%	5.0	7.5	3.0	10.0	0.047	9.186	8.389	1.922
12	90%	70	35%	off	0%	5.0	7.5	3.0	10.0	0.047	8.427	7.697	1.763
13	80%	70	35%	off	0%	5.0	7.5	3.0	10.0	0.047	7.711	7.043	1.613
14	70%	70	35%	off	0%	5.0	7.5	3.0	10.0	0.047	6.997	6.390	1.464
15	60%	70	35%	off	0%	5.0	7.5	3.0	10.0	0.047	6.251	5.709	1.308
16	50%	70	35%	off	0%	5.0	7.5	3.0	10.0	0.047	5.579	5.095	1.167
17	40%	70	35%	off	0%	5.0	7.5	3.0	10.0	0.047	4.893	4.468	1.024
18	30%	70	35%	off	0%	5.0	7.5	3.0	10.0	0.047	4.229	3.862	0.885
19	20%	70	35%	off	0%	5.0	7.5	3.0	10.0	0.047	3.612	3.299	0.756
20	10%	70	35%	off	0%	5.0	7.5	3.0	10.0	0.047	2.963	2.706	0.620
21	100%	70	35%	on/n/a	0%	5.0	7.5	3.0	10.0	0.047	9.535	8.709	1.995
22	90%	70	35%	on/n/a	0%	5.0	7.5	3.0	10.0	0.047	8.707	7.951	1.822
23	80%	70	35%	on/n/a	0%	5.0	7.5	3.0	10.0	0.047	7.957	7.267	1.665
24	70%	70	35%	on/n/a	0%	5.0	7.5	3.0	10.0	0.047	7.155	6.534	1.497
25	60%	70	35%	on/n/a	0%	5.0	7.5	3.0	10.0	0.047	6.425	5.868	1.344
26	50%	70	35%	on/n/a	0%	5.0	7.5	3.0	10.0	0.047	5.708	5.213	1.194
27	40%	70	35%	on/n/a	0%	5.0	7.5	3.0	10.0	0.047	5.006	4.572	1.047
28	30%	70	35%	on/n/a	0%	5.0	7.5	3.0	10.0	0.047	4.303	3.930	0.900
29	20%	70	35%	on/n/a	0%	5.0	7.5	3.0	10.0	0.047	3.658	3.341	0.765
30	10%	70	35%	on/n/a	0%	5.0	7.5	3.0	10.0	0.047	2.992	2.733	0.626
31	100%	122	10%	off	0%	5.0	7.5	3.0	10.0	0.047	6.449	5.890	1.349
32	90%	122	10%	off	0%	5.0	7.5	3.0	10.0	0.047	6.029	5.506	1.262
33	80%	122	10%	off	0%	5.0	7.5	3.0	10.0	0.047	5.627	5.139	1.177
34	70%	122	10%	off	0%	5.0	7.5	3.0	10.0	0.047	5.212	4.760	1.091
35	60%	122	10%	off	0%	5.0	7.5	3.0	10.0	0.047	4.798	4.382	1.004
36	50%	122	10%	off	0%	5.0	7.5	3.0	10.0	0.047	4.369	3.990	0.914
37	40%	122	10%	off	0%	5.0	7.5	3.0	10.0	0.047	3.985	3.639	0.834
38	30%	122	10%	off	0%	5.0	7.5	3.0	10.0	0.047	3.584	3.274	0.750
39	20%	122	10%	off	0%	5.0	7.5	3.0	10.0	0.047	3.165	2.891	0.662
40	10%	122	10%	off	0%	5.0	7.5	3.0	10.0	0.047	2.696	2.463	0.564
41	100%	122	10%	on/85	0%	5.0	7.5	3.0	10.0	0.047	8.741	7.983	1.829
42	90%	122	10%	on/85	0%	5.0	7.5	3.0	10.0	0.047	8.031	7.335	1.680
43	80%	122	10%	on/85	0%	5.0	7.5	3.0	10.0	0.047	7.366	6.728	1.541
44	70%	122	10%	on/85	0%	5.0	7.5	3.0	10.0	0.047	6.691	6.110	1.400
45	60%	122	10%	on/85	0%	5.0	7.5	3.0	10.0	0.047	5.999	5.479	1.255
46	50%	122	10%	on/85	0%	5.0	7.5	3.0	10.0	0.047	5.355	4.891	1.121
47	40%	122	10%	on/85	0%	5.0	7.5	3.0	10.0	0.047	4.714	4.305	0.986
48	30%	122	10%	on/85	0%	5.0	7.5	3.0	10.0	0.047	4.109	3.753	0.860
49	20%	122	10%	on/85	0%	5.0	7.5	3.0	10.0	0.047	3.525	3.220	0.738
50	10%	122	10%	on/85	0%	not avail	not avail	not avail	10.0	0.047	#VALUE!	#VALUE!	#VALUE!

Coolidge Generating Station
Sample Emission Calculation

Load fractio	Ambient bient Te (deg F)	Ambient RH (%)	0% ap Cool	Steam njectio	NH3 (lb/hr)	SO2 (lb/hr)	PM10 Front-half (lb/hr)	PM10 Total (lb/hr)	PM10 Model (lb/hr)
100%	15	60%	off	0%	7.055	7.095	4.000	5.463	7.0
90%	15	60%	off	0%	6.469	6.506	4.000	5.342	7.0
80%	15	60%	off	0%	5.918	5.951	4.000	5.228	7.0
70%	15	60%	off	0%	5.354	5.385	4.000	5.111	7.0
60%	15	60%	off	0%	4.809	4.836	4.000	4.998	7.0
50%	15	60%	off	0%	4.275	4.299	4.000	4.887	7.0
40%	15	60%	off	0%	3.736	3.757	4.000	4.775	7.0
30%	15	60%	off	0%	3.212	3.230	4.000	4.666	7.0
20%	15	60%	off	0%	2.733	2.748	4.000	4.567	7.0
10%	15	60%	off	0%	2.237	2.250	4.000	4.464	7.0
100%	70	35%	off	0%	6.802	6.841	4.000	5.411	7.0
90%	70	35%	off	0%	6.241	6.276	4.000	5.295	7.0
80%	70	35%	off	0%	5.710	5.743	4.000	5.185	7.0
70%	70	35%	off	0%	5.181	5.211	4.000	5.075	7.0
60%	70	35%	off	0%	4.629	4.656	4.000	4.960	7.0
50%	70	35%	off	0%	4.131	4.155	4.000	4.857	7.0
40%	70	35%	off	0%	3.623	3.644	4.000	4.752	7.0
30%	70	35%	off	0%	3.132	3.149	4.000	4.650	7.0
20%	70	35%	off	0%	2.675	2.690	4.000	4.555	7.0
10%	70	35%	off	0%	2.195	2.207	4.000	4.455	7.0
100%	70	35%	on/n/a	0%	7.061	7.102	4.000	5.465	7.0
90%	70	35%	on/n/a	0%	6.447	6.484	4.000	5.337	7.0
80%	70	35%	on/n/a	0%	5.892	5.926	4.000	5.222	7.0
70%	70	35%	on/n/a	0%	5.298	5.329	4.000	5.099	7.0
60%	70	35%	on/n/a	0%	4.758	4.785	4.000	4.987	7.0
50%	70	35%	on/n/a	0%	4.227	4.251	4.000	4.877	7.0
40%	70	35%	on/n/a	0%	3.707	3.728	4.000	4.769	7.0
30%	70	35%	on/n/a	0%	3.186	3.205	4.000	4.661	7.0
20%	70	35%	on/n/a	0%	2.709	2.725	4.000	4.562	7.0
10%	70	35%	on/n/a	0%	2.216	2.229	4.000	4.460	7.0
100%	122	10%	off	0%	4.775	4.803	4.000	4.991	7.0
90%	122	10%	off	0%	4.465	4.490	4.000	4.926	7.0
80%	122	10%	off	0%	4.167	4.191	4.000	4.864	7.0
70%	122	10%	off	0%	3.860	3.882	4.000	4.801	7.0
60%	122	10%	off	0%	3.553	3.573	4.000	4.737	7.0
50%	122	10%	off	0%	3.235	3.254	4.000	4.671	7.0
40%	122	10%	off	0%	2.951	2.968	4.000	4.612	7.0
30%	122	10%	off	0%	2.654	2.670	4.000	4.551	7.0
20%	122	10%	off	0%	2.344	2.357	4.000	4.486	7.0
10%	122	10%	off	0%	1.997	2.008	4.000	4.414	7.0
100%	122	10%	on/85	0%	6.473	6.510	4.000	5.343	7.0
90%	122	10%	on/85	0%	5.947	5.982	4.000	5.234	7.0
80%	122	10%	on/85	0%	5.455	5.486	4.000	5.132	7.0
70%	122	10%	on/85	0%	4.955	4.983	4.000	5.028	7.0
60%	122	10%	on/85	0%	4.443	4.468	4.000	4.922	7.0
50%	122	10%	on/85	0%	3.966	3.989	4.000	4.823	7.0
40%	122	10%	on/85	0%	3.490	3.510	4.000	4.724	7.0
30%	122	10%	on/85	0%	3.043	3.060	4.000	4.631	7.0
20%	122	10%	on/85	0%	2.611	2.626	4.000	4.542	7.0
10%	122	10%	on/85	0%	#VALUE!	#VALUE!	not avail	#VALUE!	7.0

Coolidge Generating Station
Sample Emission Calculation

Startup/Shutdown Emissions

	CT1 (LB/HR)					Duration
Condition	**NOx**	**CO**	**VOC**	**SO2**	**PM**	**(hrs)**
Startup	32.62	62.82	1.41	7.10	7.00	0.53
Shutdown	21.00	38.25	1.05	7.10	7.00	0.13

Coolidge Generating Station
Sample Emission Calculation

Startup Schedules and Downtime

	Averaging Period				
	1	**3**	**8**	**24**	**8760**
Number of Starts	2	4	6	16	400
Downtime	0	0	0	0	0

Coolidge Generating Station

Operating Scenario	Stack Exit Data Height Above Ground (ft)	Diameter (ft)	Velocity (ft/s)	Temperature (°F)
CT01C01	85	10.5	110.5	777.2
CT01C02	85	10.5	104.3	752.7
CT01C03	85	10.5	98.1	734.8
CT01C04	85	10.5	92.1	707.9
CT01C05	85	10.5	86.0	684.5
CT01C11	85	10.5	107.0	853.4
CT01C12	85	10.5	101.1	826.6
CT01C13	85	10.5	95.2	807.5
CT01C14	85	10.5	89.1	785.9
CT01C15	85	10.5	83.8	794.5
CT01C21	85	10.5	109.8	846.2
CT01C22	85	10.5	103.5	811.6
CT01C23	85	10.5	97.3	791.1
CT01C24	85	10.5	91.9	792.4
CT01C25	85	10.5	85.6	771.7
CT01C31	85	10.5	84.7	864.8
CT01C32	85	10.5	80.8	859
CT01C33	85	10.5	76.7	860.7
CT01C34	85	10.5	72.5	859.3
CT01C35	85	10.5	68.4	856.7
CT01C41	85	10.5	104.2	864.7
CT01C42	85	10.5	98.5	839
CT01C43	85	10.5	92.8	823.3
CT01C44	85	10.5	86.9	803
CT01C45	85	10.5	81.8	814.5
FP01100	20	1	19.6	1124

Coolidge Generating Station

Modeling Scenario Operating Conditions

Model ID	Load	Ambient Temperature (°F)	Relative Humidity (%)	Evaporative Cooler
CT01C01	100%	15	60%	off
CT01C02	90%	15	60%	off
CT01C03	80%	15	60%	off
CT01C04	70%	15	60%	off
CT01C05	60%	15	60%	off
CT01C11	100%	70	35%	off
CT01C12	90%	70	35%	off
CT01C13	80%	70	35%	off
CT01C14	70%	70	35%	off
CT01C15	60%	70	35%	off
CT01C21	100%	70	35%	on/n/a
CT01C22	90%	70	35%	on/n/a
CT01C23	80%	70	35%	on/n/a
CT01C24	70%	70	35%	on/n/a
CT01C25	60%	70	35%	on/n/a
CT01C31	100%	122	10%	off
CT01C32	90%	122	10%	off
CT01C33	80%	122	10%	off
CT01C34	70%	122	10%	off
CT01C35	60%	122	10%	off
CT01C41	100%	122	10%	on/85
CT01C42	90%	122	10%	on/85
CT01C43	80%	122	10%	on/85
CT01C44	70%	122	10%	on/85
CT01C45	60%	122	10%	on/85

EPRI

Formaldehyde and VOC Emissions from Siemens-Westinghouse 510F Combustion Turbine with Lean Pre-Mix Combustors and SCR and CO Catalysts

Programs: see listing on back page

This report presents a summary of flue gas formaldehyde and volatile organic compounds (VOCs) measurements conducted at a Siemens-Westinghouse 501F gas-fired combustion turbine with lean pre-mix low-NO_x combustors and selective catalytic reduction (SCR) and carbon monoxide (CO) catalysts.

Results & Findings

Formaldehyde concentrations, as measured by the CARB (California Air Resources Board) 430 method using DNPH (dinitrophenylhydrazine) impingers, averaged 10 ppb in the turbine exhaust before the SCR and CO catalysts and 5 ppb at the stack. As measured by Fourier Transform Infrared (FTIR) Spectroscopy, formaldehyde concentrations averaged 47 ppb at the turbine exhaust, and 42 ppb at the stack over the same time periods. The discrepancy between the FTIR and the "traditional" CARB 430 method could not be resolved based on the limited measurements and methods comparison. It is not known which, if either, method is providing accurate measurements.

Measurements of VOCs at full operating load were below the method detection limit using both FTIR and the traditional summa canister method (EPA TO-14A). Emissions of formaldehyde, benzene, other VOCs, NO_x, and CO were higher at low loads than at full operating load but did not track each other well enough to use one to predict the other. Based on measurements using the CARB 430 method, formaldehyde removal across the CO and SCR catalysts was measured to be at least 50% at full load and 90% at 60% unit load.

Challenges & Objectives

The objectives of this study were:

- To characterize formaldehyde emissions from "utility-size" combustion turbines with state-of-the-art lean premix low NO_x combustors
- To evaluate the impact of CO catalyst on formaldehyde removal
- To evaluate the FTIR technique along with the traditional CARB 430 and EPA TO-14A methods.

The most significant challenges faced by this research were the complexities of trace organic measurements at low ppb levels.

Applications, Values & Use

The results are relevant to permitting new combustion turbines.

EPRI Perspective

These results summarize formaldehyde and VOC emissions data from a lean premix combustion turbine operating at several operating loads and transient conditions. The formaldehyde results from the FTIR did not compare well with the traditional CARB 430 method. Base full-load measurements of formaldehyde were 9 ppb at the turbine exhaust and 5 ppb at the catalyst outlet (stack) as measured by CARB 430, and 47 ppb at the turbine exhaust and 42 ppb at the catalyst outlet, as measured by FTIR. Since the quality assurance/quality control (QA/QC) for both methods does not indicate any issues or concerns, there is no specific data or results to determine which set of results accurately represents formaldehyde emissions. Previous work by others has indicated some potential biases between FTIR and CARB 430. However, these biases are much lower in magnitude than those measured in this study.

Measurements at lower loads and transient conditions indicated increased emissions of formaldehyde and VOCs. It should be noted that these operating conditions represent a small fraction of the operating time for most, if not all, turbines. Measurements for transient start-up and shutdown are extremely difficult due to the short durations (about 5-10 minutes) of these conditions. In addition, there is uncertainty in regards to the reliability of the continuous FTIR results, based on the lack of consistency with the traditional methods.

Additional trace organic measurements are planned to characterize other combustion turbine designs.

Approach

Investigators measured formaldehyde and VOC emissions at the turbine exhaust and downstream of SCR and CO catalysts using two different sampling and analytical approaches, FTIR and "traditional" methods, specifically CARB 430 and EPA TO-14A.

Keywords

Air toxics
Formaldehyde
Combustion turbines
FTIR
CO catalyst

Project

Project Managers: P. Chu; L. Angello
Program: Plant Multimedia Toxics Characterization (PISCES); New Combustion Turbine/Combined-Cycle Design, Repowering & Risk Mitigation

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MATERIAL SAFETY DATA SHEET

AMMONIUM HYDROXIDE

TI

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735 Davisville Road, Third Floor, Southampton, PA 18966; 215-322-1238

CORPORATE EMERGENCY TELEPHONE NUMBER: 800-643-6226; CHEMTREC (CMA) 800-424-9300

DESCRIPTION

CHEMICAL NAME: Ammonium Hydroxide Solution (Baume 20.75°) **CAS REGISTRY NO**: 1336-21-6
SYNONYMS: Aqua Ammonia
CHEMICAL FAMILY: Ammonia **FORMULA**: $NH_4OH + H_2O$ **MOL. WT**: 35.05 (NH_4OH)
COMPOSITION: 19% Solution; 19% Ammonia, Anhydrous-CAS # 7664-41-7; 81% Water - CAS# 7732-18-5

STATEMENT OF HEALTH HAZARD

HAZARD DESCRIPTION:
Ammonia is an irritant and corrosive to the skin, eyes, respiratory tract and mucous membranes. May cause severe burns to the eyes, lungs and skin. Skin and respiratory related diseases could be aggravated by exposure.

Not recognized by OSHA as a carcinogen.
Not listed in the National Toxicology Program annual report.
Not listed as a carcinogen by the International Agency for Research on Cancer.

EXPOSURE LIMITS FOR AMMONIA: Vapor

OSHA	50 ppm,	35 mg/m3 PEL	8 hour TWA
NIOSH	35 ppm,	27 mg/m3 STEL	15 minutes
	25 ppm,	18 mg/m3 PEL	10 hour TWA
	300 ppm,	IDLH	
ACGIH	25 ppm,	18 mg/m3 TLV	8 hour TWA
	35 ppm,	27 mg/m3 STEL	15 minutes

TOXICITY: LD 50 (Oral/Rat) 350 mg/kg

EMERGENCY TREATMENT

EFFECTS OF OVEREXPOSURE:
Eye: lacrimation, edema or blindness may occur.
Skin: irritation, corrosive burns, blister formation may result. Contact with liquid will freeze the tissue and produce a caustic burn.
Inhalation: acute exposure may result in severe irritation of the respiratory tract, bronchospasm, edema or respiratory arrest.
Ingestion: Symptoms similar to Inhalation. Lung irritation and pulmonary edema may occur.
Extreme exposure may result in death from spasm, inflammation or edema.

EMERGENCY AID:
Eye: flush with copious amounts of water for 15 minutes. Eyelids should be held apart and away from eyeball for thorough rinsing.
Skin: flush with copious amounts of water for 15 minutes while removing contaminated clothing and shoes. Exercise caution when removing contaminated clothing as it may be frozen to the skin. Do not rub or apply ointment on affected area.
Inhalation: remove to fresh air. Administer oxygen or artificial respiration if necessary.
Ingestion: if conscious, give large amounts of water to drink. May drink orange juice, citrus juice or diluted vinegar to counteract ammonia.
DO NOT INDUCE VOMITING! SEEK IMMEDIATE MEDICAL HELP FOR ALL EXPOSURES!

NOTE TO PHYSICIAN: Respiratory injury may appear as a delayed phenomenon. Pulmonary edema may follow chemical bronchitis. Supportive treatment with necessary ventilation actions, including oxygen, may warrant consideration.

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PHYSICAL DATA

BOILING PT: NH3, vapors released upon warming	APPROXIMATE FREEZING PT: -66° F
VAPOR DENSITY (AIR=1): less than 1	VAPOR PRESSURE: 9.1 psia @ 60°F
SPECIFIC GRAVITY: 0.9302 AT 60° F	SOLUBILTY IN WATER: Complete
PERCENT VOLATILE: 100% AT 212° F	EVAPORATION RATE (Water=1): Similar
APPEARANCE AND ODOR: Colorless liquid and pungent odor	SURFACE TENSION: 62 Dynes/cm

FIRE AND EXPLOSION HAZARD DATA

FLASH POINT:	None
AUTOIGNITION TEMP:	Not applicable
FLAMMABLE LIMITS IN AIR:	for evolved ammonia: LEL 16% UEL 25%
EXTINGUISHING MEDIA:	Non-combustible

SPECIAL FIRE-FIGHTING PROCEDURES:
Must wear protective clothing and a positive pressure SCBA. Stop source if possible. Cool fire exposed containers with water spray. Stay upwind and use water spray to knock down vapor and dilute.

UNUSUAL FIRE AND EXPLOSION HAZARDS:
When heated, product will give off ammonia gas, which is a strong irritant to the eye, skin and respiratory tract.
Outdoors, ammonia is not generally a fire hazard.
Indoors, in confined areas, ammonia may be a fire hazard, especially if oil and other combustible materials are present.
If relief valves are inoperative, heat exposed storage containers may become explosion hazards.
Combustion of released ammonia may form nitrogen oxides.

CHEMICAL REACTIVITY

STABILITY:
Stable at room temperature. Ammonium Hydroxide will react exothermically with acids. Ammonia vapors are released when heated.

CONDITIONS TO AVOID:
Avoid Ammonium Hydroxide contact with chemicals such as mercury, chlorine, iodine, bromine, silver oxide or hypochlories; they can form explosive compounds.
Avoid Ammonium Hydroxide contact with chlorine, which forms a chloramine gas, that is a primary skin irritant and sensitizer.
Ammonium Hydroxide has a corrosive reaction with galvanized surfaces, copper, brass, bronze, aluminum alloys, mercury, gold and silver.

HAZARDOUS DECOMPOSITION PRODUCTS:
Ammonium Hydroxide decomposition to hydrogen and nitrogen gases above 450° C (842° F)

SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN:
Wear respiratory protection and protective clothing; see PROTECTIVE EQUIPMENT. Stop source if possible. Stay upwind and use water spray to absorb the evolved gas. Dilute with large amount of water. Contain spill from entering drains, sewers, water systems by utilizing methods, such as diking.

WASTE DISPOSAL:
Listed as hazardous substance under CWA (40 CFR 1164.40 CFR 117.3 Reportable Quantity Category C. 1000#/454kg)
Comply with all regulations. Suitably diluted product may be disposed of on agricultural land as fertilizer. Keep spill from entering streams or lakes.

MATERIAL SAFETY DATA SHEET

SPECIAL PROTECTION AND PROCEDURES

RESPIRATORY PROTECTION:
MSHA/NIOSH approved respiratory protection that consists of a full face gas mask and canisters effective for ammonia that enable use for entry and escape in emergencies. Refer to 29 CFR 1910.134 and ANSI: Z88.2 for requirements and selection. A positive pressure SCBA is required for entry into ammonia atmospheres at or above 300 ppm.

VENTILATION:
Local exhaust sufficient to keep ammonia gas to 25ppm or less.

PROTECTIVE EQUIPMENT:
Splash-proof, chemical safety goggles, rubber gloves and boots should be worn to prevent contact. Face shield can be worn over the goggles as additional protection. Respiratory protection and cotton work clothes are recommended. Refer to 29 CFR 1910.132 to1910.36 for requirements. A positive pressure SCBA is required for entry into ammonia atmospheres at or above 300 ppm.

SPECIAL PRECAUTIONS

STORAGE AND HANDLING:
Keep product in strong glass or plastic, tightly closed containers. Store in cool (26.7°C/80°F) and well-ventilated area.

WORK-PLACE PROTECTIVE EQUIPMENT:
Protective equipment should be stored near, but outside of ammonium hydroxide area. Water for first-aid, such as an eyewash station and safety shower, is to be kept available in the immediate vicinity. See 29 CFR 1910.141 for workplace requirements.

DISPOSAL:
Ammonium Hydroxide is listed as a hazardous substance under FWPCA. See WASTE DISPOSAL. Classified as RCRA Hazardous waste due to corrosivity with designation D002 if disposed of in original form.

LABELING AND SHIPPING

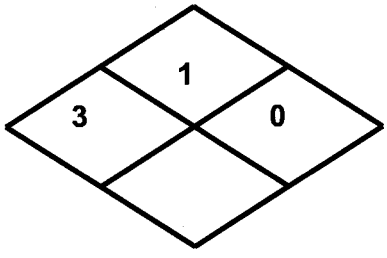
HAZARD CLASS: 8 [Corrosive Material]

PROPER SHIPPING DESCRIPTION: Ammonia Solutions, 8, UN2672, PG III, RQ

PLACARD: Corrosive

IDENTIFICATION NO: UN 2672

National Fire Protection Assoc. Hazardous Rating:



Hazardous Materials Identification System Labels:

AMMONIUM HYDROXIDE	
HEALTH	**3**
FLAMMABILITY	**1**
REACTIVITY	**0**
PERSONAL PROTECTION	**H**

MATERIAL SAFETY DATA SHEET

OTHER REGULATORY REQUIREMENTS

Under the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA), Section 103, any environmental release of this chemical equal to or over the reportable quantity of 1000 lbs. must be reported promptly to the National Response Center, Washington, D.C. (1-800-424-8802).

Any consumer product containing 5% or more ammonia requires a POISON label under FHSA (16 CFR 1500. 129(1)).

The material is subject to the reporting requirements of Section 313, Section 304 and Section 312, Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR 372. As of June 30, 1995, this material is reportable with the following qualifications: 10% of total aqueous ammonia is reportable as Ammonia (7664-41-4) under this listing.

EPA hazard Categories - Immediate: Yes; Delayed: No; Fire: No; Sudden Release: No; Reactive: No
Regulated Air Act – 40 CFR 112(r) at concentrations greater than 20% and amounts greater than 20,000 lbs.

The information, data, and recommendations in this material safety data sheet relate only to the specific material designated herein and do not relate to use in combination with any other material or in any process. The information, data, and recommendations set forth herein are believed by us to be accurate. We make no warranties, either expressed or implied, with respect thereto and assume no liability in connection with any use of such information, data, and recommendations.

EXHIBIT B-2 – HYDROLOGY / WATER QUALITY ANALYSIS

The Coolidge Generating Station (CGS) Project is proposing to build and operate a simple-cycle, natural gas-fired peaking power generation station in Coolidge, Arizona. Based on optimal operating conditions, the electrical output is expected to be up to approximately 575 megawatts (MW) from this facility. The Project is designed to provide a quick response to peak, or high-usage, power demands and also provide reserve capacity and the ability to add power quickly to support power reliability in the region. The Project Site is located in the City of Coolidge southeast of the intersection of State Route 87 and Randolph Road (**Figure B.2-1**). This report provides a detailed description of the water resources within the Project area and the potential impacts the CGS Project could have on water sources and quality.

AFFECTED ENVIRONMENT

The Project area is located in Pinal County, Arizona in the Eloy Sub-basin of the Picacho Basin within the Pinal Active Management Area (AMA). The Gila River is a natural waterway located approximately three miles north of the Project area. The Central Arizona Project (CAP), a federal reclamation project operated by the Central Arizona Water Conservation District (CAWCD) to deliver Colorado River water via a canal system, is located approximately six miles east of the Project area. Water demands in the Eloy Sub-basin are satisfied using surface water from the Gila River, CAP water and groundwater sources.

PROJECT WATER USE

GROUNDWATER

Groundwater will be used as the primary water source for the CGS Project. Estimating water use for a simple-cycle peaking generating facility is inherently difficult given the variable dispatch profile of this type of facility during any given year. Although the typical annual operation of this Project is likely to aggregate 600 hours or less, for purposes of this analysis a higher range of operating hours and resulting water use has been considered to ensure the impact values presented are conservative estimates. Therefore, this analysis assumes the Project generators will be operated within a range from about 600 to 1200 hours per year, but could operate up to 3,200 hours per year, the current estimate of its regulatory limit. This estimated operating range of 600 hours to 3,200 hours in a given year was used to estimate the Project's expected minimum to maximum water use cases. The range of water usage is discussed in more detail in the Water Resources Impacts section below.

WASTEWATER

Water used for the Project will undergo demineralization pre-treatment to remove all impurities and achieve the ultra-pure water needed for the facility. This treatment will remove the dissolved solids and mineral content. The byproduct of this treatment, generally referred to as reject water, will be retained onsite in evaporation ponds governed by a permit from Arizona Department of Environmental Quality (ADEQ).

GROUNDWATER

The Project area is located in the Picacho Basin, Eloy Sub-basin, in the City of Coolidge, Arizona, which is part of the Pinal Active Management Area (AMA) (**Figure B.2-2**). The Pinal AMA is approximately 4,000 square miles and is an arid region where precipitation averages about eight inches annually (ADWR 1989). The Picacho Basin lies in the Basin and Range geologic province of southern Arizona, which is characterized by sharply rising mountains of moderate relief separated by broad alluvial basins (Pool et al, 2001). The Eloy Sub-basin covers approximately 1,260 square miles, with boundaries formed by the Silver Bell Mountains to the south, the Picacho Mountains to the east, an unnamed mountain range to the north, and the Santan and Sacaton Mountains to the northwest (Gellenbeck and Coes, 1999).

Groundwater in the Picacho Basin primarily occurs in the basin sediments. Based on the water-bearing characteristics inferred from subsurface lithologic and physical-property information, hydrologists divide the basin sediments, for analytical identification, into the "upper alluvial unit" (UAU), the "middle silt clay unit" (MSCU), and the "lower conglomerate unit" (LCU) (Wickham and Corkhill, 1989). Principal aquifers are found in the conglomerate of the LCU and the sand and gravel interbeds within the alluvial facies of the MSCU and UAU. Downward vertical head gradients are present in the regional aquifer, and delayed drainage from the UAU to the LCU have been observed (Corkhill and Hill, 1990). Extensive evaporites (anhydrite and halite) are found within the basin with thicknesses reaching close to 400 feet less than ten miles south of the Project Site (Pool et al, 2001). Initial aquifer parameters were estimated for the basin fill sediments for the Pinal AMA by Wickham and Corkhill (1989) (see **Table B.2-1**).

Table B.2-1
Initial Estimated Hydraulic Aquifer Parameters

	Hydraulic Conductivity (ft/day)			Specific Yield (Percent)		
Unit	Min	Max	Mean	Min	Max	Mean
UAU	13.4	154.1	58.4	5	20	11
MSCU	0.134	<3.4	2.1	3	7	4
LCU	0.54	133.7	34.0	3	18	9

(Wickham and Corkhill, 1989)

The groundwater flow system of the Eloy Sub-basin has become more complex as a result of groundwater production from both the upper and lower aquifer systems in the basin. Flow generally occurs from the basin margins to a low point that extends in a north-northwestward direction from Eloy to the Sacaton Mountains. Groundwater recharge occurs along the major

streams, the local irrigation-distribution system, and at Picacho Reservoir (Pool et al, 2001). Perched groundwater conditions are present north and south of the Casa Grande Mountains, and in an area 5 miles west of the Picacho Mountains (Gellenbeck and Coes, 1999).

Historical groundwater levels near the Site were collected from the Arizona Department of Water Resources (ADWR) Groundwater Site Inventory (GWSI) and U.S. Geological Survey (USGS) databases, last updated in June 2007, to determine groundwater flow conditions in the vicinity of the proposed Project. Depth to water in these local wells ranged from 59.3 to 174.4 feet bgs between 1984 and 2003; no additional data for years later than 2003 was available for the Project area of interest (see **Table B.2-2**). A hydrograph of groundwater elevation for wells in the vicinity of the Site is presented in Figure **B.2-3**. The most complete datasets of groundwater elevation reported for these wells represented November 1993, November 1998, and December 2003; and these data were used to evaluate groundwater flow direction and gradients. Groundwater flows north-northwest in the vicinity of the Site at an average hydraulic gradient of 0.0036 vertical feet per horizontal feet (ft/ft) (see **Figures B.2-4, B.2-5**, and **B.2-6**).

Groundwater is being pumped in the vicinity of the Site for agricultural irrigation. Available annual pumping records from GWSI databases for production wells in the vicinity indicate groundwater was withdrawn at individual well rates ranging from 0 to 1,034 acre-feet per year (ac-ft/yr) per well, and averaged 191 ac-ft/yr per well, between 1984 and 2006 (SAHRA, 2008). Groundwater withdrawal rates for the region are provided in **Figure B.2-7**.

An exploratory boring was drilled in June 2008 at the northwest corner of the Site to assess the water quality and water production of the local aquifer system. The boring was advanced to a depth of 2,000 feet below ground surface (bgs).

Detailed lithologic logging of the composite samples collected from the exploratory boring drilled on-site was conducted using the Unified Soil Classification System. The general lithology of the borehole consisted of alternating units of silty sands and clayey sands in the upper 300 feet. From approximately 300 to 320 feet bgs poorly graded fine grained to medium grained uncemented sands were encountered with less than 5 percent fines. Below 320 feet bgs, fines were present, consisting primarily of clays, which increased below 320 feet from clayey sands to sandy clays below 400 feet bgs. At 600 feet bgs, a 240-foot thick high plasticity clay was encountered. Below 840 feet bgs, the lithology consisted of sandy clays. A possible evaporite deposit was encountered at 1,250 to approximately 1,820 feet bgs. Within this evaporite deposit, soil samples were observed to be lighter brown in color with traces of white color nodules reacting vigorously with hydrochloric acid (HCl). These samples were also observed to dry differently than the rest of the samples throughout the borehole, with respect to shape and consistency. From 1,820 feet bgs to the total depth of the borehole (2,000 feet bgs), interbedded units of clayey sands and sandy clays were observed. The UAU is interpreted from the surface elevation to a depth of about 400 feet bgs , and is comprised of alternating sequences of silty sands and gravels and clayey sands and gravels having low to medium plasticity. The MSCU is from 400 feet bgs to the total depth of the borehole, and includes high plasticity clays

and sandy clays to clayey sands, with an evaporite deposit consisting of anhydrite below 1,250 feet bgs. The detailed field lithologic log of CGS-POC1 is presented in **Appendix B.2-1**.

Table B.2-2
Historical Water Levels near Coolidge Generating Station

GWSI Well ID	55 Well ID	Date	Depth to Water (feet)	Elevation (feet)	Remark	Source
325447111305401	605354	11/6/1984	160	1280	Undetermined	ADWR
		11/8/1988	117.8	1322	Undetermined	ADWR
		11/11/1993	85.8	1354	Undetermined	ADWR
		11/11/1998	63.9	1376	N/A	ADWR
		12/3/2003	77.5	1362.5	N/A	ADWR
325439111305501	605356	11/6/1984	145.6	1296	Nearby	ADWR
		11/7/1988	115.4	1327	Undetermined	ADWR
		11/11/1993	90.7	1351	Undetermined	ADWR
		11/11/1998	68.2	1374	N/A	ADWR
		12/3/2003	84.05	1357.95	N/A	ADWR
325524111305601	605355	11/5/1984	141.9	1293.1	N/A	ADWR
		11/6/1984	78.5	1364	Nearby	ADWR
		11/9/1988	59.8	1382	Undetermined	ADWR
		11/7/1988	110	1325	N/A	ADWR
		11/10/1993	86.6	1348.4	N/A	ADWR
		11/10/1998	65.3	1369.7	N/A	ADWR
		12/3/2003	85.85	1349.15	N/A	ADWR
325429111301901	617779	11/12/1993	84.8	1362	Undetermined	ADWR
		11/11/1998	75.4	1372	N/A	ADWR
		12/3/2003	95.5	1351.5	N/A	ADWR
325428111305301	615428	4/10/1991	136.8	1308	Undetermined	ADWR
		11/12/1998	76.8	1368	N/A	ADWR
		11/20/2003	130.3	1314.7	N/A	ADWR
325522111301501	605238	11/5/1984	137.1	1300.9	N/A	ADWR
		11/7/1988	111.6	1326.4	N/A	ADWR
		11/10/1993	87.7	1350.3	N/A	ADWR
325458111295101	617778	11/8/1984	102.2	1348	Undetermined	ADWR
		11/1/1988	93.6	1356	Undetermined	ADWR
		11/2/1993	83	1367	Undetermined	ADWR
		11/4/1998	59.3	1391	N/A	ADWR
		11/4/1998	75.8	1372	N/A	ADWR
		11/11/1998	73.1	1375	N/A	ADWR
		12/3/2003	67.6	1380.4	N/A	ADWR
325440111295301	617774	2/16/1954	107.1	1342.9	N/A	USGS
		1/17/1955	106.79	1343.21	N/A	USGS
		1/19/1956	93.7	1356.3	N/A	USGS
		1/15/1957	109.44	1340.56	N/A	USGS
		1/13/1958	121.5	1328.5	N/A	USGS
		1/10/1994	74.7	1375.3	N/A	USGS
325534111305701	606012	11/5/1984	145.3	1286.7	N/A	ADWR
		11/7/1988	115.6	1316.4	N/A	ADWR
		11/10/1993	87.9	1344.1	N/A	ADWR
325431111311801	605357	11/6/1984	174.4	1270	Undetermined	ADWR
		11/11/1993	98.1	1346	Undetermined	ADWR
		11/11/1998	75.4	1369	N/A	ADWR
		12/3/2003	88	1356	N/A	ADWR

Notes:
N/A – Not Applicable
GWSI – Groundwater Site Inventory (USGS)

GROUNDWATER QUANTITY

The estimated volume of groundwater in storage in the Eloy Sub-basin in 1993, between land surface and 1,200 feet bgs, was approximately 24 million acre-feet (ADWR, 1999). Groundwater enters the Eloy Sub-basin as underflow from the Aguirre Valley Sub-basin to the south and from the Tucson AMA to the south and east, at estimated volumes of 3,700 ac-ft/yr and 24,500 ac-ft/yr, respectively. Underflow leaves the Pinal AMA through the Eloy Sub-basin, north of the Town of Florence and south of Sacaton at an estimated volume of 11,800 ac-ft/yr (ADWR, 1999). Recharge occurs in the basin as infiltration from precipitations, but is primarily sourced from the Santa Cruz and Gila Rivers after flooding and snow melt events (ADWR, 1999).

The development of groundwater supplies in the Picacho Basin began in the late 1890s for irrigation near the Gila River. Groundwater usage outside the Gila River area began in the early 1900s for railroad uses outside of Casa Grande (Pool et al, 2001). Intense pumping of groundwater for irrigation continued through the early 1950s, when production gradually decreased into the 1960s (Pool et al, 2001). Varying degrees of water level recovery were observed in the Eloy Sub-basin by the late 1980s. In 1989, water levels in some wells in the Eloy Sub-basin recovered 50-60 feet. This recovery has been attributed to reduced groundwater pumping, increased use of CAP water, and Gila River water (ADWR, 1999). Permits must be acquired from ADWR for new water supply development in the Eloy Sub-basin. As discussed above, groundwater resources are currently used in the vicinity of the Site for agricultural irrigation. Between 1984 and 2006, total annual volumes of groundwater extracted from within one-mile of the Site ranged between 2,135 AF and 4,656 AF, and averaged 3,486 AF according to GWSI databases (SAHRA, 2008).

A search of the ADWR well registration database found 27 water production wells within a one-mile radius of the Project Site. Extraction rates for the wells within the one-mile search were reported to be as high as 900 gpm. Depth to water in wells completed to a depth of 200 feet bgs or greater ranged from 50 to 300 feet bgs, averaging a depth of approximately 175 feet bgs. A summary of the ADWR registered water production wells within one mile of the Site is presented on **Figure B.2-8** and **Table B.2-3**.

Groundwater levels were evaluated to determine changes in aquifer levels in response to groundwater extraction in the vicinity of the Project Site. Between 1984 and 2003, water levels near the Site increased between 32 and 86 feet, indicating little impact from local pumping at the volumes discussed above. Data representing this increase in water levels are presented in **Table B.2-4** and **Figure B.2-9**.

Table B.2-3
ADWR Registered Water Wells Within a One-Mile Radius of Site

Registration No.	Water Use	Owner	Well Depth (ft)	Pump Rate (GPM)	Water Level (ft)
203457	Water Production	Suncraft Construction	0	0	0
522759	Water Production	Sunbelt Refining	493	137	180
522760	Water Production	Sunbelt Refining	0	0	0
530066	Water Production	Vail 160 LLC	300	0	80
605237	Water Production	Freeman	360	700	160
605238	Water Production	Freeman	800	700	160
605239	Water Production	Freeman	300	700	160
605242	Water Production	Peterson,G E	300	10	160
605346	Water Production	Bartlett Farms	700	800	300
605352	Water Production	Bartlett Farms	600	600	300
605353	Water Production	Bartlett Farms	500	600	300
605354	Water Production	Bartlett Farms	700	900	300
605356	Water Production	Bartlett Farms	400	400	300
606010	Water Production	Farnsworth, J.A. Jr,	600	600	200
606011	Water Production	Farnsworth, J.A. Jr,	460	300	200
606012	Water Production	Farnsworth, J.A. Jr,	600	700	200
606013	Water Production	Farnsworth, J.A. Jr,	500	700	200
606017	Water Production	Farnsworth, J.A. Jr,	0	180	0
615428	Water Production	ASLD	600	750	240
617557	Water Production	City of Mesa	0	0	0
617774	Water Production	Mc Farland,B C	0	0	0
617778	Water Production	City of Mesa	0	0	0
617779	Water Production	City of Mesa	0	0	0
617780	Water Production	City of Mesa	610	0	176
624101	Water Production	McCleve	600	600	250
640485	Water Production	Moore, M	0	0	0
805408	Water Production	N.S.K. & B. Partnership	350	35	0

Table B.2-4
Change in Water Levels near Coolidge Generating Station (1984 to 2003)

Well ID	Date	Depth to Water (feet)	Water Elevation (feet)	Rise
605354	11/6/1984	160	1280	82.5
	12/3/2003	77.5	1362.5	
605356	11/6/1984	145.6	1296	61.95
	12/3/2003	84.05	1357.95	
605355	11/5/1984	141.9	1293.1	56.05
	12/3/2003	85.85	1349.15	
617778	11/8/1984	102.2	1348	32.4
	12/3/2003	67.6	1380.4	
605357	11/6/1984	174.4	1270	86
	12/3/2003	88	1356	

GROUNDWATER QUALITY

The Project Site was desert land until the late 1940s. Since that time, it has been used for agricultural purposes. Historical agricultural activities may have included crop farming, cattle and horse farming, and cattle feed lots. An active irrigated farming operation has been conducted by a lessee, Fast Track Farms, on the Site since 2000. The Site is surrounded mainly by agricultural and undeveloped land (Arcadis, 2007).

Groundwater in the Eloy Sub-basin has been classified as calcium-mixed anion according to Gellenbeck and Coes, 1999. Samples from groundwater in the Coolidge area have shown nitrate, sulfate, and fluoride concentrations in excess of the United States Environmental Protection Agency (USEPA) maximum contaminant limits (MCLs) for drinking water. Sources of nitrate have not been identified in the basin; however, possible sources may include a geologic origin, fertilizers, cattle feed lots, legume species of desert plants, and atmospheric sources. Elevated concentrations of fluoride have been found locally in the Coolidge area (Gellenbeck and Coes, 1999).

Total dissolved solids (TDS) content is a measure of the dissolved minerals present in groundwater and can be used as an indicator for overall water quality. TDS concentrations may be elevated as a result of agricultural practices and industrial discharges. Concentrations in excess of 10,000 milligrams per liter (mg/L) have been observed near Coolidge. No permanent harmful effects have been observed from drinking high TDS water, but taste may be less than desirable (ADWR, 1999). In addition, specific conductance values greater than 1,000 µS/cm have been identified in groundwater near the City of Coolidge (Gellenbeck and Coes, 1999).

Water quality directly impacts the amount of raw water required to be treated to produce the necessary quantity of ultra-pure process water for the Project. In general, water with less impurities reduces the volume of raw source water required to be withdrawn and treated, and the resulting volume of byproduct water rejected by the treatment process to be disposed of in the evaporation ponds. Water quality samples were collected and analyzed for multiple constituents, including silica, to provide information to formulate water treatment facility design and to estimate Project reject water quantities. The TDS concentrations in the samples obtained from the onsite exploratory boring ranged from 720 mg/L to 8,500 mg/L in zones corresponding to depths at 240 feet bgs, 295 feet bgs, 335 feet bgs, and 520 feet bgs. The laboratory analytical results for the samples taken fromthis well are summarized on **Table B.2-5**.

An exploratory boring was drilled in the northwest area of the Site to assess the water quality and water production of the local aquifer system. The exploratory boring was converted to a point of compliance (POC) monitor well,CGS-POC1, by being completed in the uppermost aquifer and screened from 200 to 250 feet bgs. After well surging, water level in CGS-POC1 was observed at 104 feet bgs. The POC monitor well will initially provide baseline water quality monitoring from the well prior to power plant construction and operations. Once the Project evaporation ponds are built, the well will provide long-term monitoring of the uppermost shallow aquifer downgradient of the ponds. Well construction details are presented in **Appendix B.2-2**.

GROUNDWATER RIGHTS

The primary water source for the Project will be wells to be drilled on the Project Site. The on-site wells are expected to be approximately 500 feet deep, and capable of each producing 1,250 - 1500 gpm of continuous redundant flow. Groundwater pumping in the Pinal AMA is regulated pursuant to the Arizona Groundwater Code. The Project will have rights to approximately 276 acre-feet/year of Type 1 grandfathered groundwater rights created by conversion of the irrigation grandfathered rights appurtenant to the irrigated farmland comprising the Project Site. (The conversion will occur upon retirement of irrigation just prior to the commencement of Project construction). If the dispatch of the Project generators in any calendar year would require additional water beyond that allowed to be pumped under the Type 1 Rights, the additional water necessary to operate up to the limit of the Project's regulatory permits, will be provided by the recovery of long-term storage credits banked by recharging CAP water in the Pinal AMA.

WATER RESOURCES IMPACTS

GROUNDWATER

Groundwater is proposed as the source of water for the CGS Project. The design of the water supply and treatment system will be based on the Project's estimated maximum process water consumption for operation at full output during peak periods. Reserve capacity would be designed into the system for engineering reliability margins and to ensure a reliable fire protection capability.

Supply water will be pumped from two on-site production wells. The Project will operate during peak power demand periods, which are estimated to likely range from approximately 600 to 1,200 hours per year. However, for purposes of worst case impact evaluation, the Project hypothetically could operate up to approximately 3,200 hours per year consistent with current estimates of its regulatory limits. Based on the estimated likely case and worst case scenarios of annual operation, the estimated annual water production requirement could range from an expected volume of approximately 140 acre-feet per year to a high of approximately 736 acre-feet per year.

Table B.2-5
Coolidge Generating Station Project
Groundwater Analyses – Coolidge, Arizona

		Feet below ground surface (bgs)			
Analyte	**Units**	**520**	**335**	**295**	**240**
Dissolved Silica	(mg/L)	21	34	37	31
Silica, Total	(mg/L)	21	33	35	32
Colloidal Silica[1]	(mg/L)	0	-1	-2	1
Reactive Silica	(mg/L)	23.5	32	34.1	32.4
Chloride	(mg/L)	3,700	330	350	160
Fluoride	(mg/L)	3.1	0.61	0.77	0.98
Sulfate	(mg/L)	1,200	250	300	140
Spec. Conductance @ 25C°	(µmhos/cm)	12,000	1,800	1,900	1,200
Total Dissolved Solids (TDS)	(mg/L)	8,500	1,200	1,300	720
Total Suspended Solids	(mg/L)	<10	<10	<10	22
pH	units	7.3	8.2	8.2	8.5
Temperature	(°C)	22.4	21.4	21.9	20.9
Nitrite (as N)	(mg/L)	0.058	<0.020	<0.020	0.1
Nitrate (as N)	(mg/L)	<0.50	7.4	5.5	3.1
Turbidity	(NTU)	4.7	2.1	3	43
Alkalinity, Bicarbonate (as $CaCO_3$)	(mg/L)	22	120	160	120
Alkalinity, Carbonate (as $CaCO_3$)	(mg/L)	<20	<20	<20	<20
Alkalinity, Hydroxide (as $CaCO_3$)	(mg/L)	<20	<20	<20	<20
Alkalinity, Total (as $CaCO_3$)	(mg/L)	22	120	160	130
Aluminum	(mg/L)	<0.10	<0.10	<0.10	0.53
Arsenic	(mg/L)	0.0093	0.003	<0.0030	0.0037
Barium	(mg/L)	0.068	0.068	0.05	0.089
Boron	(mg/L)	4.2	0.52	0.59	0.33
Calcium	(mg/L)	470	150	180	67
Copper	(mg/L)	<0.010	<0.010	<0.010	<0.010
Cyanide, Total	(mg/L)	<0.010	<0.010	<0.010	<0.010
Hardness	(mg/L)	1300	440	530	200
Iron	(mg/L)	2.6	0.16	0.17	1.3
Magnesium	(mg/L)	22	16	21	8.4
Manganese	(mg/L)	0.26	0.011	0.015	0.093
Nickel	(mg/L)	<0.010	<0.010	<0.010	<0.010
Potassium	(mg/L)	25	8.2	9.4	6
Sodium	(mg/L)	2500	210	230	160
Strontium	(mg/L)	15	2.9	3.2	1.4
Zinc	(mg/L)	<0.050	<0.050	<0.050	<0.050
Biochemical Oxygen Demand (BOD)	(mg/L)	<2.0	<2.0	<2.0	16
Chemical Oxygen Demand (COD)	(mg/L)	<20	<20	<20	79
Phosphorus, Total (as P)	(mg/L)	<0.050	<0.050	<0.050	<0.050
Organic Carbon, Total	(mg/L)	<5.0	<1.0	<1.0	10
Carbon Dioxide (CO_2)	(µg/L)	2,000	1,800	2,700	<1,000
TPH C6-C10 GRO	(mg/L)	<2.0	<2.0	<2.0	<2.0
TPH C10-C22 DRO	(mg/L)	<3.0	<3.0	<3.0	<3.0
TPH C22-C32 ORO	(mg/L)	<10	<10	<10	<10

1 = Colloidal Silica calculated by subtracting Dissolved Silica from Total Silica

NT = Not tested, due to available volume of water

IMPACTS FROM GROUNDWATER WITHDRAWALS

Withdrawal of groundwater from these wells is expected to have a minimal effect on the Eloy Sub-basin Aquifer. To simulate the potential impact on the aquifer, an analysis of the drawdown and cone of depression was performed based on the estimated range of annual water withdrawal rate for 20 years. The impact was modeled using WINFLOW™, an analytical element model to simulate 2-dimensional, transient groundwater flow for the area surrounding the Site. The model was run to simulate the potential drawdown impacts of the proposed production wells on the aquifer and surrounding wells. Modeled hydraulic conductivity was assumed to be 58.4 feet per day, based on the mean UAU value presented in Wickham and Corkhill, 1989. The aquifer parameters assumed for the model were those presented above as part of the water resources description. Aquifer thickness was assumed to be 250 feet, based upon the recent onsite drilling data.

The model assumed pumping using a well field of two wells, both pumped continuously throughout a period of 20 years at a rate that would fulfill the estimated Project water requirement for each of three alternative scenarios of Project operations, "A", "B" and "C", assuming full power output of all 12 generating Units for (A) 600 hours per year, (B) 1200 hours per year, or (C) 3200 hours per year throughout that same 20-year period. Those three operating scenarios require the following corresponding annual quantities of water and equivalent rates of continuous pumping throuought the 20-year period: (A)140 acre-feet per year, equating to 43 gpm per well; (B) 276 acre-feet per year, equating to 86 gpm per well; and (C) 736 acre-feet per year, equating to 228 gpm per well.

Results of the impact modeling indicate the following projected drawdowns after 20 years under the three operating scenarios:

A. Under operating scenario A (600 hours per year), a cone of depression would be formed in the water table with a maximum drawdown of approximately 1.1 foot at the center of pumping. Drawdowns at distances of 0.5, 0.75 and one mile away are projected to be approximately 0.65, 0.55 and less than 0.5 foot, respectively, after 20 years. The details of the drawdown calculations under scenario A are shown in **Appendix B.2-3**.

B. Under operating scenario B (1,200 hours per year), a cone of depression would be formed in the water table with a maximum drawdown of approximately 2.3 feet at the center of pumping. Drawdowns at distances of 0.5, 0.75 and one mile away are projected to be approximately 1.3, 1.1 and 1.0 feet, respectively, after 20 years. The details of drawdown calculations under scenario B are shown in **Appendix B.2-3**.

C. Under operating scenario C (3,200 hours per year), a cone of depression would be formed in the water table with a maximum drawdown of approximately 6.0 feet at the center of pumping. Drawdownsat distances of 0.5, 0.75 and one mile away are projected to be approximately 3.4, 3.0 and 2.8 feet, respectively, after 20 years. The details of the drawdown calculations under scenario C are shown in **Appendix B.2-3**.

Impact on the total volume of water in storage in the Eloy Valley aquifer is expected to be minimal, and ultimately have less impact on the local aquifer than the historical water use from agricultural practices, as discussed above.

IMPACTS TO GROUNDWATER QUALITY

There are no anticipated impacts to groundwater quality from the Project. Wastewater discharges will be sent to lined on-site evaporation ponds. The evaporation ponds associated with the Project will be permitted under an ADEQ Aquifer Protection Permit (APP). The APP will require the implementation of Best Available Demonstrated Control Technology (BADCT) to minimize potential groundwater impacts from these ponds and also will include routine monitoring of shallow groundwater quality via an on-site groundwater monitor well. Under the APP, a contingency plan for a water quality exceedance and closure plan will be developed for the Project.

SUBSIDENCE IMPACTS

In general, land subsidence and earth fissuring can sometimes result from intensive groundwater development. In addition to economic consequences, land subsidence can cause compaction and reduced pore spaces of the basin aquifers (ADWR, 1999). In the Pinal AMA, both land subsidence and earth fissuring have been identified for many years, and have been substantial in some areas. Groundwater depletion has caused some land subsidence and earth fissures in the Eloy Sub-basin. More than 15 feet of land subsidence was measured south of Eloy as of 1985, and earth fissures were first reported in 1927, near the eastern edge of the Eloy Sub-basin adjacent to the Picacho Mountains. Today the earth fissure system near the Picacho Mountains extends along a north-south line for approximately nine miles (ADWR, 1999). Earth fissure zones mapped in the Pinal AMA are provided on **Figure B.2-10**. A fissure zone is located within approximately one mile southeast of the Project (Shipman, 2007). No earth fissure evidence has been observed, historically, at the Site according to the current tenant farmer. The minimal amount of groundwater required for the operation of the Project is not expected to cause subsidence in the Project area.

SUMMARY OF IMPACTS TO GROUNDWATER

Impact on the Eloy Valley aquifer is expected to be minimal, and to have less impact on the local aquifer than historical agricultural practices. The Project will retire 100 acres of agricultural land. Depending on crop type, typical annual agricultural irrigation pumping ranges between 4 to 7 feet per acre. Therefore, the estimated Project pumping rate range from 140 to 736 ac-ft per year is generally within the range of previous irrigation pumping on these same lands. Notwithstanding the minimal magnitude of this impact, the Project's physical use of groundwater will be fully offset with CAP water recharged in the Pinal AMA .

No discharge of water outside of the evaporation ponds will occur, as required by the APP. Groundwater quality will be monitored at the point of compliance monitoring well (CGS-POC1) under the APP to maintain aquifer integrity in accordance with water quality standards.

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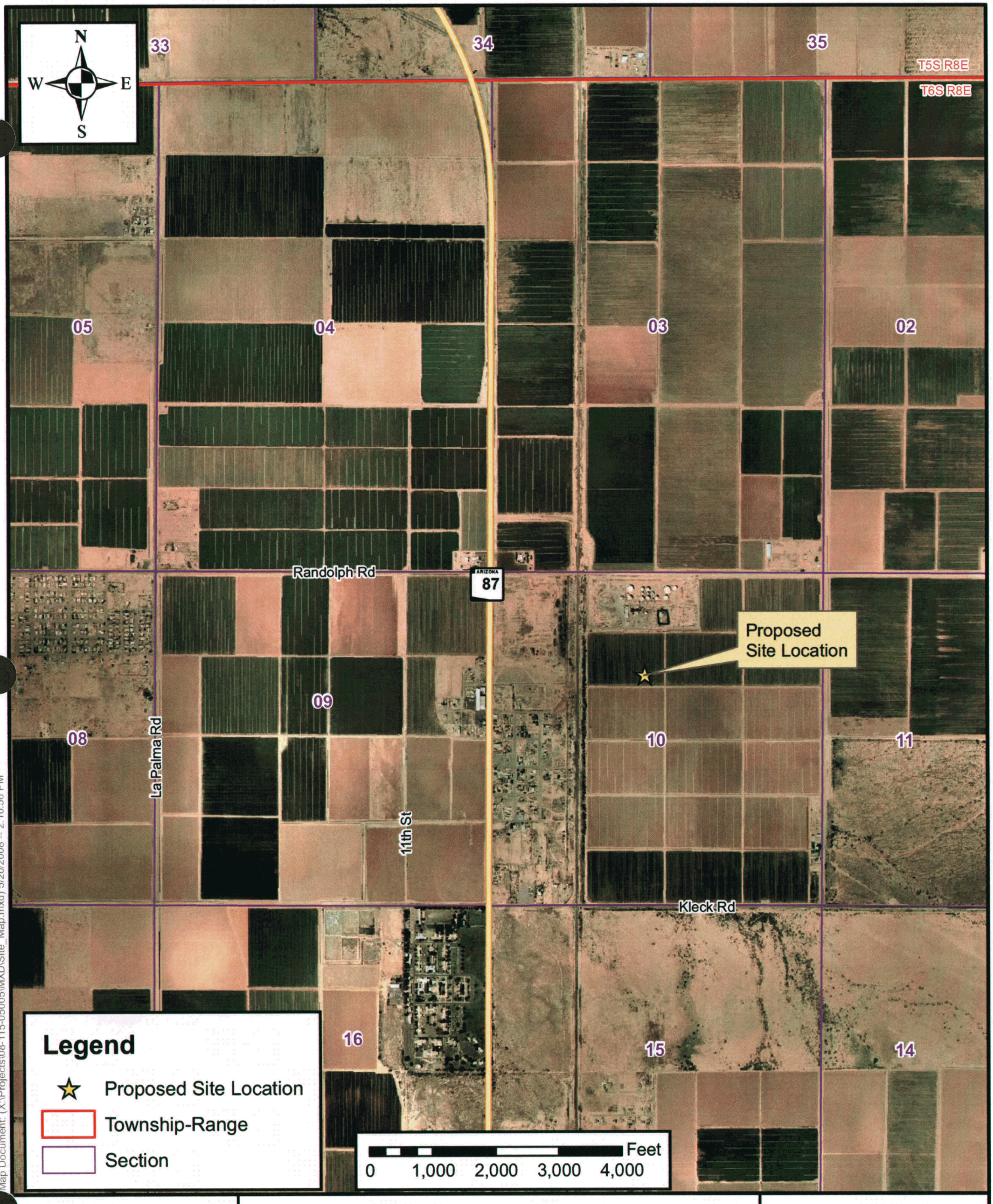

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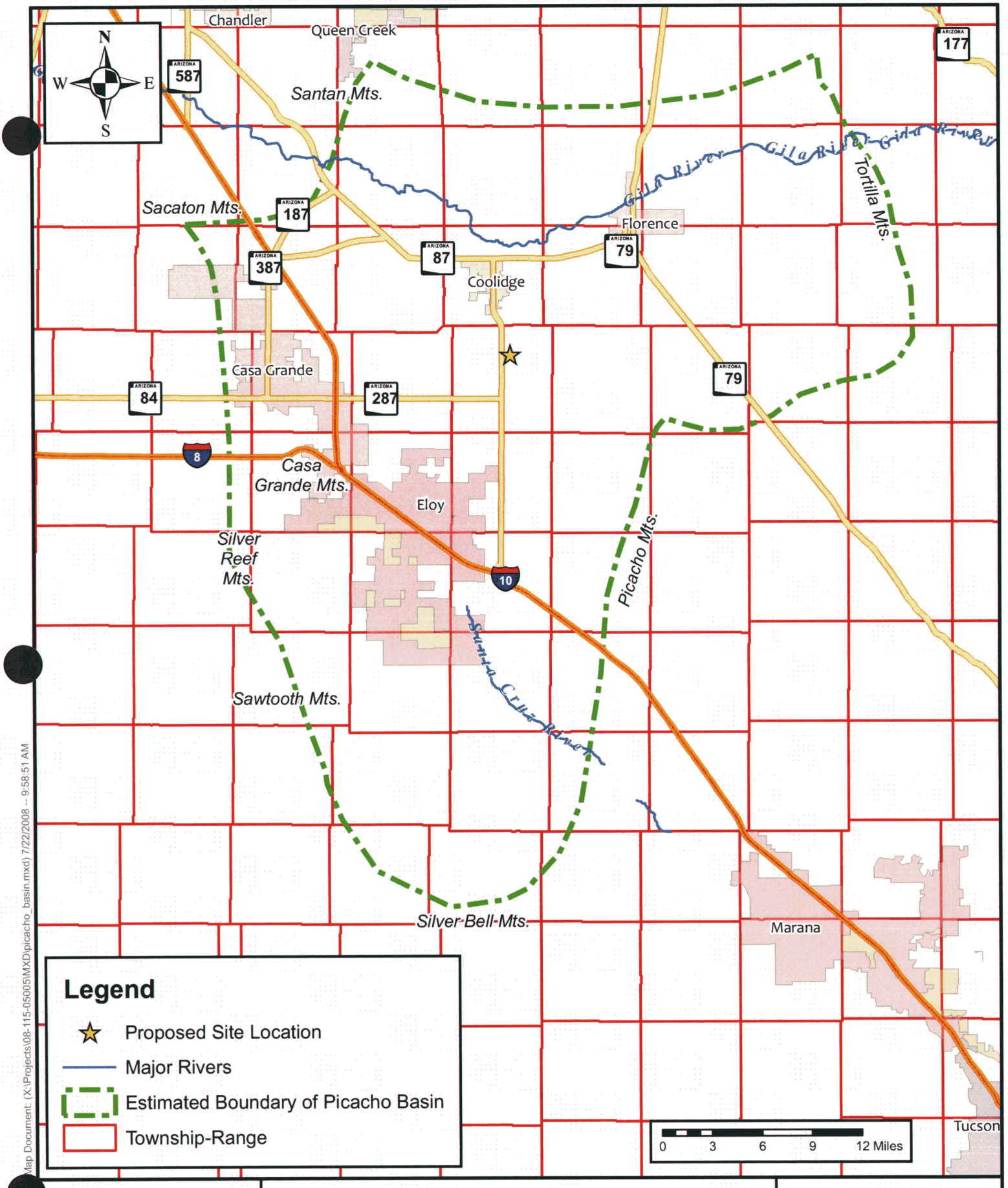
SITE LOCATION MAP

COOLIDGE GENERATING STATION
Pinal County, Arizona

FIGURE
B.2-1

amec



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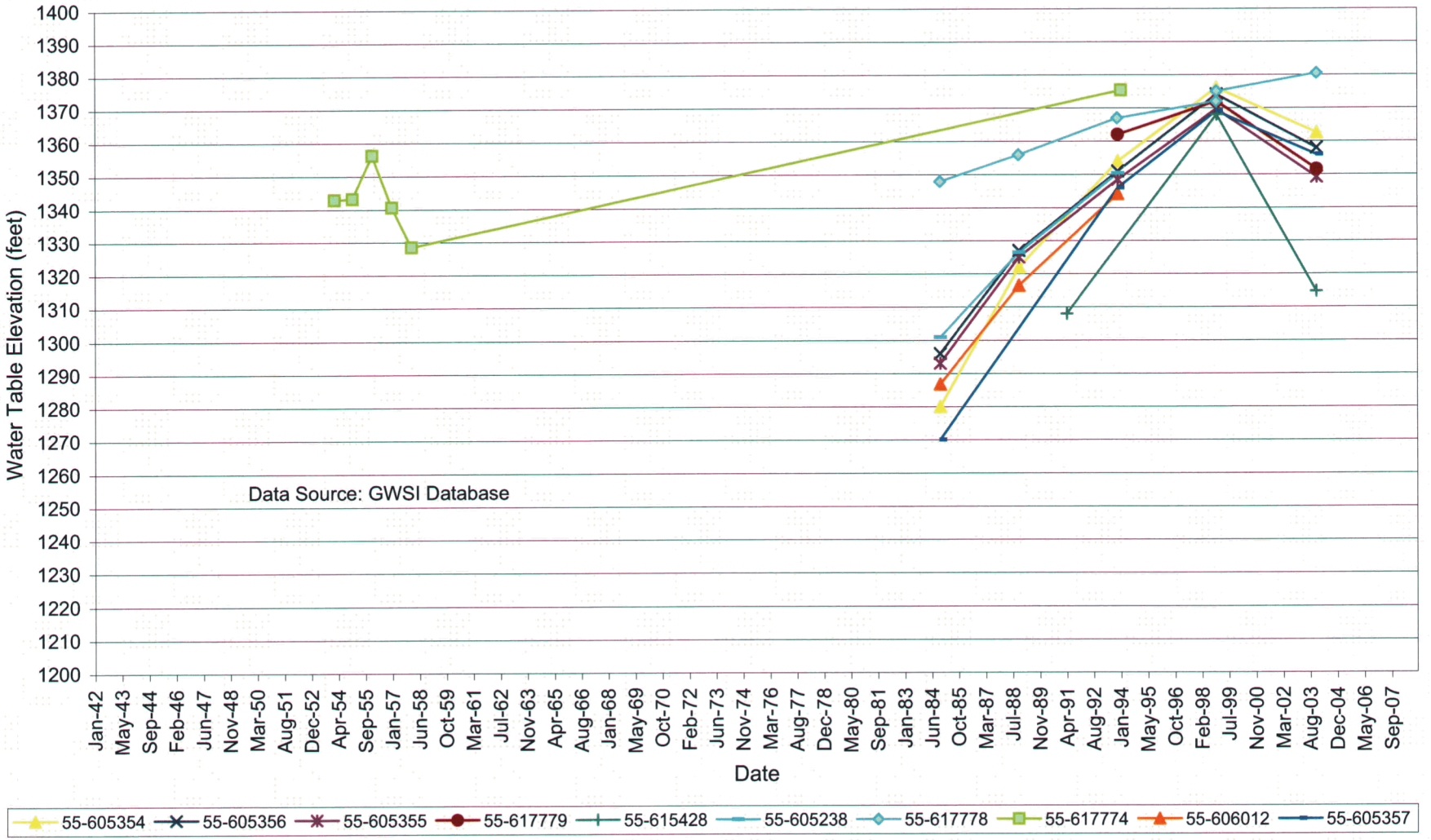
Picacho Basin

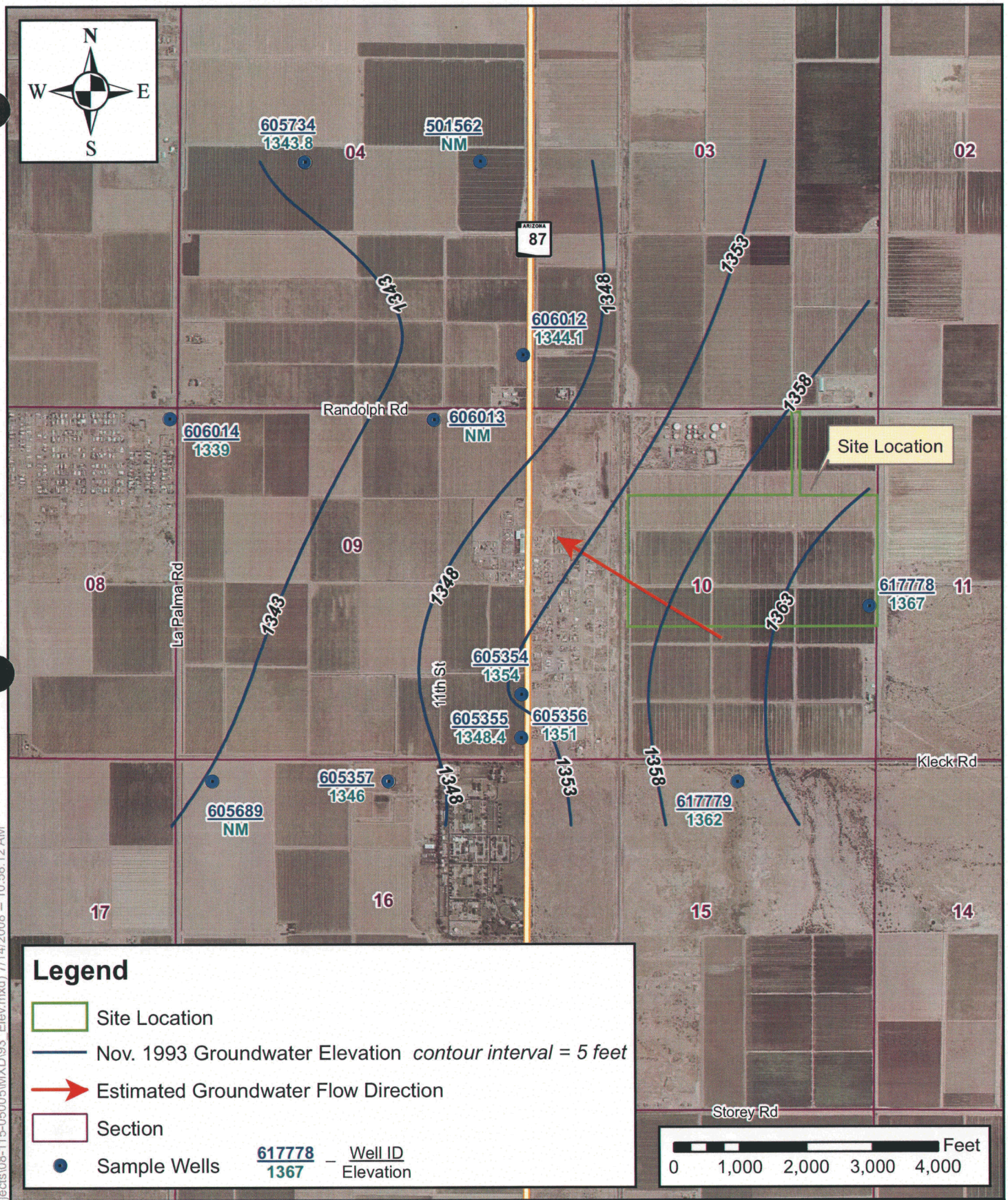
COOLIDGE GENERATING STATION
Pinal County, Arizona

FIGURE
B.2-2

amec

FIGURE B.2-3
Water Levels near Coolidge Generating Station





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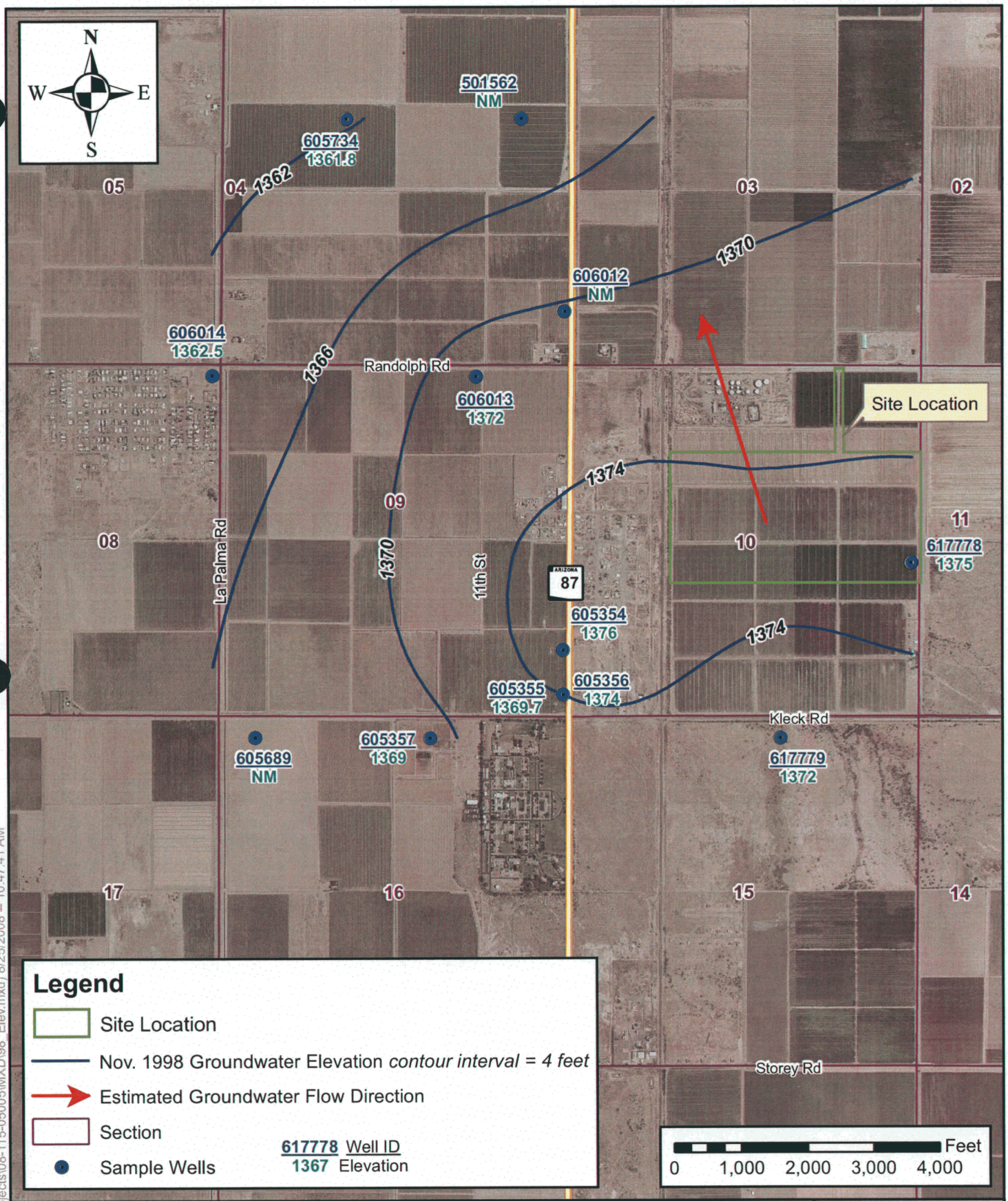
Poteniometric Surface
November 1993

COOLIDGE GENERATING STATION
Pinal County, Arizona

FIGURE
B.2-4

amec



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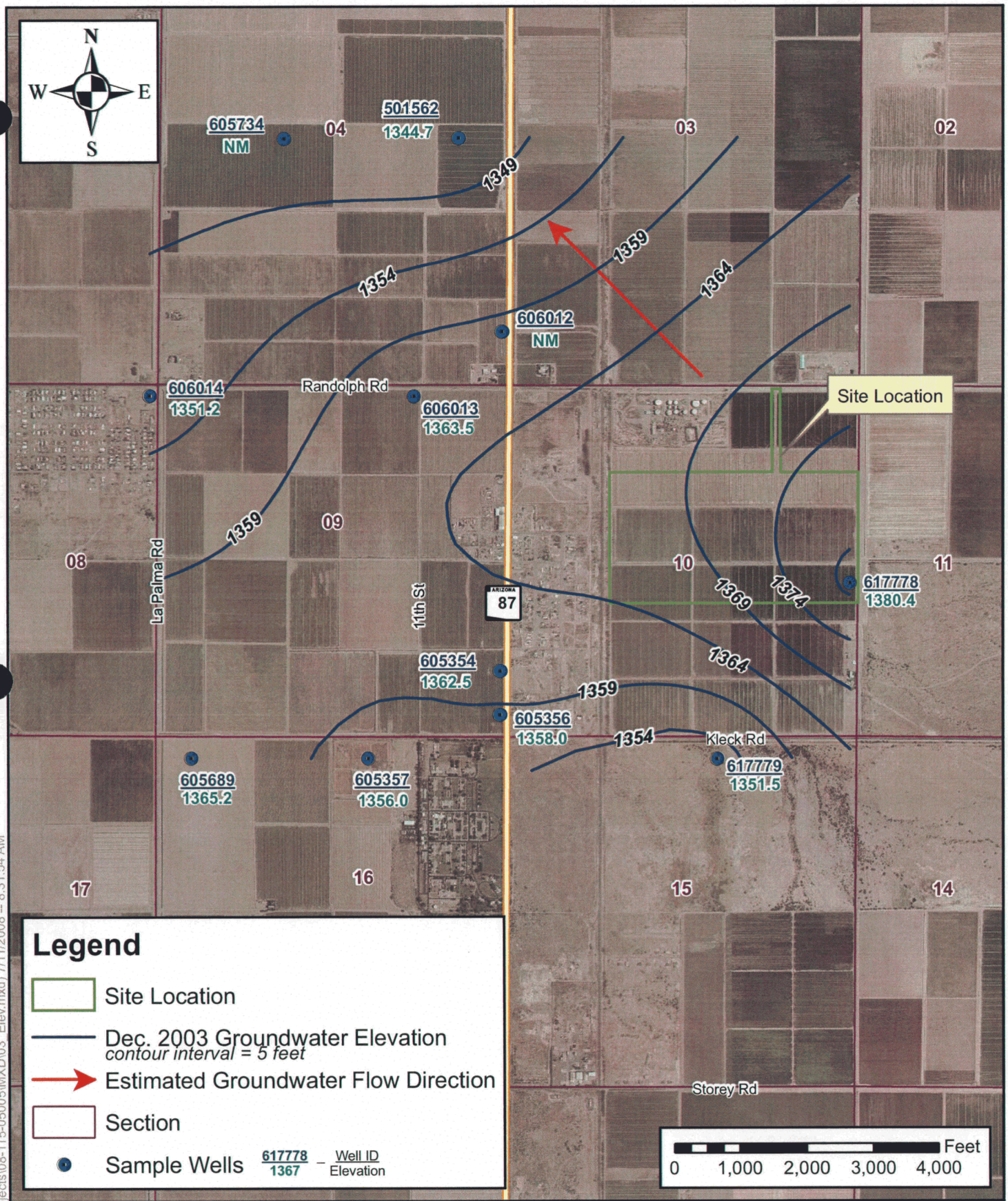
Poteniometric Surface
November 1998

COOLIDGE GENERATING STATION
Pinal County, Arizona

FIGURE
B.2-5

amec



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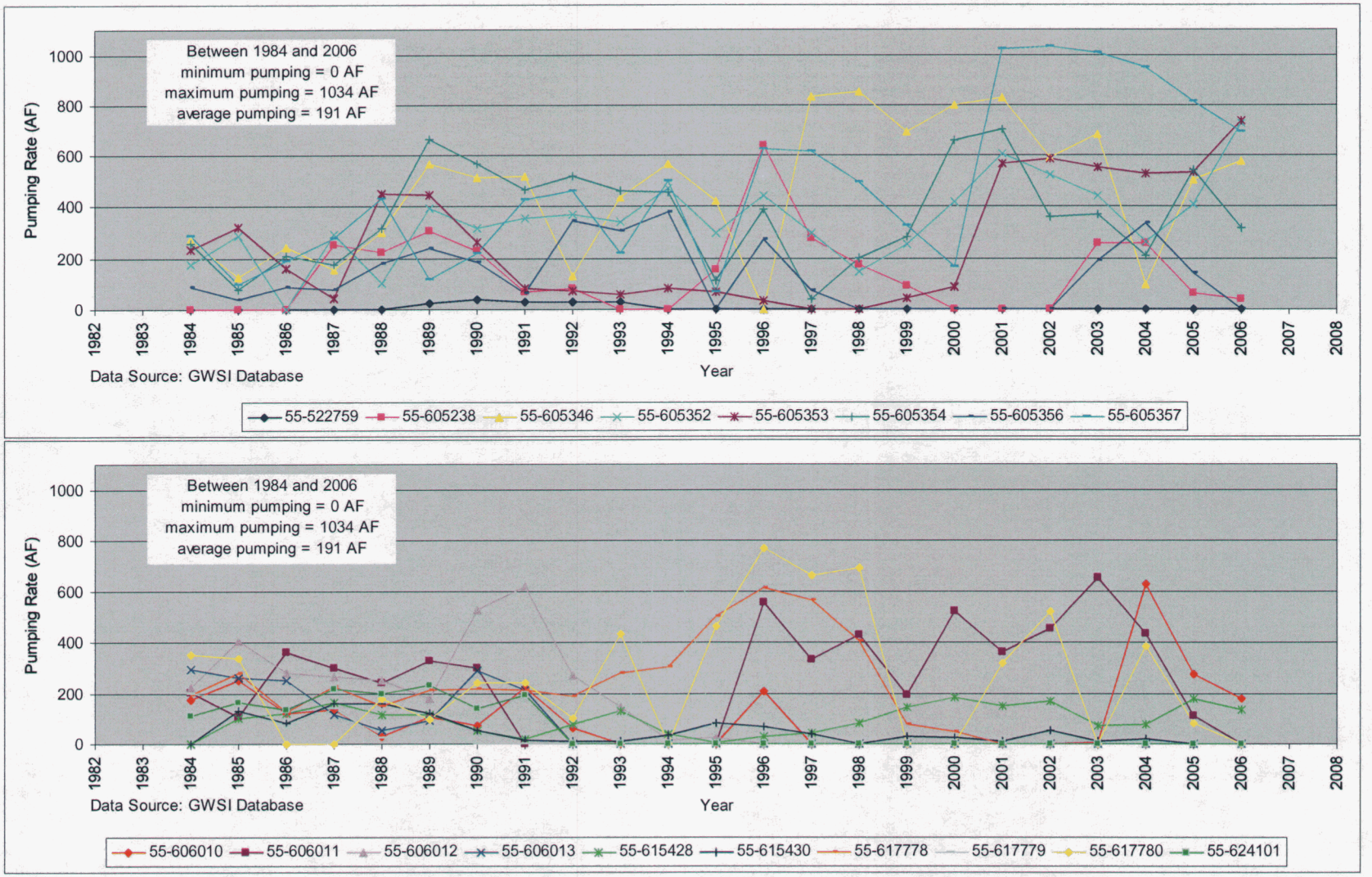
Poteniometric Surface
December 2003

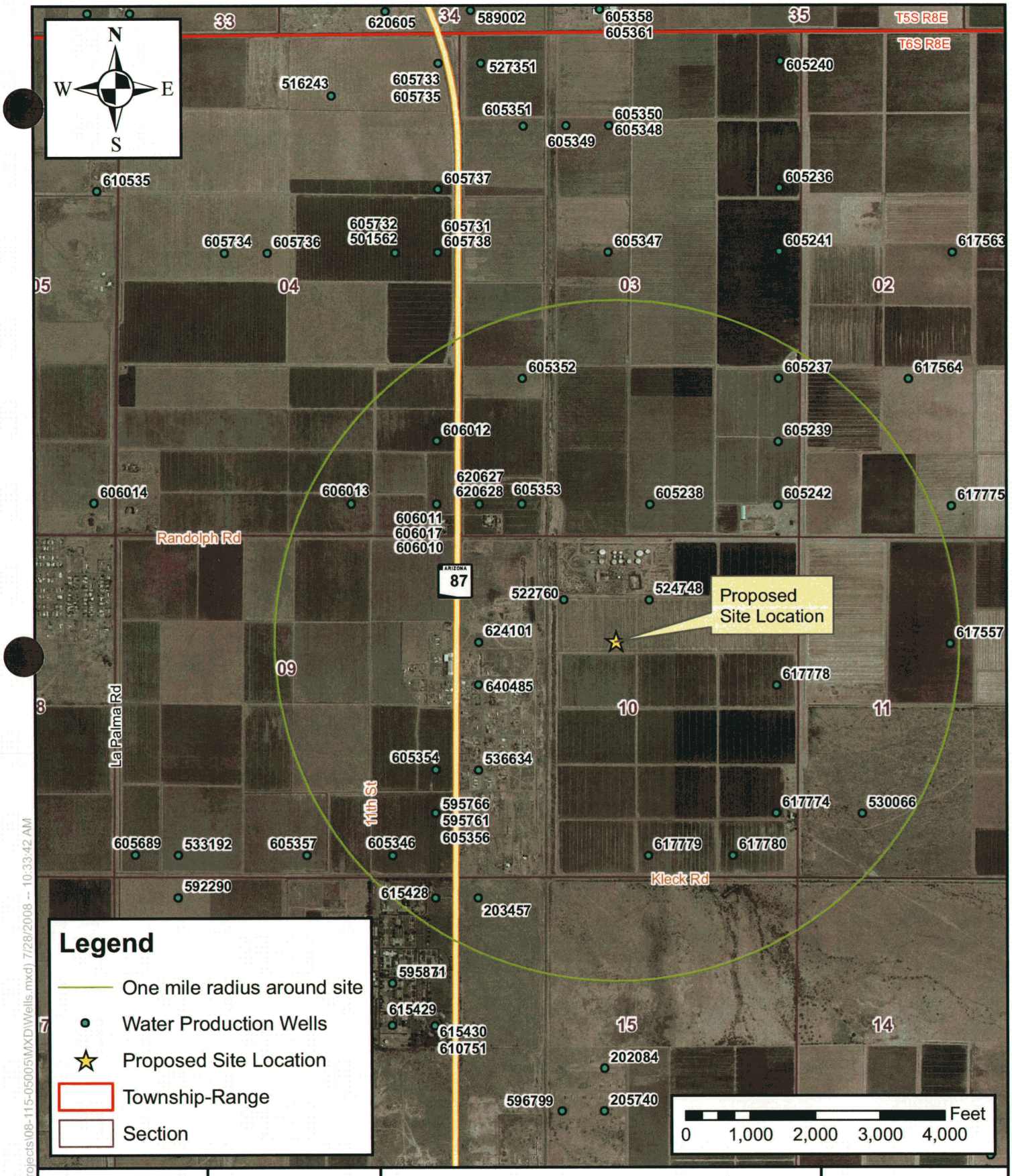
COOLIDGE GENERATING STATION
Pinal County, Arizona

FIGURE
B.2-6

amec

FIGURE B.2-7
Local Pumping Wells Annual Pumpage
Coolidge Generating Station





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WELLS LOCATED WITHIN ONE MILE OF SITE

COOLIDGE GENERATING STATION
Pinal County, Arizona

FIGURE
B.2-8

amec

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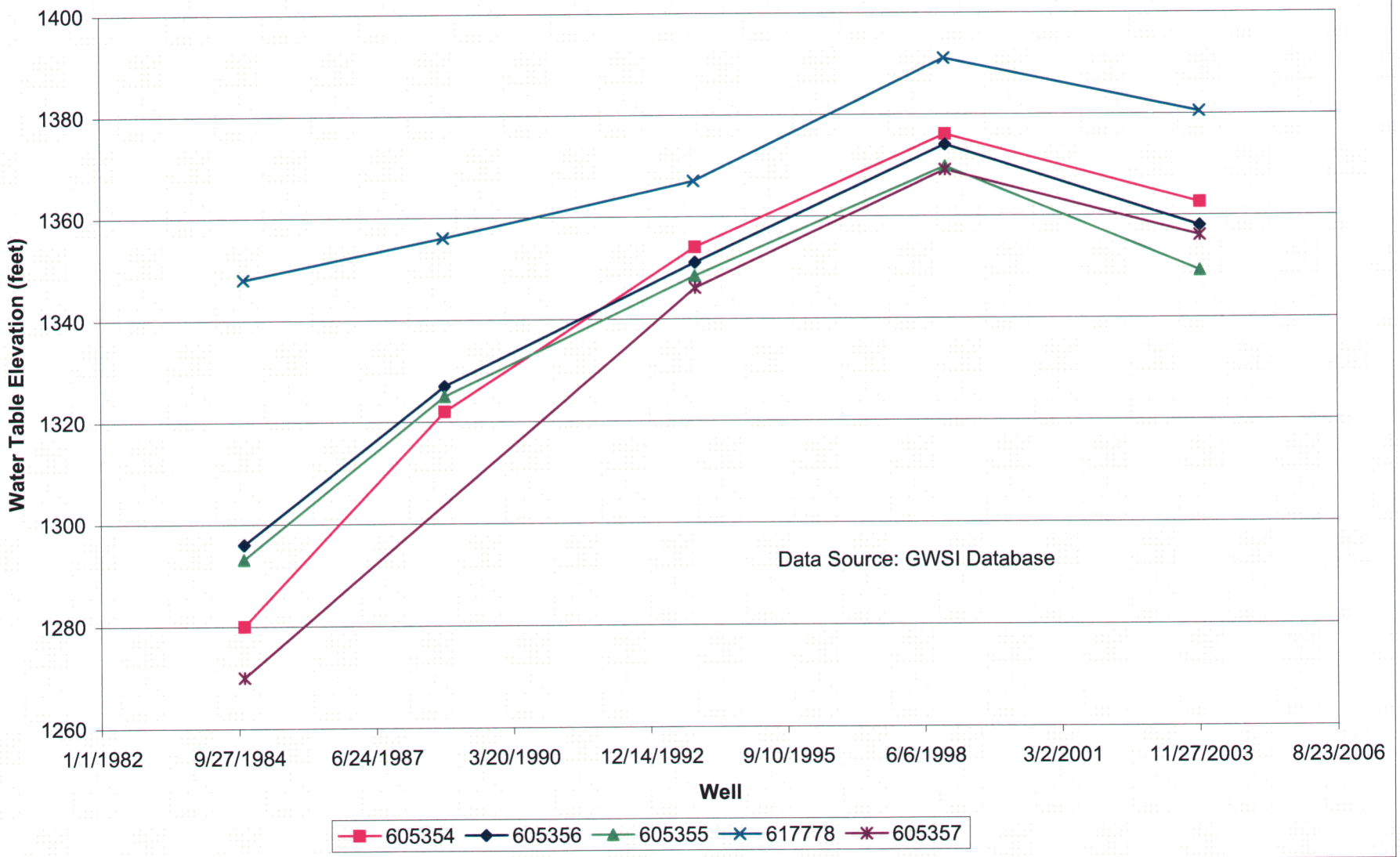
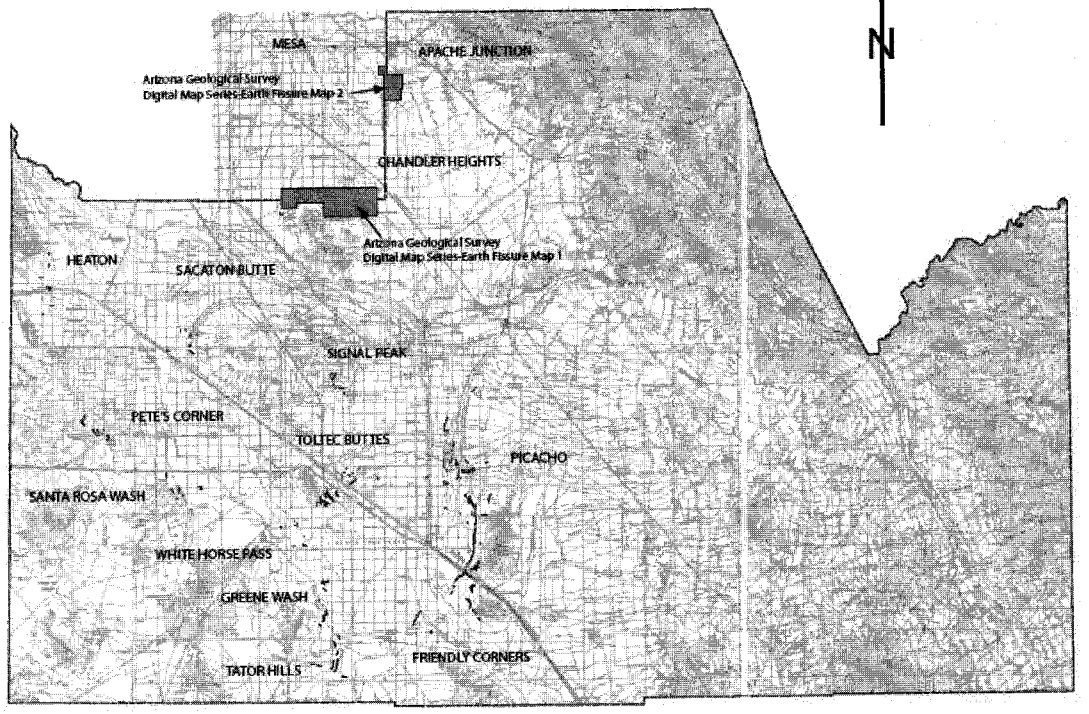
FIGURE B.2-9
Increase in Water Levels near Coolidge Generating Station
(1984-2003)





PINAL COUNTY, ARIZONA EARTH FISSURE PLANNING MAP

by Todd Shipman
Arizona Geological Survey Open File Report 07-01, version 3.0
October, 2007

Citation for this map: Shipman, T.C., 2007
Pinal County Earth Fissure Planning Map, Arizona:
Arizona Geological Survey Open File Report 07-01, v. 3,
Sheet 1, scale 1:250,000

This map identifies known or reported earth fissures and indicates study areas for detailed mapping of the fissures by the Arizona Geological Survey. A 1:250,000 USGS topographic base in the background, shows the topography and major physiographic features. Enlargement of this map image does not improve the 1:250,000 scale location accuracy of the mapped features. This map should not be used for site specific evaluation.

Study areas were identified based on three criteria; 1) potential for rapid development of communities; 2) the presence of known or reported fissures; and 3) areas where rapid land subsidence has been reported.

Map Index

Black lines on this map represent the approximate location of earth fissures as interpreted on air photos or by field reconnaissance. Many of the earth fissures have not been verified on the ground. The map is incomplete due to 1) masking of fissures by development and agriculture, 2) ongoing changes in fissure length and geometry, 3) the presence of incipient fissures that lack surface expression, and 4) the potential that photogeologically mapped features are incorrectly identified as earth fissures. A blank area on the map does not necessarily mean earth fissures are not present.

County Line Boundary

Names identify areas that will be systematically and sequentially mapped by the AZGS.

Gray boxes define the area that have been mapped in detail and are available at http://azmap.org/fissures.

Topographic base from USGS 1:250,000 scale maps, Ajo, Phoenix, Mesa, and Tucson.
Contour interval 200 feet with supplementary contours at 100 foot intervals.

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Tucson, AZ 85701
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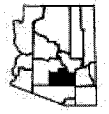


FIGURE B.2-10
Earth Fissure Map
Coolidge Generating Station
Pinal County, Arizona

amec

APPENDIX B.2-1

Field Lithologic Log

BORING NO. C66-POC1

BORING LOG

amec

PROJECT NAME: Coolidge Generating Sta. LOCATION: _____ SHEET 1 OF: 26

PROJECT NUMBER: 08-115 05005 DRILLING COMPANY: Stewart Brothers METHOD: _____

TOTAL DEPTH: 200ft DATE STARTED: 6/15/08 DATE FINISHED: _____

REMARKS: _____

Depth (feet)	Samp. No..	Samp. Depth	Blow Count	Rec. (in.)	Description	Lab Samp. (depth)	FID	Depth (feet)
				SM	SILTY SAND			0
				80%	Pred FG to CG sand, SA/SR, uncemented			
				15%	Fines (Silt > clays)			
				5%	Gravels, Fg, SA/SR			
					Light Brown, no PI			
10								10
20					NMTO: Below 20 ft, trace clays			20
				SC	CLAYEY SAND			
				80%	Pred Fg to CG sand, SA/SR			
				15%	Fines (clay > silt), low PI to Med PI			
				5%	Gravels, Fg, SA/SR			
					Light Brown to Brown, uncemented			
30								30
40								40
50								50
60					NMTO: Below 60 ft, silt > clays			60
				SM	SILTY SAND			
				80%	Pred FG to MG sand, SA/SR, uncemented			
				20%	Fines (silt > clay), low PI to no PI,			
					Brown to light brown			
70								70

BORING NO. GS-PDC 1

BORING LOG

amec

PROJECT NAME: Coolidge Generating Sta LOCATION: _____ SHEET 2 OF: 26

Depth (feet)	Samp. No.	Samp. Depth	Blow Count	Rec. (in.)	Description	Lab Samp (Depth)	FID	Depth (feet)
70				SM	SILTY SAND continued... NOTE: Increasing sand grain size at depth.			70
80								80
90								90
100								100
110								110
120								120
130								130
140				SC	NOTE: Below 140ft, gravelly sands coarse grained and Any to SA, trace clays. CLAYEY SAND MG to CA sand, Any to SA, uncemented 88% Fines (clays & silts) low PI .0% Brown, uncemented			140
150								150

BORING NO. CBG-POC 1

BORING LOG

amec

PROJECT NAME: Coolidge Generating Station LOCATION: _____ SHEET 3 OF: 26

Depth (feet)	Samp. No.	Samp. Depth	Blow Count	Rec. (in.)	Description	Lab Samp (Depth)	FID	Depth (feet)
150				SC	CLAYEY SAND continued...			150
					NOTE: Below 160, silt > clays			
160				SM	SILTY SANDS			160
					Same description as 60' to 140'			
170								170
180								180
190								190
200					NOTE: Below 200ft, increase clay content			200
210								210
220				SC 80% 20%	CLAYEY SAND Fg to Md sand, SAISR, uncemented Fines (clays > silt), low PI Brown			220
230								230

BORING NO. CGS-POC 1

BORING LOG

amec

PROJECT NAME: Cook Inlet Generating Station LOCATION: _____ SHEET 4 OF: 26

Depth (feet)	Samp. No.	Samp. Depth	Blow Count	Rec. (in.)	Description	Lab Samp (Depth)	FID	Depth (feet)
230				SC	CLAYEY SAND continued...			230
240								240
250					NOTE: Between 250' to 260', increase sand grain size MA to CG.			250
260					NOTE: Decrease sand grain size to FG below 260 ft.			260
270								270
280								280
290								290
300					NOTE: Below 308 ft, Poss FG to MG Sand, 5% Fines to 5% Fines			300
310				SP 95% 5%	SAND FG to MG sand, SM/SR, uncemented Fines (Silt > Clay), low PI, Brown			310

BORING NO. CGS-POC1

BORING LOG

amec

PROJECT NAME: Coolidge Generating Station LOCATION: _____ SHEET 5 OF: 26

Depth (feet)	Samp. No.	Samp. Depth	Blow Count	Rec. (in.)	Description	Lab Samp (Depth)	FID	Depth (feet)
310								310
320					NOTE: Below 320 ft, increase Fines 5% to 10% (clay > silt)			320
				SC	CLAYEY SAND			
				80%	FG to MG sand, SR/SR, uncemented			
330				20%	Fines (clay > silt), low to Med PI, Brown			330
					NOTE: Decrease ~~grain size~~ sand content from 300 ft to 400 ft.			
340					NOTE: Increase fines content to 360 ft, pred. FG to MG sand.			340
350								350
360					NOTE: Increase fines (clay > silt) content below 360 ft.			360
370								370
380								380
390								390

BORING NO. CBS-POC1

BORING LOG

amec

PROJECT NAME: Cold Lake Generating Station LOCATION: _____ SHEET 6 OF: 26

Depth (feet)	Samp. No.	Samp. Depth	Blow Count	Rec. (in.)	Description	Lab Samp (Depth)	FID	Depth (feet)
390				SC	CLAYEY SAND continued...			390
					NOTE: clays >> silts in below cuttings			
400				CL	SANDY CLAYS			400
				90% to 95%	Fines (clays >> silt), Med to High Plasticity, Brown to Reddish Brown			
410				10% to 5%	VFa to Fa Sand, trace MG sand, SA to angular			410
420								420
430								430
440								440
450								450
460								460
470								470

BORING NO. CGS-POC1

BORING LOG

PROJECT NAME: Coolidge Generating Station LOCATION: _____ SHEET 7 OF: 26

Depth (feet)	Samp. No.	Samp. Depth	Blow Count	Rec. (in.)	Description	Lab Samp (Depth)	FID	Depth (feet)
470				CL	SANDY CLAY continued...			470
480								480
490								490
500								500
510								510
520								520
530								530
540								540
550								550

BORING NO. CGS-POC1

BORING LOG

amec

PROJECT NAME: Coolidge Generating Station LOCATION: _____ SHEET 8 OF: 26

Depth (feet)	Samp. No.	Samp. Depth	Blow Count	Rec. (in.)	Description	Lab Samp (Depth)	FID	Depth (feet)
550				CL	SANDY CLAY continued..			550
560								560
570								570
580								580
590					NOTE: Below 590 ft to 600ft Ang to SA Note traces of sands.			590
600				CH	CLAYS			600
				>75%	Fine to coarse (clays>> silt) high PI			
					Brown to reddish brown			
				<5%	Fn sands			
610								610
620								620
630								630

BORING NO. CR-POR-1

BORING LOG

amec

PROJECT NAME: Coolidge Generating Station LOCATION: _____ SHEET 9 OF: 26

Depth (feet)	Samp. No.	Samp. Depth	Blow Count	Rec. (in.)	Description	Lab Samp (Depth)	FID	Depth (feet)
630				CH	CLAYS Continued...			630
640								640
650								650
660								660
670								670
680								680
690								690
700								700
710								710

BORING NO. CGS-PBC1

BORING LOG

amec

PROJECT NAME: Coolidge Corner Pump Station LOCATION: _____ SHEET 10 OF: 26

Depth (feet)	Samp. No.	Samp. Depth	Blow Count	Rec. (in.)	Description	Lab Samp (Depth)	FID	Depth (feet)
710				CH	NOTE: Trace Sand below 710 Ft (<5% to 5%)			710
					CLAYS continued...			
720								720
730								730
740								740
750								750
760								760
770								770
780								780
790								790

BORING NO. C66-Rec 1

BORING LOG

amec

PROJECT NAME: Coolidge Generating Station LOCATION: _____ SHEET 11 OF: 26

Depth (feet)	Samp. No.	Samp. Depth	Blow Count	Rec. (in.)	Description	Lab Samp (Depth)	FID	Depth (feet)
790				CH	CLAYS continued...			790
800								800
810								810
820								820
830					NOTE: Below 830ft, increase sand content			830
840				CL	SANDY CLAY			840
				90% to 95%	Fines (clays >> silt), high PI			
					Brown to Reddish Brown			
850				10% to 5%	VFG to MG sand, SA			850
					NOTE: Hard clays below 870ft.			
					Mod to low HCl Rxn			
860								860
870								870

BORING NO. CB6-PDC2

BORING LOG

amec

PROJECT NAME: Coolidge Generating Station LOCATION: _____ SHEET 12 OF: 26

Depth (feet)	Samp. No.	Samp. Depth	Blow Count	Rec. (in.)	Description	Lab Samp (Depth)	FID	Depth (feet)
870				CL	SANDY CLAYS continued...			870
880								880
890								890
900								900
910								910
920					NOTE: Below 920ft, increase in Moisture content to 10%			920
930								930
940								940
950								950

BORING NO. CGS-BC2

BORING LOG

amec

PROJECT NAME: Coolidge Generating Station LOCATION: _____ SHEET 13 OF: 26

Depth (feet)	Samp. No.	Samp. Depth	Blow Count	Rec. (in.)	Description	Lab Samp (Depth)	FID	Depth (feet)
950				CL	SANDY CLAYS continued...			
960								
TD					NOTE: Between 970 ft to 1000 ft, increase sand content ~10% to 15%			
980								
990								
1000					NOTE: Below 1000 ft, decreasing sand content.			
1010								
1020								
1030								

amec

BORING NO CGS-PoC 1

BORING LOG

PROJECT NAME: Coolidge Generating Station LOCATION: ______ SHEET 14 OF: 26

Depth (feet)	Samp. No.	Samp. Depth	Blow Count	Rec. (in.)	Description	Lab Samp (Depth)	FID	Depth (feet)
1030				CL	SANDY CLAY continued...			1030
1040								1040
1050								1050
1060					[illegible] Below ~1060 Same as 1000's [illegible] increase gravels and to 5% gravels ~10%, Becoming hard clay. Clay dries up in pebble size-shape appears to look like gravels			1060
1070								1070
1080								1080
1090								1090
1100								1100
1110								1110

BORING NO. OGS-POC1

BORING LOG

amec

PROJECT NAME: Oakridge Generating Station LOCATION: ______ SHEET 15 OF: 26

Depth (feet)	Samp. No.	Samp. Depth	Blow Count	Rec. (in.)	Description	Lab Samp (Depth)	FID	Depth (feet)
1110				CL	SANDY CLAY continued...			1110
1120								1120
1130					NOTE: Below 1130, more MG to CG sands and [illegible] gravels.			1130
1140								1140
1150								1150
1160								1160
1170					NOTE: Below 1170 ft, MG sands, w/10 to 15% SAPR, pred. slugs. Clays dry up [illegible]			1170
					NOTE: Mod. HCL RXN, weak CaCO2 content, light brown			
1180								1180
1190								1190

BORING NO. CGS-POC1

BORING LOG

amec

PROJECT NAME: Coolidge Generating Station LOCATION: _____ SHEET 16 OF: 26

Depth (feet)	Samp. No.	Samp. Depth	Blow Count	Rec. (in.)	Description	Lab Samp (Depth)	FID	Depth (feet)
1190				CL	SANDY CLAY continued...			1190
1200								1200
1210								1210
1220								1220
1230								1230
1240								1240
1250								1250
1260								1260
1270								1270

BORING NO. CGS-PAC1

BORING LOG

amec

PROJECT NAME: Coolidge Generating Station LOCATION: _____ SHEET 17 OF: 26

Depth (feet)	Samp. No.	Samp. Depth	Blow Count	Rec. (in.)	Description	Lab Samp (Depth)	FID	Depth (feet)
1270				CL	SANDY CLAY continued...			1270
1280								1280
1290								1290
1300								1300
1310								1310
1320								1320
1330								1330
1340								1340
1350								1350

BORING NO. CGS-PSC1

BORING LOG

amec

PROJECT NAME: Coolidge Generating Station LOCATION: _____ SHEET 18 OF: 26

Depth (feet)	Samp. No.	Samp. Depth	Blow Count	Rec. (in.)	Description	Lab Samp (Depth)	FID	Depth (feet)
1350				CC	SANDY CLAY continued...			1350
1360								1360
1370								1370
1380								1380
1390								1390
1400								1400
1410								1410
1420								1420
1430								1430

BORING NO. CGS-POC1

BORING LOG

amec

PROJECT NAME: Coolidge Generating Station LOCATION: _____ SHEET 19 OF: 26

Depth (feet)	Samp. No.	Samp. Depth	Blow Count	Rec. (in.)	Description	Lab Samp (Depth)	FID	Depth (feet)
1430				CL	SANDY CLAY Continued...			1430
1440								1440
1450								1450
1460								1460
1470								1470
1480								1480
1490								1490
1500								1500
1510								1510

BORING NO. CGS-POC1

BORING LOG

amec

PROJECT NAME: Coolidge Generating Station LOCATION: _____ SHEET 20 OF: 26

Depth (feet)	Samp. No.	Samp. Depth	Blow Count	Rec. (in.)	Description	Lab Samp (Depth)	FID	Depth (feet)
1510				CL	SANDY CLAY Continued...			1510
1520								1520
1530								1530
1540								1540
1550								1550
1560								1560
1570								1570
1580								1580
1590								1590

BORING NO. GGS-POC1

BORING LOG

amec

PROJECT NAME: Coolidge Generating Station LOCATION: _____ SHEET 21 OF: 26

Depth (feet)	Samp. No.	Samp. Depth	Blow Count	Rec. (in.)	Description	Lab Samp (Depth)	FID	Depth (feet)
1590				CL	SANDY CLAY continued...			1590
1600								1600
1610								1610
1620								1620
1630								1630
1640								1640
1650								1650
1660								1660
1670								1670

BORING NO. CGS-POC1

BORING LOG

amec

PROJECT NAME: Coolidge Generating Station LOCATION: _____ SHEET 22 OF: 26

Depth (feet)	Samp. No.	Samp. Depth	Blow Count	Rec. (in.)	Description	Lab Samp (Depth)	FID	Depth (feet)
1670				CL	SANDY CLAY Continued...			1670
1680								1680
1690								1690
1700								1700
1710								1710
1720								1720
1730								1730
1740								1740
1750								1750

BORING NO. CGS-POC1

BORING LOG

amec

PROJECT NAME: Coolidge Generating Station LOCATION: _____ SHEET 23 OF: 26

Depth (feet)	Samp. No.	Samp. Depth	Blow Count	Rec. (in.)	Description	Lab Samp (Depth)	FID	Depth (feet)
1750				CL	SANDY CLAY continued...			1750
1760								1760
1770								1770
1780								1780
1790								1790
1800				CL/SC	CLAYEY SAND/SANDY CLAY			1800
				50%	FG to MG sand, SA to Ang.			
				50%	Fines (clay >> si. H)			
1810								1810
1820					Brown, weak HCL Rxn			1820
				CL	SANDY CLAY			
				80%	Pred. Fines (clays >> silt), HI PI, hard clays			
1830				20%	VFG to MG Sand SA to Ang.			1830

BORING NO. GS-POC1

BORING LOG

amec

PROJECT NAME Coolidge Generating Station LOCATION: _____ SHEET 24 OF: 26

Depth (feet)	Samp. No.	Samp. Depth	Blow Count	Rec. (in.)	Description	Lab Samp (Depth)	FID	Depth (feet)
1830				CL	SANDY CLAY continued...			1830
1840								1840
1850								1850
1860								1860
1870								1870
1880					NOTE: Below 1880 ft, clays not as hard			1880
1890								1890
1900				CL/SC 45% 55%	CLAYEY SAND / SANDY CLAY FG to MG Sand, SA/Ang. Fines (clays >> silts), Mod to High Pl weak HCl Rxn			1900
1910								1910

BORING NO. CGS-POC1

BORING LOG

amec

PROJECT NAME: Coolidge Generating Station LOCATION: _____ SHEET 25 OF: 26

Depth (feet)	Samp. No.	Samp. Depth	Blow Count	Rec. (in.)	Description	Lab Samp (Depth)	FID	Depth (feet)
1910				SC/CL	CLAYEY SAND/ SANDY CLAY Continued...			
1920				CL	SANDY CLAY			
				70-80%	Fines (clays >> silt), high PI, Brown			
1930				30-20%	FG to MG sand, SA to Angular			
					weak HCl Rxn			
1940								
1950								
1960								
1970								
1980								
1990								

BORING NO. CGS-POC1

BORING LOG

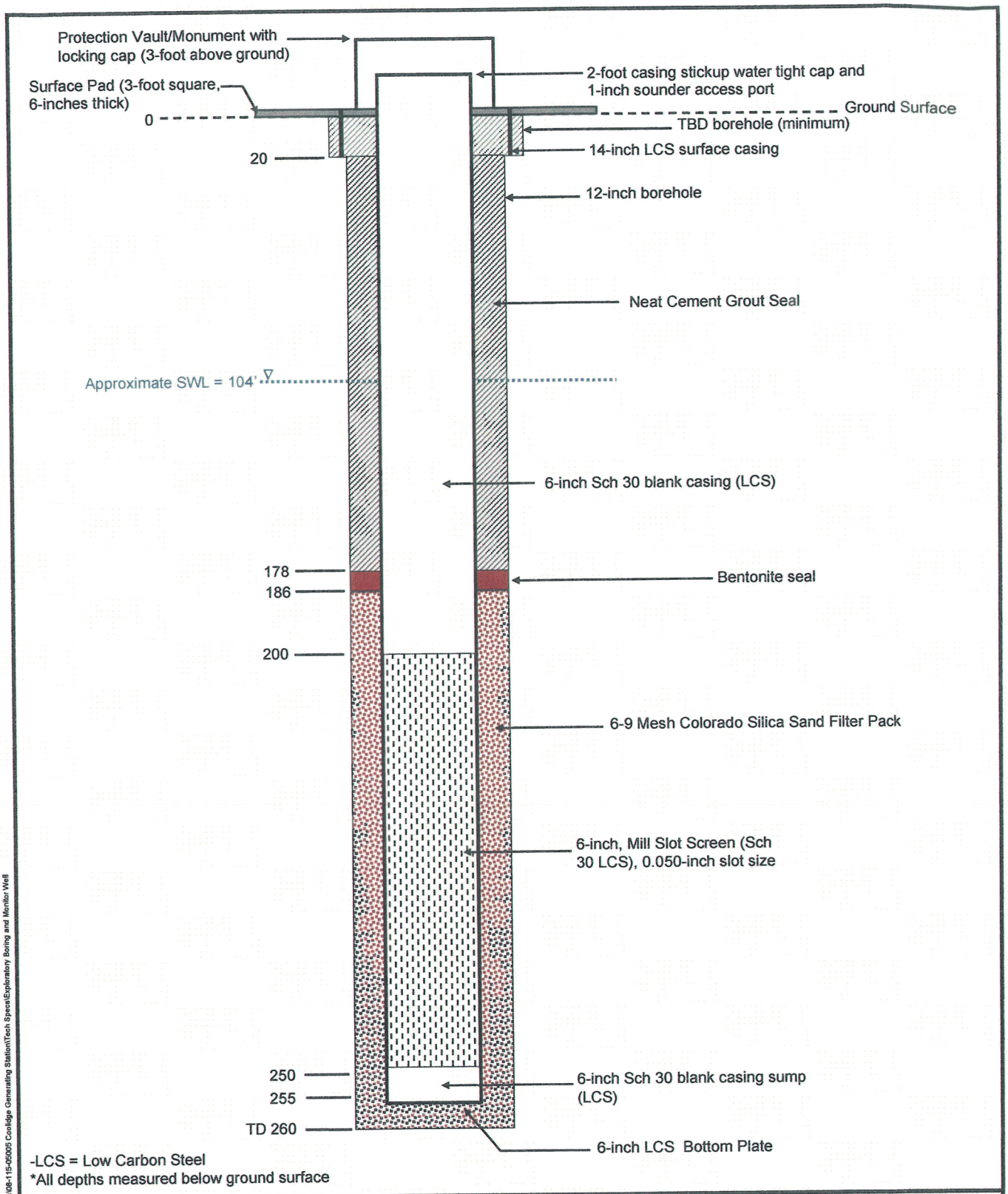
amec

PROJECT NAME: Coolidge Generating Station LOCATION: _____ SHEET 26 OF: 26

Depth (feet)	Samp. No.	Samp. Depth	Blow Count	Rec. (in.)	Description	Lab Samp (Depth)	FID	Depth (feet)
1990				CL	SANDY CLAY continued....			1990
2000					TD = 2000 ft NOTE: Drillers lost fluid at bottom of hole; possible evaporite formation at depth.			2000

APPENDIX B.2-2

Well Construction Details



JOB NO. 08-115-05005	POINT OF COMPLIANCE MONITOR WELL No. 1 Final Well As-built	
DESIGN: AMS		
DRAWN: AMS	COOLIDGE GENERATING STATION PINAL COUNTY, ARIZONA	FIGURE 2
DATE: July 2, 2008		
SCALE: N.T.S.		

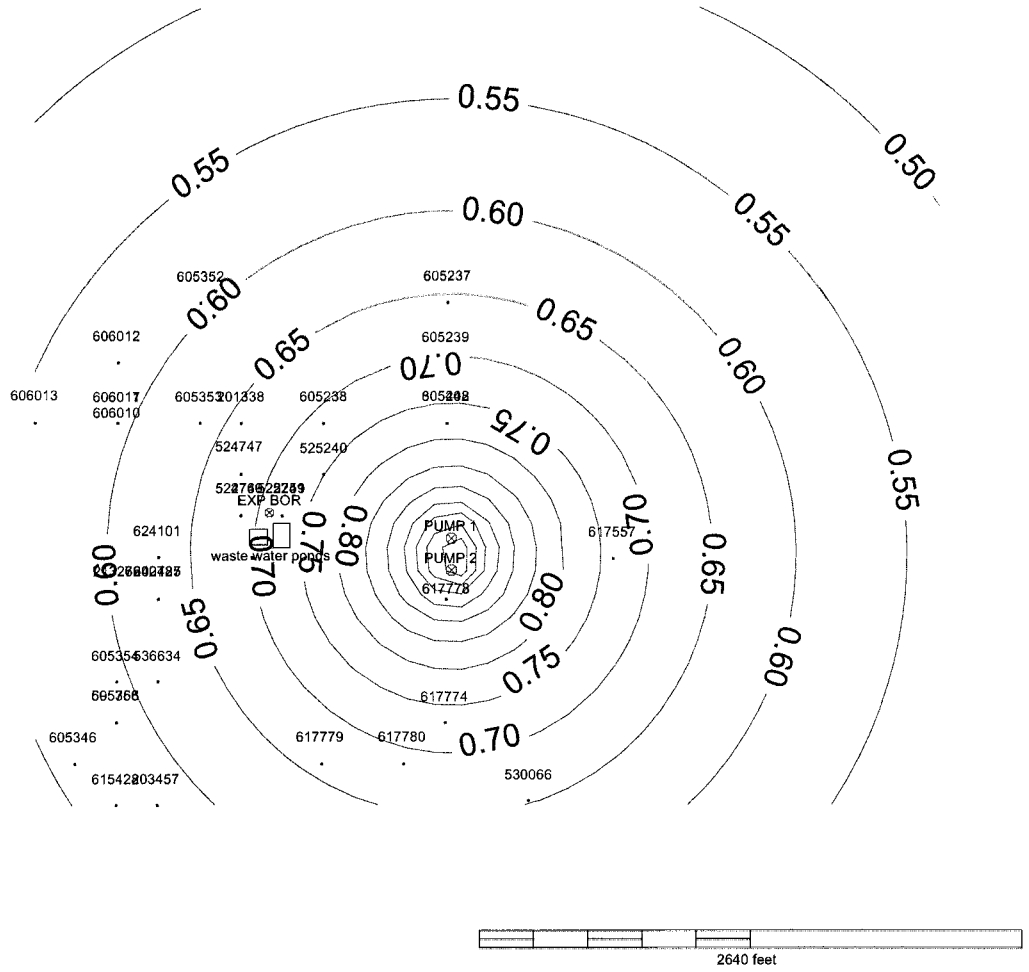
G:\Water Resources\Projects\2008 Projects\08-115-05005 Coolidge Generating Station\Tech Specs\Exploratory Boring and Monitor Well

APPENDIX B.2-3

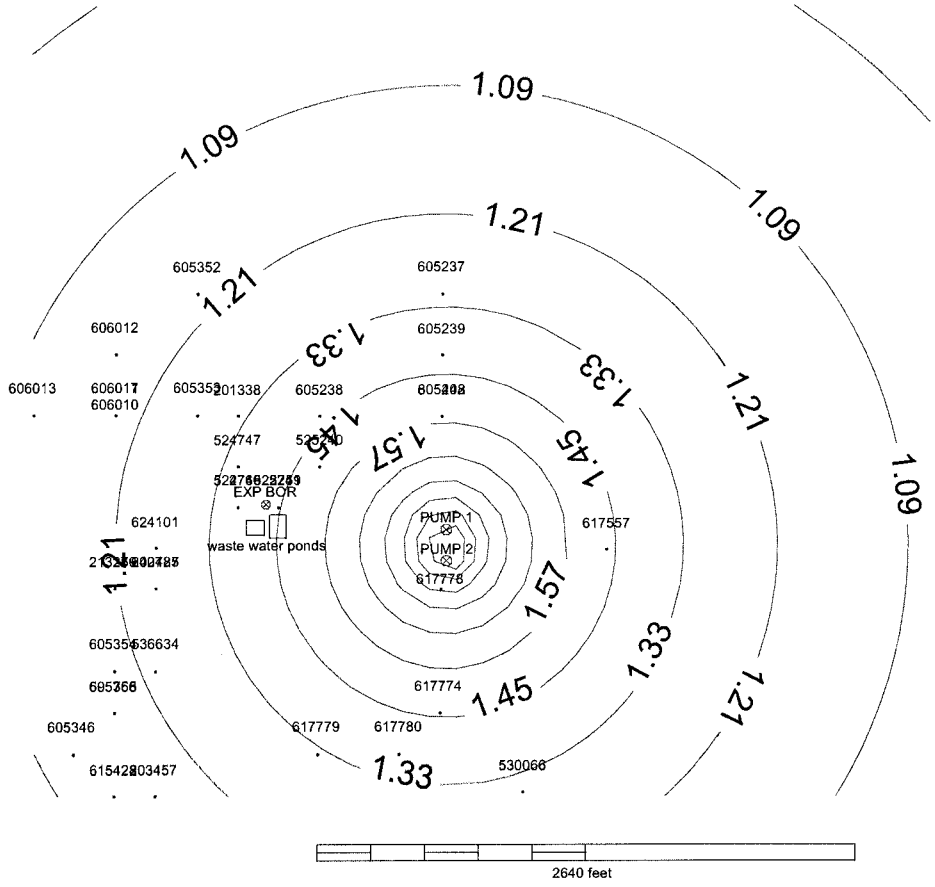
Drawdown Calculations

Coolidge Generating Station
Modeling Notes
(using WINFLOW)

Reference Elevation for Site	1435	feet MSL
Depth to Water	125	feet bgs
Reference Head Elevation	1310	feet MSL
Recharge	0	inches/year
Aquifer Top Elevation	1310	feet MSL
Aquifer Bottom Elevation	1060	feet MSL
Hydraulic Conductivity	58.4	feet/day
Specific Yield	11	percent
Pumping Rates		
PUMP 1 - 140 ac-ft/yr	43	GPM
PUMP 2 - 140 ac-ft/yr	43	GPM
Pumping Rates		
PUMP 1 - 279 ac-ft/yr	86	GPM
PUMP 2 - 279 ac-ft/yr	86	GPM
Pumping Rates		
PUMP 1 - 736 ac-ft/yr	228	GPM
PUMP 2 - 736 ac-ft/yr	228	GPM

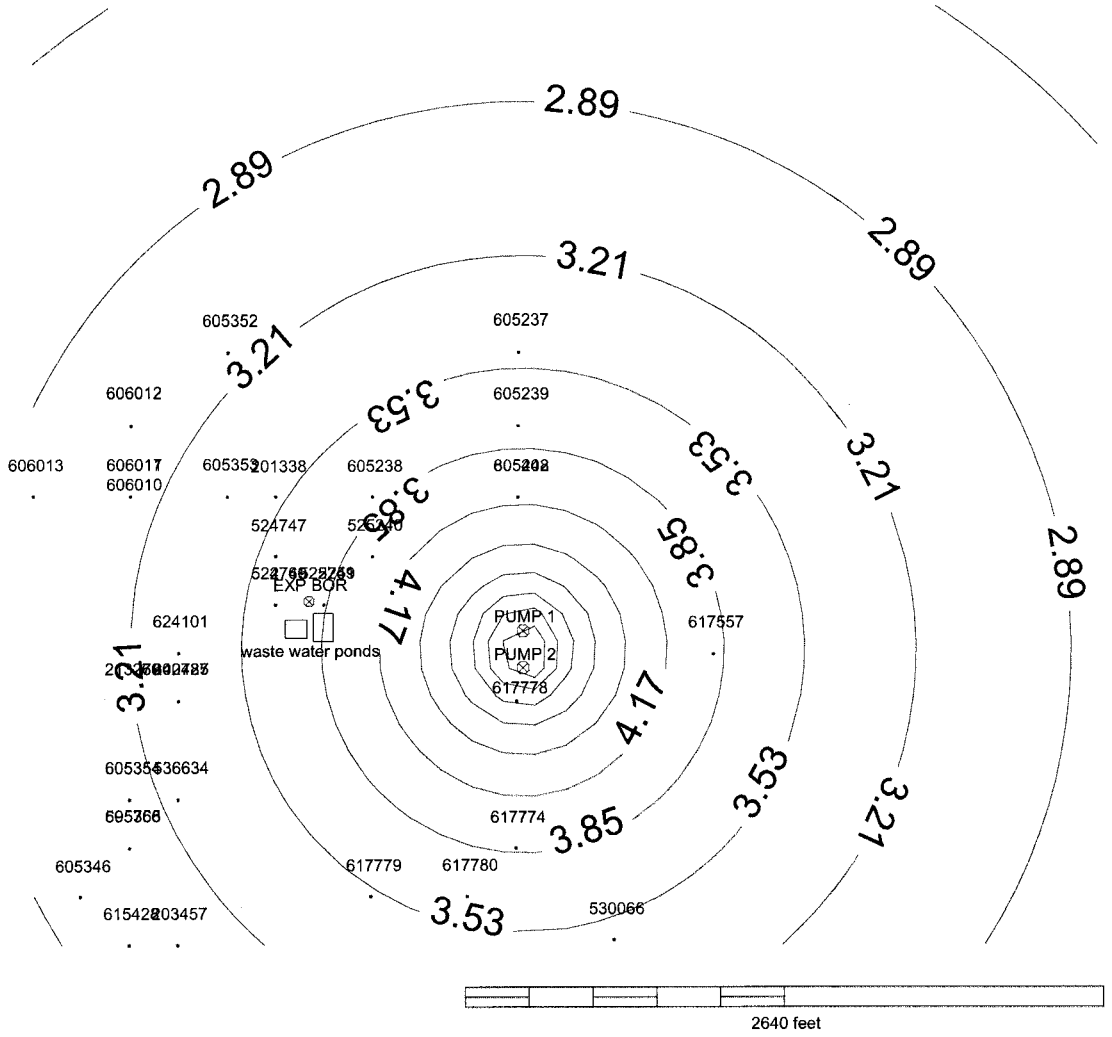


Coolidge Generating Station
Predicted Drawdown after 20 Years
140 acre-feet/year Simulation



Coolidge Generating Station
Predicted Drawdown after 20 Years
279 acre-feet/year Simulation

amec



Coolidge Generating Station
Predicted Drawdown after 20 Years
736 acre-feet/year Simulation

amec

EXHIBIT C

EXHIBIT C - AREAS OF BIOLOGICAL WEALTH

As stated in Arizona Corporation Commission Rules of Practice and Procedure R14-3-219:

> *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.*

METHODS

Special status plant and wildlife species are subject to regulations under the authority of Federal and State agencies. Special status species include those species that are listed as Federal endangered, threatened, proposed, or candidate species under the Endangered Species Act of 1973 (ESA), Section 4, as amended; that are listed as Wildlife of Special Concern in Arizona (WSCA) by the State of Arizona; or that have protection under the Arizona Native Plant Law (NPL). Descriptions of special status species are listed below:

- Endangered species are those species in danger of extinction throughout all or a significant portion of their range.
- Threatened species are those species likely to become endangered in the foreseeable future.
- Proposed species are those species recommended for listing under Section 4 of the ESA.
- Candidate species are those species for which the U.S. Fish and Wildlife Service (USFWS) has sufficient information on their biological status and threats to propose them as endangered or threatened under the ESA, but for which development of a proposed listing regulation is precluded by other higher priority listing activities. Candidate species are not protected under the ESA.
- USFWS Species of Concern (also not protected by the ESA) is an informal term that refers to those species that the USFWS believes may be in need of concentrated conservation actions. Conservation actions, such as monitoring, vary depending on the health of the populations and degree and types of threats. USFWS Species of Concern receive no legal protection and the use of the term does not necessarily mean that the species will eventually be proposed for listing as a threatened or endangered species.
- Arizona Game and Fish Department (AGFD) Wildlife of Special Concern are those species whose occurrence in Arizona is or may be in jeopardy, or with known or perceived threats or population declines, as described by the AGFD's listing of WSCA.
- Arizona Department of Agriculture (ADA) Highly Safeguarded or Salvage Restricted Native Plants. Special status plants are protected under the NPL and fall into these categories: Highly Safeguarded (no collection allowed) and Salvage Restricted (collection allowed only with permit).

The USFWS has published a list of proposed, candidate, threatened, and endangered species occurring by county in Arizona (USFWS 2008a). In addition, the Arizona Game and Fish

Department (AGFD) has published a list of additional special status species occurring by county in Arizona (AGFD 2008a). These lists were consulted to provide a basis for species that might be present in the vicinity of the Project. **Table C-1** presents the special status species potentially occurring within the region, listed by common name, scientific name, and status.

Table C-1
Special Status Species with the Potential to Occur in Pinal County, Arizona

Species		Protection Status[3]	
Common name	**Scientific name**	**ESA[1]**	**Arizona[2]**
Plants			
Pima Indian Mallow	*Abutilon parishii*	SC	SR
Hohokam agave	*Agave delamateri*	SC	HS
Toumey agave	*Agave toumeyana var. bella*		SR
Nichol's Turk's head cactus	*Echinocactus horizonthalonius var nicholii*	E	HS
Arizona hedgehog cactus	*Echinocereus triglochidiatus arizonicus*	E	HS
Acuna cactus	*Echinomastus erectocentrus acunensis*	C	HS
Needle-spined Pineapple Cactus	*Echinomastus erectocentrus* var. *erectocentrus*	SC	SR
Mogollon Fleabane	*Erigeron anchana*	SC	
San Carlos Wild-buckwheat	*Eriogonum capillare*	SC	SR
Golden Barrel Cactus	*Ferocactus cylindraceus var. eastwoodiae*		SR
Flannel Busch	*Fremontodendron californicum*		SR
Hauchuca Water Umbel	*Lilaeopsis schaffneriana var. recurva*		HS
Thornber Fishhook Cactus	*Mammillaria thornberi*		SR
Varied Fishhook Cactus	*Mammillaria viridiflora*		SR
Stag-horn Cholla	*Opuntia versicolor*		SR
Catalina Beardtongue	*Penstemon discolor*		HS
Aravaipa Sage	Salvia amissa	SC	
Organ Pipe Cactus	*Stenocereus thurberi*		SR
Tumamoc Globeberry	*Tumamoca macdougalii*		SR
Mammals			
Mexican long-tongued bat	*Choeronycteris Mexicana*	SC	WSC
Pale Townsend's Big-eared Bat	*Corynorhinus townsendii Pallescens*	SC	
Greater Western Bonneted Bat	*Eumops perotis californicus*	SC	
Western Red Bat	*Lasiurus blossevillii*		WSC
Western Yellow Bat	*Lasiurus xanthinus*		WSC
Lesser long-nosed bat	*Leptonycteris curasoae yerbabuenae*	E	WSC
California leaf-nosed bat	*Macrotus californicus*	SC	WSC
Western Small-footed Myotis	*Myotis ciliolabrum*	SC	
Cave Myotis	*Myotis velifer*	SC	
Yuma Myotis	*Myotis yumanensis*	SC	
Fish			
Gila Longfin Dace	*Agosia chrysogaster chrysogaster*	SC	
Desert Sucker	*Catostomus clarki*	SC	
Sonora Sucker	*Catostomus insignis*	SC	
Desert Pupfish	*Cyprinodon macularius*	E	WSC
Gila Chub	*Gila intermedia*	E	
Roundtail Chub	*Gila robusta*	SC	WSC
Spikedace	*Meda fulgida*	T	WSC
Gila Topminnow	*Poeciliopsis occidentalis occidentalis*	E	WSC
Speckled Dace	*Rhinichthys osculus*	SC	

Table C-1
Special Status Species with the Potential to Occur in Pinal County, Arizona

Species		Protection Status[3]	
Common name	**Scientific name**	**ESA[1]**	**Arizona[2]**
Loach Minnow	*Tiaroga cobitis*	T	WSC
Razorback Sucker	*Xyrauchen texanus*	E	
Birds			
Great Egret	*Ardea alba*		WSC
Common Black Hawk	*Buteogallus anthracinus*		WSC
Northern Gray Hawk	*Buteo nitidus maxima*	SC	WSC
Western Yellow-billed Cuckoo	*Coccyzus americanusoccidentalis*	C	WSC
Black-bellied Whistling-Duck	*Dendrocygna autumnalis*		WSC
Southwestern Willow Flycatcher	*Empidonax trailli extimus*	E	WSC
American Peregrine Falcon	*Falco peregrinus anatum*	SC	WSC
Cactus Ferruginous Pygmy-owl	*Glaucidium brasilianium cactorum*	SC	WSC
Western Burrowing Owl	*Athene cunicularia hypugaea*	SC	
Bald Eagle	*Haliaeetus leucocephalus*	T[4], DM, SC	WSC
Mississippi Kite	*Ictinia mississippiensis*		WSC
Least Bittern	*Ixobrychus exilis*		WSC
Brown Pelican	*Pelecanus occidentalis*	E, Proposed DM[5]	
Yuma Clapper Rail	*Rallus longirostris yumanensis*	E	WSC
Mexican Spotted Owl	*Strix occidentalis lucida*	T	WSC
Thick-billed Kingbird	*Tyrannus crassirostris*		WSC
Tropical Kingbird	*Tyrannus melancholicus*		WSC
Amphibians			
Great plains Narrow-mouthed Toad	*Gastrophryne olivacea*		WSC
Lowland Leopard Frog	*Rana yavapaiensis*	SC	WSC
Reptiles			
Giant Spotted Whiptail	*Aspidoscelis burti stictogrammus*	SC	
Red-back Whiptail	*Aspidoscelis burti xanthonota*	SC	
Sonoran Desert Tortoise	*Gopherus agassizii (Sonoran population)*	SC	WSC
Northern Mexican Gartersnake	*Thamnophis eques megalops*	SC	WSC
Invertebrates			
Maricopa Tiger Beetle	*Cicindela oregona maricopa*	SC	

[1] USFWS 2008a
[2] AGFD 2008a
[3] E=Endangered, T=Threatened, C=Candidate, SC=Species of Concern, DM= Delisted Taxon, Recovered, Being Monitored First Five Years, WSR=Wildlife of Special Concern, SR=Salvage Restricted, HS=Highly Safeguarded
[4] USFWS 2008b
[5] USFWS 2008c

The USFWS and AGFD have identified 19 plant species and 45 wildlife species (11 fish, 10 mammals, 17 birds, two amphibians, four reptiles, and one invertebrate) with special status that have the potential to occur within Pinal County.

An AGFD On-line Project Evaluation Program (PEP) search was completed for the Project on June 20, 2008 (AGFD 2008b). The information provided in the PEP is used to guide preliminary decisions and assessments of proposed land development, management, and conservation projects, while incorporating fish and wildlife resource needs or features. The PEP indicated that there are five special status species that are known to occur within five miles of the Project Site, including Great Egret, Western Burrowing Owl, Yuma clapper rail, Western Yellow-billed Cuckoo, and Least Bittern.

In addition to the AGFD PEP search, letters were sent to AGFD and USFWS to identify the CGS Project and enable the opportunity for validation and feedback between those agencies and the Project Team. This correspondence is included in **Appendix C-1**.

Prior to conducting fieldwork, aspects such as ecology and habitat requirements of each special status species were researched. A qualified biologist conducted a site reconnaissance on June 20, 2008. Habitat conditions and wildlife observations were noted. Information collected was used to evaluate the potential for occurrence of the species and to analyze the potential effects of the Project implementation.

RECONNAISSANCE SURVEYS/CURRENT CONDITION

A field reconnaissance was conducted on June 20, 2008 by a qualified field biologist to identify any special status species on or near the Project Site area. Habitats were evaluated and characterized within the Project Site vicinity during this field reconnaissance. The CGS Site consists entirely of agricultural lands that are actively farmed. The Project Site lands have been used for agriculture for many years and are mostly surrounded by other agriculture lands and nearby industrial and residential uses. There are a few relatively isolated patches of native habitat to the south, east, and west of the Project Site area.

The isolated native habitats near the Project Site area consist of Sonoran Desert vegetative communities (Brown 1994). The dominant native plant community in this area of the Sonoran Desert is characterized as the Sonoran Desertscrub Ecosystem with the Lower Colorado River Valley Subdivision being the dominant feature on the flats. There is a limited amount of mesquite habitat on the west side of the property between the agricultural fields and the railroad (a strip from 2 meters to 5 meters wide) and a slightly larger mesquite patch 0.5 mile to the south of the Project Site area. Local washes may support marginal xeroriparian habitat. Agricultural, Rural, and Mixed Residential and Industrial land use areas are common within the vicinity of the Project Site area. Non-native, weedy, and crop species are typically dominant in these areas.

Several species of birds were observed while conducting the field reconnaissance on June 20, 2008. One Western Burrowing Owl, a special status species, was observed in a small irrigation ditch along the eastern boundary of the Project Site area. The other species observed are not special status species. Mourning Doves and a Great Blue Heron were observed within the vicinity of the Project Site area. A Lesser Nighthawk and a Cassin's Kingbird were noted approximately 0.5 mile south of the Project Site area.

There are no suitable habitats for special status plant species that may occur within the Project Site boundary. The agricultural lands provide habitat for one special status species, the Western Burrowing Owl. Great Egret, Western Yellow-billed cuckoo, Least Bittern, and Yuma Clapper are all known to occur within five miles of the Project Site but there is no suitable habitat for these species in the Project area (AGFD 2008b). There is no suitable habitat for the remainder of the special status species within the Project area other than the agriculture lands that may provide foraging habitat for several bird species. However, there are no suitable habitats for the special status species listed in **Table C-1** in the vicinity of the Project Site so the potential for occurrence is highly unlikely.

POTENTIAL EFFECTS

While the 19 plant species and 45 wildlife species and habitats described in the above sections have the potential to occur within Pinal County, there would be minimal potential impacts to these species by Project construction and operations because the Project Site is used solely for agriculture and is actively disturbed. There would be minimal off-site impacts because all transmission interconnections would be located on this already disturbed site and only very short gas interconnections, which also would be located on previously disturbed land, would be needed. In addition, after Project construction, there would still be adjacent agriculture lands in the area for use by those species that use such habitat.

Of the 64 special status species with the potential to occur in Pinal County, Arizona, only five have been known to occur within five miles of the Project Site (AGFD 2008b). The Western Burrowing Owl is the only species with potential habitat on the Project Site and in the immediate area. See below for further discussion of the Western Burrowing Owl.

PLANTS

Of the 19 special status plant species having some potential to occur within Pinal County, none have been recorded on or within five miles of the Project Site (AGFD 2008b). While these plant species could potentially be found in undisturbed Sonoran Desertscrub habitat within the vicinity of the Project, this habitat is not found on the Project Site. These species will not be encountered during construction, so no mitigation measures would be needed in order to minimize effects of the Project on these species.

WILDLIFE

Special status wildlife species with known occurrences on the Project Site area are limited to the Western Burrowing Owl. Special status wildlife species with known occurrences within five miles of the Project Site area include Great Egret, Western Yellow-billed cuckoo, Least Bittern, and Yuma Clapper. Other special status wildlife species with the potential to occur within Pinal County and the vicinity of the Project Site would be limited to those who could use the Site for

foraging (this is due to the lack of suitable habitat and nesting locations on and in the vicinity of the Project Site).

Previous ground disturbances on and within the vicinity of the Project Site have created suitable conditions for the burrowing owl. Burrowing owls use the raised sides of dike roads and agricultural areas within the Project Site area. Burrowing owls are active hunters during both day and night hours. They feed on flying insects, small mammals, reptiles, and birds. Hunting is done from perches, in flight, and from the ground and typically occurs within two acres of active burrow locations (AGFD 2001).

The Project has the potential to impact this species through several mechanisms. There is a risk caused by the potential for impacts to burrows during construction and maintenance activities. This could result in direct mortality if the burrows are occupied during the time of collapse, or can cause undo stress if alternate burrows are not available and would also result in a loss of suitable habitat. To avoid these potential impacts to these species, lands within the impacted areas will be surveyed for the presence of burrowing owls following approval of the permits for the Project and prior to construction. Active burrows/nests will be mapped and construction planning will avoid these areas to the extent possible. If it is determined that burrows would still be at risk of disturbance, qualified biologists will clear burrows of occupants and construct alternative burrows following guidelines proposed by AGFD (Ritter 2007).

The second way the Project could impact this species would be through the risk of collisions with new transmission lines. There would be an increased potential for bird strikes with the short transmission interconnect on the Project Site between the power plant and switchyard (four 230 kV poles). To minimize the risk of collisions, the lines will be constructed following industry standards aimed at reducing avian collisions (Avian Power Line Interaction Committee [APLIC] 2006).

There is a lack of suitable habitat for the remainder of the special status species with the potential to occur or with known occurrences within five miles of the Project Site area; therefore, there would be no impacts to these species other than the loss of foraging habitat for those species that may forage in the project area. Construction of the Project would result in the loss of foraging habitat; however, these minimal impacts are not expected to result in the downward trend in special status species populations or in the degradation of their current protective status.

CONCLUSIONS

The Project Site has been actively farmed for several decades and contains no native habitats. All interconnections will occur either on this Site (transmission) or immediately adjacent to the Site on previously disturbed lands (gas) and likewise would not affect native habitats. The one sensitive species that could potentially use the lands that will be disturbed by this Project – the Western Burrowing Owl – would not be expected to be negatively affected because of the mitigation measures that would be employed to minimize the potential risk to this species.

REFERENCES

Arizona Game and Fish Department 2008a (AGFD 2008a). Arizona Heritage Data Management System (HDMS), listed alphabetically by county, by taxon, by scientific name. [Web Page] Located at http://www.fws.gov/southwest/es/EndangeredSpecies/lists/ListSpecies.cfm. Accessed: May 1, 2008.

Avian Power Line Interaction Committee (2006). Located at http://www.aplic.org/SuggestedPractices2006(LR-2watermark).pdf. Accessed June 20, 2008.

AGFD 2008b. Environmental Review On-line Tool. [Web Page] Located at http://www.azgfd.gov/hgis/. Accessed: May 2, 2008.

US Fish and Wildlife Service (USFWS). 2008a. Endangered Species List, List of Species by County, Arizona. [Web Page] Located at http://www.fws.gov/southwest/es/EndangeredSpecies/lists/ListSpecies.cfm. Accessed: June 19, 2008.

USFWS. 2008b. Endangered and Threatened Wildlife and Plants; Listing the Potential Sonoran Desert Bald Eagle Distinct Population Segment as Threatened Under the Endangered Species Act; Final Rule. Federal Register 73(85): 23966-23970. May 1, 2008.

USFWS. 2008c. Endangered and Threatened Wildlife and Plants; 12-Month Petition Finding and Proposed Rule To Remove the Brown Pelican (*Pelecanus occidentalis*) From the Federal List of Endangered and Threatened Wildlife; Proposed Rule. Federal Register 73(34): 9407-9433. February 20, 2008.

APPENDIX C-1

Agency Correspondence

ENValue LLC
Environmental Planning and Strategy

June 23, 2008

Steve Spangle
Field Supervisor
U.S. Fish and Wildlife Service, Southwest Region 2
Arizona Ecological Services Field Office
2321 West Royal Palm Road, Suite 103
Phoenix, Arizona 85021-4957

Re: Protected species occurrence near Coolidge, Arizona

Dear Mr. Spangle:

TransCanada proposes to construct and operate the Coolidge Generating Station (CGS), a simple-cycle natural gas combustion turbine generator peaking facility designed to produce up to 575 MW of net electrical output. The facility would house 12 – LM6000 simple cycle turbines that consume little water and have low emissions. The Project will be located on a 100-acre parcel of currently irrigated farmland within the East ½ of the East ½ of the West ½ of Section 10, Township 6 South, Range 8 East. This site is within the corporate limits of the City of Coolidge, in Pinal County, Arizona.

We are conducting a review of the biological issues for the proposed project site. We have reviewed the species list for Pinal County on the internet at http://www.fws.gov/southwest/es/EndangeredSpecies/lists/ListSpecies.cfm. We are also requesting the US Fish and Wildlife Service provide any additional federally protected species and habitat information that will support the preparation the Certificate of Environmental Compatibility for the State of Arizona.

Thank you in advance for your assistance. Please contact me with any questions (tele: 303.618.7910, email: pgolden@heritage-ec.com).

Sincerely,

Patrick Golden
Senior Biologist

3225 Country Club Pkwy.
Castle Rock, CO 80108
303-819-3313
303-814-9237 Fax
rschroeder@envalue.us

ENValue LLC
Environmental Planning and Strategy

June 23, 2008

Tom Hildebrandt
Wildlife Program Manager
Arizona Game and Fish Department, Region VI
9140 E. 28th St.
Mesa, Arizona 85207

Re: Protected species occurrence near Coolidge, Arizona

Dear Mr. Hildebrandt:

TransCanada proposes to construct and operate the Coolidge Generating Station (CGS), a simple-cycle natural gas combustion turbine generator peaking facility designed to produce up to 575 MW of net electrical output. The facility would house 12 – LM6000 simple cycle turbines that consume little water and have low emissions. The Project will be located on a 100-acre parcel of currently irrigated farmland within the East ½ of the East ½ of the West ½ of Section 10, Township 6 South, Range 8 East. This site is within the corporate limits of the City of Coolidge, in Pinal County, Arizona.

We are conducting a review of the biological issues for the proposed project site. We have completed Arizona's On-Line Environmental Review Tool for the project area (results attached), conducted a site visit, and reviewed the species list for federally listed species that may occur in Pinal County on the internet at http://www.fws.gov/southwest/es/EndangeredSpecies/lists/ListSpecies.cfm. We are also requesting the Arizona Game and Fish Department provide any additional protected or sensitive species and habitat information that will support the preparation the Certificate of Environmental Compatibility for the State of Arizona.

Thank you in advance for your assistance. Please contact me with any questions (tele: 303.618.7910, email: pgolden@heritage-ec.com).

Sincerely,

Patrick J. Golden

Patrick Golden
Senior Biologist

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VACANT
CHIEF OF STAFF
GARY R. HOVATTER

July 9, 2008

Mr. Patrick Golden
ENValue LLC
3225 Country Club Pkwy.
Castle Rock, CO 80108

Re: **Coolidge Generation Station.**

Dear Mr. Golden:

The Arizona Game and Fish Department (Department) has reviewed your letter, dated June 23, 2008, regarding the proposed Coolidge Generating Station. The Department understands the project would entail the construction of a simple-cycle natural gas combustion turbine generator peaking facility designed to produce 575 Mw of net electrical output. The Department has the following general comments, based on the limited information provided:

- Any connector-lines from the station must be designed to prevent or minimize risk of electrocution of raptors and other avian species.
- Since the project is located on agricultural land, surveys should be conducted for burrowing owl. Specific guidelines for burrowing owls have been included with this letter.

The Department appreciates the opportunity to provide an evaluation of impacts to wildlife and their habitats associated with this project. If you have any questions regarding this letter, please contact me at (623) 236-7606. General status information, county and watershed distribution lists and abstracts for some special status species are also available on our web site at http://www.azgfd.gov/hdms.

Sincerely,

Ginger Ritter

Ginger L. Ritter
Project Evaluation Specialist

cc: Laura Canaca, Project Evaluation Program Supervisor
Russ Haughey, Habitat Program Manager, Region VI

AGFD #M08-06234404

Burrowing Owl Artificial Nest Box Project

An Arizona Partners in Flight Habitat Substitution Project

Photo by Greg Clark

Project and Problem Summary:

In the Eastern United States artificial nest boxes were built by volunteers and organizations to try to increase the populations of Bluebirds. The nest boxes replaced natural tree cavities that had been lost when the trees were lost. The effort was a huge success. The same thing can be done for Burrowing Owls, except the cavity is in the ground. If someone chops down all the trees in a forest, everyone understands that this will have a devastating effect on the wildlife. It is not as obvious that as much damage can be done to some species when holes in the ground are covered up. Efforts are under way to figure out where replacement burrows can be installed that will have the most benefit. Some burrows have been installed to replace burrows lost nearby to development, and much of the following material shows this work. However, these burrows are part of rescue work done in conjunction with Wild At Heart (a rehabilitation group in Cave Creek, Arizona). As important to the owl as rescue work is, it is different from figuring out where to install burrows to attract new populations of owls. Phase I of the project is about finding landowners who will provide burrow sites and learning which sites the Burrowing Owl prefers. We need your help finding sites and installing burrows. Surprisingly, this is not some problem to be solved in the "wilderness." The burrows need to be installed in urban areas where development is already completed . That means all around where people live. We need niche areas, like around commercial buildings or urban greenbelts, where the burrows can be installed away from trees and buildings but near possible food sources (mice and insects). There is still time to reverse the steep decline in the Burrowing Owl population, with your help. If you live in the greater Phoenix area, you can help us directly with this project. Because Arizona is the winter home for many owls that breed in Canada and the states north of Arizona, this project can affect the entire owl population of North America. We need burrow sites and help digging the holes. If you can help, or if you would like more information about how to help the owls in your area, contact Greg Clark at:

480-961-4046 (or manually type in the e-mail address b i r d i n f o @ m i r r o r - p o l e . com without spaces)

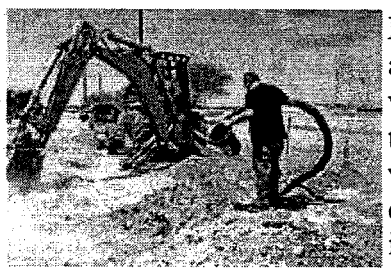
The Burrowing Owl is Federally protected by U.S. Laws pertaining to Migratory Species. If you are contemplating an operation that could destroy a burrow, or cover up a burrow with dirt, possibly killing the owl inside, this is against the law. You can find out more about this where the list of protected birds is given on a U.S. Fish and Wildlife website:

http://migratorybirds.fws.gov/intrnltr/treatlaw.html#mbta

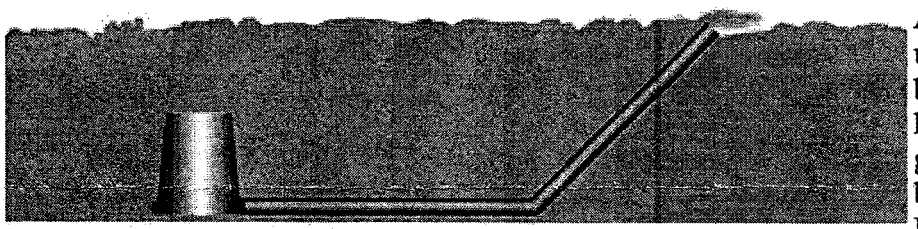
http://migratorybirds.fws.gov/intrnltr/mbta/mbtandx.html#alpha1 The list of protected birds can be found here, look under Owls to find Burrowing Owl.

More about the Burrowing Owl and artificial burrows:

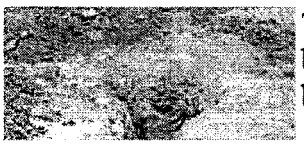
One of North America's most engaging and beneficial birds, the Burrowing Owl is experiencing a decline in population as nest sites are lost to development. Unlike birds that nest in trees, the Burrowing Owl is dependent on a ground burrow dug by other animals. If the animals are displaced, and the burrows covered over, then the Burrowing Owls must also leave. Eventually, the population of owls begins to fall merely because of a lack of suitable ground nest sites. Unlike other owls that are typically most active at night, the Burrowing Owl is most active during the day. Engaging to watch, the owl also makes a wide range of intriguing sounds. Typically perched near its burrow during the day, the owl is often easy to spot and is a great educational resource for anyone interested in learning more about wildlife. Surprisingly, this owl often selects natural nest sites on bare ground in open areas with little surrounding vegetation. Many commercial and city-maintained areas in the greater Phoenix area would be ideal for artificial burrows because the open spaces around the buildings are often bare ground, free of grass and large trees. The idea that these types of spaces could be used for habitat substitution for the Burrowing Owl has led to this project and we need to find interested groups that can help us make new home sites for this owl. Working in conjunction with Wild at Heart, based in Cave Creek, Arizona, some artificial burrows have been provided to replace burrows that are being lost due to development. This work shows what is involved to install a burrow.



Here volunteer Brian DaSilva gets ready to check the depth of the hole and tunnel dug by a backhoe to see if the orange bucket and black hose will fit properly. A typical hole is dug 4 feet deep so that the average temperature in the burrow will be around 75 degrees F. The developer worked with us both to provide a site for the burrows in Peoria and to carry out the earth excavation, so that very little manual labor was involved. Burrows can also be dug by hand.



An underground burrow is built using a plastic bucket for the burrow and 4" flexible irrigation hose for the tunnel from the ground to the burrow. The orange bucket costs about 3 dollars at Home Depot and the 4" hose costs about 6 dollars for the 12 feet required for a typical burrow. This means that materials are less than 10 dollars per burrow. For protection from dogs, in locations where the burrows are not in protected areas (like in fenced-off areas) a rigid PVC pipe must be used to protect the burrow entrance. See the special link for hardening a burrow against dog attacks. Holes must be provided in the bucket and hose to allow water to escape into the ground, the flexible hose can be purchased with perforations. In addition, the hose must make a double turn between the burrow and the surface to simulate natural burrows. The simple diagram above only shows the tube bending toward the surface, but it also needs to bend horizontally 90 degrees. The photograph below shows the bucket and tubing in place before being buried. The section from the buurow to the bend should be at a 4-foot depth. If you want to proceed on your own, contact us for more detailed information.



This is an example of a burrow dug by hand, rather than by backhoe. There must be at least two feet of dirt on top of the over-turned bucket. The photo shows the bucket and hose before being buried.

This burrow in Chandler became the home for owls that were displaced for a 200-home development project.

Once an area is slated for development where there are Burrowing Owls present, someone must carefully investigate all the burrows to make sure no owls are inside and then carefully collapse the burrow so no owl can return to be trapped inside. One of the first things that happens at a development site is land preparation that moves all the surface dirt around. Sadly, this can trap the owls in the burrow. Investigating these burrows is where Wild At Heart comes in. Holders of both Arizona Game and Fish and U.S. Fish and Wildlife permits for doing this type of work, Wild At Heart can investigate and safely collapse the burrows and, where necessary, relocate the owls to new sites. Follow the next link to see some burrow sites in Chandler, Arizona where the burrows had to be collapsed. Fortunately, a nearby homeowner offered to help us with our artificial burrow project and so the owls were able to relocate only a few hundred feet from where they were born, in habitat much like where they lived before.

Additional Burrow Construction Information and Protection Needed for Domestic Dog Attacks

Arizona Burrowing Owl Distribution

More Burrow Sites and Owl Photos

Red_Hawk Power_Plant_Release_Site New June, 2002. See where 25 Burrowing Owls were released.

Paseo Verde School New May, 2003. See the owls in one of the burrows using infrared video cameras.

mirror-pole.com home

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CHIEF OF STAFF
GARY R. HOVATTER

July 11, 2008

Patrick Golden
ENValue LLC
3225 Country Club Parkway
Castle Rock, CO 80108

Re: Protected species occurrences near Coolidge, Arizona

Dear Mr. Golden:

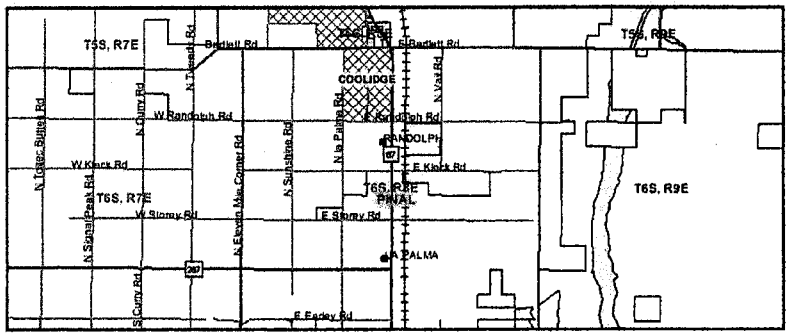
The Arizona Game and Fish Department (Department) has reviewed your letter, dated June 23, 2008 regarding special status species information associated with the above-referenced project area. We have validated the information you obtained (search #20080628006255) from the Department's Arizona On-Line Environmental Review Tool (Tool), which indicates the presence of one listed endangered (Yuma Clapper Rail) and one candidate (Western Yellow-billed Cuckoo) within the 5 mile buffer of your project. You will need to consult with Fish and Wildlife Service regarding these species. The search also identified the presence of a number of burrowing owls not far from you site. If your project should encounter burrowing owls, we recommend you follow the procedures referenced in the on-line tool receipt. No other species of special concern were identified within the 5 mile buffer of your project. The Department has no further comments at this time. Please refer to the project receipt for general project type concerns. If you have any questions regarding this letter, please contact me at (623) 236-7513. General status information, county and watershed distribution lists and abstracts for some special status species are also available on our web site at http://www.azgfd.gov/hdms.

Sincerely,

Daniel E. Nelson
Project Evaluation Program Specialist

Arizona's On-line Environmental Review Tool
Search ID: 20080620006255
Project Name: Coolidge Generating Station
Date: 6/20/2008 4:00:44 PM

Project Location



Project Name: Coolidge Generating Station
Submitted By: Patrick Golden
On behalf of: OTHER
Project Search ID: 20080620006255
Date: 6/20/2008 4:00:38 PM
Project Category: Energy Storage/Production/Transfer,Energy Production (generation),coal or gas power plant (new)
Project Coordinates (UTM Zone 12-NAD 83): 452855.382, 3642289.278 meter
Project Area: 300.305 acres
Project Perimeter: 4421.143 meter
County: PINAL
USGS 7.5 Minute Quadrangle ID: 1489
Quadrangle Name: COOLIDGE
Project locality is currently being scoped

Location Accuracy Disclaimer

Project locations are assumed to be both precise and accurate for the purposes of environmental review. The creator/owner of the Project Review Receipt is solely responsible for the project location and thus the correctness of the Project Review Receipt content.

The Department appreciates the opportunity to provide in-depth comments and project review when additional information or environmental documentation becomes available.

Special Status Species Occurrences/Critical Habitat/Tribal Lands within 5 miles of Project Vicinity:

Name	Common Name	ESA	USFS	BLM	State
Ardea alba	Great Egret				WSC
Athene cunicularia hypugaea	Western Burrowing Owl	SC		S	
Coccyzus americanus occidentalis	Western Yellow-billed Cuckoo	C	S		WSC
Ixobrychus exilis	Least Bittern				WSC
Rallus longirostris yumanensis	Yuma Clapper Rail	LE			WSC

 APPLICATION INITIALS: _____

Please review the entire receipt for project type recommendations and/or species or location information and retain a copy for future reference. If any of the information you provided did not accurately reflect this project, or if project plans change, another review should be conducted, as this determination may not be valid.

Arizona's On-line Environmental Review Tool:

1. This On-line Environmental Review Tool inquiry has generated recommendations regarding the potential impacts of your project on Special Status Species (SSS) and other wildlife of Arizona. SSS include all U.S. Fish and Wildlife Service federally listed, U.S. Bureau of Land Management sensitive, U.S. Forest Service sensitive, and Arizona Game and Fish Department (Department) recognized species of concern.
2. These recommendations have been made by the Department, under authority of Arizona Revised Statutes Title 5 (Amusements and Sports), 17 (Game and Fish), and 28 (Transportation). These recommendations are preliminary in scope, designed to provide early considerations for all species of wildlife, pertinent to the project type you entered.
3. This receipt, generated by the automated On-line Environmental Review Tool does not constitute an official project review by Department biologists and planners. Further coordination may be necessary as appropriate under the National Environmental Policy Act (NEPA) and/or the Endangered Species Act (ESA).

The U.S. Fish and Wildlife Service (USFWS) has regulatory authority over all federally listed species under the ESA. Contact USFWS Ecological Services Offices: http://arizonaes.fws.gov/.

Phoenix Main Office
2321 W. Royal Palm Road, Suite 103
Phoenix, AZ 85021
Phone 602-242-0210
Fax 602-242-2513

Tucson Sub-Office
201 North Bonita, Suite 141
Tucson, AZ 85745
Phone 520-670-6144
Fax 520-670-6154

Flagstaff Sub-Office
323 N. Leroux Street, Suite 101
Flagstaff, AZ 86001
Phone 928-226-0614
Fax 928-226-1099

Disclaimer:

1. This is a preliminary environmental screening tool. It is not a substitute for the potential knowledge gained by having a biologist conduct a field survey of the project area.
2. The Department's Heritage Data Management System (HDMS) data is not intended to include potential distribution of special status species. Arizona is large and diverse with plants, animals, and environmental conditions that are ever changing. Consequently, many areas may contain species that biologists do not know about or species previously noted in a particular area may no longer occur there.
3. Not all of Arizona has been surveyed for special status species, and surveys that have been conducted have varied greatly in scope and intensity. Such surveys may reveal previously undocumented population of species of special concern.
4. HDMS data contains information about species occurrences that have actually been reported to the Department.

Arizona Game and Fish Department Mission

To conserve, enhance, and restore Arizona's diverse wildlife resources and habitats through aggressive protection and

 APPLICATION INITIALS: _____

management programs, and to provide wildlife resources and safe watercraft and off-highway vehicle recreation for the enjoyment, appreciation, and use by present and future generations.

Project Category: Energy Storage/Production/Transfer,Energy Production (generation),coal or gas power plant (new)

Project Type Recommendations:

Based on the project type entered; coordination with Arizona Department of Environmental Quality may be required (http://www.azdeq.gov/).

Based on the project type entered; coordination with State Historic Preservation Office may be required http://www.pr.state.az.us/partnerships/shpo/shpo.html#anchor561695

Based on the project type entered; coordination with the Environmental Protection Agency may be required http://www.epa.gov/

During the planning stages of your project, please consider the local or regional needs of wildlife in regards to movement, connectivity, and access to habitat needs. Loss of this permeability prevents wildlife from accessing resources, finding mates, reduces gene flow, prevents wildlife from re-colonizing areas where local extirpations may have occurred, and ultimately prevents wildlife from contributing to ecosystem functions, such as pollination, seed dispersal, control of prey numbers, and resistance to invasive species. In many cases, streams and washes provide natural movement corridors for wildlife and should be maintained in their natural state. Uplands also support a large diversity of species, and should be contained within important wildlife movement corridors. In addition, maintaining biodiversity and ecosystem functions can be facilitated through improving designs of structures, fences, roadways, and culverts to promote passage for a variety of wildlife.

Minimization and mitigation of impacts to wildlife and fish species due to changes in water quality, quantity, chemistry, temperature, and alteration to flow regimes (timing, magnitude, duration, and frequency of floods) should be evaluated. Minimize impacts to springs, in-stream flow, and consider irrigation improvements to decrease water use. If dredging is a project component, consider timing of the project in order to minimize impacts to spawning fish and other aquatic species (including spawning seasons), and to reduce spread of exotic invasive species. We recommend early direct coordination with Project Evaluation Program for projects that could impact water resources, wetlands, streams, springs, and/or riparian habitats.

The Department recommends that wildlife surveys are conducted to determine if noise-sensitive species occur within the project area. Avoidance or minimization measures could include conducting project activities outside of breeding seasons.

Project Location and/or Species recommendations:

HDMS records indicate that one or more listed, proposed, or candidate species or Critical Habitat (Designated or Proposed) have been documented in the vicinity of your project (refer to page 1 of the receipt). Please contact:
Ecological Services Office
US Fish and Wildlife Service

2321 W. Royal Palm Rd.
Phoenix, AZ 85021-4951

 APPLICATION INITIALS: _____

Phone: 602-242-0210
Fax: 602-242-2513

HDMS records indicate that western burrowing owls have been documented within the vicinity of your project area (refer to the species list on page 1 of the receipt). Please review the relocation procedures recommended for burrowing owls found on the Environmental Review Home Page.

http://mirror-pole.com/burr_owl/bur_owl1.htm

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Recommendations Disclaimer:

1. Potential impacts to fish and wildlife resources may be minimized or avoided by the recommendations generated from information submitted for your proposed project.
2. These recommendations are proposed actions or guidelines to be considered during **preliminary project development.**
3. Additional site specific recommendations may be proposed during further NEPA/ESA analysis or through coordination with affected agencies.
4. Making this information directly available does not substitute for the Department's review of project proposals, and should not decrease our opportunity to review and evaluate additional project information and/or new project proposals.
5. The Department is interested in the conservation of all fish and wildlife resources, including those Special Status Species listed on this receipt, and those that may have not been documented within the project vicinity as well as other game and nongame wildlife.
6. **Further coordination requires the submittal of this initialed and signed Environmental Review Receipt with a cover letter and project plans or documentation that includes project narrative, acreage to be impacted, how construction or project activity(s) are to be accomplished, and project locality information (including site map).**
7. Upon receiving information by AZGFD, please allow 30 days for completion of project reviews. Mail requests to:

Project Evaluation Program, Habitat Branch
Arizona Game and Fish Department
5000 West Carefree Highway
Phoenix, Arizona 85086-5000
Phone Number: (623) 236-7600
Fax Number: (623) 236-7366

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By using this site, you acknowledge that you have read and understand the terms of use. Department staff may revise these terms periodically. If you continue to use our website after we post changes to these terms, it will mean that you accept such changes. If at any time you do not wish to accept the Terms, you may choose not to use the website.

1. This Environmental Review and project planning website was developed and intended for the purpose of screening projects for potential impacts on resources of special concern. By indicating your agreement to the terms of use for this website, you warrant that you will not use this website for any other purpose.
2. Unauthorized attempts to upload information or change information on this website are strictly prohibited and may be punishable under the Computer Fraud and Abuse Act of 1986 and/or the National Information Infrastructure Protection Act .
3. The Department reserves the right at any time, without notice, to enhance, modify, alter, or suspend the website and to terminate or restrict your access to the website.
4. This Environmental Review is based on the project study area that

 APPLICATION INITIALS: _____

was entered. The review must be redone if the project study area, location, or the type of project changes. If additional information becomes available, this review may need to be reconsidered.
5. A signed and initialed copy of the Environmental Review Receipt indicates that the entire receipt has been read by the signer of the Environmental Review Receipt.

Security:

The Environmental Review and project planning web application operates on a complex State computer system. This system is monitored to ensure proper operation, to verify the functioning of applicable security features, and for other like purposes. Anyone using this system expressly consents to such monitoring and is advised that if such monitoring reveals possible evidence of criminal activity, system personnel may provide the evidence of such monitoring to law enforcement officials. Unauthorized attempts to upload or change information; to defeat or circumvent security measures; or to utilize this system for other than its intended purposes are prohibited.

This website maintains a record of each environmental review search result as well as all contact information. This information is maintained for internal tracking purposes. Information collected in this application will not be shared outside of the purposes of the Department.

If the Environmental Review Receipt and supporting material are not mailed to the Department or other appropriate agencies within six (6) months of the Project Review Receipt date, the receipt is considered to be null and void, and a new review must be initiated.

Print this Environmental Review Receipt using your Internet browser's print function and keep it for your records. Signature of this receipt indicates the signer has read and understands the information provided.

Signature:_____

Date: _____

Proposed Date of Implementation: _____

Please provide point of contact information regarding this Environmental Review.

Application or organization responsible for project implementation

Agency/organization:_____

Contact Name: _____

Address: _____

City, State, Zip: _____

Phone: _____

E-mail: _____

 APPLICATION INITIALS: _____

Arizona's On-line Environmental Review Tool
Search ID: 20080620006255
Project Name: Coolidge Generating Station
Date: 6/20/2008 4:00:44 PM

Person Conducting Search (if not applicant)

Agency/organization:_____

Contact Name: _____

Address: _____

City, State, Zip: _____

Phone: _____

E-mail: _____

 APPLICATION INITIALS: _____

EXHIBIT D

EXHIBIT D - BIOLOGICAL RESOURCES

As stated in Arizona Corporation Commission Rules of Practice and Procedure R14-3-219:

> *"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."*

METHODS / CURRENT CONDITIONS

A qualified biologist conducted on-the-ground field reconnaissance of the Project Site and evaluated the nearby area on June 20, 2008. Prior to conducting fieldwork, aspects such as ecology and habitat requirements of various species were researched. Habitat conditions and observations were recorded. Information collected was used to evaluate the potential effects of Project implementation on biological resources within the vicinity of the Project.

Tables D-1, D-2, D-3, and **D-4** contain lists of common plant life, mammals, birds, reptiles and amphibians potentially present in Pinal County and within the vicinity of the Project Site. **Table D-3** specifically lists the species noted during a breeding bird survey conducted by AGFD near Coolidge, Arizona (Corman 2000).

The field reconnaissance on June 20, 2008 determined that overall plant diversity and density are very low. The Project Site contains only agriculture crop species as it is actively farmed. These lands have been used for agriculture for many years and are mostly surrounded by other agriculture lands and nearby industrial and residential uses, with the exception of a few relatively isolated patches of native habitat to the south, east, and west of the Project Site area. These isolated native communities are dominated by lowland desertscrub with creosotebush, white bursage, four-wing saltbush, and mesquite as the dominant species.

The Project Site (approximately 100 acres) is located entirely on disturbed agricultural land. All transmission and gas interconnections would be on the Project Site or adjacent thereto; therefore, all ground disturbance and modifications would occur within the Project Site or on previously disturbed land adjacent thereto, resulting in negligible off-site impacts.

VEGETATION

Table D-1 presents a list of common plant species that potentially could occur or have been recorded in the vicinity of the Project Site. The Arizona Native Plant Law (NPL) states that if protected native plant species are to be destroyed or removed, the property owner must contact the Arizona Department of Agriculture (ADA) prior to such actions. This process does not restrict the removal of such species on private property, but is meant to encourage the salvage of

these plants when possible. Because the Site is all farmed lands, there are no species on it that are protected under the NPL (refer to Exhibit C).

Areas in Pinal County supporting native vegetation were subdivided into three communities: creosote bush – white bursage shrublands; mesquite woodlands; and desert wash. The lands surrounding the Project Site are almost entirely agricultural or industrial and residential land uses with the exception of a few relatively isolated patches of native habitat as described below.

The creosote bush (*Larrea tridentata*) - white bursage (*Ambrosia dumosa*) community is the most widespread native vegetation type in the Project Site area. Other shrub species in this series include Four-wing saltbush (*Atriplex canensens*), brittlebush (*Encelia farinose*), and burroweed (*Isocoma tenueseca*). Trees occur in low densities and include mesquite (*Prosopis* spp.), foothills paloverde (*Cercidium microphyllum*), and ironwood (*Olneya tesota*). Cactus species including barrel cactus (*Ferrocactus wislizenii*) and jumping cholla (*Opuntia bigelovii*) are also found in low densities.

Mesquite woodlands or *bosques* are areas where trees occur at greater density and create more vertical structure in the community. Other species in these areas can include ironwood, foothills paloverde, and wolfberry (*Lycium sp.*). There is a limited amount of mesquite woodland habitat on the west side of the property between the agricultural fields and the railroad (a strip approximately 2 meters to 5 meters wide) and a slightly larger mesquite patch 0.5 mile to the south of the Project Site area.

WILDLIFE

Wildlife resources that have the potential of occurrence within the vicinity of the Project Site are predominantly associated with Sonoran Desertscrub habitats and agricultural lands. Species occurrence, abundance, and distribution are strongly influenced by the presence of surface water, topography, and habitat types within and surrounding the Project Site. The Project Site consists entirely of agricultural lands with the exception of the thin strip of mesquite on the west side of the site. The lands surrounding and in the vicinity of the Project Site area are dominated by agriculture areas and there are several isolated patches of native Sonoran Desertscrub and mesquite woodland habitat. **Tables D-2, D-3,** and **D-4** present common mammals, birds, reptiles and amphibians that have potential to occur or have been recorded in the vicinity of the Project Site.

POTENTIAL EFFECTS

PLANT SPECIES

Within the CGS Project Site, there is no native vegetation with the exception of a limited amount of mesquite habitat on the west side of the property between the agricultural fields and the railroad. There also is no native vegetation / habitat in the vicinity of the Site except for a slightly larger mesquite patch 0.5 mile to the south. Local washes may support marginal xeroriparian

habitat; although no washes were recorded in the vicinity. The entire Project Site consists of agricultural lands with non-native, weedy, and crop species typically dominant. Construction of the CGS Project will not result in impact to vegetated native habitat or impacts to native plant species.

MAMMALS

Table D-2 presents the list of mammalian species that may occur in the vicinity of the Project Site. Most mammalian species with potential for occurrence in the vicinity of the Project Site area are likely to be small, inconspicuous, largely nocturnal species of rodents and bats. Desert-adapted rodents include pocket mice and kangaroo rats. Several species of bats may forage in the area. Medium-sized and large mammals with potential for occurrence in the vicinity of the Project Site area would be limited to those who could use the Site for foraging (this is due to the lack of suitable habitat). After the Project is constructed there would still be many agricultural lands adjacent to the Site available for foraging, resulting in minimal impacts to mammalian species that could use these lands.

BIRDS

Table D-3 presents the list of bird species that may occur in the vicinity. Most bird species likely to be present on the Site are those associated with agricultural or developed land use. Species associated with Sonoran Desertscrub may also be present. Because water resources within the vicinity of the Project Site area are limited to canals and ditches, species abundance will be less than that for the greater regional area of Pinal County.

Common bird species with some potential to occur within the vicinity of the Project Site would be limited to those who use the Site for foraging (this is due to the lack of suitable habitat and nesting locations). The majority of the birds present in the Project Site area during any given season are small songbirds and raptors like the mourning dove and red-tailed hawk. After the Project is constructed there would still be many existing agricultural lands adjacent to the Site available for foraging resulting in minimal potential effects to bird species.

AMPHIBIANS AND REPTILES

Table D-4 presents a list of amphibian and reptilian species that may be present in the vicinity of the Project Site. Relatively undisturbed desert habitats represent the best habitat for reptiles, although some species may be found in agricultural areas. Suitable habitat for amphibians may be present in washes whenever water is present (i.e., the Sonoran desert toad). No washes were noted in the vicinity of the Project Site.

INVASIVE SPECIES (NOXIOUS WEEDS)

Non-native, weedy, and crop species typically dominate disturbed agricultural lands, irrigation canals, and rural areas. It is possible that some noxious weeds are present in disturbed areas, but none were detected during the reconnaissance survey. Common noxious weed species that may occur in the Project Site area that are not included in the state's noxious weed list (include pigweed (*Amaranthus sp.*), filaree (*Erodium cicutarium*), and Russian thistle (*Salsola tragus*).

CONCLUSIONS

The Site where the CGS Project will be constructed has been actively farmed for several decades and contains no native habitats. All interconnections will occur either on this Site (transmission) or immediately adjacent to the Site on previously disturbed lands (gas) and likewise would not affect native habitats. The wildlife and bird species that utilize the agricultural lands that will be displaced by this Project for foraging or cover habitat would not be expected to be negatively affected because of the significant amount of similar agricultural land near the Project Site and throughout Pinal County.

REFERENCES

Corman. 2000. Arizona Game and Fish Department. Personal Communication Re: Breeding Bird Survey Results Coolidge (unpublished data).

Brown D.E. 1994. Biotic Communities: Southwestern United States and Northwestern Mexico. University of Utah Press.

Hoffmeister, D.F. 1986. Mammals of Arizona. University of Arizona Press.

Stebbins, R.C. 1985. A Field Guide to Western Reptiles and Amphibians. Peterson Field Guides.

Table D-1 Common Plant Species Potential Occurrence in Isolated Native Habitats in the Vicinity of the Project Site area[1]		
Common Name	**Scientific Name**	**Ecosystem**
Triangleleaf bursage	*Ambrosia deltoidea*	Sonoran Desertscrub, Sonoran Riparian
White bursage	*Ambrosia dumosa*	Sonoran Desertscrub
Fiddlehead	*Amsinckia intermedia*	Sonoran Riparian
Purple three-awn	*Aristida purpurea*	Sonoran Desertscrub
Four-wing saltbush	*Atriplex canescens*	Sonoran Desertscrub
All scale	*Atriplex polycarpa*	Sonoran Desertscrub
Datura	*Datura stramonium*	Sonoran Riparian
Englemann's hedgehog cactus	*Echinocereus englemannii*	Sonoran Desertscrub
Brittlebush	*Encelia farinosa*	Sonoran Desertscrub, Sonoran Riparian
Skeletonweed	*Eriogonum deflexum*	Sonoran Desertscrub
Filaree	*Erodium cicutarium*	Sonoran Desertscrub
Barrel cactus	*Ferocactus wislizenii*	Sonoran Desertscrub
Ocotillo	*Fouquieria splendens*	Sonoran Desertscrub
Rhatany	*Krameria parviflora*	Sonoran Desertscrub, Sonoran Riparian
Creosote bush	*Larrea tridentata*	Sonoran Desertscrub, Sonoran Riparian
Wolfberry	*Lycium spp.*	Sonoran Desertscrub, Sonoran Riparian
Little fishhook cactus	*Mammillaria thornberi*	Sonoran Desertscrub
Teddybear cholla	*Opuntia bigelovii*	Sonoran Desertscrub
Prickly pear cactus	*Opuntia engelmannii*	Sonoran Desertscrub
Jumping cholla	*Opuntia fulgida*	Sonoran Desertscrub
Desert mistletoe	*Phoradendron californicum*	Sonoran Desertscrub
Galleta grass	*Pleuraphis jamesii*	Sonoran Desertscrub, Sonoran Riparian
Mesquite	*Prosopis spp.*	Sonoran Riparian
Bladdersage	*Salazaria mexicana*	Sonoran Desertscrub
Russian thistle	*Salsola iberica*	Sonoran Desertscrub, Sonoran Riparian
London rocket	*Sisymbrium irio*	Sonoran Desertscrub, Sonoran Riparian
Globe mallow	*Sphaeralcea spp.*	Sonoran Desertscrub, Sonoran Riparian
[1] Brown 1994..		

Table D-2 Mammal Species Potential Occurrence in the Vicinity of the Project Site area[1]	
Common Name	**Scientific Name**
Harris' antelope squirrel	*Ammospermophilus harrisii*
Pallid bat	*Antrozous pallidus*
Ringtail	*Bassariscus astutus*
Coyote	*Canis latrans*
Mexican long-tongued bat	*Choeronycteris mexicana*
Desert kangaroo rat	*Dipodomys deserti*
Merriam's kangaroo rat	*Dipodomys merriami*
Big brown bat	*Eptesicus fuscus*
Spotted bat	*Euderma maculatum*
Western mastiff bat	*Eumops perotis*
Mountain lion	*Felis concolor*
Bobcat	*Felis rufus*
Red bat	*Lasiurus borealis*
Hoary bat	*Lasiurus cinereus*
Southern yellow bat	*Lasiurus ega xanthinus*
Mexican long-nosed bat	*Leptonycteris nivalis*
Black-tailed jackrabbit	*Lepus californicus*
Hooded skunk	*Mephitis macroura*
Striped skunk	*Mephitis mephitis*
California myotis	*Myotis californicus*
Fringed myotis	*Myotis thysanodes*
Cave myotis	*Myotis velifer*
Yuma myotis	*Myotis yumanensis*
White-throated woodrat	*Neotoma albigula*
Desert wood rat	*Neotoma lepida*
Desert shrew	*Notiosorex crawfordi*
Desert mule deer	*Odocoileus hemionus crooki*
Muskrat	*Ondatra zibethicus*
Southern grasshopper mouse	*Onychomys torridus*
Collared peccary	*Pecari tajacu*
Arizona pocket mouse	*Perognathus amplus*
Bailey's pocket mouse	*Perognathus baileyi*
Long-tailed pocket mouse	*Perognathus formosus*
Rock pocket mouse	*Perognathus intermedius*
Little pocket gopher	*Perognathus longimembris*
Desert pocket mouse	*Perognathus penicillatus*
Brush mouse	*Peromyscus boylii*

Table D-2 Mammal Species Potential Occurrence in the Vicinity of the Project Site area[1]	
Cactus mouse	*Peromyscus eremicus*
Deer mouse	*Peromyscus maniculatus*
Western pipistrelle	*Pipistrellus Hesperus*
Townsend's big-eared bat	*Plecotus townsendii*
Raccoon	*Procyon lotor*
Western harvest mouse	*Reithrodontomys megalotis*
Arizona gray squirrel	*Sciurus arizonensis*
Arizona cotton rat	*Sigmodon arizonae*
Round-tailed ground squirrel	*Spermophilus tereticaudus*
Rock squirrel	*Spermophilus variegatus*
Western spotted skunk	*Spilogale gracilis*
Desert cottontail	*Sylvilagus audubonii*
American free-tailed bat	*Tadarida brasiliensis*
Pocketed free-tailed bat	*Tadarida femorosacca*
Big free-tailed bat	*Tadarida macrotis*
Badger	*Taxidae taxus*
Botta's pocket gopher	*Thomomys bottae*
Gray fox	*Urocyon cinereoargenteus*
Kit fox	*Vulpes macrotis*

[1] D.F. Hoffmeister. 1986. Mammals of Arizona. University of Arizona Press; Greystone 2002.

Table D-3 Bird Species Potential Occurrence in the Vicinity of the Project Site area[1]	
Common Name	**Scientific Name**
Cooper's Hawk	*Accipiter cooperii*
Sharp-shinned Hawk	*Accipiter striatus*
Red-winged Blackbird	*Agelaius phoeniceus*
Sage Sparrow	*Amphispiza belli*
Black-throated Sparrow	*Amphispiza bilineata*
Black-chinned Hummingbird	*Archilochus alexandri*
Great Blue Heron	*Ardea herodias*
Western Burrowing Owl	*Athene cunicularia hypugaea*
Verdin	*Auriparus flaviceps*
Cedar Waxwing	*Bombycilla cedrorum*
Great Horned Owl	*Bubo virginianus*
Cattle Egret	*Bubulcus ibis*
Zone-tailed Hawk	*Buteo albonotatus*
Red-tailed Hawk	*Buteo jamaicensis*
Ferruginous Hawk	*Buteo regalis*
Swainson's Hawk	*Buteo swainsoni*
Lark Bunting	*Calamospiza melanocorys*
Gambel's Quail	*Callipepla gambelii*
Anna's Hummingbird	*Calypte anna*
Costa's Hummingbird	*Calypte costae*
Cactus Wren	*Campylorhynchus brunneicapillus*
Northern Cardinal	*Cardinalis cardinalis*
Pyrrhuloxia	*Cardinalis sinuatus*
Lesser Goldfinch	*Carduelis Project Site arealtria*
House Finch	*Carpodacus mexicanus*
Turkey Vulture	*Cathartes aura*
Lark Sparrow	*Chondestes grammacus*
Lesser Nighthawk	*Chordeiles acutipennis*
Northern Harrier	*Circus cyaneus*
Red-shafted Northern Flicker	*Colaptes cafer*
Gilded Flicker	*Colaptes chrysoides*
Rock Dove	*Columba livia*
Inca Dove	*Columbina inca*
Common Ground-dove	*Columbina passerine*
Western Wood-pewee	*Contopus sordidulus*
Common Raven	*Corvus corax*
Yellow-rumped Warbler	*Dendroica coronata*
Black-throated Gray Warbler	*Dendroica nigrescens*

Table D-3 Bird Species Potential Occurrence in the Vicinity of the Project Site area[1]	
Yellow Warbler	*Dendroica petechia*
Pacific-slope Flycatcher	*Empidonax difficilis*
Dusky Flycatcher	*Empidonax oberholster*
Cordilleran Flycatcher	*Empidonax occidentalis*
Gray Flycatcher	*Empidonax wrightii*
Horned Lark	*Eremophila alpestris*
Brewer's Blackbird	*Euphagus cyanocephalus*
American Kestrel	*Falco sparverius*
Greater Roadrunner	*Geococcyx californianus*
Blue Grosbeak	*Guiraca carulea*
Cliff Swallow	*Hirundo pyrrhonota*
Barn Swallow	*Hirundo rustica*
Northern Oriole	*Icterus bullockii*
Hooded Oriole	*Icterus cucullatus*
Bullock's Oriole	*Icterus galbula*
Dark-eyed Junco	*Junco hyemalis*
Loggerhead Shrike	*Lanius ludovicianus*
Gila Woodpecker	*Melanerpes uropygialis*
Lincoln's Sparrow	*Melospiza lincolnii*
Song Sparrow	*Melospiza melodia*
Elf Owl	*Micrathene whitneyi*
Northern Mockingbird	*Mimus polyglottos*
Bronzed Cowbird	*Molothrus aeneus*
Brown-headed Cowbird	*Molothrus ater*
Ash-throated Flycatcher	*Myiarchus cinerascens*
Brown-crested Flycatcher	*Myiarchus tyrannulus*
MacGillivary's Warbler	*Oporornis tolmiei*
Sage Thrasher	*Oreoscoptes montanus*
Western Screech Owl	*Otus kennicottii*
Harris' Hawk	*Parabuteo unicinctus*
House Sparrow	*Passer domesticus*
Phainopepla	*Phainopepla nitens*
Common Poorwill	*Phalaenoptilus nuttallii*
Black-headed Grosbeak	*Pheucticus melanocephalus*
Ladder-backed Woodpecker	*Picoides scalaris*
Abert's Towhee	*Pipilo aberti*
Green-tailed Towhee	*Pipilo chlorurus*
Spotted Towhee	*Pipilo erythrophthalmus*
Canyon Towhee	*Pipilo fuscus*
Western Tanager	*Piranga ludoviciana*

Table D-3 Bird Species Potential Occurrence in the Vicinity of the Project Site area[1]	
Blue-gray Gnatcatcher	*Polioptila caerulea*
Black-tailed Gnatcatcher	*Polioptila melanura*
Vesper Sparrow	*Pooecetes gramineus*
Vermillion Flycatcher	*Pyrocephalus rubinus*
Great-tailed Grackle	*Quiscalus mexicanus*
Ruby-crowned Kinglet	*Regulus calendula*
Rock Wren	*Salpinctes obsoletus*
Black Phoebe	*Sayornis nigricans*
Say's Phoebe	*Sayornis saya*
Rufus Hummingbird	*Selasphorus rufus*
Western Bluebird	*Sialia mexicana*
Brewer's Sparrow	*Spizella breweri*
Chipping Sparrow	*Spizella passerine*
Northern Rough-winged Swallow	*Stelgidopteryx serripennis*
Western Meadowlark	*Sturnella neglecta*
European Starling	*Sturnus vulgaris*
Tree Swallow	*Tachycineta bicolor*
Violet-green Swallow	*Tachycineta thalassina*
Bewick's Wren	*Thryomanes bewickii*
Bendire's Thrasher	*Toxostoma bendirei*
Curve-billed Thrasher	*Toxostoma curvirostre*
House Wren	*Troglodytes aedon*
American Robin	*Turdus migratorius*
Western Kingbird	*Tyrannus verticalis*
Cassin's Kingbird	*Tyrannus vociferans*
Barn Owl	*Tyto alba*
Orange-crowned Warbler	*Vermivora celata*
Lucy's Warbler	*Vermivora luciae*
Nashville Warbler	*Vermivora ruficapilla*
Virginia's Warbler	*Vermivora virginiae*
Bell's Vireo	*Vireo bellii*
Warbling Vireo	*Vireo gilvus*
Wilson's Warbler	*Wilsonia pusilla*
White-winged Dove	*Zenaida asiatica*
Mourning Dove	*Zenaida macroura*
White-crowned Sparrow	*Zonotrichia leucophrys*

[1]Corman 2000a, AGFD. Breeding Bird Survey Results; Casa Grand East and Chuichu 7.5 minute quadrangle (Unpublished data); Corman 2000b, AGFDt. Breeding Bird Survey Results Coolidge. (Unpublished data); Greystone 2002; Glinski 1998.

Table D-4 Reptile and Amphibian Species Potential Occurrence in the Vicinity of the Project Site area[1]	
Common Name	**Scientific Name**
Arizona glossy snake	*Arizona elegans noctivaga*
Sonoran desert toad	*Bufo alvarius*
Great plains toad	*Bufo cognatus*
Red-spotted toad	*Bufo punctatus*
Zebra tail lizard	*Callisaurus draconoides*
Banded sand snake	*Chilomeniscus cinctus*
Western shovel-nosed snake	*Chionactus occipitalis*
Gila spotted whiptail	*Cnemidophorus flagellicaudus*
Western whiptail	*Cnemidophorus tigris*
Desert banded gecko	*Coleonyx variegatus variegatus*
Western diamondback rattlesnake	*Crotalus atrox*
Sonoran sidewinder	*Crotalus cerastes cercobombus*
Speckled rattlesnake	*Crotalus mitchellii pyrrhus*
Black-tailed rattlesnake	*Crotalus molossus*
Mojave rattlesnake	*Crotalus scutulatus*
Arizona black rattlesnake	*Crotalus viridis cerberus*
Common collared lizard	*Crotaphytus collaris*
Western collared lizard	*Crotaphytus collaris baileyi*
Desert iguana	*Dipsosaurus dorsalis*
Large spotted leopard lizard	*Gambelia wislizenii wislizenii*
Desert tortoise	*Gopherus agassizii*
Gila monster	*Heloderma suspectum*
Canyon tree frog	*Hyla arenicolor*
Night snake	*Hypsiglena torquata*
Sonoran mud turtle	*Kinosternon sonoriense*
Common kingsnake	*Lampropeltis getula*
Western blind snake	*Leptotyphlops humilis*
Rosy boa	*Lichanura trivirgata*
Red coachwhip	*Masticophis flagellum piceus*
Arizona coral snake	*Micruroides euryxanthus*
Desert horned lizard	*Phrynosoma platyrhinos*
Desert horned lizard	*Phrynosoma platyrhinos calidiarum*
Regal horned lizard	*Phrynosoma solare*
Saddled leaf-nosed snake	*Phyllorhynchus browni*
Western leaf-nosed snake	*Phyllorhynchus decurtatus perkinsi*
Sonoran gopher snake	*Pituphis melanoleucus affinis*
Bullfrog	*Rana catesbeiana*

Table D-4 Reptile and Amphibian Species Potential Occurrence in the Vicinity of the Project Site area[1]	
Western long-nosed snake	*Rhinocheilus lecontei lecontei*
Western patch-nosed snake	*Salvadora hexalepis*
Western chuckwalla	*Sauromalus obesus obesus*
Couch spadefoot	*Scaphiopus couchi*
Western spadefoot	*Scaphiopus hammondii*
Southern spadefoot	*Scaphiopus multiplicatus*
Sonoran spiny lizard	*Sceloporus magister magister*
Yellow-backed spiny lizard	*Sceloporus magister uniformis*
Ground snake	*Sonora semiannulata*
SW black-headed snake	*Tantilla hobartsmithi*
Lyre snake	*Trimorphodon biscutatus*
Spiny softshell	*Trionyx spiniferus*
Arizona brush lizard	*Urosaurus graciosus shannoni*
Tree lizard	*Urosaurus ornatus*
Side-blotched lizard	*Uta stansburiana*

[1] Stebbins, R.C. 1985. A Field Guide to Western Reptiles and Amphibians. Peterson Field Guides; Greystone 2002.

EXHIBIT
E

EXHIBIT E - SCENIC AREAS, HISTORIC SITES AND STRUCTURES, ARCHAEOLOGICAL SITES

As stated in Arizona Corporation Commission Rules of Practice and Procedure R14-3-219:

> *"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."*

VISUAL RESOURCES

Visual resources consist of the landforms, vegetation, rock and water features, and cultural modifications that create the visual character and sensitivity of a landscape. These factors also contribute to the sensitivity of the landscape to visual change. A number of factors are inventoried for the existing visual character in order to evaluate the effect the Project would have on visual resources and characteristic landscapes. The primary existing visual condition factors considered in the area around the Project Site are defined below and include: Visual Quality, Viewer Concern, Viewer Exposure, and Overall Visual Sensitivity.

Visual Quality (VQ) is a measure of the overall impression or appeal of an area as determined by the particular landscape characteristics such as landforms, rockforms, water features, and vegetation patterns, as well as associated public values. The attributes of variety, vividness, coherence, uniqueness, harmony, and pattern contribute to visual quality classifications of indistinctive (low), common (moderate), and distinctive (high). VQ is studied as a point of reference to assess whether a given project would appear compatible with the established features of the setting or would contrast noticeably and unfavorably with them.

Viewer Concern (VC) addresses the level of interest or concern of viewers regarding an area's visual resources and is closely associated with viewers' expectations for the area. VC reflects the importance placed on a given landscape based on the human perceptions of the intrinsic beauty of the existing landforms, rockforms, water features, vegetation patterns, and even cultural features.

Viewer Exposure (VE) describes the degree to which viewers are exposed to views of the landscape. Viewer exposure considers landscape visibility (the ability to see the landscape), distance zones (proximity of viewers to the subject landscape), number of viewers, and the duration of view. Landscape visibility can be a function of several interconnected considerations, including proximity to viewing point, degree of discernible detail, seasonal variations (snow, fog, and haze can obscure landscapes), time of day, and presence or absence of screening features such as landforms, vegetation, and/or built structures. Even though a landscape may have highly scenic qualities, it may be remote, receiving relatively few visitors, and therefore have a low degree of viewer exposure. Conversely, a subject landscape or project may be situated in relatively close proximity to a major road or highway utilized by a substantial number of

motorists and yet still result in relatively low viewer exposure if the rate of travel speed on the roadway is high and viewing times are brief, or if the landscape is partially screened by vegetation or other features. Frequently, it is the subject area's proximity to viewers or distance zone that is of particular importance in determining viewer exposure. Landscapes are generally subdivided into three or four distance zones based on relative visibility from travel routes or observation points. Distance zones typically include foreground, middle-ground, and background. The actual number of zones and distance assigned to each zone depends on the existing terrain characteristics and public policy and is often determined on a project-by-project basis.

Overall Visual Sensitivity is a concluding assessment related to an existing landscape's susceptibility to an adverse visual outcome. A landscape with a high degree of visual sensitivity is able to accommodate a lower degree of adverse visual change without resulting in a significant visual impact. A landscape with a low degree of visual sensitivity is able to accommodate a higher degree of adverse visual change without resulting in a significant visual impact. Overall visual sensitivity is derived from a comparison of existing visual quality, viewer concern, and viewer exposure. Visual Sensitivity is classified as low, moderate, or high.

Analysis of these factors was conducted from Key Observation Points (KOPs) that are representative of the visual conditions around the Project Site. KOPs are locations from which the visual analysis is focused and are generally selected to be representative of the most critical or common locations from which the Project will be seen. KOPs are selected in an effort to evaluate existing landscapes and potential impacts on visual resources with various levels of sensitivity, in different landscape types and terrain, and from various vantage points. The area for the visual resource analysis includes the area surrounding the Project Site from which a significant number of people will be able to view the CGS Project.

The types and degree of visual changes that would be caused by the Project are shown in computer-generated photographic simulations on photographs taken from the KOPs.

EXISTING CONDITIONS

The Project Site is located in the Basin and Range Lowlands Province. The landscape of the general area is characterized by a broad alluvial basin created by the Gila River, and is bounded by mountainous terrain. The alluvial plain consists of a broad panorama of sloping, flat terrain that is dominated by agricultural activities.

The Project Site will be located on private land in the southeastern portion of the City of Coolidge in Pinal County, Arizona. The landscape setting in the general area is a mixture of rural and industrial, consisting primarily of agriculture with interspersed residences, existing industrial uses, and the community of Randolph which is comprised of medium residential and mixed use. Randolph is an unincorporated community that is located generally between SR 87 and the UPRR between Randolph and Kleck Roads. Industrial land (the Valero Refinery) is directly north and northwest of the Project Site and the UPRR directly to the west. The relatively small amount of undeveloped land in the area consists of sparsely vegetated, flat terrain, which is

characteristic of the desert shrub found in areas of Pinal County. The Project Site is located on and is surrounded on the east and south by active agricultural land.

The affected viewshed is primarily from the residents within close proximity to the Project Site within the City of Coolidge, the unincorporated community of Randolph, and travelers on SR 87. The Project Site is approximately 5.5 miles southeast of the Casa Grande National Monument and approximately 4 miles south of downtown Coolidge and the Project could not be seen from either of these locations.

The affected viewshed has been highly modified from its natural state by agricultural and other industrial and human activities, and is characterized by a rural/agricultural landscape setting. Existing visual modification to the natural setting of the affected viewshed area consists of industrial, agriculture, roads, railroad, utilities, and rural residential uses. The quality of the landscape is low because the area has been highly modified from its natural state – the rural/agricultural setting is common throughout the viewshed – and because of the lack of variety and contrast in landform, vegetation, and natural features.

There are no scenic/visual resource management requirements by the City of Coolidge, Pinal County, or any public agency in the affected viewshed, and there are no special areas that require protection of scenic resources at or near the Project Site. The public expressed concern regarding Project visibility resulting from night time lighting and the need to restrict illumination and the potential to block mountain views. Viewer sensitivity is considered moderate based on public comment.

POTENTIAL EFFECTS ON SCENIC QUALITY

Effects to visual resources from the development of the CGS Project will result from changes to the physical setting and visual quality of the landscape, and by changed views from sensitive viewpoints, including travel routes, residences, and popular use areas. The proposed CGS Project and associated interconnection transmission line will introduce new elements into the landscape, and will alter the existing form, line, color, and texture which characterize the existing landscape.

The most visible components of the Project from all viewpoints would be the stacks and the interconnection transmission line structures – the tallest structures. The CGS Project will have twelve stacks that would be approximately 85 feet tall and 10.5 feet in diameter, creating a linear, vertical form that would contrast with the surrounding flat, horizontal landscape and be obvious to viewers on the local county roads in the vicinity of the site and visible to nearby residences. The interconnection transmission line would include four structures up to 130 feet tall between the power island and the switchyard. These structures would also be obvious to viewers in the area.

The Project would be artificially lighted at night as necessary to enhance the safety of Project personnel. Night-lighting would be designed to meet the night sky requirements of the City of Coolidge. The light, glare or backscatter illumination visible to sensitive viewpoints would be minimized by the use of this required directional shielding, specification of non-glare fixtures, and placement of lights to direct illumination into only those areas where it is needed.

The Federal Aviation Administration (FAA) requires that any permanent object that exceeds an overall height of 200 feet above ground level or exceeds any obstruction standard contained in FAR Part 77 (Special Federal Aviation Regulation No. 98 available at: http://edocket.access.gpo.gov/cfr_2007/janqtr/pdf/14cfr77.1.pdf) be lighted with a flashing lighting system. Because the exhaust stacks are only 85 feet in height and the interconnection transmission line is approximately 130 feet tall and more than three nautical miles from the nearest airport (as per FAR Part 77), blinking safety lights would not need to be installed.

Impacts to visual resources from the construction and operation of the very short gas interconnection will be negligible because they will be contained within or very close to the Project Site and will not be visible after construction.

SENSITIVE VIEWPOINTS

The locations of the KOPs that were used to illustrate potentially sensitive viewpoints in the vicinity of the CGS Project are depicted on **Figure E-1.** These KOPs include representations of views from the closest residences, from the community of Randolph, and views from primary transportation corridors in the area.

Figures E-2 through E-7 show the existing conditions and photographic simulations of the CGS Project for each of the six KOPs. The visual impact depicted on each simulation is discussed below.

KOP A (**Figure E-2**) shows the view looking south-southwest from the corner of East Randolph Road and North Vail Road. This location provides an unobstructed view of the proposed Project with only farmland in between. Existing land use in this view is dominated by agriculture. As depicted on the simulation, the proposed CGS Project would be very visible from this location because of the flat terrain and the lack of any intervening vegetation or structures that block the view. Although there are other existing industrial uses in the immediate area, from this view the only visible landscape modifications are from the existing agriculture. VQ is classified as distinctive. VE would be moderate while the overall Viewer Sensitivity would be high.

KOP B (**Figure E-3**) shows the view looking northeast from the intersection of North SR 87 and east Kleck Road about ½ mile south-southeast of the Project Site. This would be similar to what a northbound traveler on SR 87 would see from this location. Existing land use is mixed use in the foreground, vacant and low density residential in the middle ground, and medium density residential homes in the community of Randolph are in the background. As depicted on the simulation, the CGS Project and transmission interconnection structures are visible in the background. Both the stacks and interconnection structures add a vertical contrast to the existing viewshed. Existing modifications to the landscape minimize the effects of the Project. VQ is classified as common due to the existing mixed uses. VE is low while the overall Viewer Sensitivity would be moderate.

KOP C (**Figure E-4**) is a view from a location looking northeast from East Malcolm X Street and Kennedy Street within the community of Randolph. Existing land use surrounding this location is dominated by vacant land and residential in the immediate foreground and

midground. The UPRR can be seen between the community and the Project Site and overhead utility lines are visible. As depicted on the simulation, the CGS Project and transmission interconnection structures would be visible in the background from this location and add a vertical contrast. From this view, only the tops of the CGS stacks are visible. The transmission interconnection structures are more prominent in the background. Visual effects are lessened by the mixed uses in Randolph and the UPRR between the community and the Project. VQ is classified as common, VE is moderate and the overall Viewer Sensitivity would be high primarily because of the transmission structures.

KOP D (**Figure E-5**) shows the view looking east at the corner of SR 87 and Bateman Road at the north end of the community of Randolph about ¼ mile from the Project Site. Existing land use is mixed in the foreground and midground with the highway and streets visible along with some buildings and utilities. Nothing is visible in the far background because of the presence of the UPRR between the community and the Project Site. As depicted on the simulation, the CGS Project would be visible in the background and the interconnection transmission structures can be seen in the midground, both adding vertical lines to the existing view. Half of the stacks are visible in a line in the middle of this view, while the other half are screened behind the small building in the left midground. Due to the existing modifications to the landscape in this area, the visual effects would be minimized. VQ is classified as common due to the existing mixed uses. VE is low while the overall Viewer Sensitivity would be moderate.

KOP E (**Figure E-6**) shows a view from one of the nearest residences just east of SR 87 on Randolph Road looking south-southeast to the Project Site. Existing land use in this view is dominated by industrial land uses with the existing Valero Refinery and other industrial activities visible in the midground. Mountains are visible in the far background although obscured by haze. As shown on the simulation, the CGS Project would be a visible addition to the landscape but would be partially screened by the existing refinery and other existing industrial features. Due to existing modifications and industrial nature of the existing landscape from this view, the visual effects from the Project would be minor. VQ is classified as common due to the existing industrial uses. VE and Viewer Sensitivity would be low.

KOP F (**Figure E-7**) is a view from SR 87 looking south-southeast about ½ mile from the Project Site. This location is representative of what a traveler southbound on SR 87 would see when the Project would first be visible from behind the existing refinery. Existing land use in this view is dominated by agriculture in the foreground and industrial (existing Valero Refinery) visible in the midground. The existing home that is the location of KOP E is also visible in the midground. Mountains are visible in the far background although obscured by haze. As shown on the visual simulation, the CGS Project would be a visible addition to the landscape from this location but it would be partially screened by the refinery minimizing its visual effects. VQ is classified as common due to the existing industrial uses. VE would be low from this location and Viewer Sensitivity would be moderate.

CULTURAL RESOURCES

The CGS Project Site is located on 100 acres of land that have been actively farmed for several decades. As such, this location has undergone long-term and continuing disturbance associated with agricultural activities. Based on current inventories, archaeological and historical overviews, and previous surveys in the area, the proposed Project Site is expected to contain few, if any, prehistoric or historic cultural resources.

A Class I cultural resources survey was conducted where site and project files were checked at the Arizona State Museum (ASM) and the data received were examined to determine if previously recorded cultural resources were within the Project Site and a one-mile buffer. The ASM records check revealed that eleven cultural resource surveys have been conducted within the buffer area, and that one of these surveys included portions of the Project Site (the survey for the All-American Pipeline that crosses the Site). A copy of the Class I Report is Included in **Appendix E-1**.

No cultural resource sites have been previously recorded within the Project Site. However, seven sites have been recorded within the one-mile radius. One historic site (Wellton-Phoenix-Mesa-Eloy Spur of the Southern Pacific Railroad – presently the UPRR) is considered eligible for the National Register of Historic Places. This is the existing railroad that is located just west of the Project Site.

A copy of the Class I Report was provided to the SHPO and six area tribes. These letters of submittal are included in **Appendix E-2**. Response letters were received from SHPO, the Tohona O'Odham Nation, and the Hopi Tribes and are also included in **Appendix E-2**.

In addition to the cultural resource surveys that have been conducted, the Applicant also contacted the Four Southern Tribes and provided and overview of the Project at their meeting on July 25, 2008. These tribes have an interest in this part of Arizona. No issues or concerns were raised.

CONCLUSIONS

The CGS Project is not expected to have significant effects on any existing scenic areas, historic sites and structures or archaeological sites. There are no scenic areas in the vicinity of the Project Site. Construction of the CGS Project would introduce new features into the local landscape but the Project would be visually consistent with the other existing industrial uses in the immediate vicinity (refinery, construction yard, compressor station, railroad) and the planned industrial uses (plan and zoning for an industrial park).

There are no known historic sites or structures or archaeological sites that would be affected by the proposed CGS Project. The past agricultural activities on the Project Site limit the potential for archaeological resources to be present. The nearby potential historic site (the railroad immediately west of the Project Site) would not be impacted by the Project.

REFERENCES

References for the cultural resources survey are included in the Class I Cultural Resources Report.

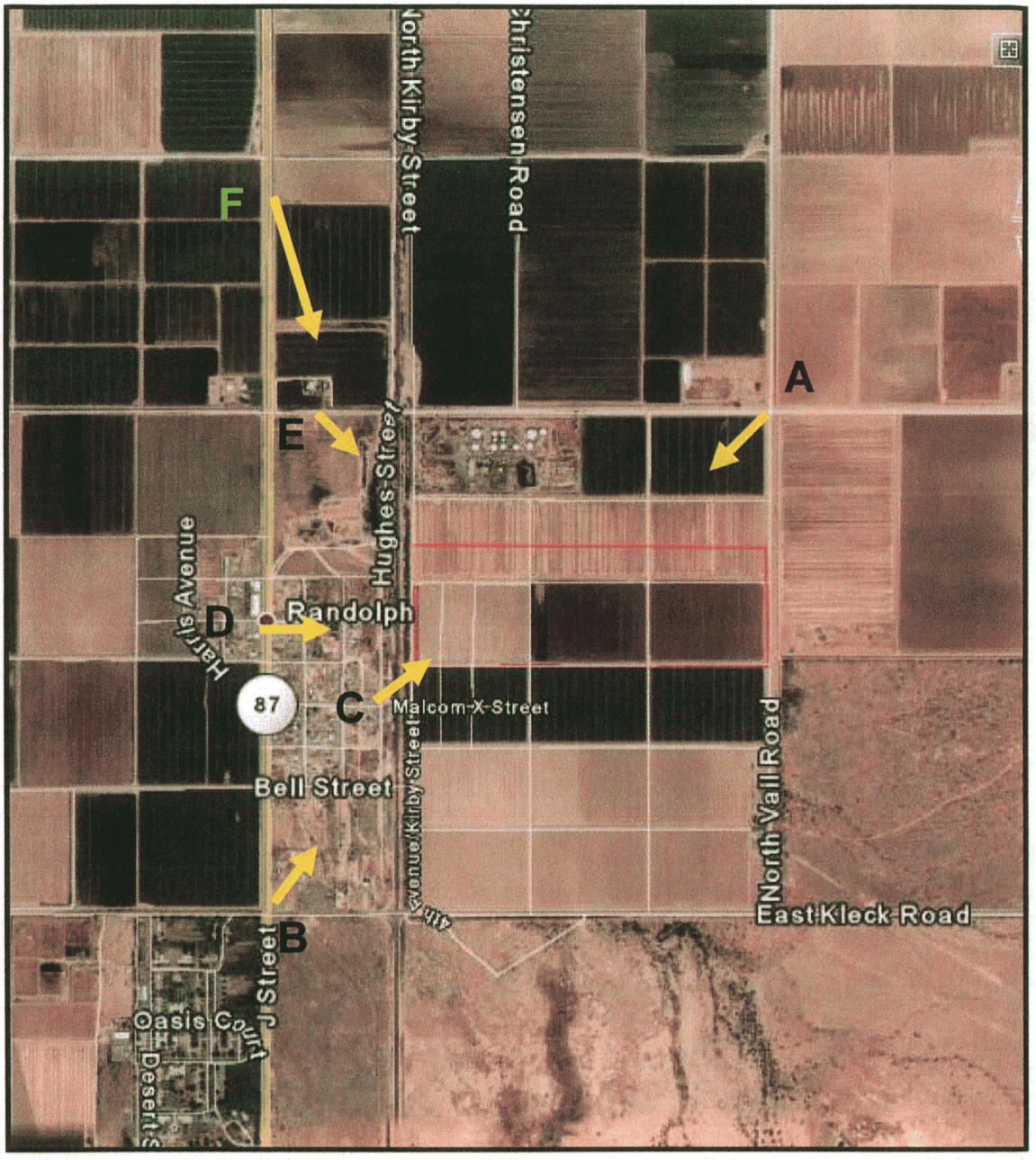


Figure E-1

Key Observation Point Locations
Coolidge Generating Station

EXISTING VIEW

PROPOSED VIEW

A

TransCanada
In business to deliver

Coolidge Generating Station Photosimulation

EAST RANDOLF RD. & NORTH VAIL RD. LOOKING SOUTHWEST

6/11/08

Figure E-2

EXISTING VIEW

PROPOSED VIEW

TransCanada
In business to deliver

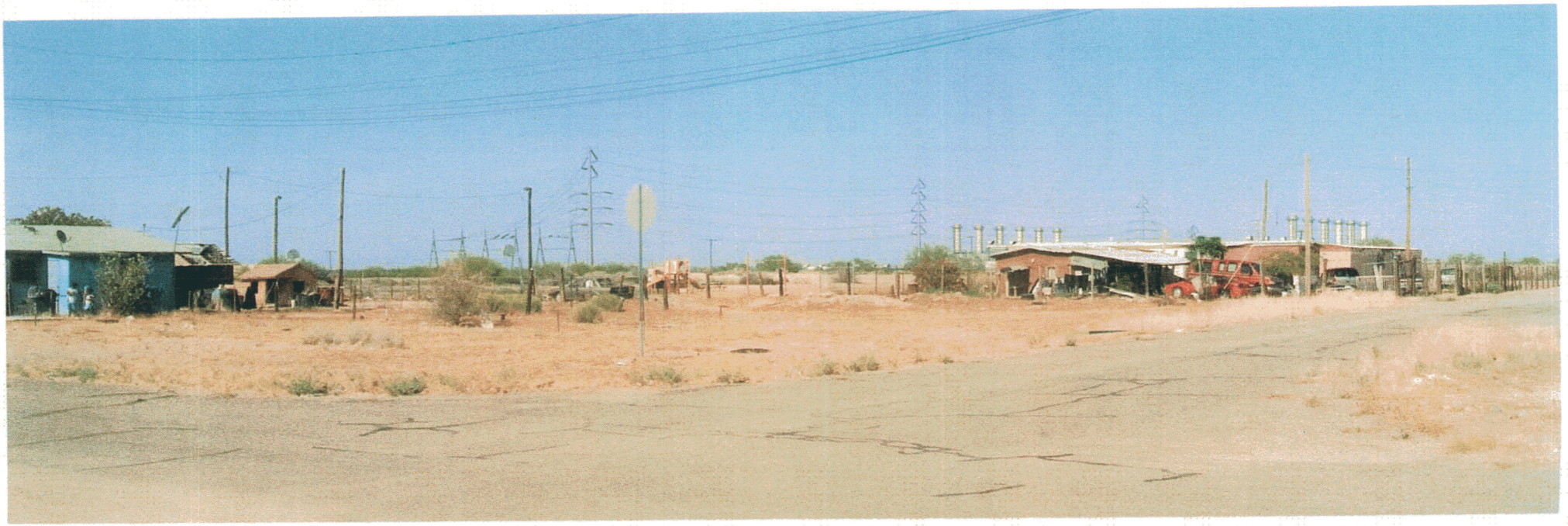
Coolidge Generating Station Photosimulation

NORTH HWY. 87 & EAST KLECK RD. LOOKING NORTHEAST

6/11/08

Figure E-3

EXISTING VIEW



PROPOSED VIEW

TransCanada
In business to deliver

Coolidge Generating Station Photosimulation

EAST MALCOLM X ST. & KENNEDY ST. LOOKING NORTHEAST

6/11/08

Figure E-4

EXISTING VIEW

PROPOSED VIEW

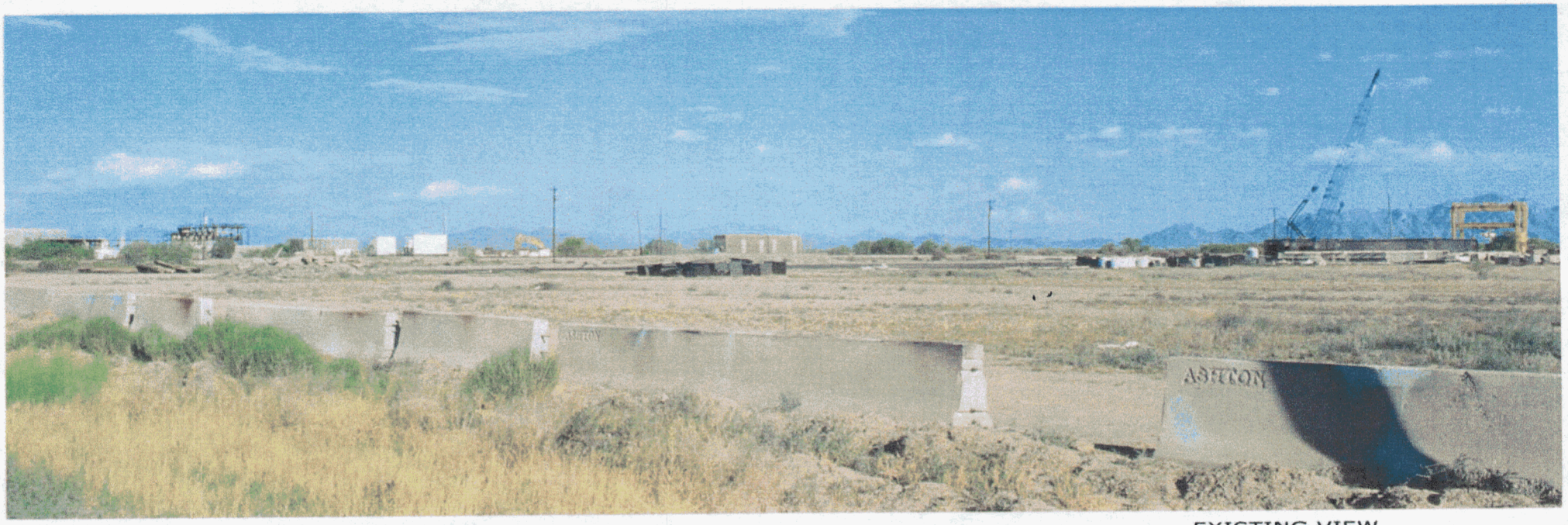
TransCanada
In business to deliver

Coolidge Generating Station Photosimulation

NORTH HWY. 87. & BATEMAN ST. LOOKING EAST

6/11/08

Figure E-5



EXISTING VIEW

PROPOSED VIEW

TransCanada
In business to deliver

Coolidge Generating Station Photosimulation

NORTH HWY. 87 & EAST RANDOLF RD. LOOKING SOUTHEAST

6/11/98

Figure E-6

EXISTING VIEW

TransCanada
In business to deliver

Coolidge Generating Station Photosimulation

SOUTHBOUND NORTH HWY. 87 NORTH OF EAST RANDOLF RD.

PROPOSED VIEW

6/11/08

Figure E-7

APPENDIX E-1

Class I
Cultural Resources Report

TRANSCANADA

Class I Cultural Resource Report for the Proposed Coolidge Generating Station Project, Pinal County, Arizona

Restrict distribution – Sensitive & Confidential Data
To prevent vandalism, restrict information in this report concerning cultural resource locations.

July 10, 2008

Class I Cultural Resource Report for the Proposed Coolidge Generating Station Project, Pinal County, Arizona

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TRANSCANADA

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July 10, 2008

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SHPO Standardized Report Abstract

AGENCY: Arizona State Land Department

REPORT TITLE: Class I Cultural Resource Report for the Proposed Coolidge Generating Station Project, Pinal County, Arizona

DATE OF REPORT: July 10, 2008

PROJECT DESCRIPTION: Class I report of previously recorded cultural resources within the Proposed Coolidge Generating Station Project, Pinal County, Arizona. The proposed Project will establish a new natural gas fired, simple-cycle power plant that will supply power during periods of peak electricity demand. The Project consists of twelve (12) General Electric (GE) LM6000 PC SPRINT NxGen combustion turbine generators (CTGs) designed to produce up to 575 MW of net electrical output, and encompasses approximately 100 acres.

LOCATION: Township 6 South, Range 8 East, Sections 2, 3, 4, 9, 10, 11, 14, 15, 16 Coolidge and Valley Farms, Arizona USGS 7.5' topographic quadrangles, Pinal County, Arizona.

NUMER OF ACRES REVIEWED: approximately 3840

METHODOLOGY: The previously recorded cultural resources and investigations in the Project area, including a one mile-wide buffer, were examined using data received from the Arizona State Museum site file check to determine if known cultural resources would be potentially impacted by the proposed Project. Information from Bureau of Land Management General Land Office, National Register of Historic Places, Arizona Historic Site List, and historic trails listings from National Parks Service, BLM, Arizona State Parks, and Pinal County Trails Plan were also reviewed.

NUMBER OF SITES: 7 (outside project area)

ELIGIBLE: 1 (outside project area)

SITES OF UNKNOWN ELIGIBILITY: 4 (outside project area)

NOT ELIGIBILE SITES: 2 (outside project area)

COMMENTS: The literature search and records review of the Project area conducted by kp environmental identified no sites previously recorded within the project area. One eligible site (the Wellton-Phoenix-Eloy Spur of the Southern Pacific Railroad); however, is located adjacent to but outside of the project area.

1.0 Introduction

TransCanada requested that kp environmental complete a Class I cultural resource literature search and records review for the Proposed Coolidge Generating Station Project. The Coolidge Generating Station (CGS Project) is a natural gas fired, simple-cycle power plant that will supply power during periods of peak electricity demand. The Project consists of twelve (12) General Electric (GE) LM6000 PC SPRINT NxGen combustion turbine generators (CTGs) designed to produce up to 575 MW of net electrical output. The Project Site is approximately 100 acres that was previously used for agriculture and has recently been zoned for industrial uses. The gas and electric interconnections associated with the Project will be made on the Project Site so no new laterals or other off-site infrastructure development are required.

2.0 Project Area

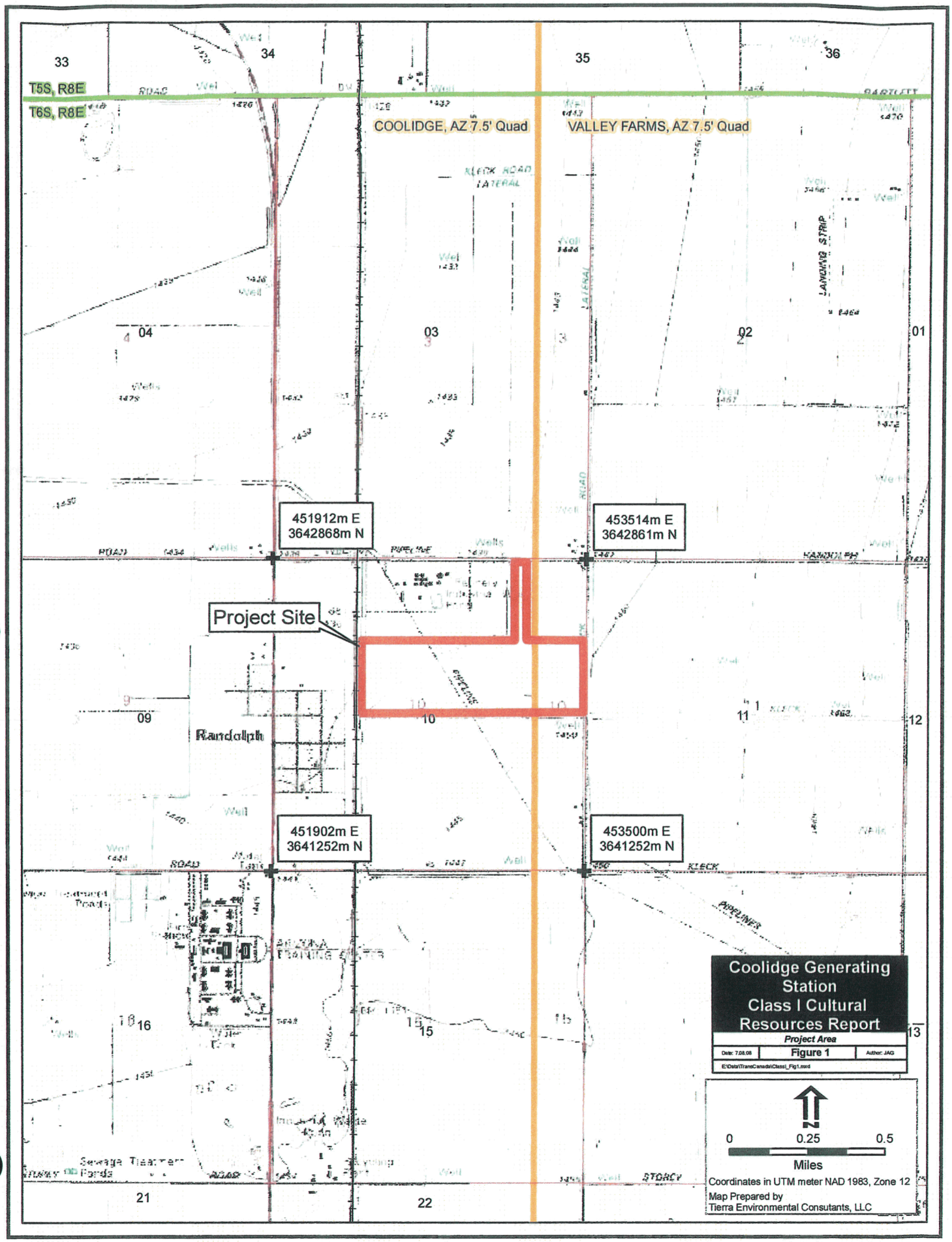
The Project area is located in Sections 2, 3, 4, 9, 10, 11, 14, 15, 16 of Township 6 South, Range 8 East (Gila and Salt River Baseline and Meridian) of the Coolidge and Valley Farms, Arizona USGS 7.5' topographic quadrangles, in Pinal County, Arizona. The Project area is in the City of Coolidge, Arizona east of and adjacent to the Southern Pacific Railroad right-of-way (Figure 1).

3.0 Methods

The previously recorded cultural resources and investigations in the Project area, including a one mile-wide buffer, were examined using data received from the Arizona State Museum (ASM) site file check to determine if known cultural resources would be potentially impacted by the proposed Project. Information from Bureau of Land Management (BLM) General Land Office (GLO), National Register of Historic Places (NRHP), Arizona Historic Site List, and historic trails listings from National Parks Service (NPS), BLM, Arizona State Parks, and Pinal County Trails Plan were also reviewed.

4.0 Cultural-Historical Setting

The following description of the cultural history of the Project area is summarized in large part from the following sources: Bilsbarrow and Palus (1997); City of Casa Grande (2004); Clemensen (1992); Craig and Hackbarth (1997); Deaver and Altschul (1994); Gilpin and Phillips (1998); Haynes (1986); Janus (1989); Marmaduke (1993); Myrick (1980); Russell (1975); Spier (1970); Whittlesey et al. (1994); Wright (2002); Wright et al. (2002). The following discussion is divided into prehistoric and historic periods. The prehistoric periods include the Paleoindian, Archaic, and Hohokam, and the historic periods include the Protohistoric and Historic.


T5S, R8E
T6S, R8E
COOLIDGE, AZ 7.5' Quad
VALLEY FARMS, AZ 7.5' Quad
451912m E
3642868m N
453514m E
3642861m N
Project Site
451902m E
3641252m N
453500m E
3641252m N
Randolph
Coolidge Generating Station
Class I Cultural Resources Report
Project Area
Figure 1
0
0.25
0.5
Miles
Coordinates in UTM meter NAD 1983, Zone 12
Map Prepared by
Tierra Environmental Consultants, LLC

Prehistoric

Paleoindian

The earliest known record of human habitation in Arizona's desert regions dates to approximately 12,000 years (Haury 1950). These Paleoindian hunters-gatherers were highly mobile, and surface cultural remains associated with their habitation and subsistence sites are rare, as Paleoindian cultural materials are often buried deep beneath Holocene sedimentary deposits.

The Paleoindian period, approximately 10,000 to 7500 B.C., is characterized by small, nomadic bands that followed megafauna and gathered wild plants. Sites from this period have been documented in southern Arizona (Cordell 1984; Haury 1950; Haynes 1986; Huckell 1984). However, sediments from this period are generally not exposed in the Casa Grande area. No Paleoindian sites have be reported near the Project area.

The subsistence practices of early hunter-gatherers changed approximately 10,000 to 8000 B.C. with the extinction of large game, as well as with the environmental changes associated with the Pleistocene/Holocene climatic transition (Guthrie 2006; Martin 1967). The overall lifestyle of the early hunter-gatherers continued into the Archaic period (ca. 8000 to 200 B.C.), but increased aridity during the early- to mid-Holocene brought about a change in the occurrence of plant species in the Southwest (Van Devender et al. 1987). Many of these drought-tolerant plants, such as mesquite, paloverde, and screwbean pods; saguaro and other cactus fruits; and agave, were exploited by prehistoric peoples. These plants provided a protein-rich food source that supplemented the Archaic diet of small game.

Archaic

The Early Archaic period, approximately 7500 to 5000 B.C., is characterized by a hunting and gathering lifestyle, similar to the preceding Paleoindian period. A major difference however was a climatic drying and warming trend leading to desert conditions, and the disappearance of Pleistocene big game, through natural or human agents. Hunting focused on modern game animals and gathering focused on seasonally available resources, with Archaic groups maintaining a significant degree of residential mobility. As the Archaic period progressed (Middle Archaic, ca. 5000 to 2000 B.C.), some populations began to experiment with encouraged plants. Various wild plant resources were encouraged through selective planting or reseeding, weeding of competitor species, and supplemental watering. Seasonal rounds were generally maintained, with encouraged plant stands being revisited during harvest time. Tools identified during the Archaic period such as metates, manos, and mortars demonstrate a significant focus on processing wild plant foods. Small seasonally occupied villages were present, but larger more permanent villages did not develop until the Late Archaic period.

The Late Archaic, approximately 2000 B.C. to A.D. 1, is a period of increasing sedentism although group mobility was still maintained to varying degrees. Encouraged plants began to give way to small-scale horticulture, especially with the introduction of domestic cultigens. Maintaining small fields and crops meant increased sedentism, and Late Archaic populations along floodplains and alluvial fans began to assemble into permanent villages. Sites of this type are known from the Tucson area, the Project area, and the Phoenix area. Experimentation with domestic cultigens from Mexico appeared first in the Tucson area (corn circa. 1700 to 1200 B.C.), which is located closer to the source area for these cultigens. Late Archaic villages are deeply buried under alluvium because of their location on floodplains and alluvial fans.

Hohokam

A summary of Hohokam chronology is presented in Table 1. A brief discussion of each period in its chronological sequence is presented below. The Pioneer, Colonial, and Sedentary periods are collectively referred to as Preclassic.

Pioneer Period

The first period of Hohokam development involves a transition in local populations, as opposed to the influx of peoples from Mesoamerica as had been previously believed. During the transition from the Late Archaic to the Pioneer period, populations slowly began to shift their subsistence strategy to focus on a more sedentary, agriculture-dependent way of life. Hunting and gathering available wild foods remained important, but the Hohokam developed a complex water control system that made irrigation agriculture possible. Ceramics first appeared during this period as plainware utilitarian items, and expanded to include many types of decorated wares including: redwares, red-on-gray, and red-on-buff. The Snaketown phase, at the end of the Pioneer period, saw several changes which indicated a growing population, increased trade contacts, and growing complexity: more diverse ceramic vessel forms and designs; expansion of irrigation systems; the presence of ceramic figurines, slate palettes, carved stone bowls, and other ritual and ceremonial items; presence of shell from the Gulf of California; and trade goods from Mesoamerica and the Mogollon rim area.

Colonial Period

During this period, the number, size, type, and complexity of Hohokam sites in the area increased. Pithouses within villages tended to cluster in courtyard groups, probably occupied by extended families, which opened onto communal plaza areas. Numerous large villages contained ballcourts, which are posited to be related to the Mesoamerican game. These ballcourts probably served as a focus for community integration, where peoples from smaller surrounding hamlets would come to trade, renew kinship ties, and take part in various community activities. Smaller villages and subsistence-related sites were increasingly established during this period. Exotic trade items such as macaws and copper bells from Mesoamerica often overshadow

Table 1
Hohokam Chronology (Dean 1991).

Period	Phase	Approximate Time Span (A.D. years)
Pioneer	Red Mountain	0-300
	Vahki	300-500
	Estrella	500s
	Sweetwater	600s
	Snaketown	700s
Colonial	Gila Butte	775 to 850/900
	Santa Cruz	850-900 to 950/1000
Sedentary	Sacaton	950/975 to 1100/1150
		1100 to 1200
Classic	Soho	1150/1200 to 1300
	Civano	1300 to 1450/1500

continuing trade with Mogollon Rim and Colorado Plateau populations. By the end of the Colonial period, Hohokam sites were established throughout central and southern Arizona in a variety of environmental settings.

Sedentary Period

Throughout this period, patterns established during the preceding Colonial period were intensified. Economic complexity increased with certain villages specializing in particular crafts. In addition, a possible hierarchical distinction between sites, especially those along shared canal systems, is indicated. Platform mounds began to be constructed during this period, and appear to have served as a type of public architecture possibly associated with hierarchical divisions within villages, with ceremonial activities, or both. As the ballcourt slowly began to go out of use, the focus of community activities began to switch to the platform mound. There are few changes to Hohokam material culture during this time with the exception of the beginnings of platform mounds, adobe/jacal surface structures, and redware.

Classic Period

Most familiar Hohokam traits disappeared or underwent radical changes during this period. Many large villages were abandoned, although, several grew as outlying

populations and groups in smaller settlements aggregated with existing communities (or formed new communities) along major watercourses. Pithouses disappeared almost completely and were replaced by surface structures of adobe and masonry, which were often organized into roomblocks, then compounds with the addition of enclosing walls. Platform mounds effectively replaced ballcourts as the focus of community activities. Red-on-buff pottery was replaced by red and polychrome wares. Treatment of the dead changed: inhumation became common while cremation declined. Trade patterns shifted from a Mesoamerican focus to a more northern and eastern focus. As the trade patterns shifted to the north and east, architectural and material culture traits of the Classic period Hohokam were being derived from contact with populations in that region of eastern Arizona and western New Mexico—the Salado culture. The reorganization of Classic period Hohokam architectural and material culture styles into styles that more closely resembled the Salado indicated increased regional interaction between the two groups. In the past it was believed to represent an invasion by Salado peoples, but this is no longer thought to be the case.

There may also be a late/post-Classic Hohokam occupation known as the Polvoron phase. The existence of the phase is still a matter of debate, as well as how it fits into the generally accepted Hohokam chronology. It may extend Hohokam culture into the 16th century, or it may merely represent the end of the Hohokam sequence around A.D. 1450 to 1500. This phase is defined in the archaeological record by the reoccupation of late Classic structures, a return to pithouses, and the end of inhumation burial.

Protohistoric

The Protohistoric period dates from approximately 1450/1500, the end of the Hohokam sequence, to the establishment of the Tubac presidio by the Spanish in 1753. The Protohistoric period saw reoccupation of several prehistoric sites by the Maricopa, Kohatk, or Pima, as well as the development of new settlements. The Jesuit missionary, Father Eusebio Francisco Kino was the first Spanish explorer to provide written accounts of the Gila River area. He was assigned to missionize in the Pimeria Alta (Land of Upper Pimas), a region that today includes northern Mexico and southern Arizona. During Kino's travels, he established many visitas and a few missions from the modern international border to the Gila River region. In addition, his explorations served as an important first step toward an overland route between Sonora, the Pima villages of the Gila River, and settlements along the California coast. Kino visited villages along the Gila River at least six times between 1691 and 1702. During his journeys, Kino mapped and described Pima villages and his interactions with various groups. Kino does not describe irrigation agriculture, so it is suspected that local populations subsisted by floodwater agriculture, hunting, and gathering. By 1744 however, the Pima were growing wheat with irrigation agriculture, and by 1775 irrigated wheat was a major crop in most Pima villages. Throughout the 1700s, the Spanish continued to expand the mission system in southern Arizona and continued to introduce non-native crops, animals, trade goods, religion, and culture.

Historic

The Historic period in Arizona dates roughly from 1753 to 1954. The 1753 date was chosen as it represents the founding of the first permanent Spanish settlement in Arizona. Dates of Protohistoric and Historic periods can differ across Arizona, usually based on dates of contact with Europeans and dates of permanent settlement by Europeans. For the purposes of this study, the aforementioned dates will be used.

According to the National Parks Service, the year 1775 marks the year Juan Bautista de Anza (Anza) successfully opened an overland route of emigration and supply from Sonora to the missions and settlements of Alta California. The 198 soldiers and families that Anza escorted brought with them on their 1,200 mile trek their language, traditions, and diverse New World Hispanic culture. The backgrounds of all soldiers and settlers were carefully recorded as español, mulato, or mestizo. Almost all the expedition members were born on this continent and had mixed European, African or Indian parentage. These influences changed the lives of the indigenous peoples and shaped the development of Arizona and California. The route Anza opened supplied the settlements of Alta California long enough for them to become established. In 1781, the Yumas revolted against Spanish rule and closed the route during the rest of the colonial period. In later years, Anza's trail served the military, settlers, cattlemen, forty-niners and other desert travelers.

The Mexican War of Independence did not have a direct affect on the area, as most of the battles took place far south of southern Arizona. However, the Spanish did have to withdraw their troops to central Mexico, which left a vacuum that the Apache exploited. During the 1820s, Apache raiders were estimated to have killed approximately 5,000 people in Sonora and southern Arizona. Mexico was victorious in the war, and declared independence in 1821. The new Mexican government abolished the mission system. In Arizona, settlements and occupation contracted to Tucson and Tubac. In response to increased Apache raiding, Piman settlement also contracted south and west. During the Mexican (1821 to 1853) and subsequent American occupations, Pima wheat production increased dramatically, as a result the Pima sold excess crop to settlers and travelers using the Gila Trail. Arizona north of the Gila River became part of the United States in 1848, although the American phase did not officially begin until 1853, when this area was sold to the United States by Mexico as part of the Gadsden Purchase. American fur trappers and traders began working the Gila River in 1825 (the American phase dates from 1853 to present). During the Mexican-American War, American military forces passed through southern Arizona on their way to California, commonly using routes centered on the Santa Cruz and Gila rivers. These routes were well blazed by the Army, and increased use occurred after the end of the war. One specific route, the Gila Trail, was by this time a widely used mail, freight, and emigrant route. At the close of the American Civil War, settlement in the Gila River valley increased dramatically. This was due in part to the American Army's attempts to pacify the Apache. Arizona was first included as part of the Territory of New Mexico, and then the Territory of Arizona, and officially received American statehood in 1912.

After the Civil War, Americans began to settle permanently along the Gila River because of the availability of good agricultural lands. Agricultural activities by American settlers along the Middle Gila and further upstream caused an insufficient supply of water for Pima farmers. By 1872, the water reaching Pima crops was so limited that some Pimas relocated to the Salt River valley. However, this is not the only reason the Pima moved. Commercial pursuits in the growing Phoenix-Mesa-Lehi area, land and water availability, and the Anglo desire for a buffer between themselves and the raiding activities of the Apache also served as agents to pull Pimas from the Gila River valley to the Salt River valley. Settlers came not only from the east to settle within Arizona's agricultural lands, and rich mining districts, but also from Utah. Mormon settlers established towns in northern and eastern Arizona, and into northern Mexico. Some of the largest areas of Mormon settlement are the modern Mesa and Safford areas, although significant settlement also took place along the Little Colorado and San Pedro Rivers. From 1880 to 1900, the population of southern Arizona doubled, and by the turn of the century, Arizona had a population of 100,000. Many communities were established. The major town centers within the AOS are discussed below. Arizona went on to become a major producer of cotton and copper, although these industries have had their ups and downs. Agriculture tends to remain as the major economic focus within the AOS. The 20th century saw the transformation of significant portions of Arizona into military installations. Prisoner of war camps where established in proximity to the communities of Florence and Queen Creek and along the Gila River between 1942 and 1945 (Iritani 1994).

Southern Pacific Railroad

Mainline

After the close of the Civil War, a southern railroad route along the now defunct Butterfield Stage Route was being explored as an option to move goods and people across the country in a timely fashion. The Southern Pacific Railroad Company (SPRR) was to lay track from San Francisco to Yuma, while the Texas and Pacific Railroad Company (TPRR) was to lay track westward across Texas, New Mexico, and Arizona to meet with the SPRR at Yuma. As the SPRR reached the Arizona border, the TPRR was stalled in the vicinity of Fort Worth, Texas, nowhere near the interconnection point at Yuma. Having no authority to continue into Arizona, the SPRR courted the U.S. Congress, but failed to receive approval. The SPRR then turned to the territorial legislatures of Arizona and New Mexico, and received approval to continue laying track eastward.

The first train arrived in Maricopa Station, modern Heaton, on April 29, 1879. Maricopa Station quickly became a boomtown, as it was the closest point to retain alternative transportation to reach Phoenix. Maricopa Station soon had a large office building, a warehouse, and a hotel. As with most railroad boomtowns, the town soon succumbed to the ups-and-downs of railroad economy, and a new junction for the transfer of goods to Phoenix was located eastward. The SPRR continued to push eastward and reached

Casa Grande on May 19, 1879. Casa Grande served as the end of the line for several months, and came to be known as Terminus. In January 1880, construction continued eastward. As 1881 drew to a close, the SPRR track through Arizona connected to the nationwide system of rail lines. The economy and settlement of southern Arizona quickly changed as it was now reliably connected to the rest of the country. The SPRR was taken over by the UPRR in 1997 (Union Pacific Railroad 2006).

Wellton-Phoenix-Mesa-Eloy

This segment of the transcontinental Sunset Route of the SPRR was constructed in 1926. It spurs off of the mainline in Wellton and travels through Phoenix, Tempe, Mesa, Gilbert, and Coolidge before rejoining the mainline at Eloy. This spur was constructed using over a thousand men and 600 mules to provide mainline access to Phoenix, which had developed into Arizona's most important city by the mid-1920s. The single-track rail line is still in use today, but it has been updated with modern track, computers, and electronic signaling (Janus 1989).

5.0 Previous Research

Site and project files were checked at the ASM and the data received were examined to determine if previously recorded cultural were within the Project area and buffer. No sites have been previously recorded within the Project area; however, seven sites have been recorded within a one-mile radius of the Project area. One historic site (Wellton-Phoenix-Mesa-Eloy Spur of the Southern Pacific Railroad) considered eligible, was present outside of but adjacent to (130' west) the Project area (Figures 2).

The ASM records check revealed that eleven projects have been conducted within the one mile-wide buffer of the Project area, with one of the projects occurring within or crossing the current Project area (Table 2).

The All American ROW Pipeline Project (1985-226.ASM) was located within the one mile-wide buffer, and crosses the middle of the Project area (Figure 2). None of the 32 sites recorded for the Pipeline project was located within the current Project area.

The CAP Hohokam Irrigation District Project (1985-238.ASM) was located within the one mile-wide buffer, but not within the Project area (Figure 2). Fifteen cultural sites were recorded for the Hohokam project in 1985, but none within the Project area.

The Arizona Training Program Coolidge Project (1996-240.ASM) was located within the one mile-wide buffer, but not within the Project area (Figure 2). One cultural site was recorded for the project in 1996, but none within the Project area.

The SFPP Arizona Reconditioning Project (1997-209.ASM) was located within the one mile-wide buffer, but not within the Project area (Figure 2). Two cultural sites were recorded for the SFPP project in 1997, but none within the Project area.

SENSITIVE & CONFIDENTIAL DATA: NOT FOR PUBLIC REVIEW

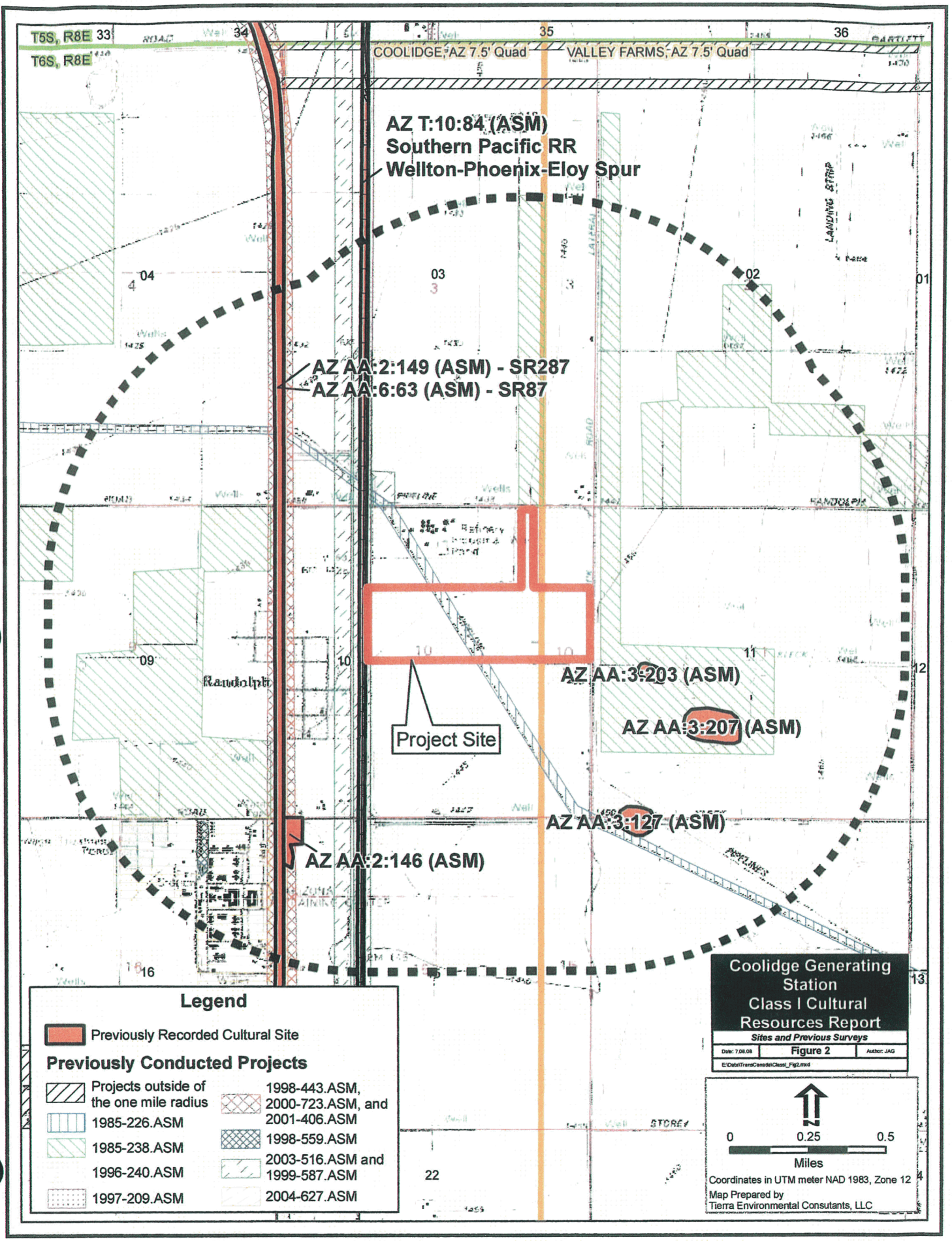


Table 2. Summary of Previous Archaeological Research

Location	Agency No. / Project Description	Sites	Reference	Project Area
AA:2 (NE)	1985-226.ASM / AAPL ROW Pipeline Project	32	Batcho 1985; Higgins and Brunsen 1985	Within 1 mile
AA:2 (NE) AA:3 (NW)	1985-238.ASM / CAP Hohokam Irrigation District Project	15	Van Nimwegen and Hockbarth 1985	Within 1 mile
AA:2 (NE)	1996-240.ASM / Arizona Training Program Coolidge	1	Darrington and Shepard 1995	Within 1 mile
AA:2 (NE) AA:3 (NW)	1997-209.ASM / SFPP Arizona Reconditioning Project	2	William Self Associates 1997	Within 1 mile
AA:2 (NE)	1998-443.ASM / SR 87 Oracle Maintenance Coolidge Project	9	Woodall 1999	Within 1 mile
AA:3 (NW)	1998-559.ASM / Cochise and Pinal Counties Survey Project	6	Fratt and Rude 1999	Within 1 mile
AA:2 (NE)	1999-587.ASM / PBNS Level 3 Fiber Optic Line Project	21	Doak 1999a, 1999b, 1999c, 1999d, 1999e, 2001; Hesse 2000	Within 1 mile
AA:2 (NE) AA:3 (NW)	2000-723.ASM / AT&T NexGen/Core Project Link 3 Project	36	Kearns et al. 2001	Within 1 mile
AA:2 (NE)	2001-406.ASM / AT&T NexGen/Core Project Link 3 Six Re-Routes Survey Project	20	Baker and Webb 2001	Within 1 mile
AA:2 (NE)	2003-516.ASM / San Tan Expansion Survey Project	11	Lindly et al. 2002	Within 1 mile
AA:2 (NE) AA:3 (NW)	2004-627.ASM / Add. D El Paso to Los Angeles Fiber Optic Cable Project	30	Newsome and Berg 2001	Within 1 mile

The SR 87 Oracle Maintenance Coolidge Project (1998-443.ASM) was located within the one mile-wide buffer, but not within the Project area (Figure 2). Nine cultural sites were recorded and/or updated for the SR 87 project in 1998, but none within the Project area.

The Cochise and Pinal Counties Survey Project (1998-559.ASM) was located within the one mile-wide buffer, but not within the Project area (Figure 2). Six cultural sites were recorded and/or updated for the project in 1998, but none within the Project area.

The PBNS Level 3 Fiber Optic Line Project (1999-587.ASM) was located within the one mile-wide buffer, but not within the Project area (Figure 2). Twenty-one cultural sites were recorded and/or updated for the project in 1999, but none within the Project area.

The AT&T NexGen/Core Project Link 3 Project (2000-723.ASM) was located within the one mile-wide buffer, but not within the Project area (Figure 2). Thirty-six cultural sites were recorded and/or updated for the project in 2000, but none within the Project area.

The AT&T NexGen/Core Project Link 3 Six Re-Routes Survey Project (2001-406.ASM) was located within the one mile-wide buffer, but not within the Project area (Figure 2). Twenty cultural sites were recorded and/or updated for the project in 2001, but none within the Project area.

The San Tan Expansion Survey Project (2003-516.ASM) was located within the one mile-wide buffer, but not within the Project area (Figure 2). Eleven cultural sites were recorded and/or updated for the project in 2003, but none within the Project area.

The Add. D El Paso to Los Angeles Fiber Optic Cable Project (2004-627.ASM) was located within the one mile-wide buffer, but not within the Project area (Figure 2). Thirty cultural sites were recorded and/or updated for the project in 2004, but none within the Project area.

Only one site, the historic Southern Pacific Railroad (AZ T:10:84), has been considered eligible for the National Register. The Wellton-Phoenix-Mesa-Eloy segment of the railroad is located outside of but adjacent to (130' west) the Project area (Figures 2).

The remaining sites are also outside of the Project area and are either not eligible for the National Register or have not been evaluated for eligibility. These include SR 87 and SR 287 (both not eligible); and three sites of undetermined eligibility (AZ AA:3:127, 203, and 207).

5.1 National Register of Historic Places Evaluation

To be eligible for listing in the National Register, a cultural resource must meet one of the four criteria defined by Title 36, Part 60, of the Code of Federal Regulations (36 CFR 60), which reads as follows:

The quality of significance in American history, architecture, archeology, engineering, and culture is present in districts, sites, buildings, structures, and objects that possess integrity of location, design, setting, materials, workmanship, feeling, and association, and

> (a) that are associated with events that have made a significant contribution to the broad patterns of our history; or
>
> (b) that are associated with the lives of persons significant in our past; or
>
> (c) that embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; or
>
> (d) that has yielded, or may be likely to yield, information important in prehistory or history.

In addition to these four criteria, there is a general stipulation that the property be 50 years old or older (for exceptions, see 36 CFR 60.4, Criteria Considerations). The importance of information that a property may yield is measured by its relevance to identified research questions that can be addressed through the analysis of particular property types. In addition to research potential, the cultural resources of Native Americans, Euroamericans, and other ethnic communities may possess public and ethnic value. Finally, cultural resources may also have broader public significance, such as serving to educate the public about important aspects of national, state, and local history and prehistory.

The first step in determining the significance of cultural resources is to define appropriate historic contexts. A historic context is a body of information about patterns or trends in history organized by three basic elements: theme, place, and time (NPS 1997). In essence, a historic context is a historically meaningful segment of the history or prehistory of a particular geographic area. Together, all of the various possible historic contexts for an area would form a comprehensive summary of all aspects of the area's history and prehistory.

A theme is the equivalent of a research problem, and a historic context is developed by placing the problem in an appropriate setting in both time and space. The context is linked to tangible cultural resources by the concept of a property type.

The historic contexts are presented below and follow the same structure. A short discussion of current research issues is followed by a set of research questions in each of the following sections. A discussion of data requirements, including a listing of pertinent property types, closes each context.

5.2 Research Questions

Chronology

Chronology is a key component in understanding the processes of cultural change in the Arizona desert regions. Sites located in southwestern Arizona and also known as Papagueria are primarily scattered ruins, once thought to be so numerous that there was often not much to the stratigraphic depth (Haury 1950).

Prehistoric residential sites do, however, contain the remains of houses, pit features, and other subsurface cultural deposits. Chronology in this area is a major research issue for Gila River drainage system. Short of reliable absolute dates from well-understood contexts, archaeologists in Gila River valley in the past have been forced to rely heavily on artifact cross dating, the origin of which was with black-on-white sherds from the Western Anasazi area (Gumerman and Haury 1979:76). It is no surprise, therefore, that our knowledge of the chronology of cultures in the region continues to change and that our comprehension of regional cultural processes remains a work in progress. Key research questions are presented below.

Research Questions

- Can the sites yield information relating to established regional lithic and ceramic typologies?
- Can the Hohokam ceramic chronology be further refined?
- Are there variations in the temporal framework in Hohokam manifestations in relationship to the distance from the core Hohokam area?

Data Requirements

In most areas of the Southwest, addressing issues of chronology requires samples suitable for absolute-dating analysis. Sample materials include botanical and faunal remains for radiocarbon dating, burned clay associated with cultural features for archaeomagnetic dating, and wood samples from specific species for tree-ring dating. Other, less-precise absolute-dating methods include thermoluminescence and obsidian hydration analyses. Sites that can provide the kind of samples described above in interpretable contexts are extremely rare in the archaeological record of the Gila River area.

Subsistence

The Sonoran Desert area of southern Arizona is in a region of alternating mountains and plains, with major streams that were the lifelines of the Hohokam people (Gumerman and Haury 1979:75). They provided water for irrigation canals, and the mountains provided ecozones for natural food sources not found on the river plains.

Paleoindian and Archaic foraging strategies changed to hunting and gathering cultures bound to floodplain resources, and progressed to floodplain-based, logistically organized horticultural societies that continued to exploit wild riparian and desert resources. For the horticulturalists, using wild resources minimized risk imposed by an agricultural adaptation. The degree of organizational complexity needed to be responsive to a variety of environmental factors. As a result, household size, composition, and organization; the size of local population aggregates; the mix of resources used (cultigens or wild plants, riverine or desert resources) varied based on the distribution and availability of resources.

Research Questions

- What mix of resources did the Archaic people and the Hohokam use?
- If the resource mix changed through time, do these changes correlate with increasing population density, environmental fluctuations, or both?
- Are ethnographic models representative of prehistoric and/or protohistoric periods?

Data Requirements

Data required to answer these questions consist of faunal and floral remains from use contexts in Archaic, Hohokam period, and protohistoric residential sites. Macrofloral and palynological samples from sealed cultural contexts (features) and from an array of plant and animal food-processing equipment are important components in defining the resource mix, and immunoassay residue analysis on lithic tools recovered from cultural contexts could potentially provide information on patterns of animal exploitation. As with chronological needs, contexts that can provide these data are rare.

Land-Use Patterns

Land-use patterns form an important part of a culture's adaptation to its surrounding environment, and its strategy characterizes and describes the ways in which a culture interacts with and exploits its natural resources. The organization of land-use strategies is patterned and is reflected in the set of functional site types embedded in the land-use system.

Analysis of land-use systems provides considerable insights into interactions between economic adaptations and changing environmental and social circumstances, and like subsistence systems, they operate in an ecological context and are, therefore, responsive to fluctuations in environmental conditions. Essentially land-use systems influence, and are influenced by a myriad of extant social conditions, such as organizational complexity, labor organization and scheduling, ritual and ceremonial activities, and interrelations with neighboring communities, among other factors.

Research Questions

- Did Hohokam site locations co-vary with environmental factors? If so, what factors appear to have been the most significant?
- How do site location and site type relate to the spatial distribution of raw-material sources in the region?
- Did site complexity influence the direction of trade relations with the Southern tribes versus the Northern and Eastern tribes?

Data Requirements

By obtaining information about residential, subsistence, and functional site-type patterning, we can reconstruct land-use strategies. Using subsistence, spatial, and chronological information obtained from residential sites, nonresidential site types, and land-use systems, the entire system can be defined. Elements comprising land-use systems (including issues of economy and seasonality) must be discerned from subsistence-related data recovered from each class of sites.

Contact and Interaction between Native Americans and Europeans and Euroamericans

Historical-period accounts of the primary Native American group in the Project area, the Pima, exist from the mid eighteenth and mid-nineteenth centuries. The first written account of Pima lifeways was first recorded by the Spanish Fr. Kino in the mid eighteenth century. Archaeological information to support or augment ethnohistoric data is largely lacking. Important questions about protohistoric and historical-period Pima subsistence and settlement systems remain.

Research Questions

- To what degree were protohistoric and historical-period Pima integrated into the local Euroamerican economy?

- To what degree, if at all, did this Native American group rely on wild botanical and faunal resources during the mid eighteenth and early nineteenth centuries?

- Are ethnohistoric data representative of Pima subsistence and land use patterns? What resource mix did they rely on during the early historical period?

- How well, if at all, were European-introduced domesticated plants and animals incorporated into the Pima resource mix?

Data Requirements

Data required to answer these questions can best be obtained from one or more eighteenth to nineteenth century Pima residential sites. If the sites have stratigraphic depth, they may include structures and sealed features that contain data that inform on subsistence, economic, social, and ritual aspects of past lifeways.

Historical-Period Occupation

The eighteenth and nineteenth century occupation of southern Arizona had a significant impact on the lives of the Native American people of the area. While changes were already underway in the Project area when the Europeans first encountered the area, more drastic changes followed. The phases of the Hohokam period saw an intensification, peak, and decline in agricultural activities. During the protohistoric and historic periods the Native Americans returned to a more intensive agricultural practice with the addition of non-native crops, animals, trade goods, religion, and culture.

Research Questions

- How did the establishment of missions and presidios, as well as the introduction of new crops and livestock, affect settlement pattern, subsistence strategies and cultural traditions?

- Can the study of historic archaeological sites, in conjunction with archival research, tell about the lives of the Spanish, Mexican, and Euroamerican soldiers and settlers in the Pima area?

- How did the coming of the railroad affect patterns of settlement and rural economies? How did sidings, camps, spurs and other associated sites function in relation to the railroads and surrounding sites?

Data Requirements

While few historic resources have been previously recorded in the Project area, there is great potential for further research into the lives of migrants into the area. Excavation of historic archaeological sites, as well as ethnohistoric data and sources can reveal a wealth of information that may provide insight into the social fabric of the lives of the migrants into the area and the effects of those cultures on the Native culture.

6.0 Management Recommendations

The kp environmental intensive Class I cultural inventory of approximately 3840 acres within the Proposed Coolidge Generating Station Project area identified one site considered eligible for the National Register; however, the site is located outside of the 100-acre Project area. The Project area has not been subjected to intensive field investigations, therefore it is recommended that a Class III field survey be conducted of the 100 acres to ensure that all historical and archaeological resources are identified in the Project area.

7.0 References Cited

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APPENDIX E-2

Class I
Cultural Resources Correspondence

kp environmental

kp environmental LLC
2387 Montgomery Ave
Cardiff By The Sea
California 92007
Tel 619 241 3330

Mr. James Garrison
State Historic Preservation Officer
Arizona State Historic Preservation Office
1300 West Washington
Phoenix, AZ 85007

RE: Class I Cultural Resources Report for the Proposed Coolidge Generating Station Project.

Dear Mr. Garrison:

Date:
July 10, 2008

Contact:
Trish Mitchell

Phone:
619.241.3330

Email:

TransCanada proposes to construct a new establish a new natural gas fired, simple-cycle power plant that will supply power during periods of peak electricity demand in Coolidge, Pinal County, Arizona. I have enclosed a copy of the Class I Cultural Resources Report document prepared by kp environmental for your review and comment.

The Arizona State Museum has previously stated that submission of a Class I inventory document is not a standard procedure, but TransCanada has been directed to do so by the Power Plant and Transmission Line Siting Committee of the Arizona Corporation Commission (ACC). The project must receive a Certificate of Environmental Compatibility prior to any ground disturbing construction activities. The proposed project consists of twelve (12) General Electric (GE) LM6000 PC SPRINT NxGen combustion turbine generators (CTGs) designed to produce up to 575 MW of net electrical output, and encompasses approximately 100 acres. The Class I document includes the locations and descriptions of cultural resources listed in public records within one mile of the alternative routes. The document was developed as a planning document to guide additional research. A thorough description of the project, its location, previous cultural resource projects, and known cultural resource sites are provided in the enclosed document.

The proposed project is not a Federal undertaking as defined in 36 CFR 800 and, therefore, is not subject to the National Historic Preservation Act, Section 106 consultation process. The proposed transmission line does not cross any tribal lands and no information is included regarding any cultural resources on tribal lands. Futhermore, traditional cultural places, religious sites, and traditional use areas are not included in the document. All cultural resource locational information including maps will be deleted from any copies of the document available to the general public. This document has been sent to the following agencies and communities for review at this time: the Arizona State Historic Preservation Office, the Arizona State Museum, the Ak-Chin Indian Community, the Fort McDowell Yavapai Nation, the Gila River Indian community, the Hopi Tribe, the Salt River Pima-Maricopa Indian Community, and the Tohono O'odham Nation.

kp environmental

TransCanada and kp environmental greatly appreciate your comments and will address any issues and concerns that you may have. Please provide your comments in 30 calendar days of receipt of this document to the attention of the following me at this mailing address:

Patricia T. Mitchell
P.O. Box 515
Alpine, CA 91903

Your letter will be included as part of the project record that is filed with the ACC. If you have any further questions or would like to discuss this document, please call me at 619.241.3330.

Sincerely,

Patricia T. Mitchell, M.A., RPA
Senior Project Archaeologist

Copies:
Randy Schroeder, Envalue
file

kp environmental

kp environmental LLC
2387 Montgomery Ave
Cardiff By The Sea
California 92007
Tel 619 241 3330

Ms. Nancy Nelson
Cultural Resource Manager
Ak-Chin Him Dak Eco Museum Road
Ak-Chin Indian Community
47685 North Eco Museum Road
Maricopa, AZ 85239

RE: Class I Cultural Resources Report for the Proposed Coolidge Generating Station Project.

Dear Ms. Nelson:

Date:
July 10, 2008

Contact:
Trish Mitchell

Phone:
619.241.3330

Email:
[redacted]

TransCanada proposes to construct a new establish a new natural gas fired, simple-cycle power plant that will supply power during periods of peak electricity demand in Coolidge, Pinal County, Arizona. I have enclosed a copy of the Class I Cultural Resources Report document prepared by kp environmental for your review and comment.

The Arizona State Museum has previously stated that submission of a Class I inventory document is not a standard procedure, but TransCanada has been directed to do so by the Power Plant and Transmission Line Siting Committee of the Arizona Corporation Commission (ACC). The project must receive a Certificate of Environmental Compatibility prior to any ground disturbing construction activities. The proposed project consists of twelve (12) General Electric (GE) LM6000 PC SPRINT NxGen combustion turbine generators (CTGs) designed to produce up to 575 MW of net electrical output, and encompasses approximately 100 acres. The Class I document includes the locations and descriptions of cultural resources listed in public records within one mile of the alternative routes. The document was developed as a planning document to guide additional research. A thorough description of the project, its location, previous cultural resource projects, and known cultural resource sites are provided in the enclosed document.

The proposed project is not a Federal undertaking as defined in 36 CFR 800 and, therefore, is not subject to the National Historic Preservation Act, Section 106 consultation process. The proposed transmission line does not cross any tribal lands and no information is included regarding any cultural resources on tribal lands. Futhermore, traditional cultural places, religious sites, and traditional use areas are not included in the document. All cultural resource locational information including maps will be deleted from any copies of the document available to the general public. This document has been sent to the following agencies and communities for review at this time: the Arizona State Historic Preservation Office, the Arizona State Museum, the Ak-Chin Indian Community, the Fort McDowell Yavapai Nation, the Gila

River Indian community, the Hopi Tribe, the Salt River Pima-Maricopa Indian Community, and the Tohono O'odham Nation.

TransCanada and kp environmental greatly appreciate your comments and will address any issues and concerns that you may have. Please provide your comments in 30 calendar days of receipt of this document to the attention of the following me at this mailing address:

Patricia T. Mitchell
P.O. Box 515
Alpine, CA 91903

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Sincerely,

Patricia T. Mitchell, M.A., RPA
Senior Project Archaeologist

Copies:
Randy Schroeder, Envalue
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kp environmental

kp environmental LLC
2387 Montgomery Ave
Cardiff By The Sea
California 92007
Tel 619 241 3330

Ms. Karen Ray
Coordinator Cultural Resources
Fort McDowell Yavapai Nation
P.O. Box 17779
Fountain Hills, AZ 85269

RE: Class I Cultural Resources Report for the Proposed Coolidge Generating Station Project.

Dear Ms. Ray:

Date:
July 10, 2008

Contact:
Trish Mitchell

Phone:
619.241.3330

Email:

TransCanada proposes to construct a new establish a new natural gas fired, simple-cycle power plant that will supply power during periods of peak electricity demand in Coolidge, Pinal County, Arizona. I have enclosed a copy of the Class I Cultural Resources Report document prepared by kp environmental for your review and comment.

The Arizona State Museum has previously stated that submission of a Class I inventory document is not a standard procedure, but TransCanada has been directed to do so by the Power Plant and Transmission Line Siting Committee of the Arizona Corporation Commission (ACC). The project must receive a Certificate of Environmental Compatibility prior to any ground disturbing construction activities. The proposed project consists of twelve (12) General Electric (GE) LM6000 PC SPRINT NxGen combustion turbine generators (CTGs) designed to produce up to 575 MW of net electrical output, and encompasses approximately 100 acres. The Class I document includes the locations and descriptions of cultural resources listed in public records within one mile of the alternative routes. The document was developed as a planning document to guide additional research. A thorough description of the project, its location, previous cultural resource projects, and known cultural resource sites are provided in the enclosed document.

The proposed project is not a Federal undertaking as defined in 36 CFR 800 and, therefore, is not subject to the National Historic Preservation Act, Section 106 consultation process. The proposed transmission line does not cross any tribal lands and no information is included regarding any cultural resources on tribal lands. Futhermore, traditional cultural places, religious sites, and traditional use areas are not included in the document. All cultural resource locational information including maps will be deleted from any copies of the document available to the general public. This document has been sent to the following agencies and communities for review at this time: the Arizona State Historic Preservation Office, the Arizona State Museum, the Ak-Chin Indian Community, the Fort McDowell Yavapai Nation, the Gila River Indian community, the Hopi Tribe, the Salt River Pima-Maricopa Indian Community, and the Tohono O'odham Nation.

kp environmental

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Patricia T. Mitchell
P.O. Box 515
Alpine, CA 91903

Your letter will be included as part of the project record that is filed with the ACC. If you have any further questions or would like to discuss this document, please call me at 619.241.3330.

Sincerely,

Patricia T. Mitchell, M.A., RPA
Senior Project Archaeologist

Copies:
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kp environmental

kp environmental LLC
2387 Montgomery Ave
Cardiff By The Sea
California 92007
Tel 619 241 3330

Mr. Barnaby Lewis
Cultural Resource Specialist
Gila River Indian Community
P.O. Box 2140
Sacaton, AZ 85247

RE: Class I Cultural Resources Report for the Proposed Coolidge Generating Station Project.

Dear Mr. Lewis:

Date:
July 10, 2008

Contact:
Trish Mitchell

Phone:
619.241.3330

Email:

TransCanada proposes to construct a new establish a new natural gas fired, simple-cycle power plant that will supply power during periods of peak electricity demand in Coolidge, Pinal County, Arizona. I have enclosed a copy of the Class I Cultural Resources Report document prepared by kp environmental for your review and comment.

The Arizona State Museum has previously stated that submission of a Class I inventory document is not a standard procedure, but TransCanada has been directed to do so by the Power Plant and Transmission Line Siting Committee of the Arizona Corporation Commission (ACC). The project must receive a Certificate of Environmental Compatibility prior to any ground disturbing construction activities. The proposed project consists of twelve (12) General Electric (GE) LM6000 PC SPRINT NxGen combustion turbine generators (CTGs) designed to produce up to 575 MW of net electrical output, and encompasses approximately 100 acres. The Class I document includes the locations and descriptions of cultural resources listed in public records within one mile of the alternative routes. The document was developed as a planning document to guide additional research. A thorough description of the project, its location, previous cultural resource projects, and known cultural resource sites are provided in the enclosed document.

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kp environmental

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Patricia T. Mitchell
P.O. Box 515
Alpine, CA 91903

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Sincerely,

Patricia T. Mitchell, M.A., RPA
Senior Project Archaeologist

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kp environmental LLC
2387 Montgomery Ave
Cardiff By The Sea
California 92007
Tel 619 241 3330

Mr. Lee Kuwanwisiwma
Director Cultural Preservation Office
The Hopi Tribe
P.O. Box 123
Kykotsmovi, AZ 86039

RE: Class I Cultural Resources Report for the Proposed Coolidge Generating Station Project.

Dear Mr. Kuwanwisiwma:

Date:
July 10, 2008

Contact:
Trish Mitchell

Phone:
619.241.3330

Email:

TransCanada proposes to construct a new establish a new natural gas fired, simple-cycle power plant that will supply power during periods of peak electricity demand in Coolidge, Pinal County, Arizona. I have enclosed a copy of the Class I Cultural Resources Report document prepared by kp environmental for your review and comment.

The Arizona State Museum has previously stated that submission of a Class I inventory document is not a standard procedure, but TransCanada has been directed to do so by the Power Plant and Transmission Line Siting Committee of the Arizona Corporation Commission (ACC). The project must receive a Certificate of Environmental Compatibility prior to any ground disturbing construction activities. The proposed project consists of twelve (12) General Electric (GE) LM6000 PC SPRINT NxGen combustion turbine generators (CTGs) designed to produce up to 575 MW of net electrical output, and encompasses approximately 100 acres. The Class I document includes the locations and descriptions of cultural resources listed in public records within one mile of the alternative routes. The document was developed as a planning document to guide additional research. A thorough description of the project, its location, previous cultural resource projects, and known cultural resource sites are provided in the enclosed document.

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kp environmental

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Patricia T. Mitchell
P.O. Box 515
Alpine, CA 91903

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Sincerely,

Patricia T. Mitchell, M.A., RPA
Senior Project Archaeologist

Copies:
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kp environmental

kp environmental LLC
2387 Montgomery Ave
Cardiff By The Sea
California 92007
Tel 619 241 3330

Ms. Joni Ramos
President
Salt River Pima-Maricopa Indian Community
10005 East Osborn Road
Scottsdale, AZ 85256

RE: Class I Cultural Resources Report for the Proposed Coolidge Generating Station Project.

Dear Ms. Ramos:

Date:
July 10, 2008

Contact:
Trish Mitchell

Phone:
619.241.3330

Email:

TransCanada proposes to construct a new establish a new natural gas fired, simple-cycle power plant that will supply power during periods of peak electricity demand in Coolidge, Pinal County, Arizona. I have enclosed a copy of the Class I Cultural Resources Report document prepared by kp environmental for your review and comment.

The Arizona State Museum has previously stated that submission of a Class I inventory document is not a standard procedure, but TransCanada has been directed to do so by the Power Plant and Transmission Line Siting Committee of the Arizona Corporation Commission (ACC). The project must receive a Certificate of Environmental Compatibility prior to any ground disturbing construction activities. The proposed project consists of twelve (12) General Electric (GE) LM6000 PC SPRINT NxGen combustion turbine generators (CTGs) designed to produce up to 575 MW of net electrical output, and encompasses approximately 100 acres. The Class I document includes the locations and descriptions of cultural resources listed in public records within one mile of the alternative routes. The document was developed as a planning document to guide additional research. A thorough description of the project, its location, previous cultural resource projects, and known cultural resource sites are provided in the enclosed document.

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kp environmental

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Patricia T. Mitchell
P.O. Box 515
Alpine, CA 91903

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Sincerely,

Patricia T. Mitchell, M.A., RPA
Senior Project Archaeologist

Copies:
Randy Schroeder, Envalue
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kp environmental LLC
2387 Montgomery Ave.
Cardiff By The Sea
California 92007
Tel 619 241 3330

Mr. Peter Steere
Program Manager, Cultural Affairs Department
Tohono O'odham Nation
P.O. Box 837
Sells, AZ 85634

RE: Class I Cultural Resources Report for the Proposed Coolidge Generating Station Project.

Dear Mr. Steere:

Date:
July 10, 2008

Contact:
Trish Mitchell

Phone:
619.241.3330

Email:
[illegible]
mail.com

TransCanada proposes to construct a new establish a new natural gas fired, simple-cycle power plant that will supply power during periods of peak electricity demand in Coolidge, Pinal County, Arizona. I have enclosed a copy of the Class I Cultural Resources Report document prepared by kp environmental for your review and comment.

The Arizona State Museum has previously stated that submission of a Class I inventory document is not a standard procedure, but TransCanada has been directed to do so by the Power Plant and Transmission Line Siting Committee of the Arizona Corporation Commission (ACC). The project must receive a Certificate of Environmental Compatibility prior to any ground disturbing construction activities. The proposed project consists of twelve (12) General Electric (GE) LM6000 PC SPRINT NxGen combustion turbine generators (CTGs) designed to produce up to 575 MW of net electrical output, and encompasses approximately 100 acres. The Class I document includes the locations and descriptions of cultural resources listed in public records within one mile of the alternative routes. The document was developed as a planning document to guide additional research. A thorough description of the project, its location, previous cultural resource projects, and known cultural resource sites are provided in the enclosed document.

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kp environmental

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P.O. Box 515
Alpine, CA 91903

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Sincerely,

Patricia T. Mitchell, M.A., RPA
Senior Project Archaeologist

Copies:
Randy Schroeder, Envalue
file

TOHONO O'ODHAM NATION
CULTURAL AFFAIRS PROGRAM
P.O. BOX 837 • SELLS, ARIZONA 85634
Telephone (520) 383-3622 • Fax (520) 383-3377

July 15, 2008

Patricia T. Mitchell
Senior Project Archaeologist
KP Environmental, LLC
P.O. Box 515
Alpine, California
91903

Dear Patricia Mitchell:

Thank you for contacting the Tohono O'odham Nation regarding the proposed Coolidge Generating Station Project.

We understand that TransCanada is proposing to construct a new natural gas fired power plant near Coolidge, Arizona.

The Arizona State Museum is correct when they informed you that submittal of a Class 1 records search report is not standard procedure. We also understand that you have been requested to do this by the Power Plant and Transmission Line Siting Committee of the Arizona Corporation Committee.

The project area where this proposed power plant will be built is within the traditional-use lands of the Tohono O'odham Nation, the Gila River Indian Community, the Salt-River Pima-Maricopa Indian Community and the Ak Chin Indian Community. This area is also of significance to the Hopi Tribe and the Fort McDowell Yavapai Nation.

These lands contain cultural sites, traditional cultural places and sacred sites significant to all of the above mentioned tribes.

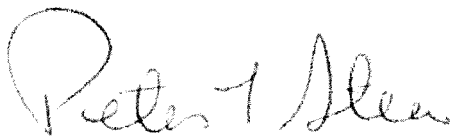
The Tohono O'odham Nation concurs with your recommendations on page 19, that a Class III field survey be conducted of the entire 100 acre project area.

Please keep the Tohono O'odham Nation informed of work on this project – when the field survey will be done and when the report will be completed.

Please make sure copies of the cultural field survey report is sent to the Tohono O'odham Nation, the Gila River Indian Community, the Salt River Pima-Maricopa

Indian Community, the Ak Chin Indian Community, the Hopi Tribe and the Fort McDowell Yavapai Nation for review.

Sincerely,



Peter L. Steere, Manager
Cultural Affairs, Tohono O'odham Nation

In Reply Refer to:
SHPO-2008-1139 (37114)
Survey Required

Arizona® State Parks

July 28, 2008

John Foreman, Assistant Attorney General
Attorney General's Office
1275 W. Washington Street
Phoenix, AZ 85007

Re: Receipt and Review of Class I File and Records Search entitled *Class I Cultural Resource Report for the Proposed Coolidge Generating Station Project, Pinal County, Arizona* by Patricia S. Mitchell for Transcanada by kp environmental, LLC of Cardiff by the Sea, California
(SHPO Project No. SHPO-2008-1139)

Dear Mr. Foreman:

The State Historic Preservation Office (SHPO) has received and reviewed the cultural resources Class I records check for the Coolidge Generating Station Project prepared by P. Mitchell dated July 10, 2008 and submitted on behalf of kp environmental, LLC. The project is to establish a new natural gas fired, simple-cycle power plant that will supply power during periods of peak electricity demands. The project consists of 12 General Electric LM6000 PC SPRINT NxGen combustion turbine generators (CTGs) designed to produce up to 575 MW of net electrical output. The construction encompasses 100 acres of private land in Pinal County, Arizona, in Township 6 South, Range 8 East, Section 10 N1/2.

We are communicating with you as Chairman of the Power Plant and Transmission Line Siting Committee of the Arizona Corporation Commission (ACC), the lead agency for purposes of compliance pursuant to A. R. S. 41-861 through 41-865, A. R. S. 41-841 through 41-844, Executive Order 2006-14, and other historic preservation legislation enacted to protect and preserve Arizona's cultural resources. Our advice to a state agency under state statute should not be construed or used in any way to substitute for or limit our advice to a federal agency under federal law. If a federal agency has an undertaking related to the above-referenced project, that agency will need to consult with our office directly under Section 106 of the National Historic Preservation Act.

The Class I file and records check indicated there are no previously recorded archaeological sites or historic structures within the project's 100-acre Area of Potential Effect (APE). There is a historic railroad adjacent to the property on the west side, the Wellton-Phoenix-Eloy Spur of the Southern Pacific Railroad, but the railroad is located outside the project APE, and should not be impacted.

Janet Napolitano
Governor

State Parks Board Members

Chair
William C. Scalzo
Phoenix

Arlan Colton
Tucson

[redacted]eese Woodling
Tucson

Tracey Westerhausen
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State Land Commissioner

Kenneth E. Travous
Executive Director

Arizona State Parks
1300 W. Washington
Phoenix, AZ 85007

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www.azstateparks.com

800.285.3703 from
(520 & 928) area codes

General Fax:
602.542.4180

[redacted]irector's Office Fax:
602.542.4188

Just a small portion of the APE has been surveyed for cultural resources (a pipeline route traverses the APE from northwest to southeast), and **a Class III intensive cultural resources survey of the entire 100-acre parcel will be required for this project, to identify all historical and archaeological resources in the project area.**

We appreciate consultation with our office concerning the proposed Coolidge Generating Station Project. We look forward to receiving the results of the Class III intensive survey and having the opportunity to comment before the Certificate of Environmental Compatibility (CEC) is issued. Thank you for considering Arizona's cultural resources in the planning efforts. If you have any concerns or questions, please contact me at (602) 542-7137 or cgibson@azstateparks.gov.

Sincerely,

Connie Thompson Gibson

Connie Thompson Gibson, RPA
Archaeologist & Compliance Specialist
Arizona State Historic Preservation Office

Cc: Patricia T. Mitchell, Senior Project Archaeologist, kp environmental, LLC

THE HOPI TRIBE

Benjamin H. Nuvamsa
CHAIRMAN

Todd Honyaoma, Sr.
VICE-CHAIRMAN

July 28, 2008

Patricia T. Mitchell, Senior Project Archaeologist
kp environmental, LLC
P.O. Box 515
Alpine, California 91903

Dear Ms. Mitchell,

This letter is in response to your correspondence on behalf of TransCanada dated July 10, 2008, regarding an enclosed Class I cultural resources report for the proposed Coolidge Generating Station Project. Because the Hopi Tribe claims cultural affiliation to prehistoric cultural groups in Arizona, including the Hohokam prehistoric culture in southern Arizona, and the Hopi Cultural Preservation Office supports the identification and avoidance of prehistoric archaeological sites and Traditional Cultural Properties. Casa Grande National Monument is a traditional Cultural Property of the Hopi Tribe. Therefore, we appreciate your solicitation of our input and efforts to address our concerns.

The Hopi Cultural Preservation Office considers the archaeological sites of our ancestors to be Traditional Cultural Properties. The enclosed overview report states that the Class I cultural resources inventory of the Proposed Coolidge Generating Station Project area identified no previously recorded prehistoric sites in the 100 acre project area. However, the report also recommends a Class III survey of the project area.

Therefore, we request continuing consultation on this proposal. Please provide us with a copy of the Class III cultural resources survey of the area of potential effect. If prehistoric cultural resources are identified that will be adversely affected by project activities, we look forward to consulting on any proposed treatment plans as well.

Should you have any questions or need additional information, please contact Terry Morgart at the Hopi Cultural Preservation Office. Thank you for your consideration.

Respectfully,

Leigh Kuwanwisiwma, Director
Hopi Cultural Preservation Office

xc: Arizona State Historic Preservation Office

EXHIBIT F

EXHIBIT F - RECREATIONAL PURPOSES AND ASPECTS

As stated in Arizona Administrative Code 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."*

Pinal County has a diverse geography, which offers a multitude of recreational opportunities. Recreational activities in Pinal County and the City of Coolidge range from developed activities in mixed use areas such as golf courses, ball parks, or designated open space to dispersed and undeveloped activities on private and state lands.

There are no existing or planned designated recreational facilities or areas within two miles of the Project Site. The Project Site will not be available for public recreation purposes but would not preclude recreational uses in the area around the Site.

EXHIBIT G

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."*

Figure G-1 contains a rendering of the Coolidge Generating Station Project. This rendering was used to develop each of the six visual simulations that were prepared for this Project and are included in Exhibit E.

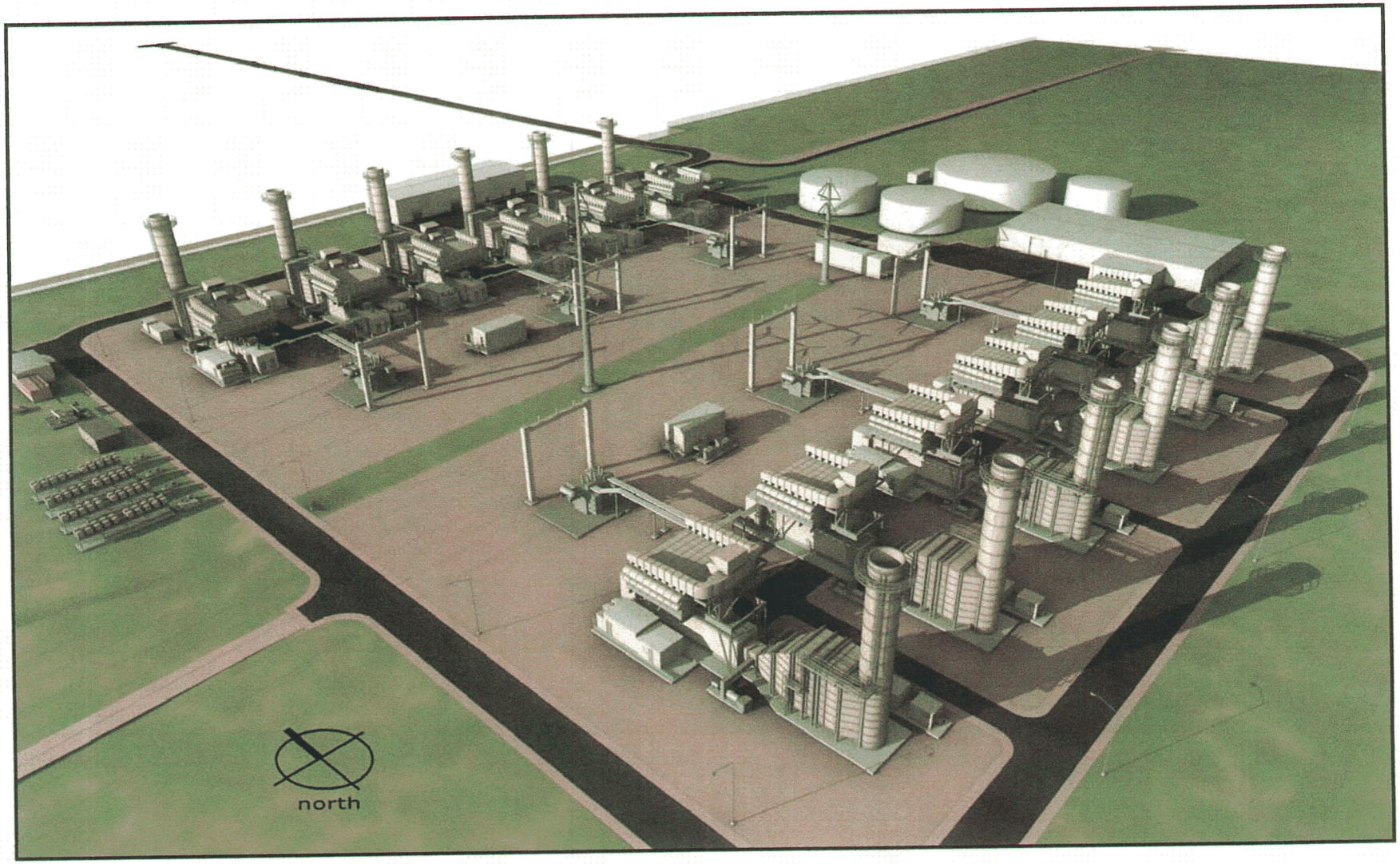


Figure G-1

Rendering of Coolidge Generating Station Project

EXHIBIT H

EXHIBIT H – EXISTING PLANS

As stated in Arizona Administrative Code R14-3-219:

> *"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."*

LOCAL GOVERNMENT PLANS

The CGS Project is on lands within the corporate limits of the City of Coolidge. The nearby unincorporated lands are under the jurisdiction of Pinal County. The plans of these entities for the lands in the vicinity of the Project are described in **Exhibit A** and are summarized below. The Project is consistent with these plans.

CITY OF COOLIDGE

The current General Plan for the City of Coolidge identifies for industrial uses the lands in the City that include the Project Site.

In addition, the City recently completed the planned re-zoning for industrial use of approximately 454 acres that include the 100-acre CGS Project Site. **Figure H-1** shows the boundary of this industrially zoned area, with the CGS Project Site superimposed.

The City Council passed the zoning change from Agricultural (AG) to General Industrial (I-2) classification on June 9, 2008. The City plans to encourage the development of this zoned area as an industrial / commercial park.

PINAL COUNTY

Pinal County has jurisdiction over those lands closest to the CGS Project Site that are not within the City of Coolidge. The closest of those lands is west of the Project Site where industrial lands, a utility/transportation corridor, and the community of Randolph are located.

As described in **Exhibit A**, the Project is consistent with the current land use designations in the Pinal County Plan.

STATE GOVERNMENT PLANS

The State is considering a proposed north-south freeway connecting US 60 to I-10 near Picacho. This highway, if built, would be east of Coolidge and would not be affected by the CGS Project. There are no other plans by State agencies for lands near the CGS Project Site.

PRIVATE ENTITY PLANS

PLANNED AREA DEVELOPMENTS (PADS)

There are several areas in Pinal County that have been, at various times, in various stages of planning for residential development. Such areas that have been formally designated are referred to as Planned Area Developments (PADs). At an Open House for the Project, a guest identified himself as a developer of a potential development referred to as Brighton Village that would be located northwest of the intersection of Randolph Road and SR 87. Recent discussions with Pinal County and City of Coolidge planning staff identified there were no PADs currently active within two miles of the Project Site.

UTILITIES

Future utility plans within the vicinity of the Project include the SRP Pinal West to Southeast Valley/Browning 500/230kV transmission line. This line was certificated by the ACC in Decision No.68093. The certificated route runs adjacent to and along the western edge of the CGS Project Site. The CGS Project will interconnect with the 230kV circuit of this transmission line.

El Paso Natural Gas is currently building a new compression station just north of the Project Site on Randolph Road. Additionally the proposed TransWestern gas pipeline is planned to be built to a terminus point in this same general location.

CONCLUSION

The proposed CGS Project would be consistent with the existing plans of the state, local government, and private entities for other developments at or in the vicinity of the proposed Project Site.

REFERENCES

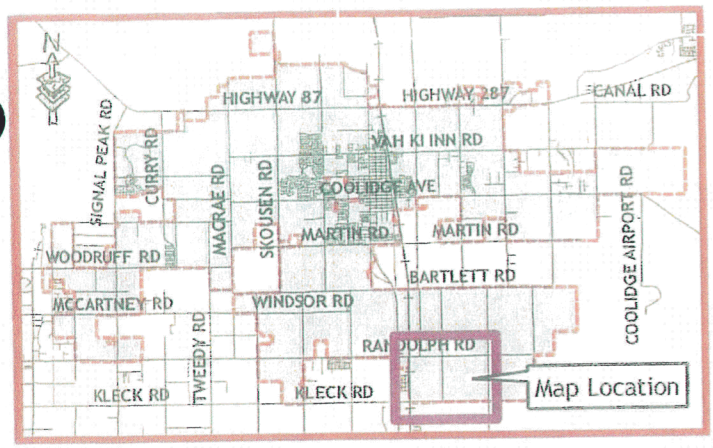
Coolidge, City of. 2007. City of Coolidge General Plan Update. Coolidge, Arizona. 2007.

Coolidge, City of. 2007. Updated General Plan Land Use Map. December 2007

Pinal, County of 2001 Pinal County Comprehensive Plan. Adopted December 19, 2001. [Online] Located at: http://co.pinal.az.us/PlanDev/PDCP/CPInfo.asp. Accessed November 9, 2007.

Pinal, County of. 2006. Land Use Plan [online] located at: http://www.co.pinal.az.us/PlanDev/PDCP/files/CompPlanFinal2006.pdf.

FIGURE H-1 - INDUSTRIALLY ZONED AREA AND CGS PROJECT SITE



Zoning Case # 08-04-011

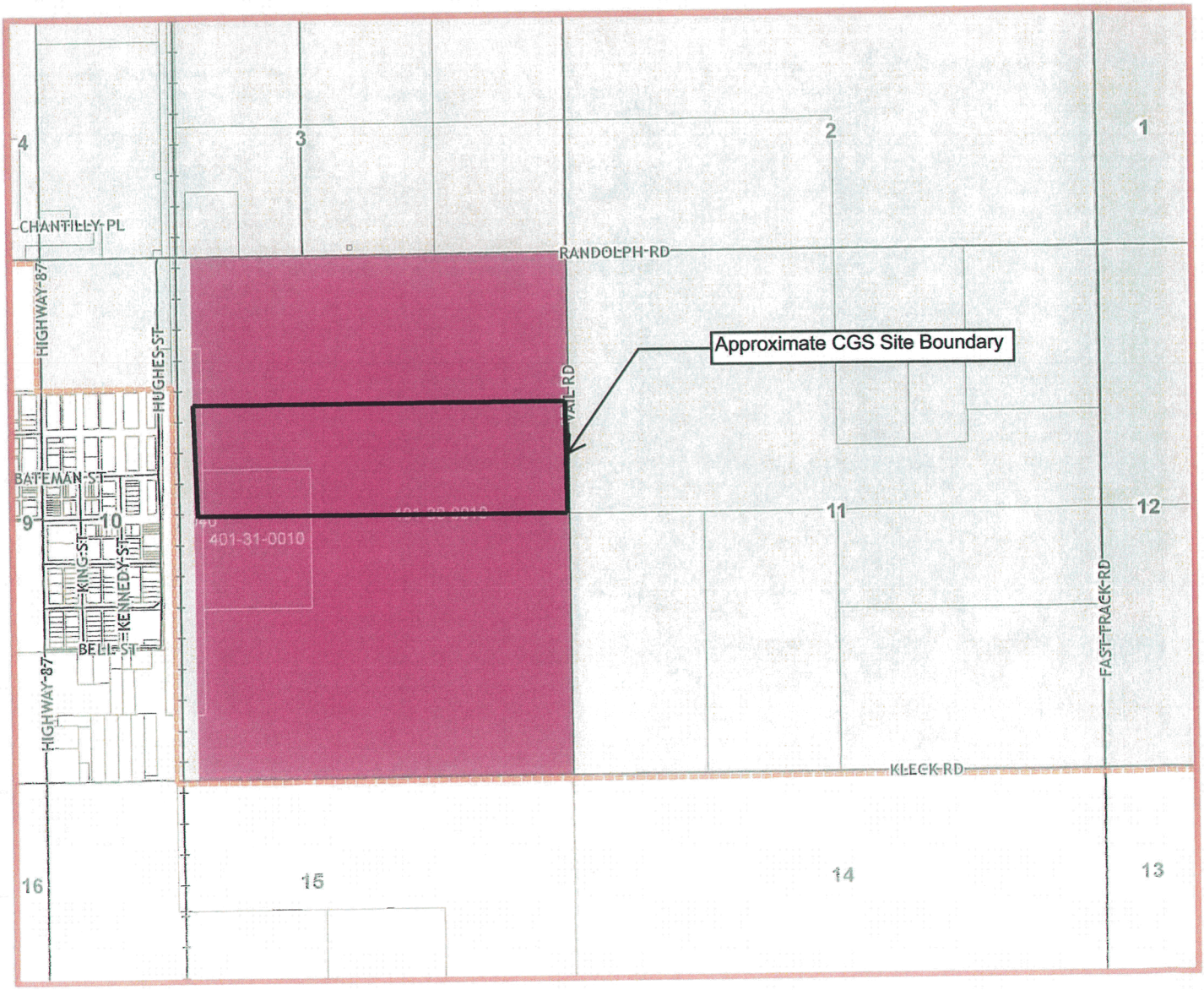
Streets / Roads
Railroad
Section Line
Parcels
Coolidge City Limits
Area of Re-Zoning

Legal Description for Rezoning Area - Agricultural (AG) to Industrial (I-2)

Section 10 of Township 6 South, Range 8 East of the Gila and Salt River Base and Meridian, Pinal County, Arizona,

EXCEPT the West half (W/2) of the West Half (W/2) of Section 10;

Comprising an area of 454 acres, more or less.



Map Author: Thansen Map Date: 04/30/2008 M:\Maps\Randolph_Industrial_Concept\ReZoning Exhibit_Modified.pdf

EXHIBIT
I

EXHIBIT I – ANTICIPATED NOISE / INTERFERENCE WITH COMMUNICATION SIGNALS

As stated in Arizona Administrative Code R14-3-219:

> *"Describe the anticipated noise emission levels and any interference with communication signals which will emanate from the proposed facilities."*

INTRODUCTION

The CGS Project will generate noise but is not expected to generate interference with communication signals.

A noise study was conducted to determine the potential noise impacts that would be generated from the operation of the proposed Project. A noise survey was conducted of the area to determine the current ambient noise levels in the area. The noise that would be generated by the CGS Project was then modeled to determine what additional sound could be heard by people within the vicinity of the Project.

Discussions of ambient sound levels do not focus on pure tones. Commonly heard sounds have complex frequency and pressure characteristics. Correction factors for adjusting actual sound pressure levels to correspond with human hearing have been determined experimentally. For measuring sound levels in ordinary environments, A-weighted (dBA) correction factors are employed. The A-weighted scale is used in most sound level (noise) ordinances and standards.

The level of a sound from a source is measured using a Sound Level Meter (SLM) that includes an electrical filter corresponding to the A-weighted curve. The filter de-emphasizes the very low and very high frequencies of sound in a manner similar to the response of the human ear. The SLM performs calculations to determine the average sound level that is recorded at intervals (i.e. 1-minute) in the SLM's memory.

Environmental sound levels are generally described and evaluated in the following ways:

- The equivalent sound pressure level (Leq) is defined as the average sound level, on an energy basis, for a stated period of time (e.g., hourly) at a given location.
- The Ldn is the day/night sound level that was adopted by the Environmental Protection Agency (EPA) as a measure of community sound level exposure (Crocker 1982). EPA defines Ldn as the average A-weighted sound level for a 24-hour period. Nighttime sound levels (10:00 PM. to 7:00 AM.) are increased by a 10 dB weighting factor, to account for the public's sensitivity to nighttime sound levels when most people are sleeping. The

daytime (7:00 AM to 10:00 PM) energy average sound level is added to a weighted (+10 dB) mean nighttime level. The Ldn meets the EPA requirements for a description of cumulative sound level exposure, in particular the requirement that it be easily measured with simple, relatively inexpensive equipment.

- The EPA has established sound levels that are identified as protective of public health and welfare. EPA identified Ldn of 55 dB for residential areas as an outdoor sound level above which the public health and welfare will be affected (EPA 1974).
- Typical day-night sound levels in urban areas range from 68 to 90 dB; suburban areas average 50 dB; and rural range from 40 dB to 50 dB depending on the type of rural area.

For purposes of general comparison, **Table I-1** lists the average sound level of various sources as defined by EPA.

Table I-1
Examples of Sound Levels in dB from Various Locations

Location	Sound Level (dB)
Inside an Average Residence	45
Light Traffic at 100 feet	50
Inside a Private Business	52
Inside a Large Store	60
Traffic near a Freeway	65
Normal Conversation (@ 3 feet)	65
Freight Train at 100 feet	75

Source: EPA 1974

EXISTING SOUND LEVELS

The ambient noise in the vicinity of the CGS Project Site is dominated by the trains on the railroad located on the western edge of the Project Site, traffic noise from SR 87, existing industrial uses in the immediate vicinity, and agricultural activities on the Project Site and surrounding agricultural lands.

Perhaps the loudest exiting source of noise in the area comes from the trains that periodically travel through the area. At the western edge of the Project Site, the Union Pacific Railroad (UPRR) is located between the Proposed Project and all points west of the Site including the community of Randolph. The precise noise levels from trains is a complex calculation that considers the train speed, the train length, the conditions of the wheels, and the condition of the track (Harris 1991). Noise from trains has been measured (Harris 1991) to range from 87 to 96 dBA at 100 feet from a track. As referenced above, the EPA uses an average of 75 dBA for a freight train at 100 feet.

Noise from highway traffic on SR 87 is also a significant source of noise in the vicinity. Noise generated from traffic is dependent on several factors including vehicle type, vehicle speed, road surface, and distance from the source. As a result, estimates of noise generated by highway traffic can vary widely from 65 dBA near a freeway to 50 dBA for light traffic 100 feet from the source.

In order to determine reasonable estimates for the existing noise levels in the vicinity of the CGS Project Site, noise monitoring was conducted at locations in the area during a 3-day period in 2007. The survey period included both weekday and weekend periods and readings were taken at seven locations surrounding the Site that were selected to be representative of sensitive receptors or property boundaries.

The sound level survey was conducted in general accordance with the American Society for Testing and Materials (ASTM) E 1014-84, Standard Guide for Measurement of Outdoor A-Weighted Sound Levels. However, data collected during wind speeds exceeding 20 km/hr (12 mph) are not excluded from the data set and data are not tabulated by the number of occurrences of each sound level recorded.

The average weekday ambient sound levels ranged from 45.5 to 69.7 dBA near the Site. The average weekend sound levels ranged from 47.0 to 59.3 dBA.

NOISE IMPACTS FROM PROPOSED PROJECT

CONSTRUCTION

Noise generated during the construction phase would result from the operation of construction equipment and vehicles. **Table I-4** presents typical noise levels for construction equipment at a distance of 15 meters (45 feet) (Crocker 1982). These values assume the equipment is operating at full power.

Table I-4
Typical Construction Noise Levels

Equipment Category	Noise Level at 45 ft (dBA)
Dump Truck	88
Portable Rock Drill	88
Concrete Mixer Truck	85
Pneumatic tool	85
Grader	85
Front-End Loader	84
Mobile Crane	83
Excavator	82
Backhoe	81
Dozer	78
Generator	78

The typical noise 45 feet from a construction site would be 85 dBA because the construction equipment can be spread throughout a construction site and may not be operating concurrently. This value and the data presented above indicate that there will be a temporary increase in ambient noise that will be limited to the construction phase of the Project. The propagation of noise depends on many factors including atmospheric conditions, ground cover, and the presence of any natural or man-made barriers. As a general rule, noise decreases by approximately 6 dBA with every doubling of the distance from the source (Bell 1982). Therefore, noise levels at various distances from the construction site can be predicted and are shown in **Table I-5**.

Table I-5 Predicted Noise Near Construction Activities	
Distance from construction site (feet)	Predicted Noise Level (dBA)
45	85
90	79
180	73
360	67
720	61
1440	55

Construction noise generated by the Project would be intermittent in nature and would be temporary as the construction period is estimated to be nine (9) to twelve (12) months. Up to six (6) months of the construction period will involve performance testing of the Project equipment. During this start-up and testing period, noise levels will be consistent with noise levels during operation.

The nearest noise receptors (residences) are approximately 600 to 1500 feet from the edge of the Project Site. At this distance, the construction noise from the plant will be at the low end of that discussed above and probably near the background levels that were measured in the area (48.4 to 57.4 dBA). The actual noise level at distance will vary with wind direction and velocity.

It is expected that most construction would occur during daylight hours. Some deliveries and continuous construction activities such as foundation pours or peak construction work forces will be required during non-daylight hours. During start-up and testing, performance testing will also require some continuous work but, as stated above, the noise profile associated with these activities will be consistent with operational levels. Impacts to noise are expected to be minor and short in duration.

OPERATIONS

To determine the potential noise impact from these sources, detailed noise modeling was conducted. A copy of the full noise report is attached and is summarized below.

During operation of the CGS Project, the primary noise sources will be the twelve (12) GE LM6000 gas turbine generator packages, twelve (12) selective catalytic reduction (SCR) units, six (6) GSU transformers, and other ancillary equipment, such as lube oil fin-fan coolers, gas compressors, and auxiliary transformers. A complete list of all noise sources is included in the attached report. Noise data for the various pieces of equipment were provided by the manufacturer or obtained from other sources or calculations where manufacturer's data was not available.

The nearest noise receptors (residences) to the Project were identified in order to determine the highest noise impacts that could be expected from the Project. Three noise receptors (NR) located to the southeast, northeast and west of the proposed generating station were identified and are described below:

- **Receptor NR 1**: This receptor is a farmhouse located along N. Vail Road and is located approximately 1600 ft from the southern project property line.
- **Receptor NR 2**: This receptor is another farmhouse located along N. Vail Road and is located approximately 1350 ft from the northern project property line.
- **Receptor NR 3**: This receptor is the residence within the community of Randolph located closest to the Site and is on the other side of the railroad approximately 560 feet west of the proposed switchyard location.

The acoustical modeling incorporated the physical features of the Project (such SCRs and stacks) and the identified noise sources. The propagation calculations were carried out using ISO 9613, *Part 1: Calculation of the absorption of sound by the atmosphere, 1993* and *Part 2: General method of calculation (ISO 9613-2:1996)*.

Sound propagation calculations under the ISO 9613 standard incorporate the adverse effects of certain atmospheric and meteorological conditions on sound propagation, such as a gentle breeze from source to receiver and mild atmospheric temperature inversion. Also critical to the modeling results is ground absorption and moderate absorption of 0.5 which will absorb and diffuse some of the sound. Other modeling assumptions are included in the attached detailed report.

First, the model was run to show the noise contribution that the CGS Project alone would have on each of the 3 nearest receptors. This analysis shows that the sound levels emitted by the proposed CGS Project will be less than 55 dBA at each of the 3 noise receptors.

The modeled noise levels were then added to the ambient noise levels that were measured in these areas to determine the potential additive effect the Project could have (comprehensive sound levels). For this cumulative analysis, the lowest sound levels measured over the survey periods (which represent the quietest ambient sound levels) were used to show the greatest potential additive effect at the noise receptors. The results of this analysis showed a change in noise levels that ranged from 1 to 4 dBA at the 3 receptors.

CONCLUSIONS

The assessment of the noise impact on the surrounding area from the proposed CGS Project predicted that noise emanating from the Project to the nearest noise receptors (NR 1, NR 2 and NR 3) will be less than 55 dBA L_{eq}. The noise impact from the Project alone at these nearest points (50 to 52 dBA) is only slightly higher or lower than the most quiet ambient sound levels that were recorded at these same locations under current existing conditions (48.4 to 57.4 dBA).

The impact from the Project on the comprehensive sound levels in the area (ambient noise levels combined with the predicted noise levels generated by the Project) is estimated to create an increase of 1.1 to 3.9 decibels over existing ambient noise levels at the nearest noise receptors

(using only the quietest of existing ambient levels). In general, there is only a marginally perceivable difference in noise for an increase of 3 to 5 decibels and no perceivable difference in noise for an increase less than 3 decibels. Therefore, the proposed addition of the CGS Project will have a minimal noise impact to nearest residential dwellings in the vicinity of the Project.

REFERENCES

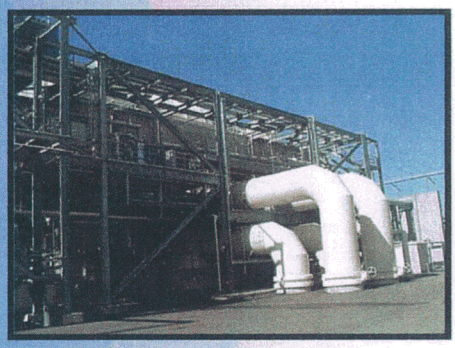
Arcadis, 2007. Background Sound Level Survey, TransCanada Proposed Power Plant Facility, Coolidge, Pinal County, Arizona. September, 2007.

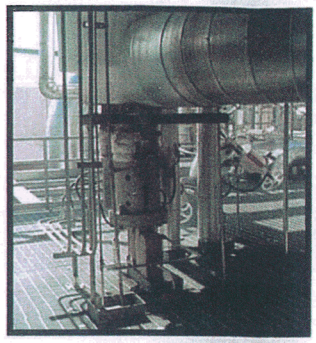
ATCO, 2008. Noise Impact Assessment, Coolidge Generating Station, Coolidge, Arizona. June 2008.

APPENDIX I-1

Noise Report

Noise Impact Assessment
Coolidge Generating Station
Coolidge, Arizona





June 2, 2008

PREPARED FOR:

PB Power, Inc.

PREPARED BY:

ATCO Noise Management

EXECUTIVE SUMMARY

TransCanada is proposing to build and operate a 575 MW simple cycle natural gas-fired peaking power generation station near Coolidge, Arizona in the County of Pinal, which will be designed and constructed by PB Power (PB). TransCanada has requested that the project's noise emissions meet 55 dBA L_{eq} at the three nearest receptors.

PB asked ATCO Noise Management (ATCO) to perform a noise impact assessment of the facility for the purpose of determining whether this project noise limit will be achieved at the three nearest receptors, given below:

Receptor	Description	Distance from Site	Direction	Project Noise Limit (dBA, Leq)
NR 1	Farm House along N. Vail Road	1600 ft	S	55
NR 2	Farm House along N. Vail Road	1350 ft	N	55
NR 3	Town of Randolph	560 ft	W	55

The main equipment proposed for the facility includes twelve (12) GE LM6000 - PC/PD 60 Hz "Next Generation" gas turbine generator packages, twelve (12) selective catalytic reduction (SCR) units, six (6) GSU transformers and other ancillary equipment, such as lube oil fin-fan coolers, gas compressors, and auxiliary transformers.

The objectives of the assessment were to:

- Build a detailed noise model for the facility;
- Perform noise propagation calculations.
- Establish appropriate restrictions on noise emissions if higher than the nighttime limit of 55 dBA L_{eq}.

The noise modeling results suggest that the facility as proposed will meet the noise limit requirement of 55 dBA L_{eq} at the residential receptors.

Receptor	Description	Predicted Nighttime Sound Levels (dBA, Leq)	Permitted Maximum Sound Levels (dBA, Leq)
NR 1	Farm House	50	**55**
NR 2	Farm House	51	**55**
NR 3	Town of Randolph	52	**55**

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1.0 INTRODUCTION

1.1 Background

PB Power (PB) has retained ATCO Noise Management (ATCO) to conduct a noise impact assessment of the proposed Coolidge Generating Station (CGS) project, located near Coolidge, Arizona in Pinal County. The project will be owned and operated by TransCanada.

The proposed CGS project is a simple-cycle gas-fired power plant that will be comprised of twelve (12) GE LM6000 - PC/PD 60 Hz "Next Generation" gas turbine generator packages, twelve (12) selective catalytic reduction (SCR) units, six (6) GSU transformers and other ancillary equipment, such as lube oil fin-fan coolers, gas compressors, and auxiliary transformers.

The scope and objectives for the study are:

- Collect, calculate or assume sound levels and equipment dimensions for all the major noise sources in the proposed generating station;
- Develop an acoustical model, entering the power station layout into the modeling software using PB-supplied site drawings G2.1, G2.2 and G2.3;
- Assess the noise impact by calculating the expected noise levels at the critical receivers;
- Compare calculated or predicted levels with the noise level criterion;
- Where predicted noise levels exceed the allowable levels, the significant noise sources from the project will be identified;
- Report the acoustical modeling results and any noise mitigation measures that may be required.

This report contains information on noise and noise control in the environment. A glossary of acoustical terminology is given in Appendix A.

1.2 Noise Receptors

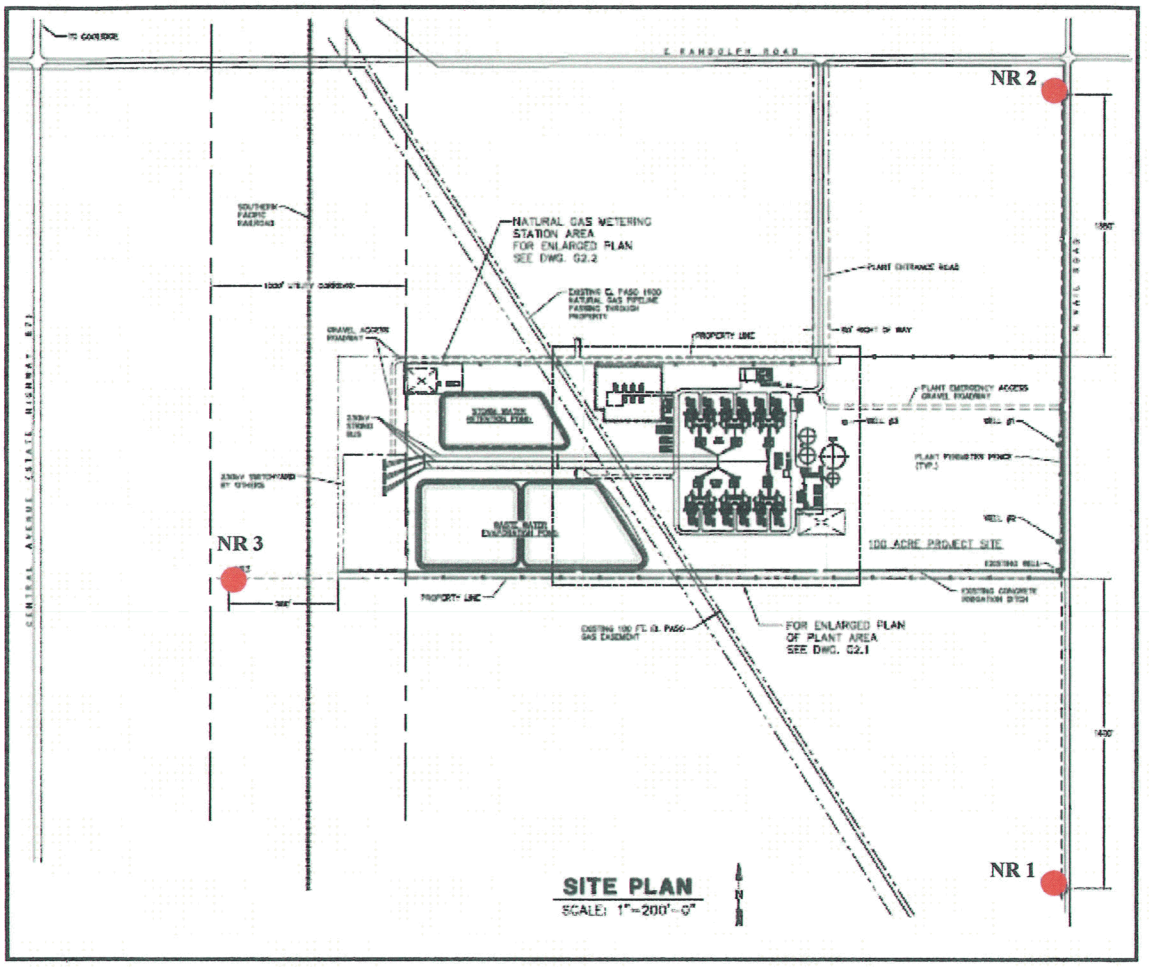
The project site is located in the County of Pinal, adjacent to the Town of Randolph and near the more major center of Coolidge, Arizona. There are three noise receptors (NR) located to the southeast, northeast and west of the project site. These noise residential receptors were identified by the project owner and shown in Figure 1.1.

- **Receptor NR 1**: This receptor is a farmhouse located along N. Vail Road and approximately 1600 ft from the southern project property line;

- **Receptor NR 2**: This receptor is another farmhouse located along N. Vail Road and approximately 1350 ft from the northern project property line;

- **Receptor NR 3**: The Town of Randolph is located to the west of the project site, approximately 560 ft from the switchyard on site.

FIGURE 1.1 Noise Receptors of Project



2.0 NOISE CRITERIA

TransCanada has requested a project nighttime noise level limit at all residential receivers of 55 dBA L_{eq}. This report assessed noise generated from the facility only. Construction noise was also not considered in this report.

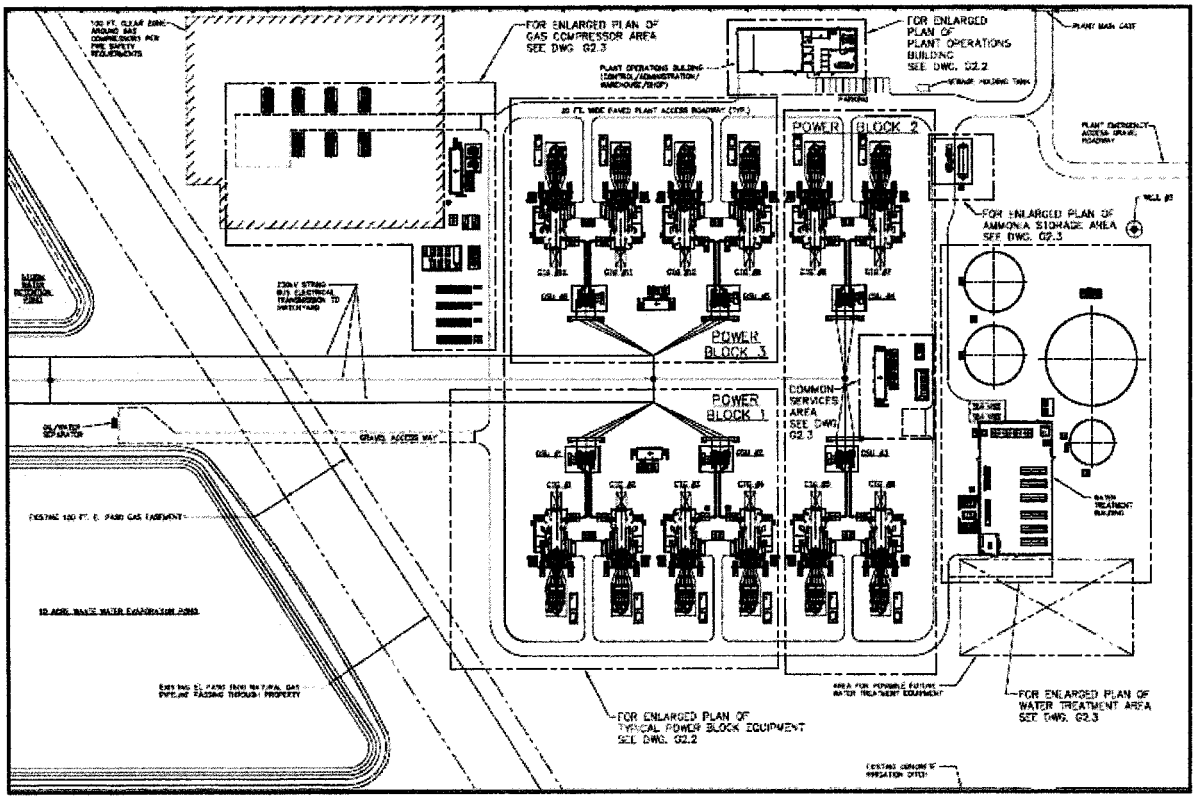
3.0 FACILITY LAYOUT AND NOISE SOURCE DESCRIPTION

3.1 Stationary Noise Sources

A stationary noise source represents any steady-state, continuous, immobile source of noise, such as ventilation inlets and outlets, exhaust systems, GT-generator sets, gas compressors, engines, pumps and valves.

The stationary noise sources on the CGS site include: twelve GE LM6000 - PC/PD 60 Hz "Next Generation" gas turbine generator packages, twelve selective catalytic reduction (SCR) units, twelve lube oil fin-fan coolers, seven gas compressors, three air compressor units, four auxiliary cooling water chiller units, six GSU transformers, two auxiliary service transformers and other ancillary equipment. Figure 3.1 shows the site equipment layout.

FIGURE 1.2 Site Equipment Lay-out



Noise data for the various components of the GE LM6000- PC/PD 60 Hz "Next Generation" package were provided to ATCO by PB. Where component information was lacking, ATCO used source noise levels provided by GE from other LM6000 projects. The list of data sources included:

- Sound Power Levels for LM6000-PC/PD 60 Hz "Next-Generation" Package from GE; dated August 31, 2007
- ST Gas Turbine SCR/COR Noise Control, from Sound Technologies, proposal No P08-0107; dated January 23, 2008
- PWL of 60-Hz Lube-Oil Fin-Fan Cooler, GE; from the ATCO database
- PWL of SCR Tempering Air Fan, from the ATCO database
- PWL of LM6000 "Standard" 60-Hz 85 dBA package with PC engine; from the ATCO database
- PWL of LM6000 "Next-Generation" 80 dBA package; from the ATCO database

Table 3.1 lists each stationary noise source with its associated sound power level (PWL's) used in the acoustical model, along with a brief description and source of the data. Table 3.2 gives the sound power level of each noise source by octave band.

TABLE 3.1 Project Noise Sources in Model, *dB re 10^{-12} watt*

No	Drg Ref	Noise Source	PWL/ Per Item (dBA)	Total Qty	Information Sources and Assumptions
1	(1)	Turbine Enclosure	95	12	GE LM6000-PC/PD 60 Hz "NXGN" package
2	(1)	Generator Enclosure	95	12	As above
3	(1)	Combustion Air Inlet Filter House	93/side	12	As above
4	(1)	Filter House Shell Surface Break-out	81	12	As above
5	(1)	Intake Silencer Shell Break-out	94	12	As above
6	(1)	Turbine Vent Exhaust (Horizontal directivity included)	86	24	As above, 1 running, 1 standby per unit; model included 12
7	(1)	Turbine Vent Motor & Fan Surface	96	24	As above, 1 running, 1 standby per unit; model included 12
8	(1)	Generator Motor & Fan Surface	88	24	As above, 1 running, 1 standby per unit; model included 12
9	(1)	Generator Ventilation Exhaust	106	12	GE LM6000-PC/PD 60 Hz "NXGN" package
10	(1)	Generator Ventilation Exhaust Shell	87	12	As above
11	(11)	Turbine Exhaust Stack Exit w/ SCR & Silencer 90 degree	104	12	85 ft stack, Sound Technologies data sheet P08-0107
12	(14)	Lube Oil Fin-fan Cooler	98	12	ATCO database
13	(8)	Auxiliary Skid with Enclosure	95	12	Typical GE LM6000 standard package- ATCO database
14	(19)	GSU Transformer	103	6	ATCO database

15	(25)	Power Block Service Transformer	87	2	ATCO database
16	(9)	SCR Tempering Air Fan Inlet	98	24	ATCO database, 1 running, 1 standby; model included 1
17	(9)	SCR Tempering Air Fan Casing	95	24	ATCO database, 1 running, 1 standby; model included 1
18	(85)	Auxiliary Cooling Water Chiller	93	4	ATCO database, 3 running, 1 standby; model included 3
19	(38,39)	Gas Compressor Skid	107	7	ATCO database, 6 running, 1 standby; model included 6
20	(1)	Exhaust Expansion Joint with Barrier	98	12	ATCO database, with Barrier
21	(10)	SCR Duct Section 1 Sides with Barrier	76	12	Sound Technologies data sheet P08-0107
22	(10)	SCR Duct Section 1Tops	87	12	Sound Technologies data sheet P08-0107
23	(10)	SCR Duct Section 2 Sides	89	12	Sound Technologies data sheet P08-0107
24	(10)	SCR Duct Section 2 Tops	89	12	Sound Technologies data sheet P08-0107
25	(10)	SCR Duct Section 3 Sides	88	12	Sound Technologies data sheet P08-0107
26	(10)	SCR Duct Section 3 Tops	88	12	Sound Technologies data sheet P08-0107
27	(10)	SCR Duct CO Section Sides	85	12	Sound Technologies data sheet P08-0107
28	(10)	SCR Duct CO Section Top	86	12	Sound Technologies data sheet P08-0107
29	(10)	SCR Duct SCR Section	85	12	Sound Technologies data sheet P08-0107
30	(10)	SCR Duct Breach Section	82	12	Sound Technologies data sheet P08-0107
31	(11)	Stack Casing Lower Portion	88	12	Sound Technologies data sheet P08-0107
32	(11)	Stack Casing Silencer Portion	86	12	Sound Technologies data sheet P08-0107
33	(11)	Stack Casing Upper Portion	75	12	Sound Technologies data sheet P08-0107
34	(13)	Ammonia Skid	90	12	ATCO database
35	(49)	Air Compressor Skid	91	3	ATCO database, 2 running, 1 standby; model included 2
36	(41)	Lube Oil Chiller Service Transformer	87	2	ATCO database
37	(89)	Gas Compressor Aux Transformer	87	2	ATCO database
38	(80)	Common Services Area Service Transformer	87	2	ATCO database
39	(81)	Power Block 2 Service Transformer	87	2	ATCO database
40	(88)	Step-down Transformer	87	2	ATCO database
41	(59)	Multi-Media Backwash Pump	90	2	ATCO database, 1 running, 1 standby; model included 1
42	(71)	Raw Water Transfer Pump	90	2	ATCO database, 1 running, 1 standby; model included 1

43	(72)	Service Water Pump	90	2	ATCO database, 1 running, 1 standby; model included 1
44	(73)	Softened Water Forwarding Pump	90	2	ATCO database, 1 running, 1 standby; model included 1
45	(86)	Auxiliary Cooling Water Pump	90	4	ATCO database, 3 running, 1 standby; model included 1
46	(46)	Water Treatment Building	86	1	ATCO database
47		Gas Metering Station Reduce Valve	100	1	ATCO database

Note: the drawing reference number is the item number shown on PB drawing "Enlarged Plot Plan – G2.2 & G2.3"

TABLE 3.2 Equipment Noise Data in OBCF, *dB re 10^{-12} watt*

Equipment			Octave Band Center Frequency Hz									
No	**Drg Ref**	**Name**	**31.5**	**63**	**125**	**250**	**500**	**1k**	**2k**	**4k**	**8k**	**dBA**
1	(1)	Turbine Enclosure	108	105	101	95	91	84	85	87	83	**95**
2	(1)	Generator Enclosure	107	106	106	94	89	90	86	77	77	**95**
3	(1)	Combustion Air Inlet Filter House	102	102	98	92	87	87	85	83	72	**93**
4	(1)	Filter House Shell Surface Break-out	105	98	95	71	60	51	59	68	70	**81**
5	(1)	Intake Silencer Shell Break-out	102	98	89	87	86	88	89	84	81	**94**
6	(1)	Turbine Vent Exhaust (Horizontal directivity included)	103	104	96	91	77	75	74	68	59	**86**
7	(1)	Turbine Vent Motor & Fan Surface	101	98	99	99	91	89	84	85	80	**96**
8	(1)	Generator Motor & Fan Surface	102	102	102	91	78	73	71	68	65	**88**
9	(1)	Generator Ventilation Exhaust	99	96	109	103	93	100	99	100	89	**106**
10	(1)	Generator Ventilation Exhaust Shell	90	89	100	92	75	67	61	49	37	**87**
11	(11)	Turbine Exhaust Stack Exit w/ SCR & Silencer 90 degree	130	127	115	100	85	81	78	85	82	**104**
12	(14)	Lube Oil Fin-fan Cooler	107	108	101	98	96	92	89	85	78	**98**
13	(8)	Auxiliary Skid with Enclosure	84	87	98	93	89	90	88	82	74	**95**
14	(19)	GSU Transformer	98	100	106	102	104	93	89	85	82	**103**
15	(25)	Power Block Service Transformer	86	86	90	85	84	82	78	75	70	**87**
16	(9)	SCR Tempering Air Fan Inlet	98	98	100	96	95	94	89	87	82	**98**
17	(9)	SCR Tempering Air Fan Casing	91	91	94	94	91	90	89	84	78	**95**

18	(85)	Auxiliary Cooling Water Chiller	91	91	88	90	89	88	84	86	79	**93**
19	(38, 39)	Gas Compressor Skid	100	101	103	106	103	102	98	95	92	**107**
20	(1)	Exhaust Expansion Joint	100	101	98	97	95	92	89	87	78	**98**
21	(10)	SCR Duct Section 1 Sides with Barrier	112	97	81	74	62	45	36	28	13	**76**
22	(10)	SCR Duct Section 1Tops	113	105	96	92	83	68	64	62	51	**87**
23	(10)	SCR Duct Section 2 Sides	115	107	98	94	85	70	66	64	53	**89**
24	(10)	SCR Duct Section 2 Tops	115	107	98	94	85	70	66	64	53	**89**
25	(10)	SCR Duct Section 3 Sides	114	106	97	93	84	69	65	63	52	**88**
26	(10)	SCR Duct Section 3 Tops	114	106	97	93	84	69	65	63	52	**88**
27	(10)	SCR Duct CO Section Sides	106	101	94	90	81	66	62	60	49	**85**
28	(10)	SCR Duct CO Section Top	106	101	95	91	82	67	63	61	49	**86**
29	(10)	SCR Duct SCR Section	106	101	94	90	80	64	60	57	46	**85**
30	(10)	SCR Duct Breach Section	104	99	92	88	77	62	58	55	43	**82**
31	(11)	Stack Casing Lower Portion	99	100	98	94	84	72	68	65	54	**88**
32	(11)	Stack Casing Silencer Portion	100	100	96	92	81	64	60	57	47	**86**
33	(11)	Stack Casing Upper Portion	100	98	87	67	47	40	39	48	46	**75**
34	(13)	Ammonia Skid	90	90	87	89	86	85	80	85	78	**90**
35	(49)	Air Compressor Skid	90	90	88	90	87	86	83	82	78	**91**
36	(41)	Lube Oil Chiller Service Transformer	86	86	90	85	84	82	78	75	70	**87**
37	(89)	Gas Compressor Aux Transformer	86	86	90	85	84	82	78	75	70	**87**
38	(80)	Common Services Area Service Transformer	86	86	90	85	84	82	78	75	70	**87**
39	(81)	Power Block 2 Service Transformer	86	86	90	85	84	82	78	75	70	**87**
40	(88)	Step-down Transformer	86	86	90	85	84	82	78	75	70	**87**
41	(59)	Multi-Media Backwash Pump	89	89	86	88	85	84	79	84	77	**90**
42	(71)	Raw Water Transfer Pump	89	89	86	88	85	84	79	84	77	**90**
43	(72)	Service Water Pump	89	89	86	88	85	84	79	84	77	**90**
44	(73)	Softened Water Forwarding Pump	89	89	86	88	85	84	79	84	77	**90**
45	(86)	Auxiliary Cooling Water Pump	89	89	86	88	85	84	79	84	77	**90**
46	(46)	Water Treatment Building	102	100	86	86	84	81	75	69	63	**86**
47		Gas Metering Station Reduce Valve	88	89	85	86	88	91	94	94	92	**100**

Note: the drawing reference number is the item number shown on PB drawing "Enlarged Plot Plan – G2.2 & G2.3"

The dimensions and layout of the GE LM6000 package, SCR, Stack, Chiller, and other equipment were modeled as per PB drawing "Enlarged Plot Plan – G2.1, G2.2 & G2.3". The project equipment layout drawing is shown in Figure 1.2.

3.2 Intermittent Noise Sources

An intermittent noise source represents any stationary noise source which is periodically or intermittently active during the day or night.

The LM6000 variable bleed vent (VBV) is expected to be an intermittent noise source during the start-up and shutdown operation. However, the bleed-vent noise is at a minimum when combustion exhaust is at the maximum; as a consequence, they do not achieve the maximum noise level simultaneously. For this reason, the maximum turbine combustion exhaust noise was modeled when the plant was operational at full load, while the VBV noise levels were not considered in the model.

3.3 Noise Sources with Impulsive and Tonal Qualities

An impulsive noise or impact noise source is any sound with a rapid rise and decay of sound level caused by sudden interaction between two surfaces or a sudden release of pressure.

A tonal noise source is any sound that can be distinctly identified through the sensation of pitch. Tonal or discrete frequency sounds are characterized by spikes of high energy at specific frequencies in an otherwise continuous noise spectrum. For industrial noise analysis, only the One-third Octave Band provides a sufficient level of detail. When the One-third Octave Band level of a particular frequency is 5 to 15 dB higher, (depending on the frequency range), than both of the adjacent upper and lower band levels, it can be classified as tonal.

No tonal or impulsive noise sources will be included in the model until final equipment selection is made. With this detailed equipment information, such as fan make and model, tonal noise can be assessed.

4.0 MODELING PROCEDURES

4.1 Sound Power Level Calculations

Where possible, the source sound power levels were secured from equipment vendors as well as the ATCO database. For other sources, the sound power was calculated using commonly accepted engineering methods. Calculations were performed for each identified source in full octave bands between 31.5 Hz and 8000 HZ.

4.2 Prediction Method

The acoustical modeling for this project was conducted using Cadna/A computer software developed by DataKustik GmbH. The model incorporated the physical features of the facility and the surrounding area such SCRs and stacks; and the identified noise sources. The propagation calculations were carried out using ISO 9613, *Part 1: Calculation of the absorption of sound by the atmosphere, 1993* and *Part 2: General method of calculation (ISO 9613-2:1996)*.

4.2 Modeling Elements

The dimensions and layout of the GE LM6000 package, SCR, Stack, and other equipment were modeled according to PB drawings. The project's equipment layout is shown in Figure 3.1.

Each noise radiating element was modeled based on its noise emission pattern. Concentrated sources such as the Cooper air compressor were modeled as point sources that radiate sound spherically. The CT enclosure's walls and roof were modeled as plane sources, which radiate sound in a hemispherical pattern. The exhaust stacks, chiller and storage tanks were modeled as structural elements. The reflective characteristic of the structure is quantified by its absorption coefficient, which is typically defined with a value of 0.21. Blast walls and sound barriers were modeled as reflective barriers for the non-attenuated model and as absorptive barriers for the attenuated model.

4.3 Modeling Parameters and Assumptions

The propagation calculation parameters are shown in Table 4.1. Propagation calculations under the ISO 9613 standard incorporate the adverse effects of certain atmospheric and meteorological conditions on sound propagation, such as gentle breeze from source to receiver and mild atmospheric inversion. Also critical to the modeling results is ground absorption.. Ground absorption can vary from 0.0 (completely reflective) to 1.0 (completely absorptive). ATCO selected moderate absorption of 0.5 by assuming relatively rough terrain which will absorb and diffuse some of the sound rays.

TABLE 4.1 Summary of Terrain Description and Meteorology

Item	Description
1. Terrain Description	Flat
2. Site Elevation	N/A
3. Design Ambient Temperature	68°F
4. Design Relative Humidity	50%
5. Ground Absorption	G = 0.5
6. Reflections	Two reflections (from buildings and obstacles) were allowed for individual acoustic rays during propagation calculations

Other assumptions used in the model included:

1. Plant operation is full load, steady-state;
2. All equipment, with the exception of the VBV, are stationary noise sources emitting continuous sound;
3. Barriers are installed at both sides of each turbine exhaust expansion joint and SCR inlet duct;
4. Only one (1) of the two (2) turbine and two (2) generator compartment ventilation exhaust fans is operating at any given time;
5. Six (6) of seven (7) gas compressors are operating at any given time;
6. Only one (1) of two (2) SCR tempering air fan is operating at any given time;
7. Two (2) of three (3) air compressor skids operates at any given time;
8. Three (3) of four (4) auxiliary cooling water pumps operate at any given time;
9. Only one (1) of two (2) multi-media backwash pumps, service water pumps, softened water forwarding pumps and raw water transfer pumps operates at any time;
10. The noise receptors are modeled as described in Section 1.2, and the height of all receptors is set to 5 ft (1.5 m) above the ground.

4.4 Prediction Accuracy

Cadna/A predictions are accurate to within 1 dB of the ISO propagation standard. Calculations based on the ISO 9613 Standard are typically accurate to within 3 dB of actual measurements and in most cases yield conservative results. The software accuracy is well within the uncertainties introduced by factors such as source noise data, actual and varying ground attenuation characteristics, actual environmental conditions, atmospheric turbulence, presence of inversion layers, and the direction of the wind.

5.0 MODELING ASSESSMENT RESULTS

5.1 Sound Levels at the Nearest Receptors

The acoustic model calculated the sound propagation from the CGS project site to the surrounding area based on the sound levels listed in Table 3.1 and Table 3.2. The noise impact of the CGS project at the noise receptors as described in Section 1.2 is presented in this section.

The predicted sound levels in Octave Band Center Frequency at each receptor are shown in Table 5.1 below.

TABLE 5.1 Predicted Sound Levels at Receptors, dB

	Octave Band Center Frequency, Hz										
Receptor	**31.5 Hz dB**	**63 Hz dB**	**125 Hz dB**	**250 Hz dB**	**500 Hz dB**	**1000 Hz dB**	**2000 Hz dB**	**4000 Hz dB**	**8000 Hz dB**	**Overall dB(A)**	**Max. Allowable (dBA)**
NR 1	76	73	59	48	43	42	37	20	-	50	**55**
NR 2	77	73	59	49	45	45	39	23	-	51	**55**
NR 3	76	73	60	50	46	46	40	26	-	52	**55**

Figure 5.1 and Figure 5.2 illustrate the noise impact of the CGS project on the surrounding area in a contour line and color contour format, respectively. Different sound level ranges are represented by the corresponding colors on the site map.

Table 5.1 shows that the sound levels emitted by the CGS project will not exceed the noise criteria at two noise receptors and will meet the noise requirements for the project.

It should be noted that the noise impact assessment has relied on the sound levels listed in Table 3.1 and Table 3.2. For equipment for which noise data were not provided by PB, ATCO calculated or assumed noise levels from an in-house database of previous projects. These data include sound power levels in the 31.5 Hz band for the LM6000 exhaust stacks.

At the time when equipment selections are finalized, final equipment noise data should be entered into the model to ensure that the project will still meet the noise requirement.

FIGURE 5.1 Noise Contour Lines of CGS Project

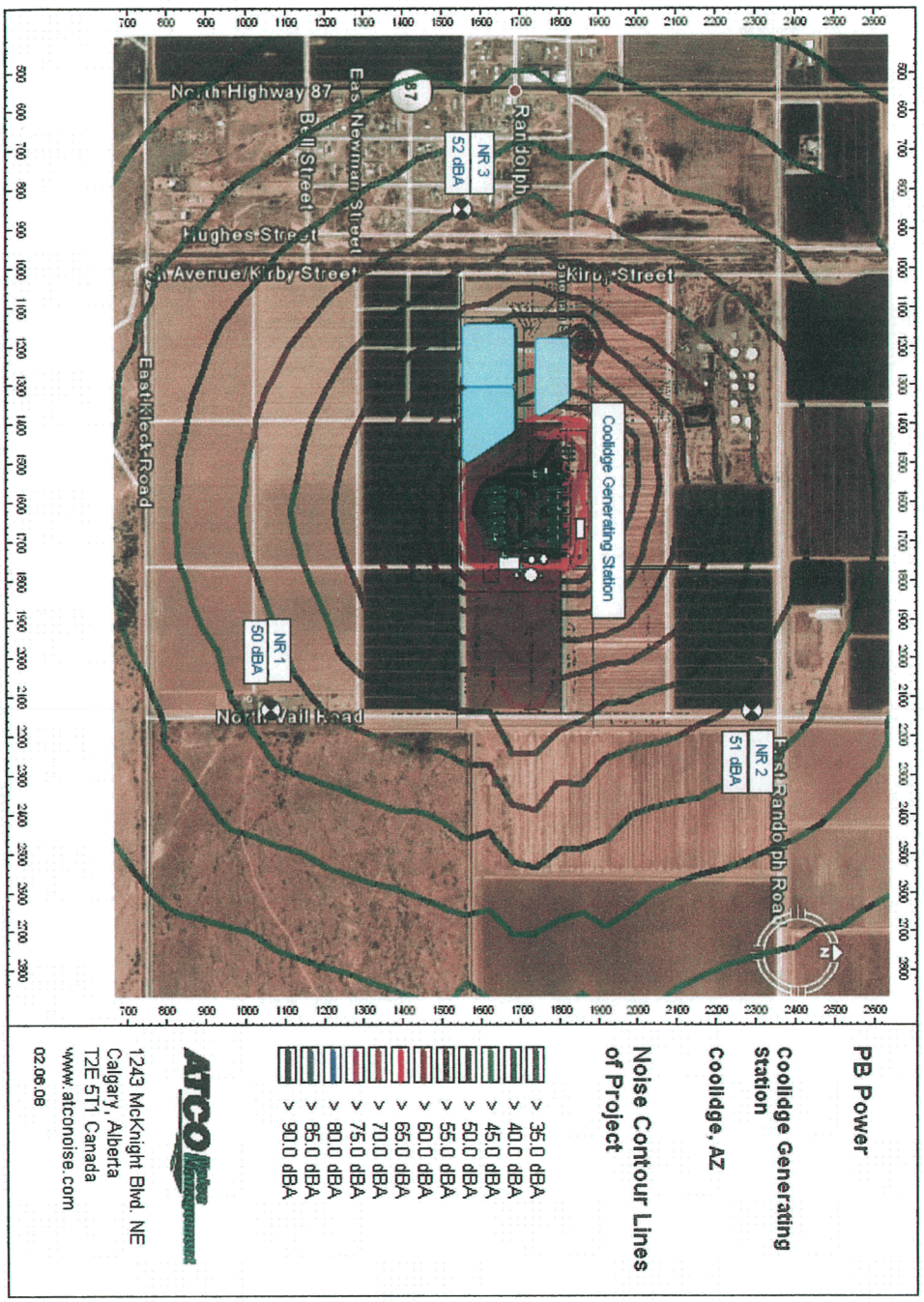
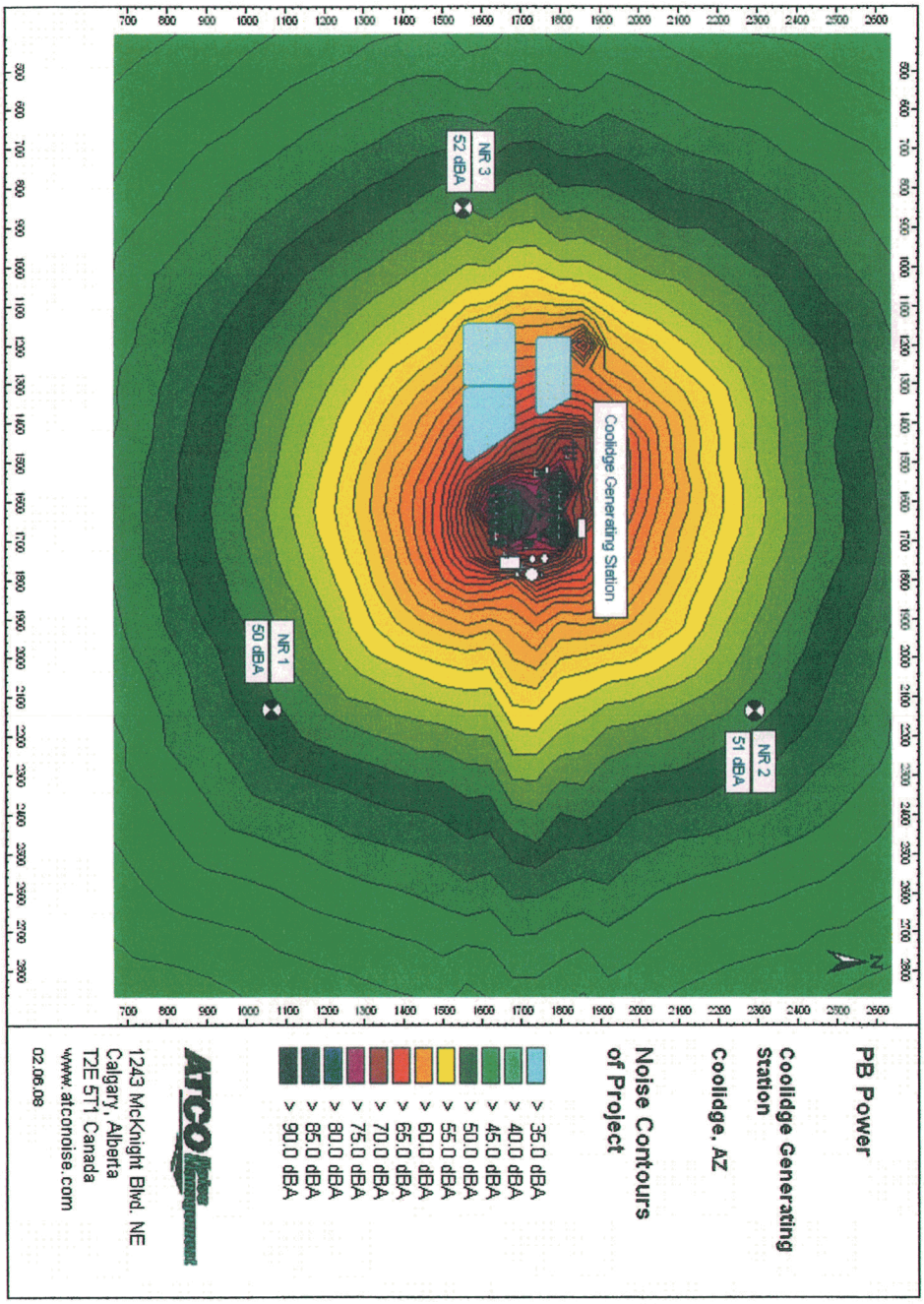


FIGURE 5.2 Noise Contour Maps of CGS Project



6.0 CONCLUSION

This study assessed the noise impact of the proposed Coolidge Generating Station on the surrounding area. The predicted sound levels indicate that the noise levels at the nearest noise receptors NR 1, NR 2 and NR 3 will meet the noise requirement for the project of 55 dBA L_{eq}.

7.0 DISCLAMERS

Our review is based on an examination of representative portions of the design parameters and conditions supplied by Client. If Client did not provide all the required information, ATCO assumed representative design parameters and conditions, based on in-house literature and in-house equipment database. It must be further acknowledged that our study is based on the present design parameters and conditions listed in this report only, and that we cannot and do not warrant any different design parameters and conditions that may exist but which were not represented in this study.

Third Party:

This "Study", which is reported in the preceding pages, has been prepared in response to a specific request for service from the Client to whom it is addressed. The information contained in this "Study" is not intended for the use of, nor is it intended to be relied upon, by any person, firm, or corporation other than the Client to whom it is addressed. We deny any liability whatsoever to other parties who may obtain access to the information contained in this "Study" for any damages or injury suffered by such third parties arising from the use of this "Study" by them without the express prior written permission from ATCO and its Client who has commissioned this "study".

APPENDIX A: SOUND LEVEL TERMINOLOGY

Frequency - the number of cycles per unit interval of time. *Units Hz (Hertz).*

Bel (B) - a unit of measure for LEVEL or LEVEL DIFFERENCE (A.G. Bell *1847-1922*). If a quantity is increased by a factor 10^n, its level goes up by *n* bels.

Decibel (dB) - the standard unit of measure, in acoustics, for level or level difference. The decibel scale is based on the ratio $10^{1/10}$; multiplying a power-like quantity (such as sound power or mean square) by this factor increases its level by 1 decibel. If a power-like quantity is increased by a factor $10^{n/10}$, its level goes up by *n* decibels. *Unit symbol for dB.*

Sound Pressure (Pa) - the difference between the instantaneous pressure at a fixed point in a sound field, and the pressure at the same point with the sound absent. *Units Pa (Pascal).*

Sound Pressure Level (SPL, L_p) - or sound pressure-squared level, at a given point the quantity L_p defined by $L_p = 10\ \mathrm{Log}_{10}(P_{rms}/P_{ref})^2 = 20\ \mathrm{Log}_{10}(P_{rms}/P_{ref})$. Here P_{rms} is the ROOT MEAN SQUARE sound pressure, and P_{ref} is the reference rms sound pressure. *Units dB re* $(20\mu Pa)^2$.

A-weighted Sound Pressure Level (SPL, L_{pA}, L_A) - the LEVEL of sound pressure signal to which A-WEIGHTING has been applied. *Units dB re* $(20\mu Pa)^2$.

Sound Power – the rate of acoustic energy flow across a specified surface, or emitted by a specified sound source. *Units W (Watt).*

Sound Power Level (PWL, L_w) - the level of SOUND POWER expressed in decibels relative to a stated reference value. The quantity L_w is defined by $L_w = 10\ \mathrm{Log}_{10}(W/W_{ref})$. Here W_{ref} is the reference sound power. *Units dB re* 1_PW.

A-weighted Sound Power Level (PWL, L_{wA}) - the level of sound power to which A-WEIGHTING has been applied. *Units dB re* $(20\mu Pa)^2$.

A-weighting - a frequency-weighting procedure, in which the power or energy spectrum of a signal is progressively attenuated towards the high and low ends of the human audible range. Frequency components around 1 kHz - 5 kHz are hardly affected, but the attenuation is large at low frequencies (i.e., 70 dB at 10 Hz).

Percentile Sound Levels, L_N - since the noise levels in a community vary with time in a more or less random manner, the descriptors of these time varying noise levels may be defined in statistical terms. The statistical descriptors are referred to as the percentile sound levels, L_N; with L_N defined as the level exceeded N% of the time. The descriptors often used are:

L_0, Highest Level - this is the highest noise level, also known as L_{max}.

L_1, Level of Highly Intrusive Sounds – the level exceeded 1% of the time, is a measure of the highly intrusive sounds.

L_{10}, Level of Intrusive Sounds - The level exceeded 10% of the time, and is used to indicate the average level of the intrusive sounds.

L_{50}, Median Level - The level exceeded 50% of the time or the median level. A useful measure of the average noise conditions on a site.

L_{90}, Background Level – The level exceeded 90% of the time. It provides a good indication of the steady background noise level on a site.

L_{eq}, Equivalent Sound Level - the prime descriptor used in assessing most types of sounds heard in a community. The L_{eq} is an average of sounds measured over time. It is strongly influenced by occasional loud, intrusive noises. Because it is able to account for such noises, for example, the L_{eq} is the best descriptor for the intermittent sound levels from construction activities.

Noise Reduction Coefficient (NRC) – the overall sound absorbing performance of a material, or wall system, which are an arithmetic average of the absorption coefficients at 250, 500, 1000, and 2000 Hz.

Ambient sound level - means background sound level. It is the sound level that is present in the acoustic environment of a defined area. Aircraft flyover and rail noise may be excluded in some jurisdictions.

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ANSI SI.26-1978, Method for the Calculation of the Absorption of Sound by the Atmosphere;

ANSI B133.8-1977, Gas Turbine Installation Sound Emissions;

ANSI S12.8-1987, Methods for Determination of Insertion Loss of Outdoor Noise Barrier;

ANSI S12.23-1989, Method for the Designation of Sound Power Emitted by Machinery and Equipment;

ANSI S12.34-1988, Engineering Methods for the Determination of Sound Power Levels of Noise Sources for Essentially Free-field Conditions over a Reflecting Plane;

ISO Standard 9613,Attenuation of sound during propagation outdoors – Part 1: Calculation of the Absorption of Sound by the Atmosphere, Part 2: General method of calculation;

ASTM E413-87(Reapproved 1994) Classification for Rating Sound Insulation;

ASTM C423-90a Sound Absorption and Sound Absorption Coefficients by the Reverberation Room Method;

EPA Report No.55019-74-004, 1974, Information on Levels of Environment Noise Requisite to Protect Health and Welfare with an Adequate Margin of Safety, U.S.Environmental Protection Agency, Washington, D.C., pg D-17;

EXHIBIT J

EXHIBIT J - SPECIAL FACTORS

As stated in Arizona Administrative Code R14-3-219:

> *"Describe any special factors not previously covered herein, which Applicant believes to be relevant to an informed decision on its application."*

PUBLIC PROCESS

The Applicant initiated a public process for the Project that included extensive outreach efforts focused on distributing information about the Project and soliciting input from the public and interested stakeholders.

The public process was conducted in two phases as follows:

- Phase I – described the company, Project need and benefits, Site location, and Project schedule.
- Phase II – described the company, detailed Project layout and results of preliminary studies.

A series of meetings were conducted during each phase to engage the stakeholders and the public in the process. These meetings included:

- Briefings with the state and local jurisdictional agencies;
- Stakeholder workshops with representatives of multiple agencies; and
- Open house meetings with interested members of the public.

In addition to briefings, workshops, and open house meetings, the Project team worked diligently to provide additional opportunities for members of the public to participate during each phase of the public process. These opportunities included the following:

Project Web Page: The Applicant maintains a Project web page, *www.transcanada.com/coolidge,* which includes details about the Project, maps and graphics, Project schedules, and general Project information.

Toll-free Telephone: The Applicant maintains a toll-free telephone number, 1-866-382-0886, which allows people to ask questions about the Project and receive Project information.

Project E-mail Account: The Applicant maintains a project e-mail account and responds to all inquiries. The Applicant attempts to respond to inquiries within three business days.

Door-to-door Neighbor Discussions: The Applicant felt it was important to reach out to the local residents of the Randolph community, the closest community to the Project Site. Therefore,

the Applicant conducted a door-to-door outreach program in this community, as described further below, as part of the second phase of the public outreach program.

PHASE I – PUBLIC PROCESS

The goal of the Phase I public process was to introduce the company and the Project to jurisdictional officials and staff, interested stakeholders, and the public. The Applicant presented information about the need and benefits of the new Coolidge Generating Station, a general Project overview, the Site location, and Project schedule.

PHASE I - JURISDICTIONAL BRIEFINGS

The focus of the briefings was to provide an overview for the Project and to gain local input. The Applicant met individually with elected officials and agency representatives of the City of Coolidge, Pinal County, the ACC, and other interested stakeholders. A list of all Project briefings conducted during this phase is included in **Appendix J-1**.

PHASE I – STAKEHOLDER WORKSHOP

Following the briefings, the Applicant held a Stakeholder Workshop to coordinate with planning staff from the jurisdictions within the Project area. The objective of the workshop was to provide more detailed information on the Project and to solicit information from local communities and community leaders to identify potential opportunities and concerns. The Workshop was held on February 7, 2008. The Workshop invitation, a list of invitees, handouts, presentation figures, and the sign-in sheet are included in **Appendix J-2.**

PHASE I - OPEN HOUSE MEETING

The Project team held an Open House on February 28, 2008. The Applicant mailed an invitation to all the residents within a 7 mile radius of the Project Site and the entire Coolidge zip code. In total, approximately 5,600 invitations were mailed to local households. Additionally, Open House announcements were posted at public gathering places (i.e., post offices, community centers and local markets) and on the Project web page. Open house advertisements and articles about the Project were also published in local newspapers. **Appendix J-3** includes the Open House invitation, sign-in sheets, poster boards used at the Open House, and comment forms received from the Phase I Open House attendees. The Applicant advertised the Open House in the Casa Grande Dispatch and the Tri-Valley Dispatch.

PHASE II – PUBLIC PROCESS

PHASE II - JURISDICTIONAL BRIEFINGS

In Phase II, an additional round of briefings was conducted with elected officials and representatives of organizations that had expressed a desire to remain engaged in the Project. The purpose of these briefings was to solicit input on new or outstanding opportunities or concerns prior to the Phase II Stakeholders Workshop. A complete list of the stakeholder briefings that occurred during this phase is included in **Appendix J-1**.

PHASE II – DOOR-TO-DOOR NEIGHBOR DISCUSSIONS

As stated previously, the Applicant felt it was important to proactively reach out to the local residents of the Randolph community because this is the community in closest proximity to the Project Site. Project representatives went to approximately 100 dwelling units within the Randolph area during May and spoke directly with all persons who responded to the contact effort at each individual dwelling structure, which included approximately one-third of the potential households. Residents were provided information about the Project, were provided an opportunity to talk one-on-one with Project representatives, and were encouraged to attend the second Open House held on June 30, 2008. Information was left at homes where residents did not respond at the door. Maps showing the location of where the door-to-door visits were conducted and the results are included in **Appendix J-4**.

PHASE II – STAKEHOLDER WORKSHOP

The Phase II Stakeholder Workshop was held on June 17, 2008. The purpose of the Phase II Stakeholder Workshop was to share the input received as a result of the Phase I briefings and Open House and to provide detailed site design and engineering detail about the Project. The invitations, list of attendees, handouts and figures that were presented at the Phase II Stakeholder Workshop along with the comment forms received and the sign-in sheets are included in **Appendix J-2**.

PHASE II - OPEN HOUSE MEETING

The Phase II Open House was held on June 30, 2008. To encourage attendance, the Open House was located in a large air conditioned facility and included a full BBQ dinner. Open House invitations were mailed to the residents within a 7 mile radius of the Project site and the entire Coolidge zip code. Approximately 5,600 invitations were mailed as was done in Phase I. Additionally, advertisements were placed in local papers (Casa Grande Dispatch, Coolidge Examiner, and Tri-Valley Dispatch) and Open House announcements were posted at public gathering places (i.e. post offices, community centers and local markets) and on the Project web page. As stated above, residents of Randolph also were provided with open house invitations during the door-to-door outreach in that community.

At the Phase II Open House, site design and details, plant renderings and photographic simulations of the facility and the results of preliminary studies were provided for comment. The Open House invitation, sign-in sheets, poster boards used at the Open House, and comment forms received from the Phase II Open House attendees are included in **Appendix J-3.**

APPENDIX J-1

Jurisdictional Briefings

Coolidge Generating Station

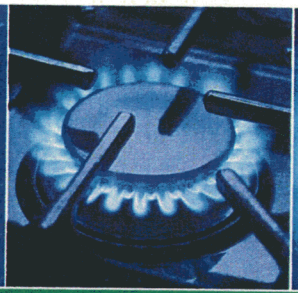
Timing / Audience for Briefings Provided About the CGS Project

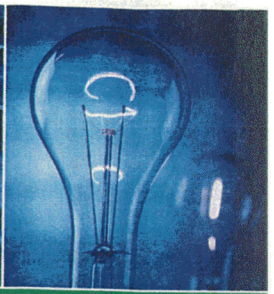
Date	Event
January 2008	ACC Briefings
	Sandie Smith/Pinal County Supervisor
	Bob Flatley/City of Coolidge
	Lionel Ruiz/Pinal County Supervisor
	David Snider/Pinal County Supervisor
	Ken Buchanan, Pinal County
	Senator Rebecca Rios
	State Representative Barbara McGuire
	State Representative Lucy Mason
	State Representative Pete Rios
	State Representative Michele Reagan
	Jessica Youle, Department of Commerce Energy Policy Advisor
	Central Arizona Regional Economic Development Foundation
February 2008	Stakeholder Workshop #1
	Pinal County Government Alliance Meeting
	Open House #1
May 2008	Meeting with ACC Line Siting Committee Chairperson (John Foreman)
	Meeting with Greg Wertz, Property Owner
	Door to Door Neighborhood Discussions with Randolph Residents
June 2008	Coolidge Planning and Zoning Commission
	Coolidge City Council
	Randall Rushing, City of Coolidge Newly Elected Council Member
	Stakeholder Workshop #2
	Open House #2
July 2008	Four Southern Tribes Meeting
	Arizona Training Center

APPENDIX J-2

Stakeholder Workshops

Coolidge Generating Station
Stakeholder Workshop





Date: Thursday, February 7, 2008

Time: 11:00 a.m. to 1:00 p.m.

Location: Women's Club
260 W. Pinkley Ave
Coolidge, AZ 85228

TransCanada is proposing to build and operate a simple-cycle, natural gas-fired peaking power generation station in Coolidge, Arizona, in response to a request for proposals from Salt River Project (SRP). Based on optimal operating conditions, TransCanada predicts an electrical output of approximately 575 megawatts (MW) from this facility. The Project is designed to provide a quick response to "peak" power demands. It would also provide reserve capacity and the ability to add power quickly to support power reliability in the region.

The Project team is conducting a workshop for interested jurisdictions, stakeholders and planning staff to learn about the Project and discuss planning issues. Representatives from TransCanada will be available to discuss the Project, its need and benefits, and answer any questions you may have. We welcome your input and hope you can join us.

For more information about TransCanada, please visit our website: www.transcanada.com

Lunch will be served. Please RSVP to Leslie McFadden (1.866.382.0886) on or before February 1, 2008 or by email at cgs@transcanada.com

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Trans Canada / COOLIDGE GENERATING STATION PROJECT STAKEHOLDERS LIST						
Workshop Location: The Womens Club Coolidge Arizona						
	Workshop 1 Date:					
Name	**Title**	**Street Address**	**City**	**State**	**Zip**	**Email**
Randolph						
Dr. Darleen White	Superintendent/Randolph School District	221 W. Central Ave.	Coolidge	Arizona	85228	
Steve Bowlin	Randolph School Board Vice President	PO Box 31	Valley Farms	Arizona	85291	steve.bowlin@azwildblue.com
Irma Murrieta	Randolph School Board President	PO Box 1282	Coolidge	Arizona	85228	
Coolidge						
Tom Shope	Mayor	130 West Central Avenue	Coolidge	Arizona	85228	Tshope@coolidgeaz.com
Robert Flatley	City Manager	130 West Central Avenue	Coolidge	Arizona	85228	Bobflatley@coolidgeaz.com
Alton Bruce	Developmental Director	130 West Central Avenue	Coolidge	Arizona	85228	Abruce@coolidgeaz.com
Sue Laybourn	City Planner	130 West Central Avenue	Coolidge	Arizona	85228	Suel@coolidgeaz.com
Don Peters	Public Works Director	130 West Central Avenue	Coolidge	Arizona	85228	Donp@coolidgeaz.com
Sherry Ulmer	Chamber/Executive Director	575 North Marshall Street	Coolidge	Arizona	85228	coolidgechamber@quest.net
Pinal County						
Lionel Ruiz	Supervisor Pinal County	PO Box 827	Florence	Arizona	85232	Lionel.Ruiz@co.pinal.az.us
Don Gabrielson	Pinal County Air Quality District	PO Box 987	Florence	Arizona	85232	Don.Gabrielson@co.pinal.az.us
Terry Doolittle	County Manager	31 North Pinal Street	Florence	Arizona	85232	Terry.Doolittle@co.pinal.az.us
David Kuhl	Planning and Development	31 North Pinal Street	Florence	Arizona	85232	David.Kuhl@co.pinal.az.us
Ken Buchanan	Asst County Manager	31 North Pinal Street	Florence	Arizona	85232	Ken.Buchanan@co.pinal.az.us
Greg Stanley	Public Works Director	31 North Pinal Street	Florence	Arizona	85232	Greg.Stanley@co.pinal.az.us
Jerry Stabley	Planning Manager	31 North Pinal Street	Florence	Arizona	85232	Jerry.Stabley@co.pinal.az.us

AGENDA

STAKEHOLDER WORKSHOP
COOLIDGE GENERATING STATION

February 7, 2008
11:00 am to 1:00 pm

11:00 – 11:15 **WELCOME & INTRODUCTIONS**

- **Goals and Objectives of the Meeting**

11:15 – 11:45 **OVERVIEW OF THE PROJECT**

- **Introduction of TransCanada**
- **Understanding of the Project**
  - **Purpose of the Project**
  - **Project Overview**
    - **Simple Cycle/Peaking Technology**
    - **Location**

11:45 – 12:15 **PROCESS AND SCHEDULE**

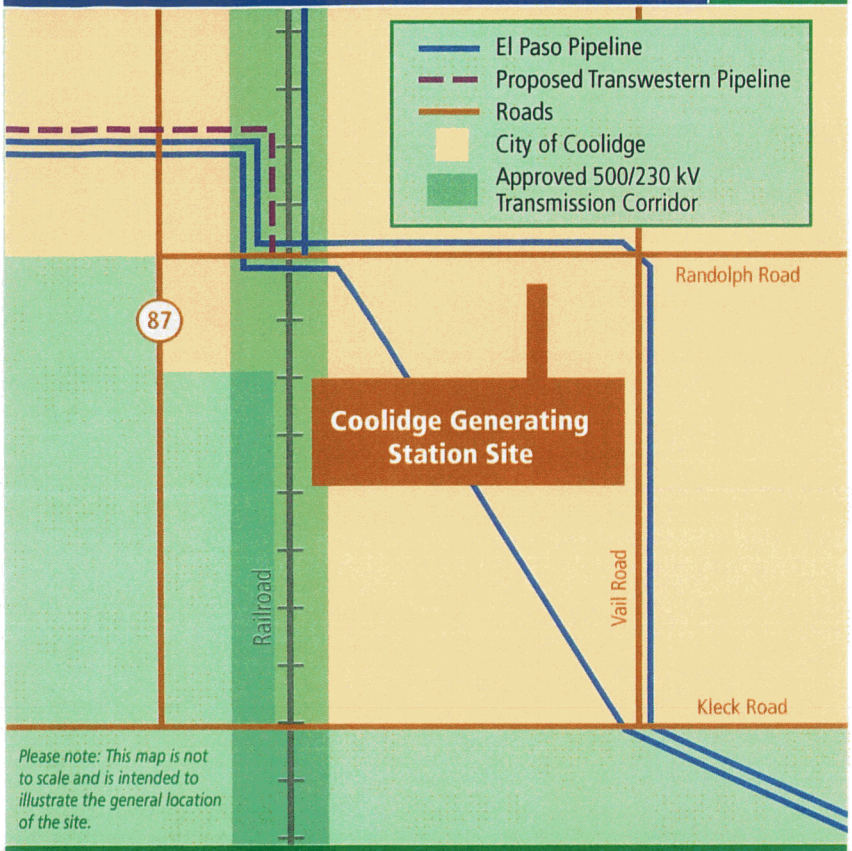
- **Project Permitting and Approval Process**
- **Project Schedule**

12:15 – 1:00 **ROUND TABLE DISCUSSION**

- **Local Benefits**
- **Role of the Stakeholder Workshop Group**

Lunch will be provided.

Coolidge
Generating Station



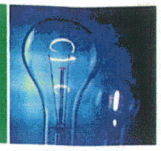
Please note: This map is not to scale and is intended to illustrate the general location of the site.

About the Proposed Project

TransCanada is proposing to build and operate a simple-cycle, natural gas-fired peaking power generation station in Coolidge, Arizona, in response to a request for proposals from Salt River Project (SRP). Based on optimal operating conditions, TransCanada predicts an electrical output of approximately 575 megawatts (MW) from this facility. The Project is designed to provide a quick response to "peak" power demands. It would also provide reserve capacity and the ability to add power quickly to support power reliability in the region.

TransCanada has entered into an agreement with the city of Mesa to purchase land for the site in an area recently annexed by the city of Coolidge. We've initiated a process of meeting with key interested stakeholders to introduce ourselves, inform them of our plans and gather initial input.

About TransCanada



TransCanada is a leader in the responsible development and reliable operation of North American energy infrastructure including natural gas pipelines, power generation, gas storage facilities, and projects related to oil pipelines and LNG facilities.

With more than 35,500 miles of pipeline infrastructure, we come in to contact with hundreds of communities and thousands of stakeholders on a regular basis while conducting our business. We're proud of our 50 year history and the reputation we've built as a solid corporate citizen.

TransCanada owns, or has interests in, approximately 7,700 megawatts of power generation in Canada and the United States, including hydro, wind, nuclear and gas-fired generation.

We've increased our asset base substantially in the U.S. during the past few years with the GTN and ANR pipeline acquisitions. In addition, our power presence in the U.S. continues to grow. With the completion of the North Baja pipeline, Arizona became a new market area and TransCanada is excited about expanding its presence in this growing area.

TransCanada employs approximately 3,550 people in nearly 50 professions, trades and fields and we strive to develop and maintain positive relationships with our stakeholders in the communities where we live and work.

For more information about TransCanada, please visit our website at www.transcanada.com

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Proposed Project Schedule

- **Stakeholder Engagement:** Third Quarter 2007 – Ongoing
- **Permitting Phase:** First Quarter 2008 – Third Quarter 2009
- **Construction Phase:** Third Quarter 2009 – Second Quarter 2010
- **Commissioning Phase:** Third Quarter 2010 – First Quarter 2011
- **Facility Operation Date**: May 1, 2011

Environmental Considerations

TransCanada goes to great lengths to ensure our facilities are designed, constructed and operated to minimize environmental impacts. We develop, implement and continually refine environmental policies and programs that allow us to not only comply with government regulations, but lead our industry.

The Coolidge Generating Station will be designed for low environmental impact. TransCanada will work with local agencies to acquire the permits needed to build and operate the facility.

Public Involvement

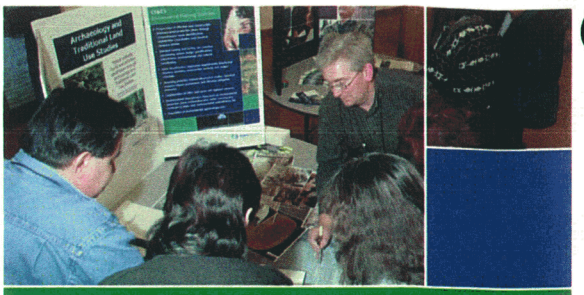
TransCanada is committed to public involvement at every stage of the project and when the time is right, we will undertake a comprehensive stakeholder engagement effort to share information and gather public input.

Wherever possible, our preference is face-to-face communication with those potentially impacted by the project. However, communication would occur in some of or all of the following ways:

- Community open houses
- One-on-one meetings with interested stakeholders
- Brochures or information packages mailed to individuals
- Project web page on www.transcanada.com
- Posters or public notices placed in local newspapers

Community Benefits

TransCanada has a long and well-respected track record with regard to community partnering and social responsibility. Typically with a project like Coolidge, there are near-term benefits in the community during the construction phase of the project primarily from money spent by construction contractors for food, lodging, fuel and other construction-related services. Long-term benefits can include new permanent employment opportunities, contracted operations and maintenance supplies and services, and additional municipal revenues generated due to new facilities sited within municipal boundaries.



We would like to hear from you

Communicating with people who live and work in the area is key for us at TransCanada. If you have any comments or concerns about the proposed project, or if you would like more information, please contact:

General Inquiries:
(toll free in the U.S. and Canada)
1.866.382.0886
Project Email Account: cgs@transcanada.com

Media Inquiries:
(toll free in the U.S. and Canada)
1.800.608.7859

Project Web Page:
www.transcanada.com/coolidge

Mailing Address:
TransCanada
P.O. Box 1000
450 – 1st Street SW
Calgary, Alberta
T2P 5H1

Attn: Ms. Kelly Matthews,
11th floor

TransCanada
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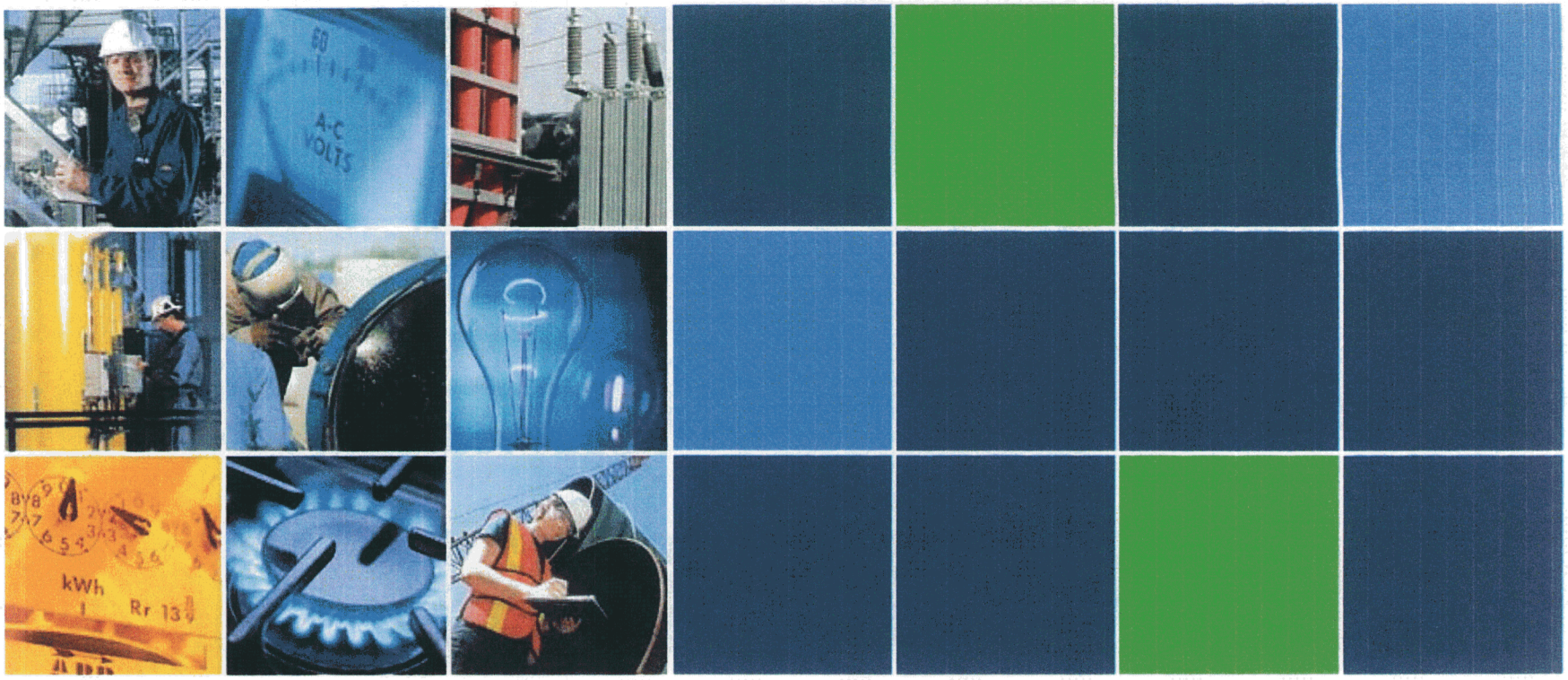

Coolidge Generating Station

Stakeholder Workshop

February 7, 2008

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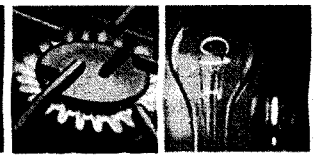
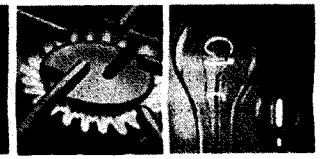
Agenda and Purpose of Workshop



- Introduce TransCanada
- Provide an overview of the Project
- Discuss Project need
- Discuss the proposed Project schedule
- Discuss local benefits of the Project
- Discuss role of the Stakeholder Workshop Group
- Gather input
- Respond to questions

TransCanada

Who is TransCanada?

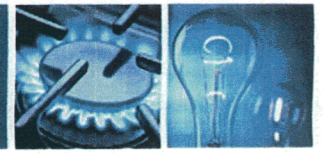


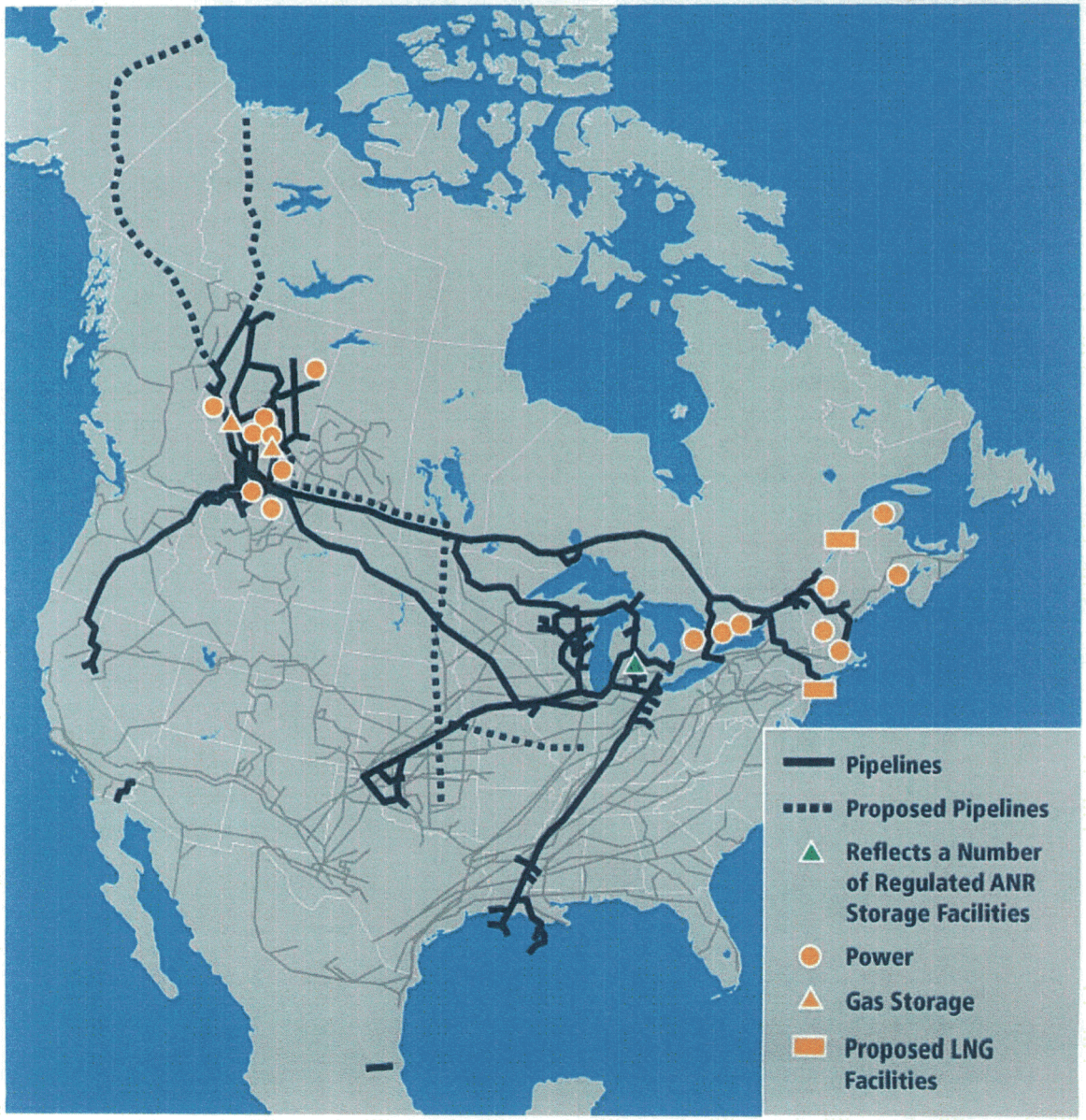
- North American energy company
- Competitively positioned in pipeline and power businesses
- Almost $30 billion of premium pipeline and energy assets ($Cdn at Dec. 31, 2007, includes ANR)
- Strong financial position

Dow Jones Sustainability Indexes
Member 2006/07

TransCanada

Quality assets and proposed projects





- approx. 59,000 km (36,500 miles) of wholly owned pipeline
  - transport 15 billion cubic feet/day (Bcf/d) from virtually all major supply basins on the continent
- 3,456 km of proposed oil pipeline, capable of transporting 590,000 barrels per day
- 16 power facilities
  - 7,700 megawatts of power generation
- two proposed liquefied natural gas facilities
  - 1.5 Bcf/d
- significant gas storage capacity in Canada and the United States
  - 360 Bcf

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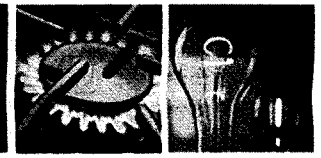
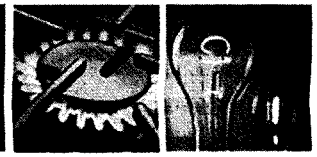
TransCanada in the Community



- Long and well-respected track record as a good corporate neighbor across North America
- We get involved and are active members of the communities where we operate and do business

TransCanada

Project Benefits



- Benefits include money spent by contractors for food, lodging, fuel and other construction-related services
- Strive to hire local people if possible
- Additional community revenues generated due to equipment and new facilities

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Facility Description

- 12 X GE LM6000 PC Sprint
  - Simple Cycle
  - Low water consumption
  - Low emissions
- Project investigating use of renewable water
- Dispatch Expectations: Peaking Resource
- Quick Start – 10 minutes (Reserve Capacity)
- High Availability
  - 98% Summer
  - 96% Non-Summer

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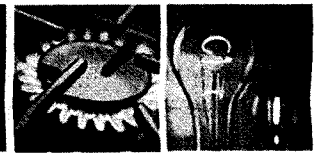
Project Technology

- Similar to nearby Sundance
  - LM6000 turbines
  - Natural gas fuel
  - Runs only when needed
  - Uses minimal water
  - Low air emissions
  - Small environmental footprint

Photograph of Existing Sundance Energy Project

TransCanada

Project Schedule



- Stakeholder Engagement: Q1 2008 – Ongoing
- Permitting Phase: Q1 2008 – Q3 2009
  - 90-Day Notice Filing Q1 2008
  - CEC Application Filing Summer 2008
- Construction Phase: Q3 2009 – Q2 2010
- Commissioning Phase: Q3 2010 – Q1 2011
- Facility Operation Date: May 1, 2011

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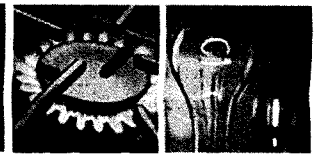
Public Involvement



- TransCanada is committed to public involvement at every stage of the project
- Communication will occur in the following ways:
  - Community open houses
  - One-on-one meetings with interested stakeholders
  - Brochures or information packages mailed to individuals
  - Project web page www.transcanada.com/coolidge
  - Posters or public notices placed in local newspapers
  - 24-hour project hotline 1.866.382.0886

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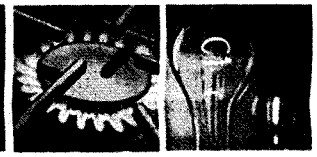
Three-Step Stakeholder Process



Step 1:

- Introduce TransCanada and the Coolidge Project
  - Conduct Stakeholder Workshop (today)
  - Community Open House – February 28, 2008

Step 2:

- Pre-Permit Filing
  - Anticipated for May 2008
  - Conduct Stakeholder Workshop
  - Community Open House

Step 3:

- Post-Application Filing
  - Summer 2008 and beyond

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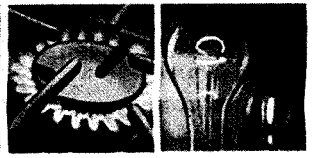
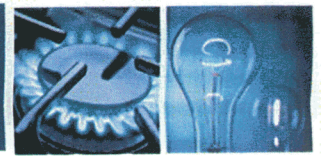
Permitting and Approval Processes

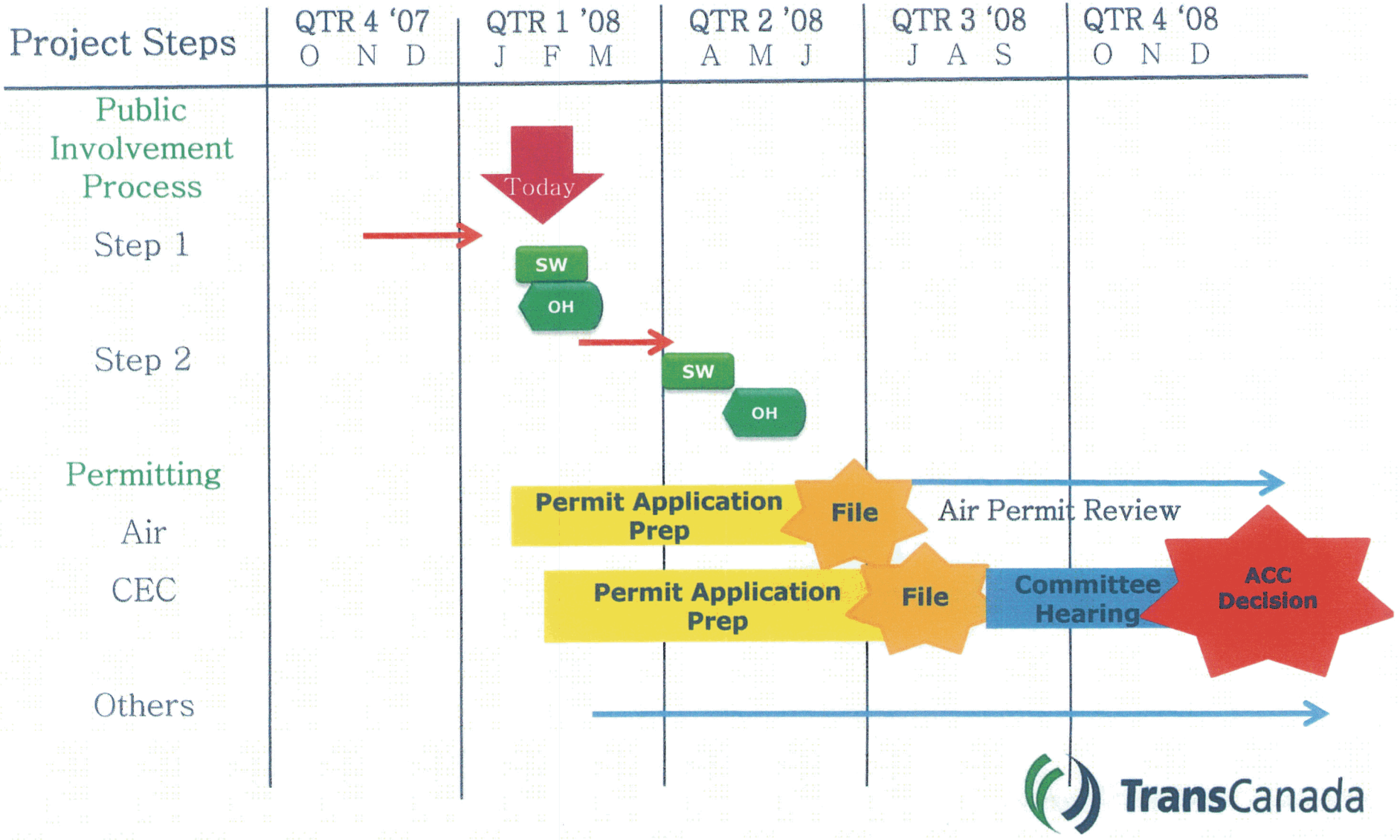


- Certificate of Environmental Compatibility
  - Arizona Corporation Commission (ACC)
- Air Permits
  - Pinal Country Air Quality Control District (PCAQCD)
- Other Permits / Approvals
  - Re-zoning, Aquifer Protection Permit (APP), Conditional Use Permit, non-exempt well permits
  - Construction Permits

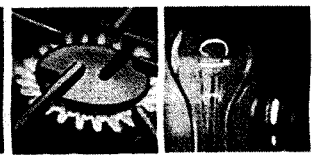
TransCanada

Project Public Outreach / Permitting Schedule





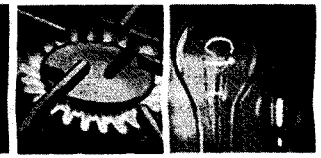
Public Contact Points to Provide Feedback



- Project Web Page
  - www.transcanada.com/coolidge
- Toll-free Telephone Number
  - 1.866.382.0886
- Project Email Address
  - cgs@transcanada.com

TransCanada

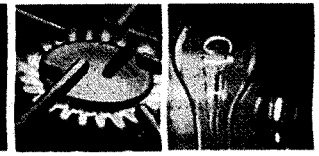
Project Overview



- Project advanced in response to SRP Request for Proposal
- TransCanada to build and operate
- Approximately 575 MW simple-cycle natural gas peaking facility
- Agreement with the City of Mesa to purchase site
- Highly experienced project team utilizing local experts
- Initiating a process of meeting with stakeholders

TransCanada

Project Need



- Pinal County growth
- Provides peak power in high-demand time
- Provides reserve capacity and ability to add power quickly to support reliability in the region

TransCanada

Coolidge Generating Station Project
Stakeholder Workshop, February 7, 2008

Please take a few minutes to complete this questionnaire and to leave it at the entrance or with a TransCanada representative. Your comments are important to us.

1. What specific questions or comments did you have regarding the proposed Coolidge Generating Station Project?

   buy off or acceptance from from neighbors, Property Tax Benefit, environmental concerns

2. Were your questions adequately answered at the Stakeholder Workshop?

   Yes X No ____

   If not, what additional information do you require?

3. Do you have any other comments you'd like to share with the members of the project team?

If you would like TransCanada personnel to provide follow-up information or address questions, please leave your name and address:

Name Tom Shoke Phone No. 520 560 3462

Mailing Address PO Box 1627 Coolidge AZ 85228

Email Address TShoke@qwestoffice.net

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COOLIDGE GENERATING STATION PROJECT
Stakeholders Workshop Sign-In Sheet
February 07, 2008

The information collected below will be used to allow for tracking of participation in the Stakeholder Workshop. Additionally, the information collected below will allow TransCanada to provide you with further information about the project and other project-related events. All information collected will be held in the strictest of confidence by TransCanada and will not be disclosed to any outside parties.

Name (please print clearly)	Organization	Phone Number	Email Address
ANU JAIN	PINAL COUNTY AIR QUALITY	(520) 866-6931	anu.jain@co.pinal.az.us
Barbara Cenalmor	Pinal County Air Quality	(520)866-6860	barbara.cenalmor@co.pinal.az.us
Ken Buchanan	Pinal County Development Services	(520)866-6098	Ken.Buchanan@co.pinal.az.us

COOLIDGE GENERATING STATION PROJECT
Stakeholders Workshop Sign-In Sheet
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Name (please print clearly)	Organization	Phone Number	Email Address
James Myers	Growth Management	723-6075	James.m@coolidgeAz.com
Jill Dusenberry	Coolidge	723-6014	JilldC@coolidgeaz.com
RICHARD LISTER	COOLIDGE	723 4829	RLISTER@COOLEQ.COM
Tom Shope	Coolidge	560 3482	TShope@qwestoffice.NET
Bonnie E Palmer	City of Coolidge Cusp	723-4711	bpalmer@cusd.k12.az.us bepfec@yahoo.com

COOLIDGE GENERATING STATION PROJECT
Stakeholders Workshop Sign-In Sheet
February 07, 2008

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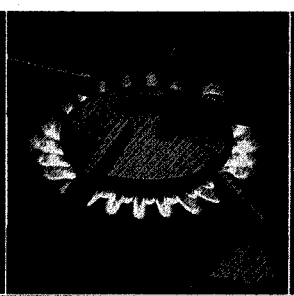
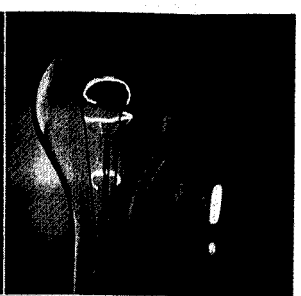
Name (please print clearly)	Organization	Phone Number	Email Address
BOB FLATLEY	CITY OF COOLIDGE	520-723-5361	bobf@coolidgeaz.com
Judy Rotz-Lopez	City of Coolidge	5207239846	jazincook@msn.com
Andrew Clegg	CAREDF	520-836-6868	aclegg@CAREDF.org.
ALTON BRUCE	CITY OF Coolidge	520 723 6071	abruce@coolidgeaz.com
LUIS RAMIREZ	COOLIDGE PUBLIC WORKS	520-510-3002	

Coolidge Generating Station
Stakeholder Workshop #2





Date: Tuesday, June 17, 2008

Time: 11:00 a.m. to 1:00 p.m.

Location: Coolidge Police Department
911 S. Arizona Boulevard
Coolidge, AZ 85228

The Project team is conducting a second workshop for interested jurisdictions, stakeholders and planning staff to learn about the Project and discuss planning issues. Representatives from TransCanada will be available to discuss the Project, its need and benefits, and answer any questions you may have. We welcome your input and hope you can join us.

TransCanada is proposing to build and operate a simple-cycle, natural gas-fired peaking power generation station in Coolidge, Arizona, in response to a request for proposals from Salt River Project (SRP). Based on optimal operating conditions, TransCanada predicts an electrical output of approximately 575 megawatts (MW) from this facility. The Project is designed to provide a quick response to "peak" power demands. It would also provide reserve capacity and the ability to add power quickly to support power reliability.

For more information about TransCanada, please visit our website: www.transcanada.com

Lunch will be served. Please RSVP to Leslie McFadden (1.866.382.0886) on or before June 11, 2008 or by email at cgs@transcanada.com

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Trans Canada / COOLIDGE GENERATING STATION PROJECT STAKEHOLDERS LIST						
Workshop Location: City of Coolidge Police Department Council Chambers						
	Workshop 2 Date: June 17, 2008					
Name	**Title**	**Street Address**	**City**	**State**	**Zip**	**Email**
Dianne Kresich	Regional Planning Team Supervisor, MAG and CAGG Regions	206 South 17th Avenue	Phoenix	Arizona	85007	Dkresich@azdot.gov
Roger Herzog/Bill Leister	Senior Project Manager/Transportation Director	1075 South Idaho Road, Suite 300	Apache Junction	Arizona	85219	Bleister@caag.central.org
Maxine Leather	CAAG Executive Director	1075 South Idaho Road, Suite 300	Apache Junction	Arizona	85219	Mleather@caag.central.org
Juleen Hollenbach	Arizona Training Center Director	PO Box 1467	Coolidge	Arizona	85228	
Herb Guenther	Arizona Department of Water Resources (ADWR)Director	3550 N. Central Ave.	Phoenix	Arizona	85012	
Steve Owens	Arizona Department of Environmental Quality (ADEQ)Director			Arizona		
Jim Palmer	Chief of Police	911 S. Arizona Ave.	Coolidge	Arizona	85228	
Robert Flatley	City Manager	130 West Central Avenue	Coolidge	Arizona	85228	Bobflatley@coolidgeaz.com
Alton Bruce	Development Director	130 West Central Avenue	Coolidge	Arizona	85228	Abruce@coolidgeaz.com
Sue Laybourn	City Planner	130 West Central Avenue	Coolidge	Arizona	85228	Suelaybourn@coolidgeaz.com
Don Peters	Public Works Director	130 West Central Avenue	Coolidge	Arizona	85228	Donp@coolidgeaz.com
Sherry Ulmer	Chamber/Executive Director	575 North Marshall Street	Coolidge	Arizona	85228	coolidgechamber@quest.net
Lionel Ruiz	Supervisor Pinal County	31 North Pinal Street	Coolidge	Arizona	85232	Lionel.Ruiz@co.pinal.az.us
Sandie Smith	Supervisor Pinal County	31 North Pinal Street	Coolidge	Arizona	85232	Sandie.Smith@co.pinal.az.us
David Snider	Chairman, Pinal County Board of Supervisors	31 North Pinal Street	Florence	Arizona	85232	David.Snider@co.pinal.az.us
Terry Haifley	Pinal County Parks & Recreation/Fairground Director	P.O. Box 3110 11 MCRB	Casa Grande	Arizona	85222	Terry.haifley@co.pinal.az.us
Oliver Anderson	Pinal AMA Groundwater Users Advisory Council			Arizona		
Barbara Cenalmor	Pinal County Air Quality District			Arizona		barbara.cenalmor@co.pinal.az.us
Terry Doolittle	Pinal County Manager	31 North Pinal Street	Florence	Arizona	85232	Terry.Doolittle@co.pinal.az.us
David Kuhl	Planning and Development	31 North Pinal Street	Florence	Arizona	85232	David.Kuhl@co.pinal.az.us
Ken Buchanan	Planning Manager	31 North Pinal Street	Florence	Arizona	85232	Ken.Buchanan@co.pinal.az.us
Greg Stanley	Public Works Director	31 North Pinal Street	Florence	Arizona	85232	Greg.Stanley@co.pinal.az.us
Jerry Stabley	Planning Manager	31 North Pinal Street	Pinal County	Arizona	85232	Jerrold.Stabley@co.pinal.az.us
Janeen Rohovit	SRP Public Input					Jerohovi@srp

AGENDA

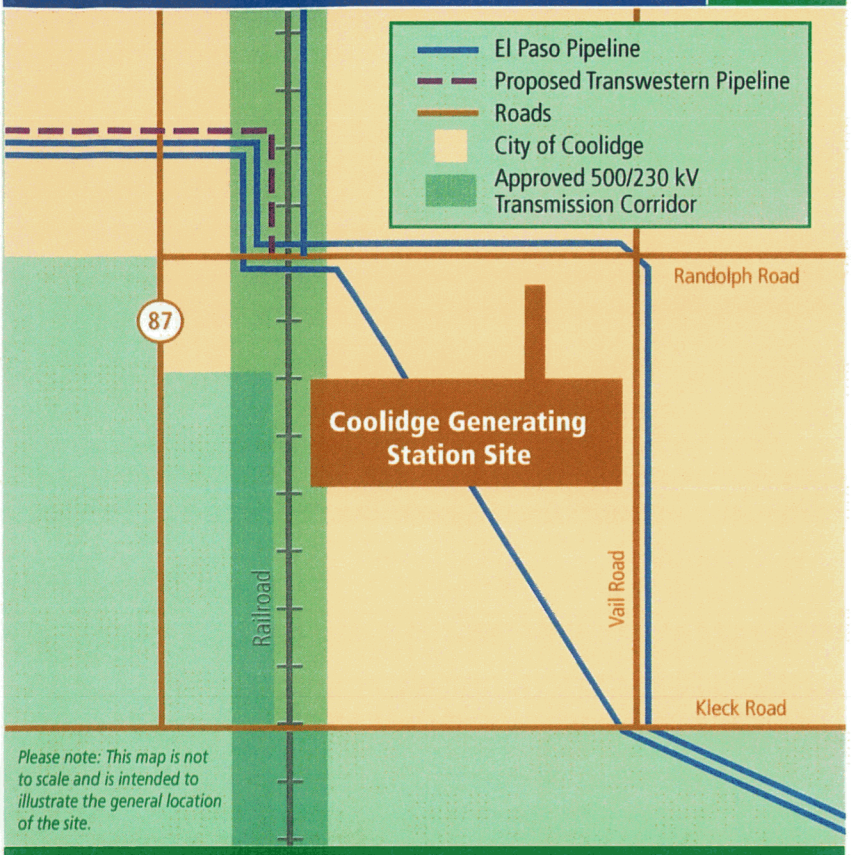
STAKEHOLDER WORKSHOP
COOLIDGE GENERATING STATION

June 17, 2008
11:00 am to 1:00 pm

11:00 – 11:15	**WELCOME & INTRODUCTIONS** • **Goals and Objectives of the Meeting**
11:15 – 11:45	**OVERVIEW OF THE PROJECT** • **Project Description** • **Project Permitting and Approval Process** • **Project Schedule**
11:45 – 12:15	**PROJECT DETAILS** • **Site Plan** • **Photographic Simulations**
12:15 – 1:00	**ROUND TABLE DISCUSSION** • **Local Benefits** • **Upcoming Open House**

Lunch will be provided.

Coolidge
Generating Station



Please note: This map is not to scale and is intended to illustrate the general location of the site.

About the Proposed Project

TransCanada is proposing to build and operate a simple-cycle, natural gas-fired peaking power generation station in Coolidge, Arizona, in response to a request for proposals from Salt River Project (SRP). Based on optimal operating conditions, TransCanada predicts an electrical output of approximately 575 megawatts (MW) from this facility. The Project is designed to provide a quick response to "peak" power demands. It would also provide reserve capacity and the ability to add power quickly to support power reliability in the region.

TransCanada has entered into an agreement with the city of Mesa to purchase land for the site in an area recently annexed by the city of Coolidge. We've initiated a process of meeting with key interested stakeholders to introduce ourselves, inform them of our plans and gather initial input.

About TransCanada

TransCanada is a leader in the responsible development and reliable operation of North American energy infrastructure including natural gas pipelines, power generation, gas storage facilities, and projects related to oil pipelines and LNG facilities.

With more than 35,500 miles of pipeline infrastructure, we come in to contact with hundreds of communities and thousands of stakeholders on a regular basis while conducting our business. We're proud of our 50 year history and the reputation we've built as a solid corporate citizen.

TransCanada owns, or has interests in, approximately 7,700 megawatts of power generation in Canada and the United States, including hydro, wind, nuclear and gas-fired generation.

We've increased our asset base substantially in the U.S. during the past few years with the GTN and ANR pipeline acquisitions. In addition, our power presence in the U.S. continues to grow. With the completion of the North Baja pipeline, Arizona became a new market area and TransCanada is excited about expanding its presence in this growing area.

TransCanada employs approximately 3,550 people in nearly 50 professions, trades and fields and we strive to develop and maintain positive relationships with our stakeholders in the communities where we live and work.

For more information about TransCanada, please visit our website at www.transcanada.com

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Proposed Project Schedule

- **Stakeholder Engagement:** Third Quarter 2007 – Ongoing
- **Permitting Phase:** First Quarter 2008 – Third Quarter 2009
- **Construction Phase:** Third Quarter 2009 – Second Quarter 2010
- **Commissioning Phase:** Third Quarter 2010 – First Quarter 2011
- **Facility Operation Date**: May 1, 2011

Environmental Considerations

TransCanada goes to great lengths to ensure our facilities are designed, constructed and operated to minimize environmental impacts. We develop, implement and continually refine environmental policies and programs that allow us to not only comply with government regulations, but lead our industry.

The Coolidge Generating Station will be designed for low environmental impact. TransCanada will work with local agencies to acquire the permits needed to build and operate the facility.

Public Involvement

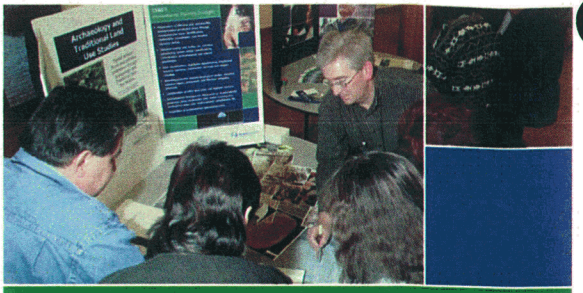
TransCanada is committed to public involvement at every stage of the project and when the time is right, we will undertake a comprehensive stakeholder engagement effort to share information and gather public input.

Wherever possible, our preference is face-to-face communication with those potentially impacted by the project. However, communication would occur in some of or all of the following ways:

- Community open houses
- One-on-one meetings with interested stakeholders
- Brochures or information packages mailed to individuals
- Project web page on www.transcanada.com
- Posters or public notices placed in local newspapers

Community Benefits

TransCanada has a long and well-respected track record with regard to community partnering and social responsibility. Typically with a project like Coolidge, there are near-term benefits in the community during the construction phase of the project primarily from money spent by construction contractors for food, lodging, fuel and other construction-related services. Long-term benefits can include new permanent employment opportunities, contracted operations and maintenance supplies and services, and additional municipal revenues generated due to new facilities sited within municipal boundaries.



We would like to hear from you

Communicating with people who live and work in the area is key for us at TransCanada. If you have any comments or concerns about the proposed project, or if you would like more information, please contact:

General Inquiries:
(toll free in the U.S. and Canada)
1.866.382.0886
Project Email Account: cgs@transcanada.com

Media Inquiries:
(toll free in the U.S. and Canada)
1.800.608.7859

Project Web Page:
www.transcanada.com/coolidge

Mailing Address:
TransCanada
P.O. Box 1000
450 – 1st Street SW
Calgary, Alberta
T2P 5H1

Attn: Ms. Kelly Matthews,
11th floor

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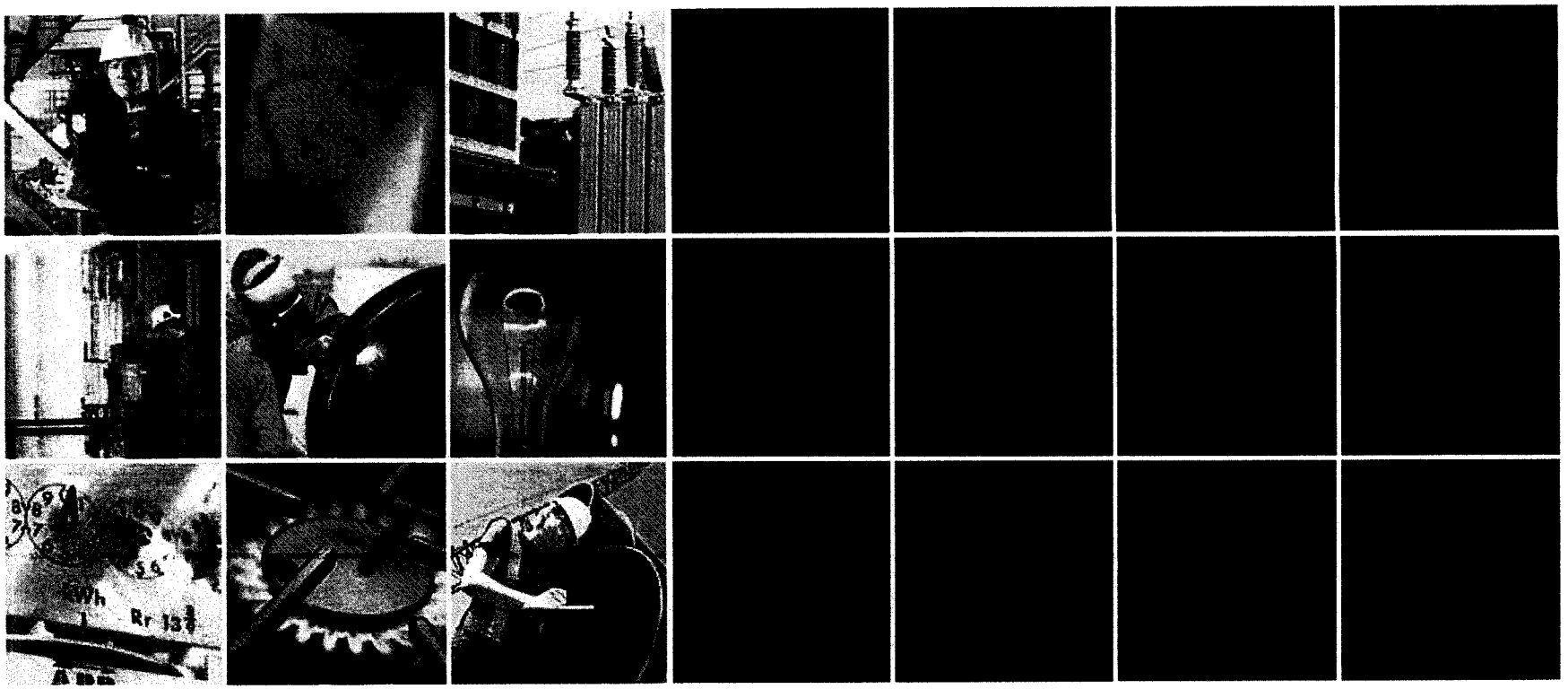

Coolidge Generating Station

Stakeholder Workshop 2

June 17, 2008

TransCanada

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Today's Agenda

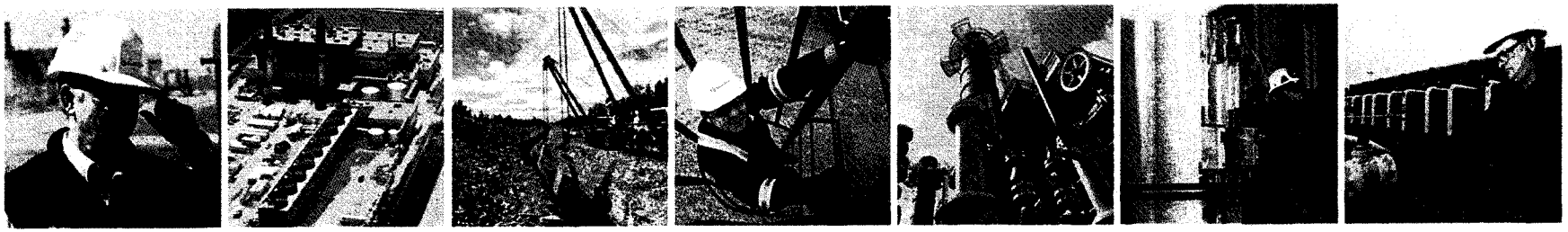
- Introductions
- TransCanada's Coolidge Generating Station Project
  - Project History, Overview
  - Site Location
  - Facility Description / Layout
  - Permitting and Public Involvement
  - Schedule
- Next Steps/Questions

TransCanada

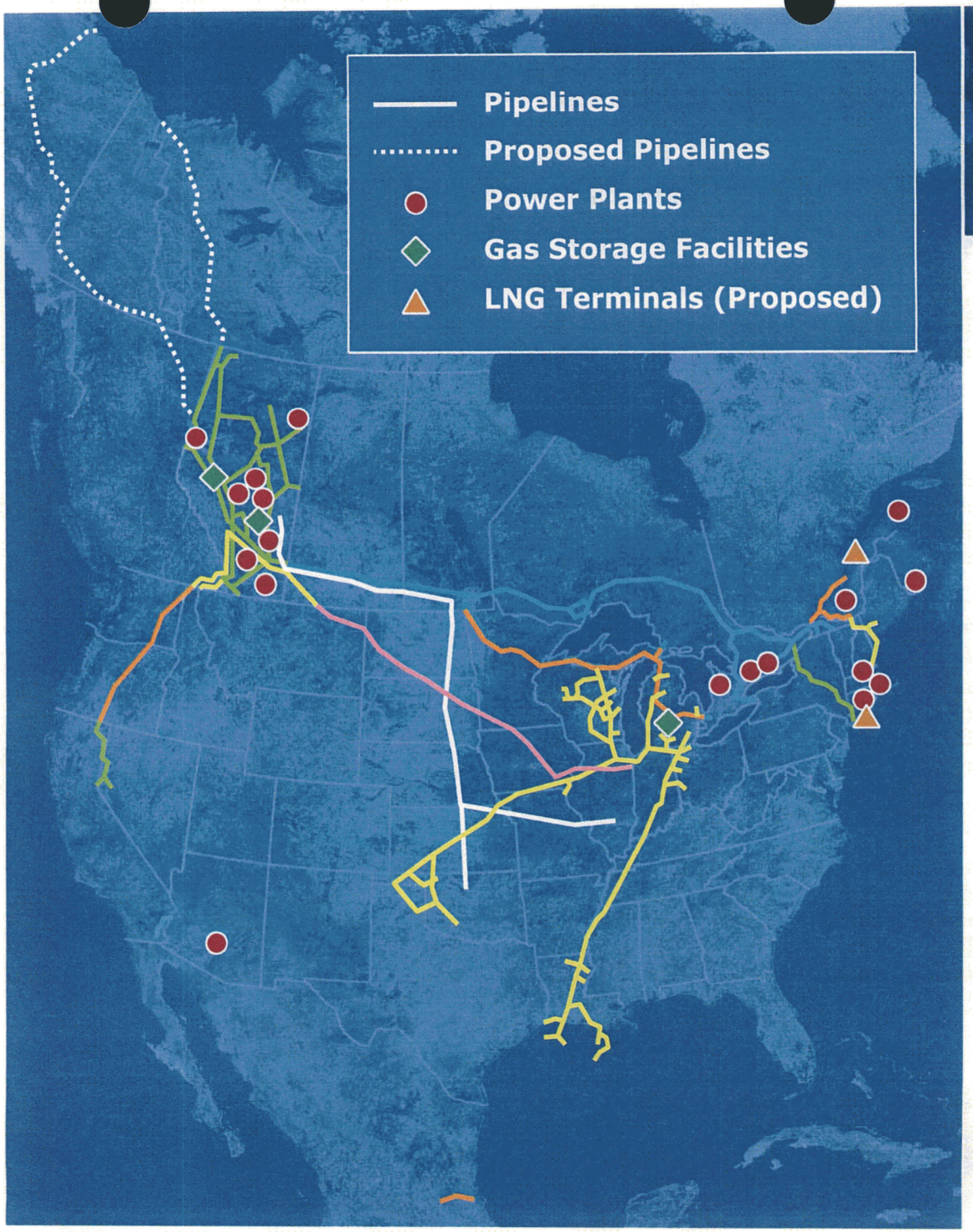
Who is TransCanada?

- Competitively positioned in pipeline and energy infrastructure
- Over $30 billion of premium pipeline and energy assets ($Cdn at Dec. 31, 2007)
- 3,600 employees – almost half in the U.S.
- Strong financial position

Dow Jones Sustainability Indexes
Member 2006/07



TransCanada



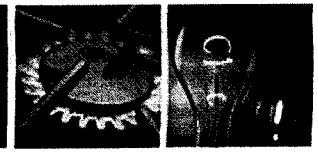
TransCanada Corporation (TSX/NYSE: TRP)

Portfolio of Quality Assets

- 59,000 km (36,500 mi) of wholly owned pipeline
- Interests in an additional 7,800 km (4,800 mi) of pipeline
- 15 Bcf/d
- 355 Bcf of natural gas storage capacity
- 18 power plants
- 10,800 megawatts
- Crude oil pipeline project and two proposed LNG terminals

TransCanada

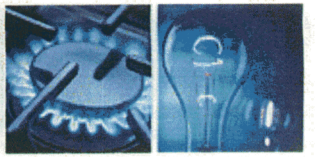
Project Overview

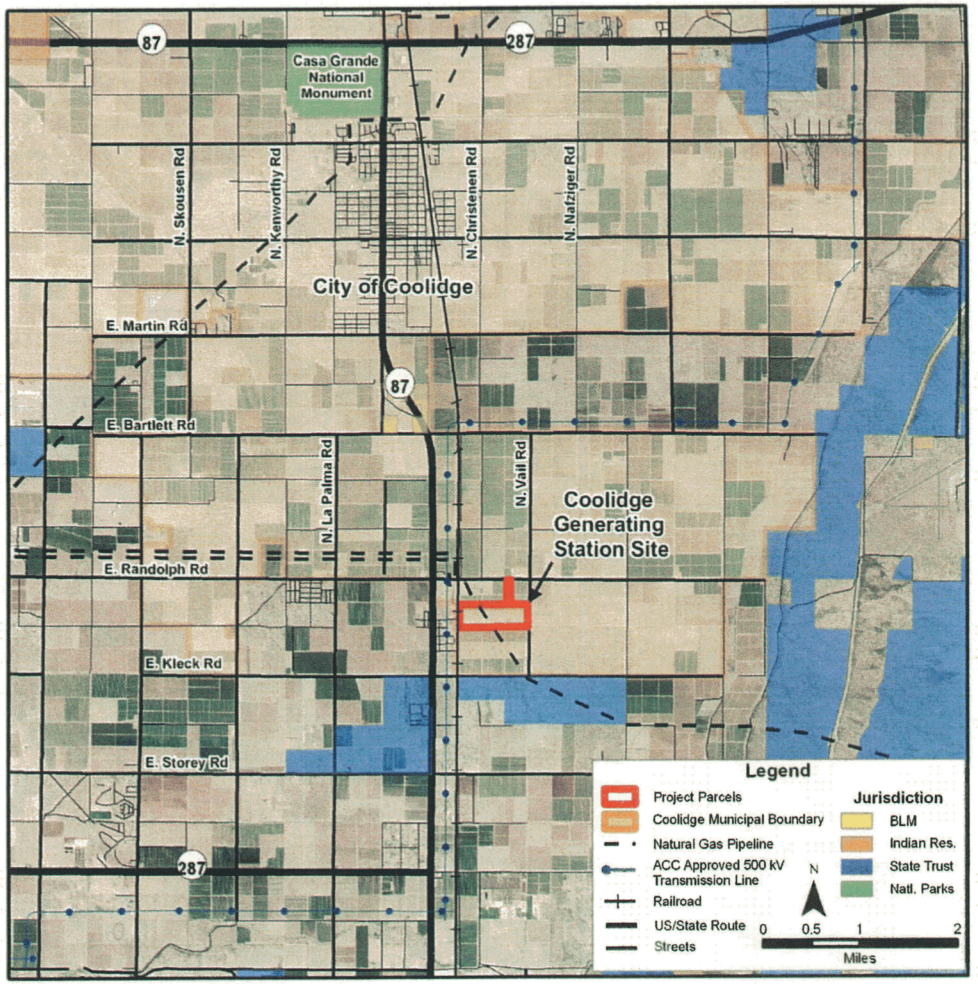


- Project advanced in response to SRP Request for Proposal
- TransCanada to build and operate an approximately 575 MW simple-cycle natural gas peaking facility
- 100 acre site has been dedicated to the project
- City of Coolidge is finalizing re-zoning consistent with its general plan
  - TransCanada supportive of City of Coolidge re-zoning initiative and Industrial/Commerce Park concept
- Highly experienced project team utilizing local experts
- Continuing a process of meeting with key stakeholders

TransCanada

Regional Aerial View





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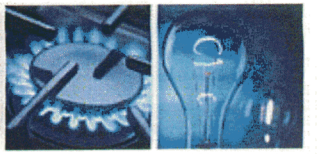
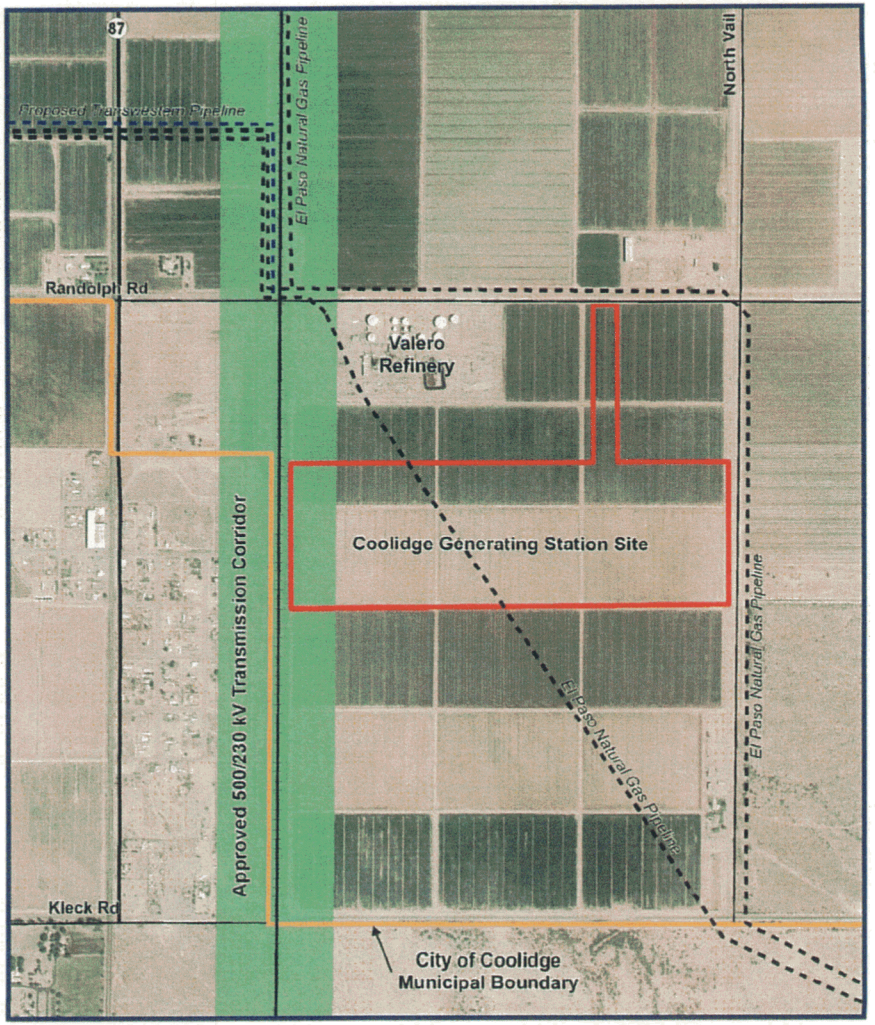
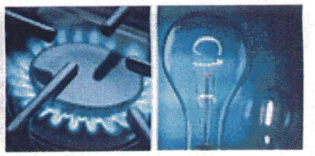
Site Location





TransCanada

Facility Description

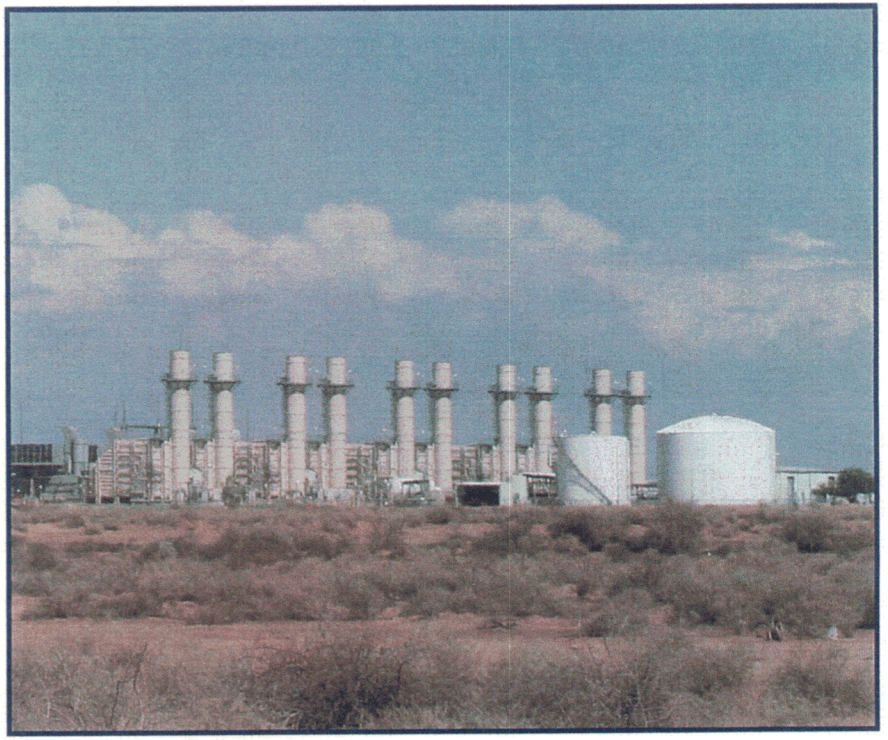


- 12 X LM6000 simple-cycle gas turbines (no steam turbine)
  - Low water consumption
  - Low emissions
- Modest groundwater pumping replenished with renewable (CAP) water recharge
- Dispatch Requirements: continuous operation up to permit limits
- Dispatch Expectations: low dispatch (normally 400-600 hours/year)
- Quick Start – 10 minutes (reserve capacity)
- High Availability
  - 98% Summer
  - 96% Non-Summer

TransCanada

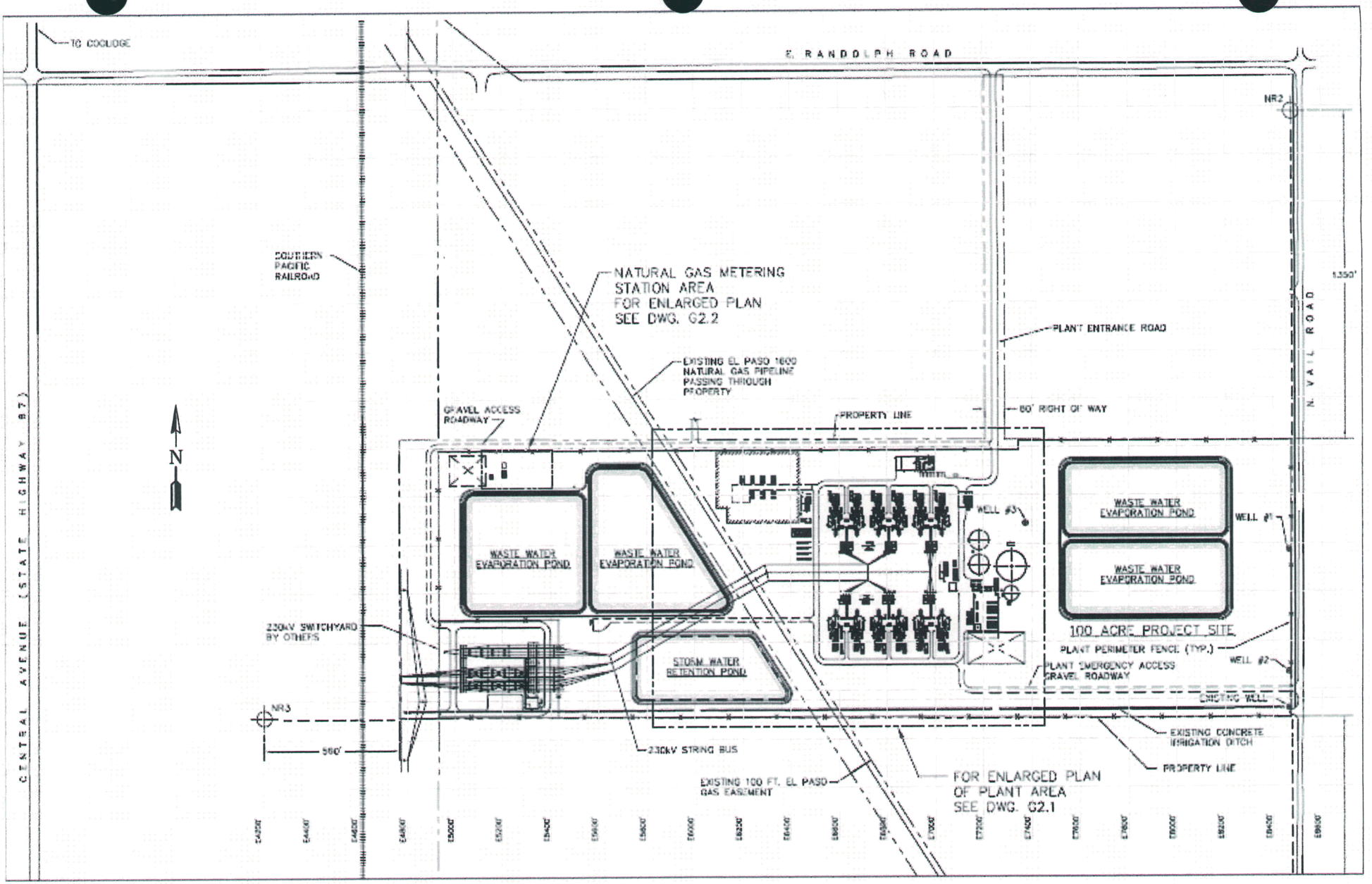
Project Technology

- Very similar to nearby Sundance Energy Project but with 2 more turbines
- LM6000 turbines
  - Provides reserve capacity
  - Runs only when needed
  - Natural gas fuel
  - Relatively small footprint
  - Uses minimal water
  - Low air emissions



Photograph of Existing Sundance Energy Project

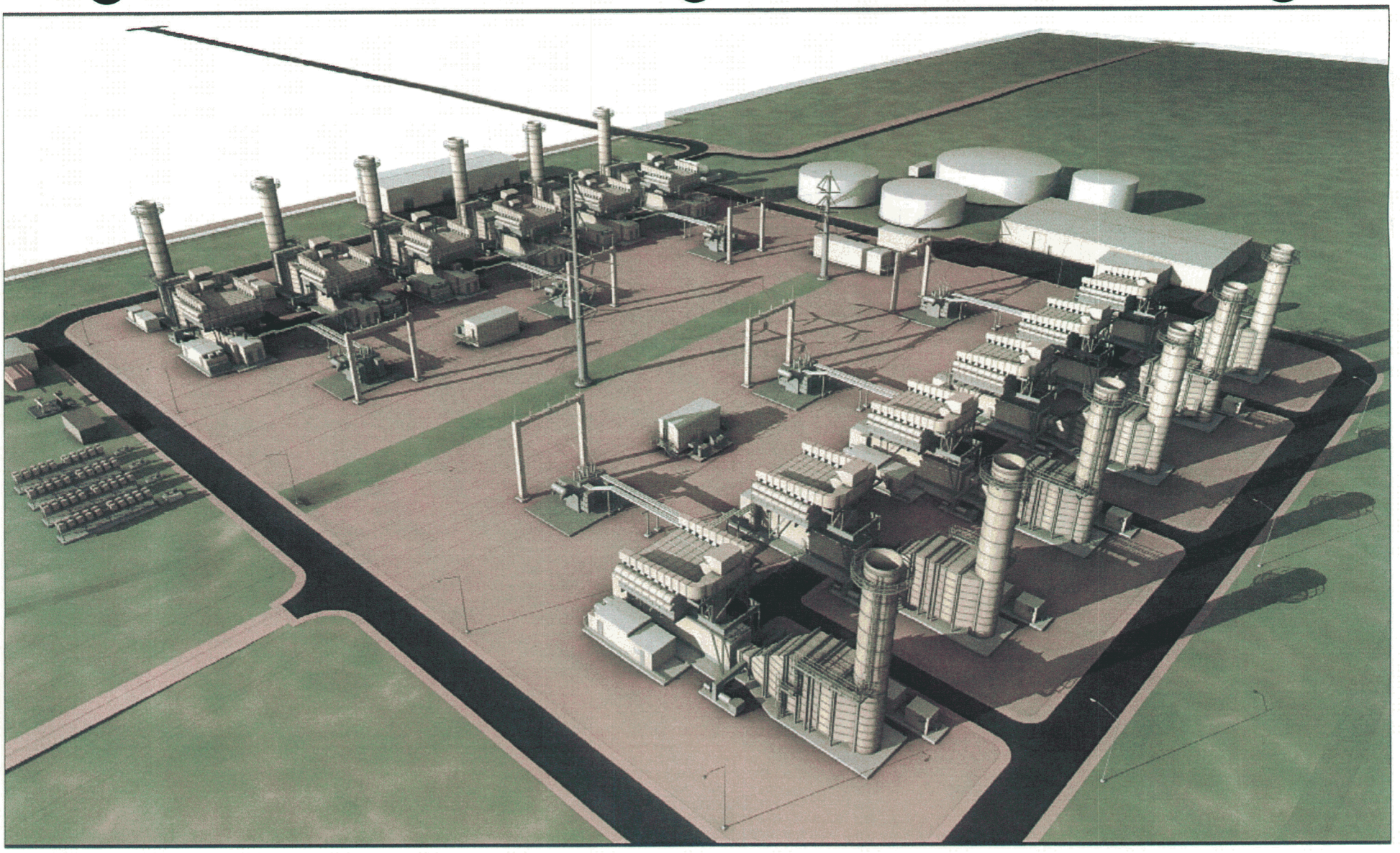
TransCanada



Coolidge Generating Station

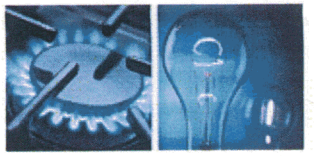
Site Layout

TransCanada



Coolidge Generating Station
Project Visual Rendering

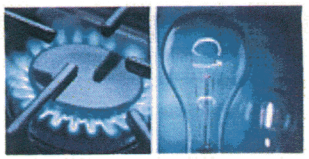
TransCanada



Existing View

Traveling South on Highway 87

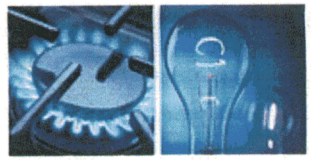
TransCanada



Visual Simulation

Traveling South on Highway 87

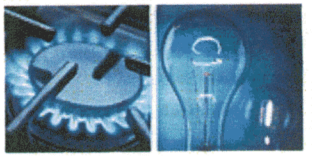
TransCanada



Existing View

Corner of Randolph Road and Vail Road

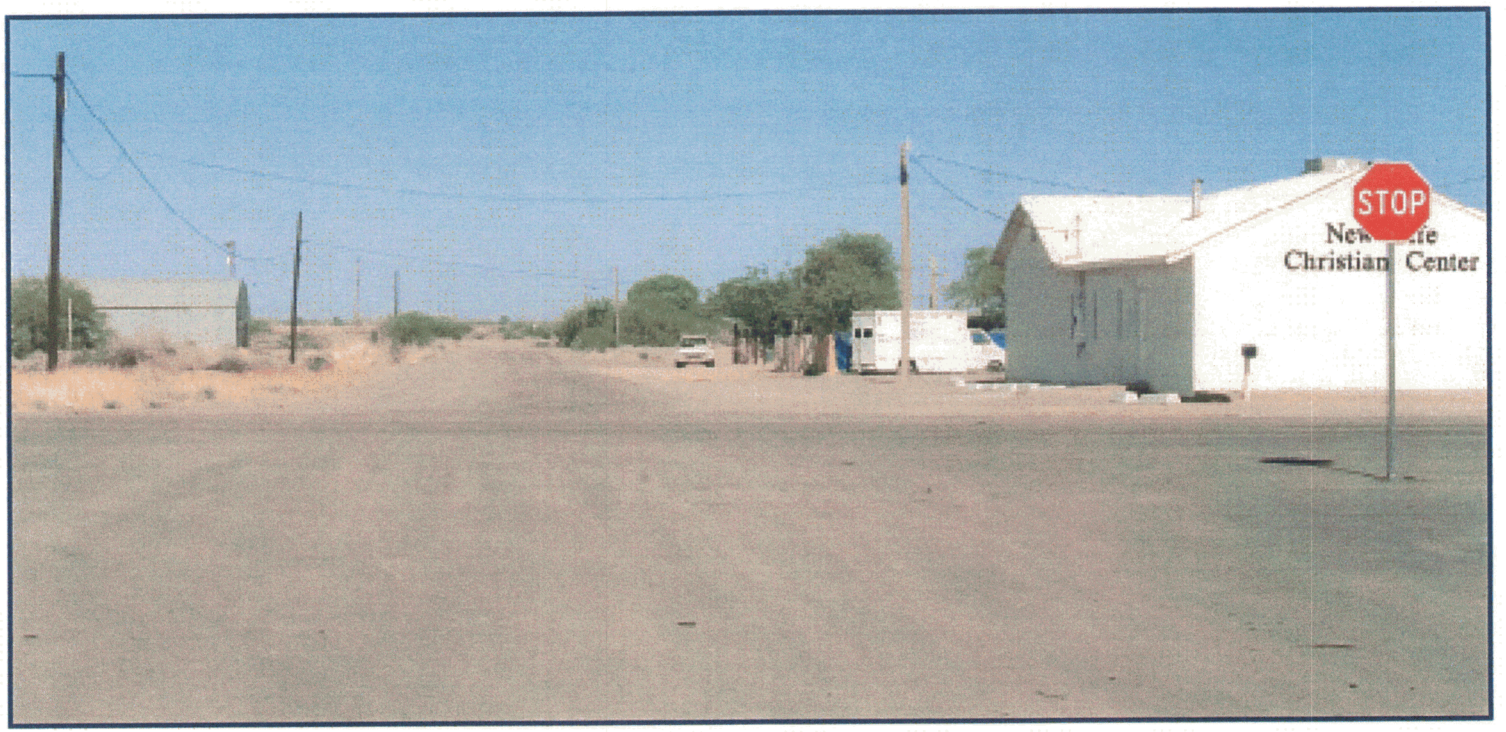
TransCanada



Visual Simulation

Corner of Randolph Road and Vail Road

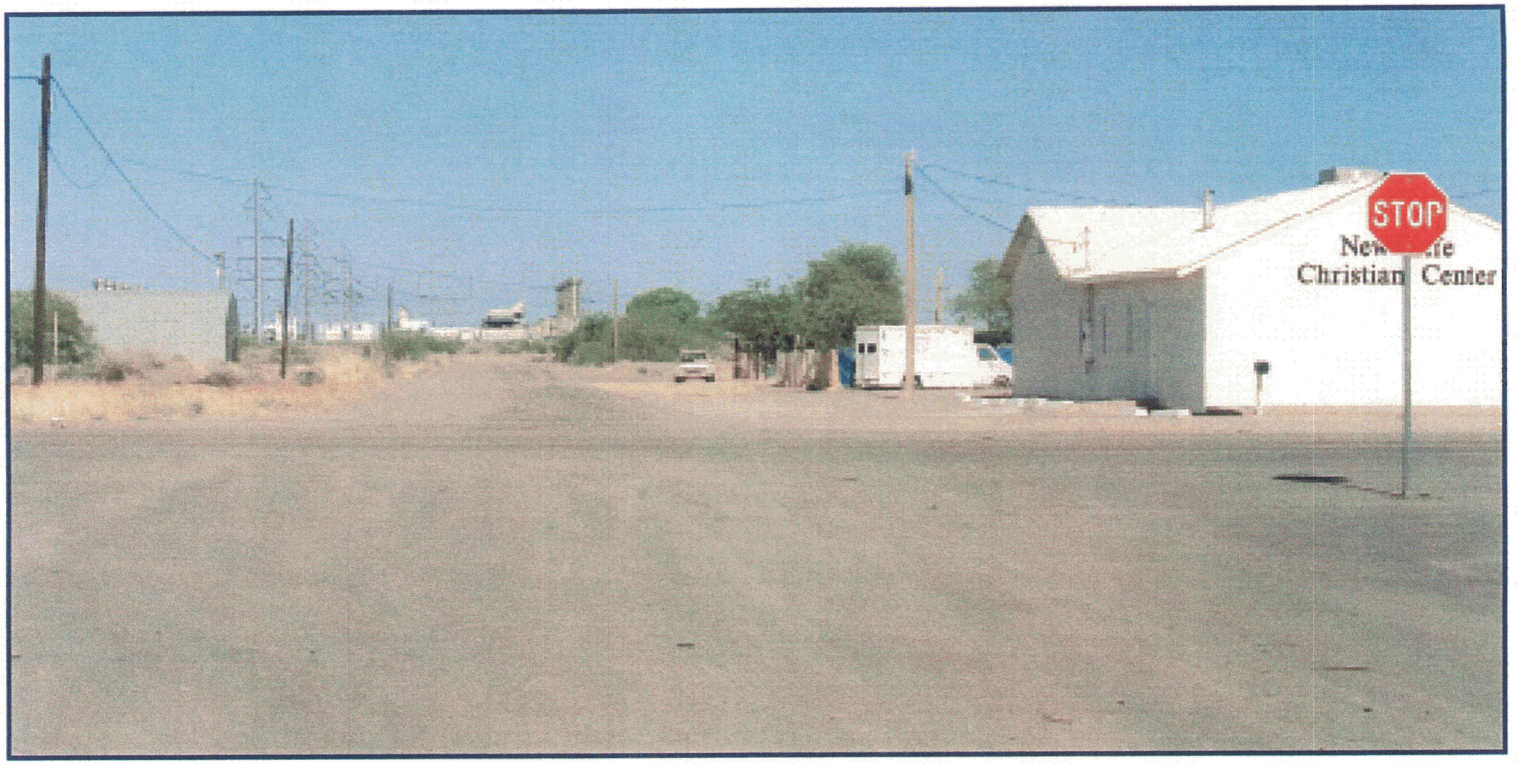
TransCanada



Existing View

Corner of Highway 87 and Bateman Street

TransCanada

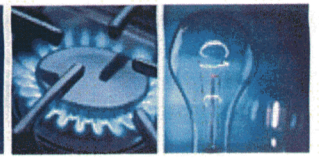


Visual Simulation

Corner of Highway 87 and Bateman Street

TransCanada

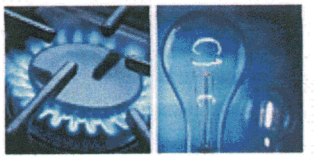
Noise Modeling Results

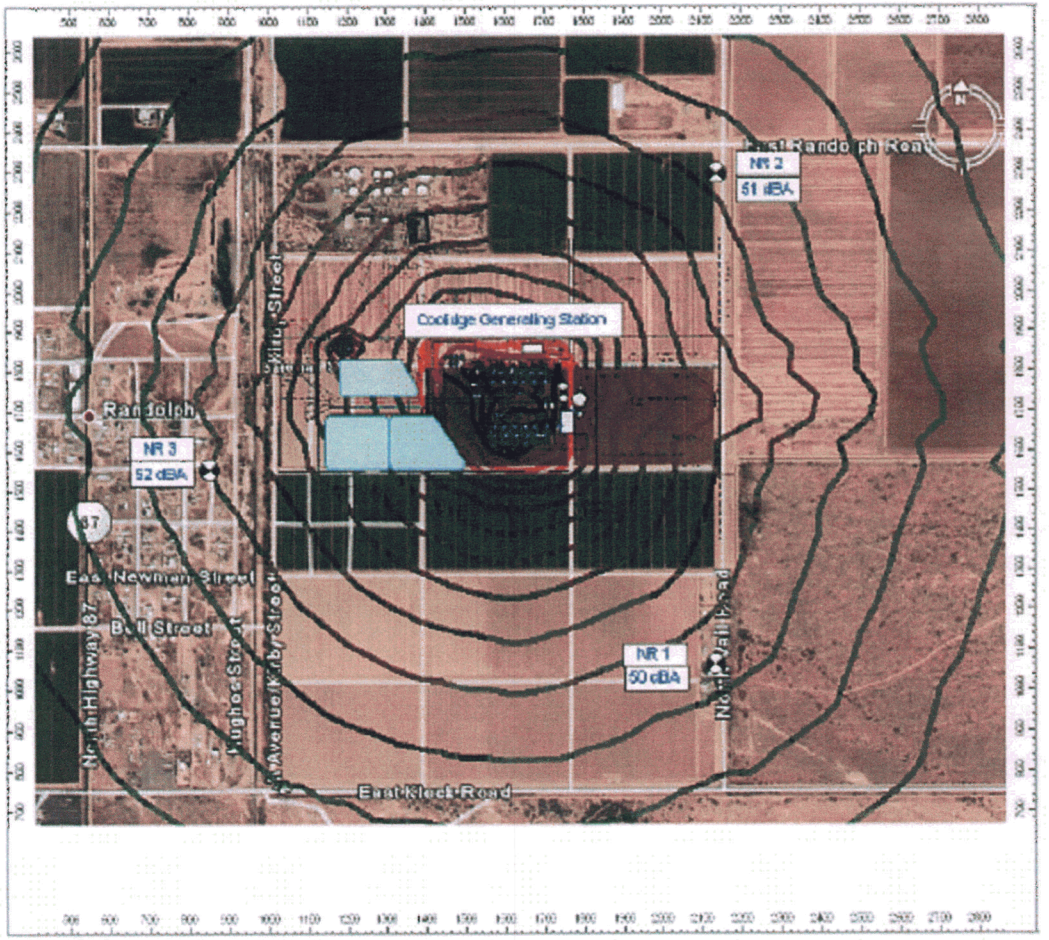


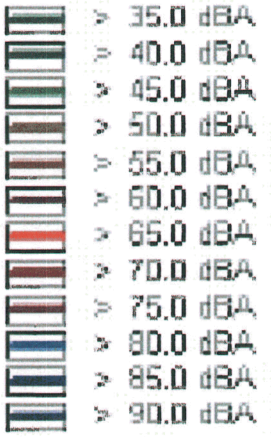
- Preliminary noise modeling completed
  - Using designed plant location and equipment specifications
- Results show potential noise impact less than 55 dbA at closest residences
- For comparison - the sound levels of other noises in a community*
  - Inside an average residence – approximately 45 dbA
  - Light traffic at 100 feet – approximately 50 dbA
  - Inside a private business – approximately 52 dbA
  - Inside a large store – approximately 60 dbA
  - Traffic near freeway – approximately 65 dbA
  - Normal conversation at 3 feet – approximately 65 dbA
  - Freight train at 100 feet – approximately 75 dbA

** Source – EPA's Community Noise Assessment*

TransCanada



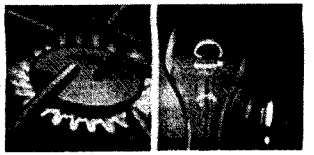




Noise Modeling Results

TransCanada

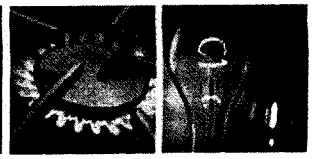
Permitting and Public Involvement



- Significant experience permitting facilities across North America
- Will meet or exceed applicable laws and submit complete and thorough applications
- Early and proactive agency and public communication
- Communication has and will continue to include:
  - Stakeholder workshops;
  - Community open houses;
  - One-on-one meetings;
  - Brochures or information packages mailed to individuals;
  - Project web page www.transcanada.com/coolidge; and
  - Posters or public notices placed in local newspapers.
- Committed to being a responsible member of the community

TransCanada

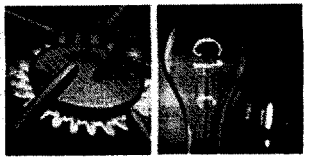
Public and Stakeholder Involvement



- Briefings with stakeholders - January 2008
- Stakeholder Workshop #1 - February 7, 2008
- Open House #1 – February 28, 2008
- Door-to-Door with Randolph residents - May 2008
  - Visited 93 houses (spoke with 28 families)
- Briefings with stakeholders - June 2008
- Stakeholder Workshop #2 - June 17, 2008
- Open House and BBQ #2 - June 30, 2008
- Continuing Engagement - Throughout Project Life

TransCanada

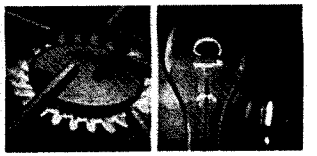
Continuing Schedule



• Permitting Phase:	Q1 2008 – Q3 2009
▪ 90-Day Notice Filing	March 20, 2008
▪ CEC / Air Application Filings	Summer 2008
▪ Proposed CEC to ACC	180 Days Post Filing
• Construction Phase:	Q3 2009 – Q2 2010
• Commissioning Phase:	Q3 2010 – Q1 2011
• Facility Operation Date:	May 1, 2011

TransCanada

Questions



??????????????????

TransCanada

COOLIDGE GENERATING STATION PROJECT
Stakeholders Workshop Sign-In Sheet
June 17, 2008

The information collected below will be used to allow for tracking of participation in the Stakeholder Workshop. Additionally, the information collected below will allow **TransCanada** to provide you with further information about the project and other project-related events. All information collected will be held in the strictest of confidence by TransCanada and will not be disclosed to any outside parties.

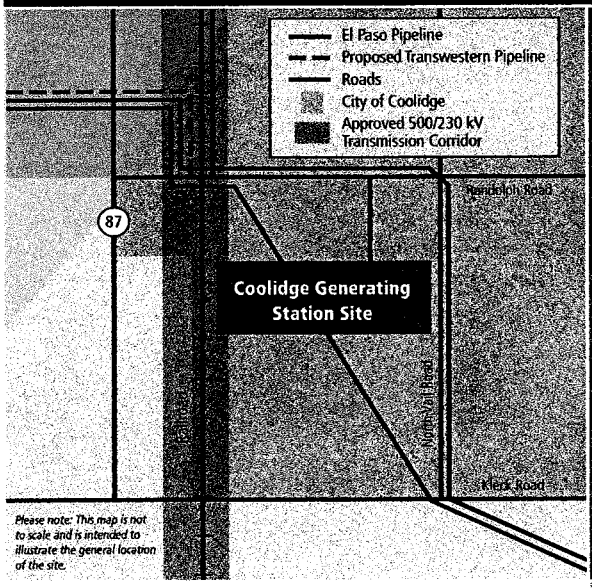
Name (please print clearly)	Organization	Phone Number	Email Address
DENNIS RITTENBACK	PINAL COUNTY	520 866 6452	DENNIS.RITTENBACK@CO.PINAL.AZ.US
ROGER STINSON	COOLIDGE P.D.	520 723-5311	ROGERS@COOLIDGEAZ.COM
Robby Criswell	City of Coolidge	520-723-6000	rcriswell@coolidgeaz.com
Holly Bergman	Central Arizona Regional Economic Dev. Foundation	520-836-6868	hbergman@caredf.org
JILL DUSENBERRY	COOLIDGE	520 723-6014	Jdusenberry@coolidgeaz.com
BOB FLATLEY	COOLIDGE	520-723-5361	bflatley@coolidgeaz.com
C. ALTON BRUCE	Coolidge	723 6075	abruce@coolidgeaz.com
Tom Shope			

APPENDIX J-3

Open Houses

Coolidge Generating Station Project

Open House



Don't miss your opportunity to learn more about power generation and TransCanada's proposed Coolidge Generating Station Project.

Bring your questions, ideas, and input and we'll supply the refreshments. We're looking forward to meeting you and becoming an active and long-term member of the community.

If you cannot attend the event, but would like to learn more, please contact us by using our toll-free telephone line or project email account:

1.866.382.0886
cgs@transcanada.com

Or visit our project web page:
www.transcanada.com/coolidge

Open House

Coolidge Youth Center
660 S. Main Street
Coolidge, Arizona 85228

Thursday, February 28, 2008
4:00 – 7:00 p.m.

TransCanada
In business to deliver

COOLIDGE GENERATING STATION PROJECT
OPEN HOUSE Sign-In Sheet
February 28TH, 2008

The information collected below will be used to allow for tracking of participation in the Open House. Additionally, the information collected below will allow TransCanada to provide you with further information about the project and other project-related events. All information collected will be held in the strictest of confidence by TransCanada and will not be disclosed to any outside parties.

Name (please print clearly)	Home or Business Address	Phone Number	Email Address
Marlon Peters	3703 N Michigan	520-868-2896	
Charles Emmack	3709 N. Wisconsin Florence, AZ	868-0978	
Trey Champion	4382 N 1st Ave Tucson 85718	520-792-2652 x105	
David B. Workman Sr.	2146 W. Wilson Ave Coolidge AZ 85228	520-723-0852	dbworkmansr@gmail.com
Ken Buchanan	31 N. Pinal Florence Az	520 866.6098	Ken.Buchanan@co.pinal.AZ.us
RICHARD LISTER	820 DOUGLAS	520-723-4829	

COOLIDGE GENERATING STATION PROJECT
OPEN HOUSE Sign-In Sheet
February 28TH, 2008

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Name (please print clearly)	Home or Business Address	Phone Number	Email Address
Susan Taylor	359 N. Desert Ln Coolidge	723 5654	TAylorsuegreg@aol.com
Francis Pavlicko	336 S. 15th st.	305.360.0240	deepspace42@msn.com
Steve Dockstader	1105 N COTA LANE COOLIDGE AZ 85228	520-723-2814	s.dockstader@att.net
Jon Thompson	1037 E Lauren Lane Coolidge AZ	520-723-5755	
Mark Bimson & wife	339 E Paseo De Paula	480-225-5514	Markb@idzyn.biz

COOLIDGE GENERATING STATION PROJECT
OPEN HOUSE Sign-In Sheet
February 28TH, 2008

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Name (please print clearly)	Home or Business Address	Phone Number	Email Address
Chris Hershberger	Sunrise Engineering	(520) 289-1985	chershberger@sunrise-eng.com
William Reed	Sycamore Ave Apache Jct AZ	480 734 4000	
John Palmer	8000 Randolph Rd	520-723-3588	
Terry Luttrell	Lindbergh Ave	520- -	
Christine Blakeman	859 W. Blakeman Pl.	723-4012	
Earl & Sue Hannah	31 W. Chantilly Pl.	723-5182	
Alton Bruce	141 N Main St Coolidge	723-6075	abruce@coolidgeaz.com
Phyllis Mikles	1180 Mesquite Ln. Coolidge	723-3521	
Denise Whittemore	5609 E Shuvinna Coolidge, AZ	723-3461	
Jill Dugenberry	130 W. Central Coolidge AZ 85228	723-5361	Jdusenberry@coolidgeaz.com
Samuel Buchanan	225 S. 14th circle Coolidge 85228	723-2158	

COOLIDGE GENERATING STATION PROJECT
OPEN HOUSE Sign-In Sheet
February 28TH, 2008

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Name (please print clearly)	Home or Business Address	Phone Number	Email Address
George Allen	P.O. Box 1345, Coolidge	520 723-6023	Allenb786@cs.com

COOLIDGE GENERATING STATION PROJECT
OPEN HOUSE Sign-In Sheet
February 28TH, 2008

The information collected below will be used to allow for tracking of participation in the Open House. Additionally, the information collected below will allow TransCanada to provide you with further information about the project and other project-related events. All information collected will be held in the strictest of confidence by TransCanada and will not be disclosed to any outside parties.

Name (please print clearly)	Home or Business Address	Phone Number	Email Address
Barry Stonehouse	10055 E. Jane Cir. Mesa, Az 85207	602-803-2240	
Donald G Peters	Public Works Coolidge	(520) 723-4882	donp@coolidgeaz.com
Geoffrey Child	Sunrise Engineering 1016 N. Arizona Blvd. Coolidge, AZ 85228	520-723-8634	gchild@sunrise-eng.com
R E Anderson	P.O. Box 91 Coolidge AZ 85228	520-705-0317	
Marvena R. Shoaf	695 West Wilson Ave Coolidge AZ 85228	520-723-3698	—
Sylvia June Silva	City of Coolidge 130 W. Central Ave Coolidge	520-723-6060	
Frank Riley	3618 N. Ohio Florence, Arizona	520-868-4478	
B.B Flath	130 W. Central Coolidge, Az.	520-723-5311	[illegible]@coolidgeaz.com
Regina Pisani	353 W Central Coolidge Examiner	520 723 5441	
Bruce + Bernice Ellis	1202 N Reeves Rd	480 202-6427	

Coolidge Generating Station Project
~~Stakeholders Workshop~~ February 28th, 2008
OPEN HOUSE

1. What specific questions or comments did you have regarding the proposed Coolidge Generating Station Project?

+ i. WILL THE CITY OF COOLIDGE BENEFIT FROM "IMPACT FEES"

+ 2. WILL THE FACILITY PAY TAXES IN THE CITY.

2. Were your questions adequately answered at the OPEN HOUSE?

Yes ✓ No ____

If not, what additional information do you require?

EXCELLENT

3. Do you have any other comments you'd like to share with the members of the project team?

CONTINUE KEEPING OUR COUNCIL AND CITY MGR INFORMED.

If you would like TransCanada personnel to provide follow-up information or address questions, please leave your name and address:

Name RICHARD LISTER Phone No. 723-4829

Mailing Address ____

Email Address KLISTERCOOL@Q.COM.

TransCanada
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Coolidge Generating Station Project
~~Stakeholders Workshop~~ February 28th, 2008
OPEN HOUSE

1. What specific questions or comments did you have regarding the proposed Coolidge Generating Station Project?

   How much water will be used?
   What about emissions?

2. Were your questions adequately answered at the OPEN HOUSE?

   Yes X No ____

   If not, what additional information do you require?

3. Do you have any other comments you'd like to share with the members of the project team?

   We already have 2 generating plants in Pinal County

If you would like TransCanada personnel to provide follow-up information or address questions, please leave your name and address:

Name _____ Phone No._____

Mailing Address _____

Email Address _____

TransCanada
In business to deliver

Coolidge Generating Station Project
Stakeholders Workshop February 28th, 2008

OPEN HOUSE

1. What specific questions or comments did you have regarding the proposed Coolidge Generating Station Project?

By building this Substation, are there any Tax benefits the city of Coolidge would realize, and if so when?

2. Were your questions adequately answered at the OPEN HOUSE?

Yes _____ No _____

If not, what additional information do you require?

Are there any Scaled Taxes forgiven at the front end, and if so for how long?

3. Do you have any other comments you'd like to share with the members of the project team?

If you would like TransCanada personnel to provide follow-up information or address questions, please leave your name and address:

Name David B. Workman Sr. Phone No. _____

Mailing Address 2146 W. Wilson Ave Coolidge AZ 85228-3254

Email Address dbworkmansr@gmail.com

I would like written reply, not phone reply.

Thanks

TransCanada
In business to deliver

Coolidge Generating Station Project
~~Stakeholders Workshop~~ February 28th, 2008
OPEN HOUSE

1. What specific questions or comments did you have regarding the proposed Coolidge Generating Station Project?

   HAD ALL OUR QUESTIONS/Concerns addressed at this "OPEN House"

2. Were your questions adequately answered at the OPEN HOUSE?

   Yes ✓ No _____

   If not, what additional information do you require?

3. Do you have any other comments you'd like to share with the members of the project team?

   The reps were all very CORDIAL and very knowledgeable. Very well organized. And the refreshments were a nice "touch".

If you would like TransCanada personnel to provide follow-up information or address questions, please leave your name and address:

Name _____ Phone No. _____

Mailing Address Thank You . . .

Email Address B+B ELLIS
Coolidge, AZ

TransCanada
In business to deliver

Coolidge Generating Station Project
~~Stakeholders Workshop~~ February 28th, 2008
OPEN HOUSE

1. What specific questions or comments did you have regarding the proposed Coolidge Generating Station Project?

Generation of jobs will be fabulous
Management of negative environmental impact will be great for our community.

2. Were your questions adequately answered at the OPEN HOUSE?

Yes _____ No X

If not, what additional information do you require?

Very excited to have you in the community

3. Do you have any other comments you'd like to share with the members of the project team?

If you would like TransCanada personnel to provide follow-up information or address questions, please leave your name and address:

Name _____ Phone No. _____

Mailing Address _____

Email Address _____

TransCanada
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Coolidge Generating Station Project
~~Stakeholders Workshop~~ February 28th, 2008
OPEN HOUSE

1. What specific questions or comments did you have regarding the proposed Coolidge Generating Station Project?

   How might this project affect the surrounding environment (Local)

2. Were your questions adequately answered at the OPEN HOUSE?

   Yes X No ___

   If not, what additional information do you require?

New – Can this Plant be run on an alternate fuel if NG is not available or becomes too expensive?

3. Do you have any other comments you'd like to share with the members of the project team?

   I think this project is an excellent idea and will be good for Coolidge, Pinal County and Arizona as a whole.

If you would like TransCanada personnel to provide follow-up information or address questions, please leave your name and address:

Name G. Steve Dockstader Phone No. 520-723-2814

Mailing Address 1105 N Cota Lane, Coolidge AZ 85228

Email Address S.dockstader@att.net

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Coolidge Generating Station Project
~~Stakeholders Workshop~~ February 28th, 2008
OPEN HOUSE

1. What specific questions or comments did you have regarding the proposed Coolidge Generating Station Project?

   WE ARE EXREMLY CONCERED ABOUT THE NOISE FROM THE OPERATION OF THE GENERATION STATION.

2. Were your questions adequately answered at the OPEN HOUSE?

   Yes _____ No X

   If not, what additional information do you require?

   WE NEED ALL AVAILABLE INFORMATION ABOUT THE NOISE & HOW IT WILL AFFECT US AT OUR PROPERTY

3. Do you have any other comments you'd like to share with the members of the project team?

If you would like TransCanada personnel to provide follow-up information or address questions, please leave your name and address:

Name EARL & SUE HANNAH Phone No. 520 723-5152

Mailing Address 31 W. CHANTILLY PL. Coolidge, Az. 85228

Email Address ∅

- Provide background noise monitoring data.
- Provide data of on various noise levels examples.

TransCanada
in business to deliver

Sue Hannah

Coolidge Generating Station Project
Stakeholders Workshop February 28th, 2008

1. What specific questions or comments did you have regarding the proposed Coolidge Generating Station Project?

   START DATES, DURATION, WHO'S DOING ENGINEERING & CONSTRUCTION.

2. Were your questions adequately answered at the OPEN HOUSE?

   Yes X No ____

   If not, what additional information do you require?

3. Do you have any other comments you'd like to share with the members of the project team?

   SUNRISE ENGINEERING IS INTERESTED IN PROVIDING DESIGN SERVICES AND SURVEYING.

If you would like TransCanada personnel to provide follow-up information or address questions, please leave your name and address:

Name SUNRISE ENGINEERING GEOFFREY CHILD Phone No. 520-723-8634

Mailing Address 1016 N. ARIZONA BLVD.

Email Address gchild@sunrise-eng.com

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Coolidge Generating Station Project
~~Stakeholders Workshop~~ February 28th, 2008
OPEN HOUSE

1. What specific questions or comments did you have regarding the proposed Coolidge Generating Station Project?
Many technical, logistic, & cultural awareness related questions.

2. Were your questions adequately answered at the OPEN HOUSE?

   Yes ✓ No _____

   If not, what additional information do you require?

3. Do you have any other comments you'd like to share with the members of the project team?
Do your homework. Don't be shy when it comes to asking questions & partnering with other existing corporate community members.

If you would like TransCanada personnel to provide follow-up information or address questions, please leave your name and address:

Name _____ Phone No._____

Mailing Address _____

Email Address _____

Good Luck !!

Fran Carlisle

TransCanada
in business to deliver

Coolidge Generating Station Project
~~Stakeholders Workshop~~ OPEN HOUSE February 28th, 2008

1. What specific questions or comments did you have regarding the proposed Coolidge Generating Station Project?

   Who is contractor - Could we, Sunrise Engineering, be of service? Water Resources, Survey, gas design?

2. Were your questions adequately answered at the OPEN HOUSE?

   Yes ✓ No ____

   If not, what additional information do you require?

   ____

   ____

   ____

3. Do you have any other comments you'd like to share with the members of the project team?

   ____

   ____

   ____

   ____

If you would like TransCanada personnel to provide follow-up information or address questions, please leave your name and address:

Name Chris Hershberger Phone No. (520) 289-1985

Mailing Address 1576 W Copper Ridge Dr Oro Valley, Az 85737

Email Address chershberger@sunrise-eng.com

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Welcome

Coolidge Generating Station Project

Open House

TransCanada
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We value your feedback

- The project team is here to answer your questions about the proposed Coolidge Generating Station Project
- Your input and feedback early on in the process will help enrich our proposed plans as we move forward
- Before you go, please take a moment to fill out a comment sheet and leave it with us – or take it home and return it at a later date to the address provided

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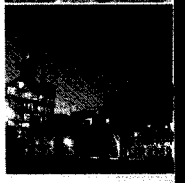

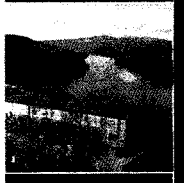

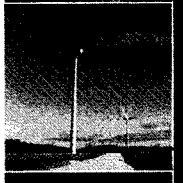

Who is TransCanada?

- Leader in the responsible development and reliable operation of North American energy infrastructure
- Own, or have interests in, 7,700 megawatts of power generation in Canada and the U.S., including hydro, wind and gas-fired generation
- Network of 36,500 miles of pipeline transports the majority of Western Canada's natural gas production to key Canadian and U.S. markets
- 3,600 employees, almost half in the U.S.

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Proposed Coolidge Generating Station Project

- Project developed in response to Salt River Project's (SRP) Request for Proposal
- Based on optimal operating conditions, TransCanada predicts an electrical output of approximately 575 megawatts
- TransCanada to build and operate simple-cycle natural gas peaking facility
- Agreement with the City of Mesa to purchase site
- Highly experienced project team utilizing Arizona experts

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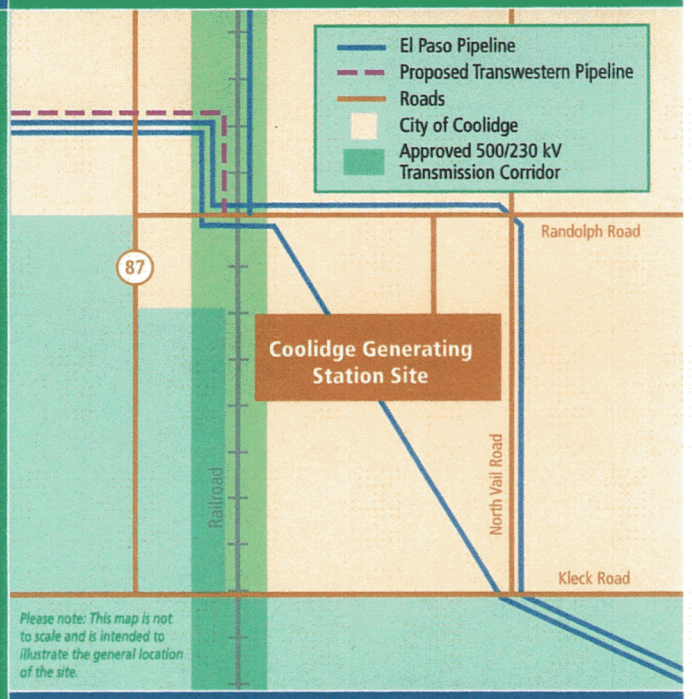
Proposed Site



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Facility Description

- 12 GE LM6000 PC Sprint Generating Units
  - Simple cycle
  - Low water consumption
  - Low emissions
- Project investigating use of renewable water
- Dispatch expectations: peaking resource
- Quick Start – 10 minutes (reserve capacity)
- High availability
  - 98% summer
  - 96% non-summer

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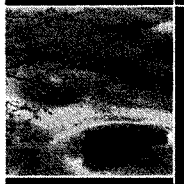

Environmental Considerations

- Proposed facility would use low-emissions technology and meet or exceed all environmental requirements
- Simple-cycle plant design results in low water use relative to most other thermal generation facilities
- TransCanada is investigating options to secure renewable water resources
- All water will be managed on site

Community Benefits

- Employment opportunities during construction and operations
- Money spent by contractors for food, lodging, fuel and other construction-related services
- Additional community revenues generated due to the new facilities
- A good corporate citizen in TransCanada

TransCanada
In business to deliver

Public Involvement

- TransCanada is committed to consulting with area residents, landowners, community organizations and government and elected officials throughout the life of the project
- We want to understand community needs and concerns early on as project details develop
- We will continue to share information regarding environmental considerations and project design as more detail becomes available

TransCanada
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Permitting and Approval Process

- Certificate of Environmental Compatibility
  - Arizona Corporation Commission (ACC)
- Air Permits
  - Pinal Country Air Quality Control District (PCAQCD)
- Other Permits/Approvals
  - Re-zoning, Aquifer Protection Plan (APP), Conditional Use Permit, non-exempt well permits
  - Construction Permits

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In business to deliver

Project Schedule

• Public Involvement:	Q1 2008 – Ongoing
– First Stakeholder Workshop	Feb. 7, 2008
– First Community Open House	Feb. 28, 2008
– Second Stakeholder Workshop and Open House planned prior to application filings	Summer 2008
• Permitting Phase:	Q1 2008 – Q3 2009
– CEC/Air Permit Application Filing	Summer 2008
• Construction Phase:	Q3 2009 – Q2 2010
• Commissioning Phase:	Q3 2010 – Q1 2011
• Facility Operation Date:	May, 2011

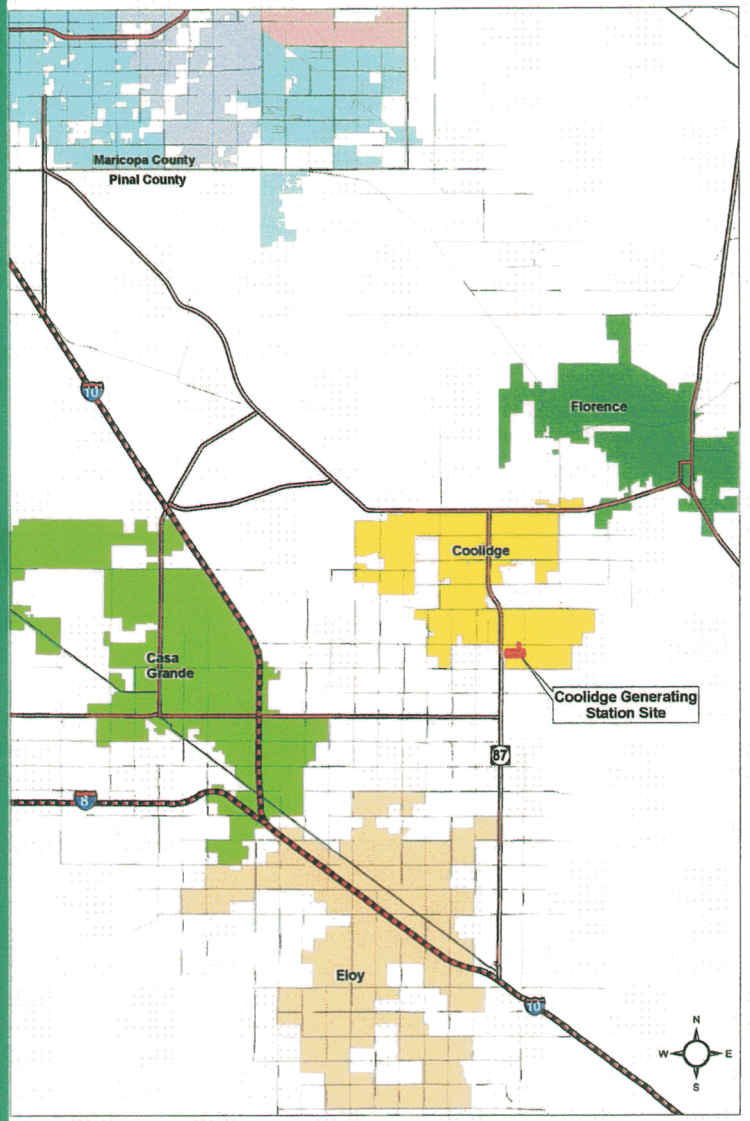
TransCanada
In business to deliver

We want to hear from you

- Project Web Page
  www.transcanada.com/coolidge
- Toll-free Telephone Number
  1.866.382.0886
- Project Email Address
  cgs@transcanada.com

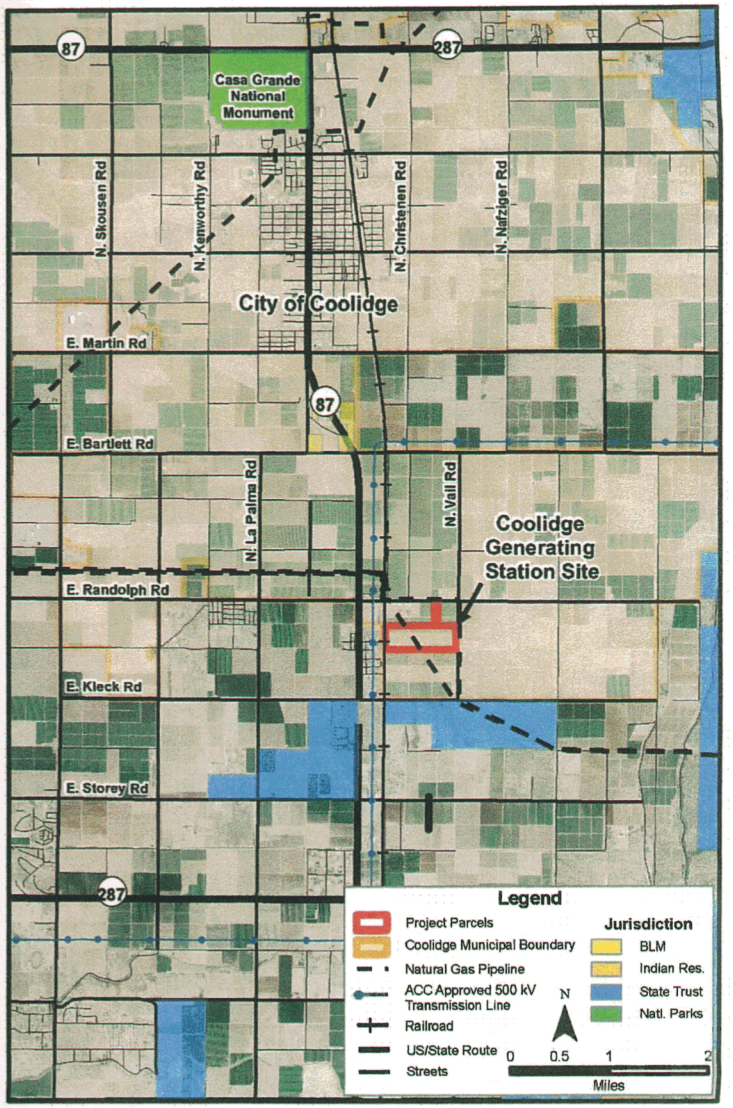
TransCanada
In business to deliver

Project Location



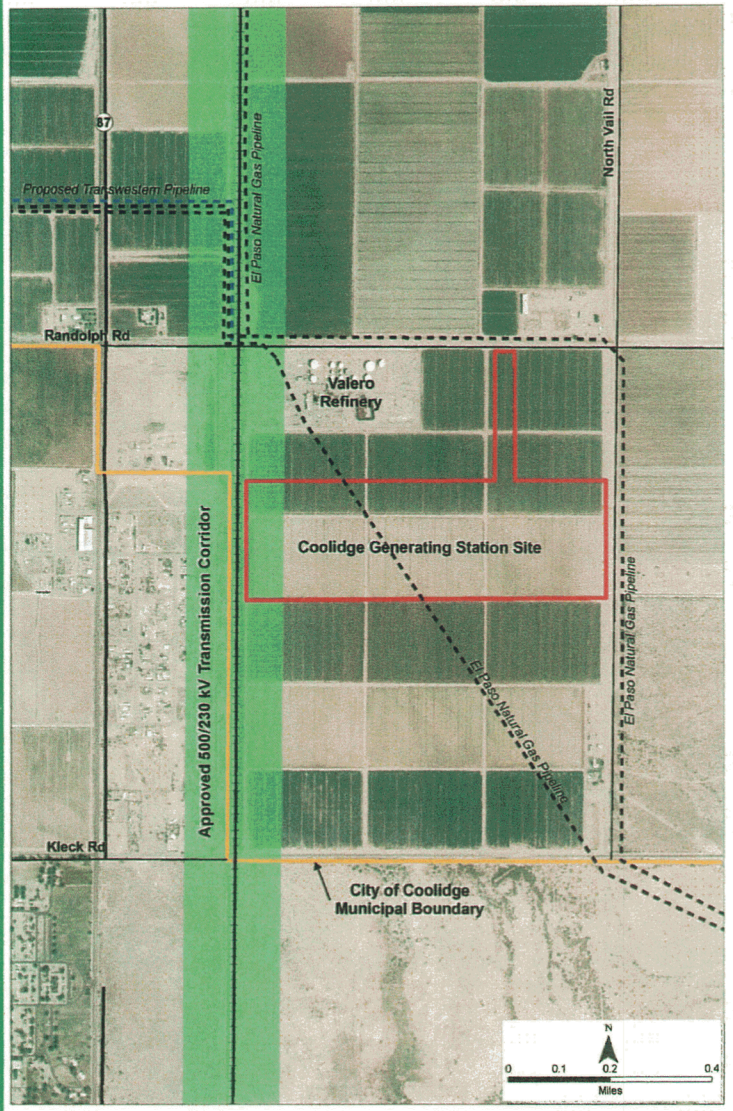
TransCanada
In business to deliver

Project Area



TransCanada
In business to deliver

Project Site



TransCanada

In business to deliver

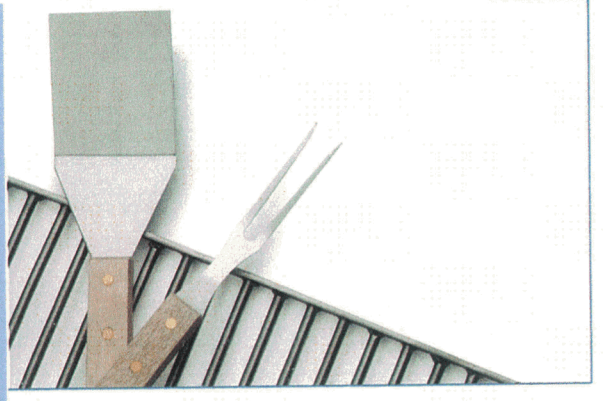
You're Invited!

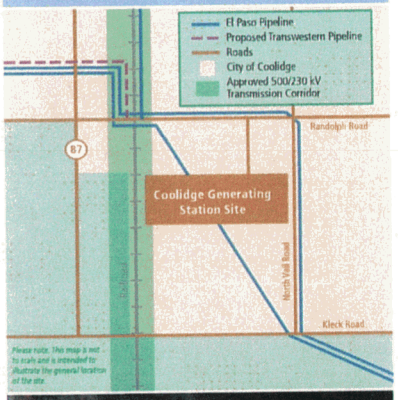
Coolidge Generating Station Project

Open House and Community Barbeque

Coolidge Youth Center
660 S. Main Street
Coolidge, Arizona 85228

Monday, June 30, 2008
5:00 – 7:00 p.m.





Don't miss your opportunity to learn more about power generation and TransCanada's Coolidge Generating Station Project at our second open house.

Bring your questions, ideas, and input and we'll supply the meal and refreshments. We're looking forward to meeting you and becoming an active and long-term member of the community.

RSVP requested (but not required) to help determine the number of guests joining us for the barbeque. Please call or e-mail:

- Toll-free Telephone Number: 1.866.382.0886
- Project E-mail: cgs@transcanada.com

If you cannot attend the event, but would like to learn more; please visit our project web page: www.transcanada.com/coolidge

TransCanada
In business to deliver

COOLIDGE GENERATING STATION PROJECT
Open House and Community Barbeque Sign-In Sheet
June 30, 2008

The information collected below will be used to allow for tracking of participation in the Open House and Community Barbeque. Additionally, the information collected below will allow TransCanada to provide you with further information about the project and other project-related events. All information collected will be held in the strictest of confidence by TransCanada and will not be disclosed to any outside parties.

Name (please print clearly)	Organization	Phone Number	~~Email~~ mailing Address
Noah Skousen			Coolidge
Seth Skousen			Coolidge
Gilbert Lopez	City of Coolidge	520-723-5361	Coolidge City Hall.
Steve Morok			691 IROQUOIS DR. COOLIDGE
BOB FLATLEY	City of Coolidge	520-723-5361	130 W. Central Ave.
Clarence White		520 723 9391	1210 N Reeves Coolidge, AZ
NICK BROADHURST	SUNRISE ENGINEERING	480-768-8600	1016 N. ARIZONA RD., COOLIDGE, AZ
Greta Williams		520-723-1022	750 W. Patton Ave., Coolidge

COOLIDGE GENERATING STATION PROJECT
Open House and Community Barbeque Sign-In Sheet
June 30, 2008

The information collected below will be used to allow for tracking of participation in the Open House and Community Barbeque. Additionally, the information collected below will allow TransCanada to provide you with further information about the project and other project-related events. All information collected will be held in the strictest of confidence by TransCanada and will not be disclosed to any outside parties.

Name (please print clearly)	Organization	Phone Number	MAILING ~~Email~~ Address
GEOFFREY CHILD	SUNRISE ENGINEERING	520-723-8634	1016 N. ARIZONA BLVD. COOLIDGE, AZ 85228
MARY STORM	66	520 723 - 8407	661 W. IROQUOIS DR COOLIDGE AZ
TOM MARTIN	COG	5207237744	PO BOX 548 COOLIDGE AZ 85228
Clara Vasquez			
Deborah Bagnall	Morning Star Farms	520-723-5506	12292 N Valley Farms Rd Coolidge Az 85228
Margaret Mander	Coolidge School District	520-466-6562	P.O. Box 1031 AZ City, AZ 852 23
Tom Shoke	City of Coolidge	520-723-4567	PO BOX 1627 Coolidge, AZ 85228
MARK LARNED	RESEDENT	520-560-3698	1478 E. AVENIDA ISABELLA CASA GRANDE, AZ. 85222
Rodrick O Williams	Resident	(520) 723-1022	750 W Patton Ave Coolidge, AZ 85228
[redacted]			
Alan Wahl	Resident	520-723-7420 480-216-8060	311 S. 16th St Coolidge, AZ 85228

COOLIDGE GENERATING STATION PROJECT
Open House and Community Barbeque Sign-In Sheet
June 30, 2008

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Name (please print clearly)	Organization	Phone Number	Mailing Address
			X 4 Coolidge, AZ
MARLO Hill DeVonte Gu Bennie Corum Jr	N/A	520-723-5852	N/A
Josh Morgenstern	Energeon	(602) 808-8600	N/A
DAVID WILSON	ELECTRICAL DISTRICT No. 2	520-381-2327	P.O. Box 548 COOLIDGE AZ 85228
John Murphy	N/A		1601 S 7th ST Coolidge
Sylvia Tam Silva	City of Coolidge	723-6060	HR 130 W. Central, Coolidge AZ 85228
Alan C Glover		413 3048	Coolidge
Robert T Barnes	Friendship Finance	903-245-0169	210 E Florence Blvd Casa Grande, AZ 85222
Gilbert & Rhonda Miller & Family	Resident	520.723.3570	250 S. 14th Circle Coolidge AZ 85228
John & Daniel Harms	Resident	602-[illegible]-6633	615 S 12th St Coolidge, AZ 85228
Reg + Austin Franklin	Resident	520-793-8400	1643 E. Jasmine Casa Grande, AZ 85222.

COOLIDGE GENERATING STATION PROJECT
Open House and Community Barbeque Sign-In Sheet
June 30, 2008

The information collected below will be used to allow for tracking of participation in the Open House and Community Barbeque. Additionally, the information collected below will allow TransCanada to provide you with further information about the project and other project-related events. All information collected will be held in the strictest of confidence by TransCanada and will not be disclosed to any outside parties.

Name (please print clearly)	Organization	Phone Number	Mailing [redacted] Address
Clarabelle & Swanner	Citizens - Residents	(520) 723-9016	schneer3na@msn.com
Mr & Mrs Joseph Straack		723-5127	710 N. Seneca x2
FRANK MURPHY		520-	1513 S 7th
Jill Dusenberry	Coolidge	520-723-6014	130 W. Central Ave Coolidge 85228
JAY MOYES	Moyes Sellers & Sims	602-604-2106	1850 N. Central Ave. Phx Az 85004
ALTON BRUCE	CITY OF Coolidge		
Susan Skousen	Amanda S	520-413-3048	252 S. 18th St.
Jon Thompson	City of Coolidge	723-5115	130 W. Central Ave Coolidge AZ 85228
Archie Lopez	Felix construction.com	602-469-5208	1326 West. Industrial Dr. Coolidge, AZ 85228
DANA WATTS Susan Watts	" " "	602 390 4724	" "
DENNIS CRESWELL	AZ Electric Power Cooperative	520-586-5101	Box 602 Benson, AZ 85602

Coolidge Generating Station Project
OPEN HOUSE June 30th, 2008

Please take a few minutes to complete this questionnaire and to leave it at the entrance or with a TransCanada representative. Your comments are important to us.

1. What specific questions or comments did you have regarding the proposed Coolidge Generating Station Project?

   how can local community work with T.C.

2. Were your questions adequately answered at the OPEN HOUSE?

   Yes _____ No _____

   If not, what additional information do you require?

   the info was a good start

3. Do you have any other comments you'd like to share with the members of the project team?

   as a former stakeholder in Randolph AZ I hope to learn more.

If you would like TransCanada personnel to provide follow-up information or address questions, please leave your name and address:

Name Clarence White Phone No. 520 723 9341

Mailing Address PO Box 475, Coolidge AZ 85228

Email Address cwhiteblessed@yahoo.com

TransCanada
In business to deliver

Coolidge Generating Station Project
OPEN HOUSE June 30th, 2008

Please take a few minutes to complete this questionnaire and to leave it at the entrance or with a TransCanada representative. Your comments are important to us.

1. What specific questions or comments did you have regarding the proposed Coolidge Generating Station Project?

   What is Coolidge Generating Station & Location

2. Were your questions adequately answered at the OPEN HOUSE?

   Yes ✓ No ____

   If not, what additional information do you require?

3. Do you have any other comments you'd like to share with the members of the project team?

   This was very informative

If you would like TransCanada personnel to provide follow-up information or address questions, please leave your name and address:

Name _____ Phone No. _____

Mailing Address _____

Email Address _____

TransCanada
In business to deliver

Coolidge Generating Station Project
OPEN HOUSE June 30th, 2008

Please take a few minutes to complete this questionnaire and to leave it at the entrance or with a TransCanada representative. Your comments are important to us.

1. What specific questions or comments did you have regarding the proposed Coolidge Generating Station Project?

   Industrial Construction opportunities for a local Contractor.

2. Were your questions adequately answered at the OPEN HOUSE?

   Yes ✓ No ____

   If not, what additional information do you require?

   Very helpful staff and informative. Good Food also!

3. Do you have any other comments you'd like to share with the members of the project team?

   Very excited for the opportunity to provide contracting services on this project. We have a very extensive reference list and qualifications we'd like to share.

If you would like TransCanada personnel to provide follow-up information or address questions, please leave your name and address:

Name Felix Construction Co. Phone No. 602-469-5208

Mailing Address ArchieL@FelixConstruction.com

Email Address ~~Dana W@~~ 309 E. 10th Dr. Mesa, AZ 85210
DanaW@Felixconstruction.com

TransCanada
In business to deliver

Coolidge Generating Station Project
OPEN HOUSE June 30th, 2008

Please take a few minutes to complete this questionnaire and to leave it at the entrance or with a TransCanada representative. Your comments are important to us.

1. What specific questions or comments did you have regarding the proposed Coolidge Generating Station Project?

2. Were your questions adequately answered at the OPEN HOUSE?

   Yes X No ____

   If not, what additional information do you require?

3. Do you have any other comments you'd like to share with the members of the project team?

   Not at this time.

If you would like TransCanada personnel to provide follow-up information or address questions, please leave your name and address:

Name _____ Phone No. _____

Mailing Address _____

Email Address _____

TransCanada
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Coolidge Generating Station Project
OPEN HOUSE June 30th, 2008

Please take a few minutes to complete this questionnaire and to leave it at the entrance or with a TransCanada representative. Your comments are important to us.

1. What specific questions or comments did you have regarding the proposed Coolidge Generating Station Project?

   How long have the genratere been in mind to be built

2. Were your questions adequately answered at the OPEN HOUSE?

   Yes ____ No ____ X unknown

   If not, what additional information do you require?

3. Do you have any other comments you'd like to share with the members of the project team?

   I hope the grenrater don't go out at the weakes moment when needed or is there back up for that

If you would like TransCanada personnel to provide follow-up information or address questions, please leave your name and address:

Name Bennie Corum Jr Phone No. 723-5852

Mailing Address 190 S 16th Street

Email Address

TransCanada
In business to deliver

Coolidge Generating Station Project
OPEN HOUSE June 30th, 2008

Please take a few minutes to complete this questionnaire and to leave it at the entrance or with a TransCanada representative. Your comments are important to us.

1. What specific questions or comments did you have regarding the proposed Coolidge Generating Station Project?

   When the power goes out how fare would it cover

2. Were your questions adequately answered at the OPEN HOUSE?

   Yes ____ No ____ * unknown

   If not, what additional information do you require?

3. Do you have any other comments you'd like to share with the members of the project team?

   Just it was a great idea to put a genrater in our area

If you would like TransCanada personnel to provide follow-up information or address questions, please leave your name and address:

Name Mario Hill Phone No. 723-5852

Mailing Address 190 S. 16th Street

Email Address ____

TransCanada
In business to deliver

Coolidge Generating Station Project
OPEN HOUSE June 30th, 2008

Please take a few minutes to complete this questionnaire and to leave it at the entrance or with a TransCanada representative. Your comments are important to us.

1. What specific questions or comments did you have regarding the proposed Coolidge Generating Station Project?

   Win will it be built

2. Were your questions adequately answered at the OPEN HOUSE?

   Yes _____ No _____ unknown

   If not, what additional information do you require?

3. Do you have any other comments you'd like to share with the members of the project team?

   How Long have this idea Been in mind who is the builder

If you would like TransCanada personnel to provide follow-up information or address questions, please leave your name and address:

Name Bennie Coum Phone No. (520) 723-8552

Mailing Address 190 S. 16th St. Coolidge, Az 85228

Email Address _____

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Coolidge Generating Station Project
OPEN HOUSE June 30th, 2008

Please take a few minutes to complete this questionnaire and to leave it at the entrance or with a TransCanada representative. Your comments are important to us.

1. What specific questions or comments did you have regarding the proposed Coolidge Generating Station Project?

   How power will it Generate

2. Were your questions adequately answered at the OPEN HOUSE?

   Yes _____ No _____

   If not, what additional information do you require?

3. Do you have any other comments you'd like to share with the members of the project team?

   no

If you would like TransCanada personnel to provide follow-up information or address questions, please leave your name and address:

Name Devonte Granderson Phone No. 520 723-5852

Mailing Address 190 S 16th Street

Email Address _____

TransCanada
In business to deliver

Coolidge Generating Station Project
OPEN HOUSE June 30th, 2008

Please take a few [illegible] to complete this questionnaire and to leave it at the entrance or with a T[illegible]nada representative. Your comments are important to us.

1. What specific questions or comments did you have regarding the proposed Coolidge Generating Station Project?

2. Were your questions adequately answered at the OPEN HOUSE?

   Yes X No _____

   If not, what additional information do you require?

3. Do you have any other comments you'd like to share with the members of the project team?

   Thank you for sharing the projects planning stages with the community!

If you would like TransCanada personnel to provide follow-up information or address questions, please leave your name and address:

Name Peggy Franklin Phone No. 602 793-8400

Mailing Address Peggy Franklin@rscrental.com

Email Address 1663 E. Jasmine St.
Casa Grande AZ 85222

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Coolidge Generating Station Project
OPEN HOUSE June 30th, 2008

Please take a few minutes to complete this questionnaire and to leave it at the entrance or with a TransCanada representative. Your comments are important to us.

1. What specific questions or comments did you have regarding the proposed Coolidge Generating Station Project?

   What percentage will be available for COOLIDGE

2. Were your questions adequately answered at the OPEN HOUSE?

   Yes ✓ No ____

   If not, what additional information do you require?

3. Do you have any other comments you'd like to share with the members of the project team?

   VERY INFORMATIVE

If you would like TransCanada personnel to provide follow-up information or address questions, please leave your name and address:

Name _____ Phone No. _____

Mailing Address _____

Email Address _____

TransCanada
In business to deliver

Coolidge Generating Station Project
OPEN HOUSE June 30th, 2008

Please take a few minutes to complete this questionnaire and to leave it at the entrance or with a TransCanada representative. Your comments are important to us.

1. What specific questions or comments did you have regarding the proposed Coolidge Generating Station Project?

   Noise Pollution, Property Values? Height of stacks.

2. Were your questions adequately answered at the OPEN HOUSE?

   Yes X No _____

   If not, what additional information do you require?

3. Do you have any other comments you'd like to share with the members of the project team?

If you would like TransCanada personnel to provide follow-up information or address questions, please leave your name and address:

Name _____ Phone No. _____

Mailing Address _____

Email Address _____

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Coolidge Generating Station Project
OPEN HOUSE June 30th, 2008

Please take a few minutes to complete this questionnaire and to leave it at the entrance or with a TransCanada representative. Your comments are important to us.

1. What specific questions or comments did you have regarding the proposed Coolidge Generating Station Project?

   None

2. Were your questions adequately answered at the OPEN HOUSE?

   Yes _____ No _____

   If not, what additional information do you require?

3. Do you have any other comments you'd like to share with the members of the project team?

If you would like TransCanada personnel to provide follow-up information or address questions, please leave your name and address:

Name Sylvio Jan Silva Phone No. 723-6060

Mailing Address ssilva@coolidgeaz.com

Email Address 1000 N. 8th Place Apt A Coolidge, Az 85228

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In business to deliver

Coolidge Generating Station Project
OPEN HOUSE June 30th, 2008

ase take a few minutes to complete this questionnaire and to leave it at the nce or with a TransCanada representative. Your comments are important s.

1. What specific questions or comments did you have regarding the proposed Coolidge Generating Station Project?

   Where it would be? How soon in operation?
   Employment opportunities?

2. Were your questions adequately answered at the OPEN HOUSE?

   Yes X No ____

   If not, what additional information do you require?

   Who to contact about employment opportunities and what I can do from now until then?

3. Do you have any other comments you'd like to share with the members of the project team?

If you would like TransCanada personnel to provide follow-up information or address questions, please leave your name and address:

Name Alan Wahl Phone No. 520-723-7470 480-216-9060 (cell)

Mailing Address 311 S. 16th St. Coolidge, AZ 85228

Email Address alanwahl@hotmail.com

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Coolidge Generating Station Project
OPEN HOUSE June 30th, 2008

Please take a few minutes to complete this questionnaire and to leave it at the entrance or with a TransCanada representative. Your comments are important to us.

1. What specific questions or comments did you have regarding the proposed Coolidge Generating Station Project?

   none

2. Were your questions adequately answered at the OPEN HOUSE?

   Yes ✓ No ____

   If not, what additional information do you require?

   none

3. Do you have any other comments you'd like to share with the members of the project team?

   Happy for business to come to our area & provide jobs.

If you would like TransCanada personnel to provide follow-up information or address questions, please leave your name and address:

Name _____ Phone No. _____

Mailing Address _____

Email Address _____

TransCanada
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Coolidge Generating Station Project
OPEN HOUSE June 30th, 2008

Please take a few minutes to complete this questionnaire and to leave it at the entrance or with a TransCanada representative. Your comments are important to us.

1. What specific questions or comments did you have regarding the proposed Coolidge Generating Station Project?
   How it would be protected against terrorists attacks

2. Were your questions adequately answered at the OPEN HOUSE?
   Yes ✓ No ____
   If not, what additional information do you require?

3. Do you have any other comments you'd like to share with the members of the project team?
   You all are very friendly and knowledgeably

If you would like TransCanada personnel to provide follow-up information or address questions, please leave your name and address:

Name _____ Phone No. _____

Mailing Address _____

Email Address _____

TransCanada
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Coolidge Generating Station Project
OPEN HOUSE June 30th, 2008

Please take a few minutes to complete this questionnaire and to leave it at the entrance or with a TransCanada representative. Your comments are important to us.

1. What specific questions or comments did you have regarding the proposed Coolidge Generating Station Project?

   How many units, what kind of intake cooling
   what type of water treatment & water source

2. Were your questions adequately answered at the OPEN HOUSE?

   Yes ✓ No ____

   If not, what additional information do you require?

3. Do you have any other comments you'd like to share with the members of the project team?

If you would like TransCanada personnel to provide follow-up information or address questions, please leave your name and address:

Name _____ Phone No. _____

Mailing Address _____

Email Address _____

TransCanada
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Coolidge Generating Station Project
OPEN HOUSE June 30th, 2008

Please take a few minutes to complete this questionnaire and to leave it at the entrance or with a TransCanada representative. Your comments are important to us.

1. What specific questions or comments did you have regarding the proposed Coolidge Generating Station Project?

What will it cost the tax payers of Coolidge? Is this a private company?

2. Were your questions adequately answered at the OPEN HOUSE?

Yes ✓ No ____

If not, what additional information do you require?

3. Do you have any other comments you'd like to share with the members of the project team?

Do you know how many people you will employ?

If you would like TransCanada personnel to provide follow-up information or address questions, please leave your name and address:

Name M.M. Mander (teach at an Elementary school) Phone No. 520-466-6562

Mailing Address P.O. Box 1031 AZ City, AZ 85223

Email Address ____

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In business to deliver

Coolidge Generating Station Project
OPEN HOUSE June 30th, 2008

Please t[illegible] minutes to complete this questionnaire and to leave it at the entrance [illegible] TransCanada representative. Your comments are important to us.

1. What specific questions or comments did you have regarding the proposed Coolidge Generating Station Project?

   SPECIFICS ON THE GENERATORS AND HOW THEY OPERATE

2. Were your questions adequately answered at the OPEN HOUSE?

   Yes ✓ No ____

   If not, what additional information do you require?

3. Do you have any other comments you'd like to share with the members of the project team?

If you would like TransCanada personnel to provide follow-up information or address questions, please leave your name and address:

Name STEVE MONCK Phone No. ____

Mailing Address 691 IROQUOIS DR COOLIDGE, AZ

Email Address ____

TransCanada
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Coolidge Generating Station Project
OPEN HOUSE June 30th, 2008

Please take a few minutes to complete this questionnaire and to leave it at the entrance or with a TransCanada representative. Your comments are important to us.

1. What specific questions or comments did you have regarding the proposed Coolidge Generating Station Project?

   ~~Both~~ I was wondering how it would effect environment and how many jobs it would bring to area

2. Were your questions adequately answered at the OPEN HOUSE?

   Yes ✓ No ____

   If not, what additional information do you require?

   n/a

3. Do you have any other comments you'd like to share with the members of the project team?

   thank you for the opportunity to learn more about what is happening and what the generating station will do.

If you would like TransCanada personnel to provide follow-up information or address questions, please leave your name and address:

Name Dale Miller Phone No. ____

Mailing Address ____

Email Address gdmj@q.com

TransCanada
In business to deliver

Coolidge Generating Station Project
OPEN HOUSE June 30th, 2008

Please take a few minutes to complete this questionnaire and to leave it at the entrance or with a TransCanada representative. Your comments are important to us.

1. What specific questions or comments did you have regarding the proposed Coolidge Generating Station Project?

   Location, output, gas lines

2. Were your questions adequately answered at the OPEN HOUSE?

   Yes X No ____

   If not, what additional information do you require?

3. Do you have any other comments you'd like to share with the members of the project team?

   We need good efficient & clean energy sources. This seems to fit the agenda

If you would like TransCanada personnel to provide follow-up information or address questions, please leave your name and address:

Name Robert Barnes Phone No. 903-245-0169

Mailing Address 210 E Florence Blvd. Casa Grande, AZ 852

Email Address FRFINANCE@QWESTOffice.net

TransCanada
In business to deliver

Coolidge Generating Station Project
OPEN HOUSE June 30th, 2008

Please take a few minutes to complete this questionnaire and to leave it at the entrance or with a TransCanada representative. Your comments are important to us.

1. What specific questions or comments did you have regarding the proposed Coolidge Generating Station Project?

   TAX REVENUE TO TOWN

2. Were your questions adequately answered at the OPEN HOUSE?

   Yes _____ No _____

   If not, what additional information do you require?

3. Do you have any other comments you'd like to share with the members of the project team?

If you would like TransCanada personnel to provide follow-up information or address questions, please leave your name and address:

Name FRANK MURPHY Phone No. _____

Mailing Address 1513 S 7TH ST

Email Address FMURPHYMEISTER@GMAIL.COM

TransCanada
In business to deliver

Coolidge Generating Station Project
OPEN HOUSE June 30th, 2008

Please take a few minutes to complete this questionnaire and to leave it at the entrance or with a TransCanada representative. Your comments are important to us.

1. What specific questions or comments did you have regarding the proposed Coolidge Generating Station Project?

   I like it.

2. Were your questions adequately answered at the OPEN HOUSE?

   Yes X No _____

   If not, what additional information do you require?

3. Do you have any other comments you'd like to share with the members of the project team?

   no

If you would like TransCanada personnel to provide follow-up information or address questions, please leave your name and address:

Name _____ Phone No. _____

Mailing Address _____

Email Address _____

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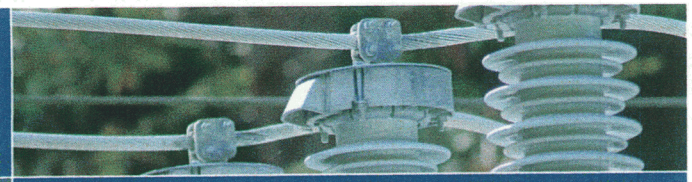


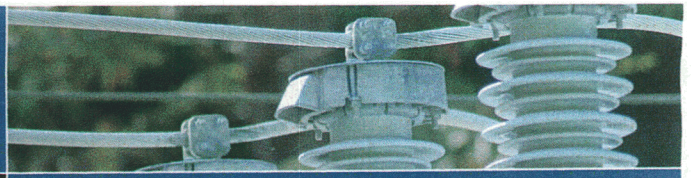
Welcome

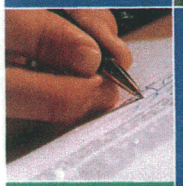
Coolidge Generating Station Project

Open House and Community Barbeque

Please sign in.

TransCanada
In business to deliver



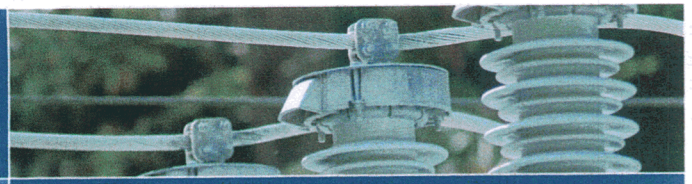


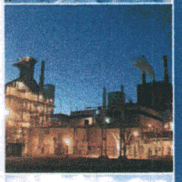
We value your feedback

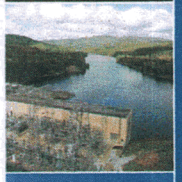
- The project team is here to answer your questions about the proposed Coolidge Generating Station Project
- Your input and feedback will help enrich our proposed plans as we move forward
- Before you go, please take a moment to fill out a comment sheet and leave it with us – or take it home and return it at a later date to the address provided

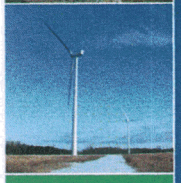
Coolidge Generating Station Project – June 2008

TransCanada
In business to deliver









Who is TransCanada?

- Leader in the responsible development and reliable operation of North American energy infrastructure
- Own, or have interests in, 8,300 megawatts of power generation in Canada and the U.S., including hydro, wind and gas-fired generation
- Our network of more than 36,500 miles of pipeline taps into virtually all major gas supply basins in North America
- 3,600 employees, almost half in the U.S.
- Listed as TRP on the Toronto and New York stock exchanges

Coolidge Generating Station Project – June 2008

TransCanada
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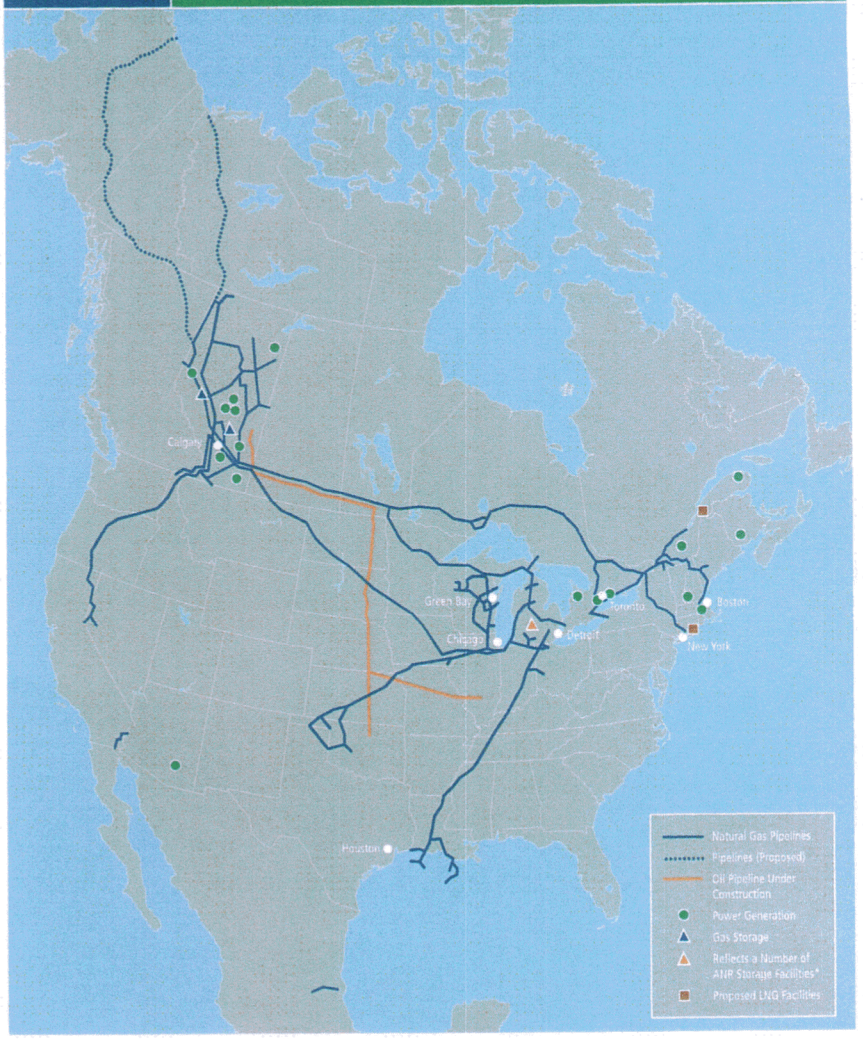
TransCanada's Assets



Coolidge Generating Station Project – June 2008

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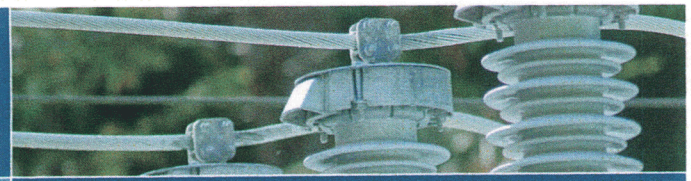
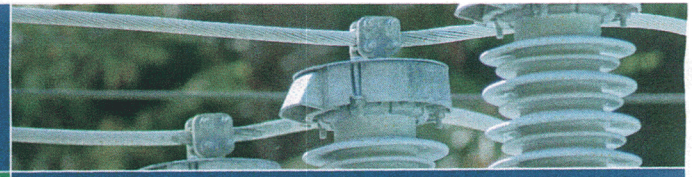


Project Overview

- Project advanced in response to SRP Request for Proposal
- TransCanada to build and operate an approximately 575 MW simple-cycle natural gas peaking facility
- Land has been purchased
- 100-acre site has been dedicated to the project
- Site located in an area designated as industrial in the City of Coolidge's General Plan
- City currently rezoning as per plan
- Highly experienced project team utilizing local experts
- Continuing a process of meeting with stakeholders

TransCanada
In business to deliver



Project Need

- SRP will utilize the power generated by the Coolidge Generating Station
- Explosive growth in SRP's Central Arizona service territory is driving the need for additional power
- Provides reserve capacity
- Increasing use of renewables also requires back-up peaking capacity
- These needs are filled by employing quick-start facilities like the Coolidge Generating Station
- The purchase of approximately 575 MW of peaking capacity from TransCanada will fill a portion of SRP's near-term need

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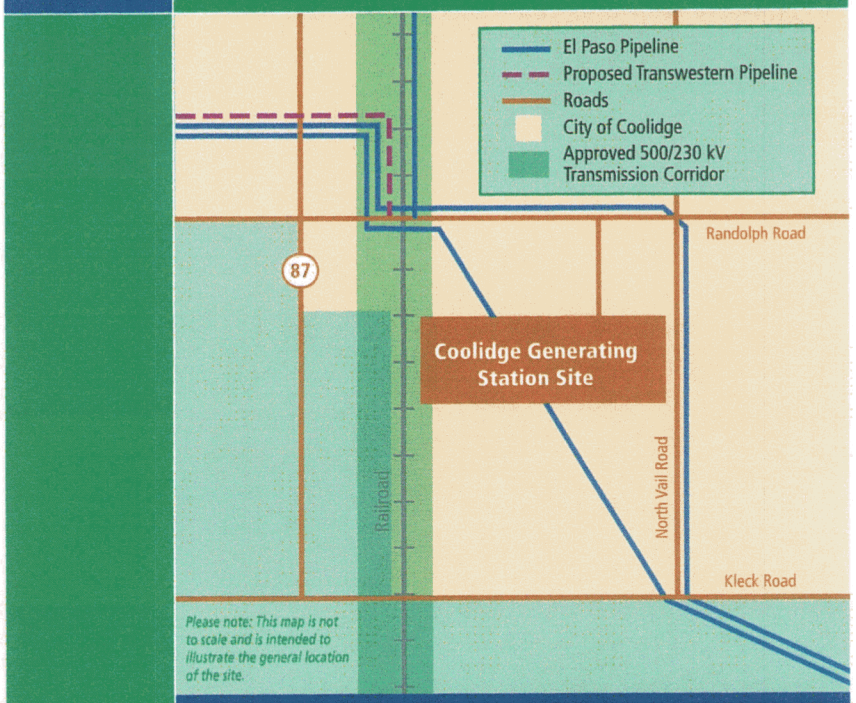
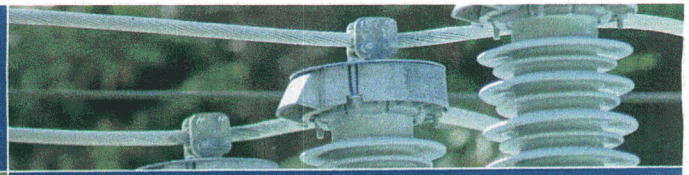
Site



TransCanada
In business to deliver



Facility Description

- 12 X LM6000 simple-cycle gas turbines (no steam turbine)
  - Low water consumption
  - Low emissions
- Dispatch Requirements: continuous operation up to permit limits
- Dispatch expectations: low dispatch
- Quick Start – 10 minutes (reserve capacity)
- High availability
  - 98% summer
  - 96% non-summer

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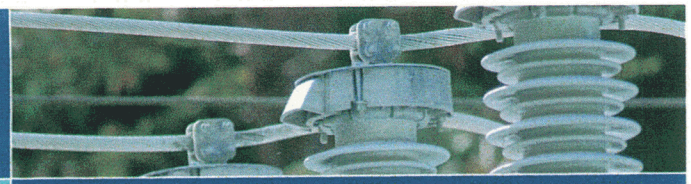

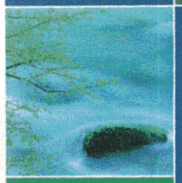

Environmental Considerations

- Proposed facility would use low-emissions technology and meet or exceed all environmental requirements
- Simple-cycle plant design results in low-water use relative to most other thermal generation facilities
- Modest groundwater pumping replenished with renewable (CAP) water recharge
- Waste water will be managed on site
- Noise associated with the proposed facility will not significantly increase current noise levels in the area or at nearest residence

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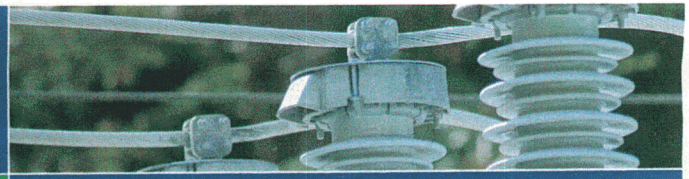
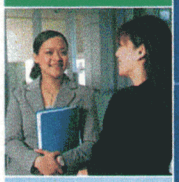


Noise Comparison

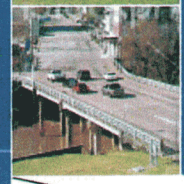
Normal Conversation at 3 feet approximately 65 dBA



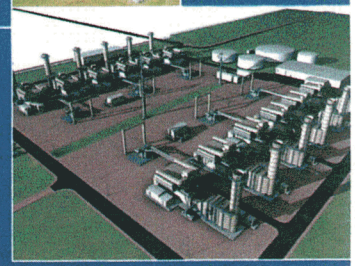
Traffic near freeway approximately 65 dBA

Decibels
80
70
60
50
40
30
20
10

Freight train at 100 feet - approximately 75 dBA



Light traffic at 100 feet - approximately 50 dBA



Coolidge Generating Facility at nearest residence - 52 dBa

Coolidge Generating Station Project – June 2008

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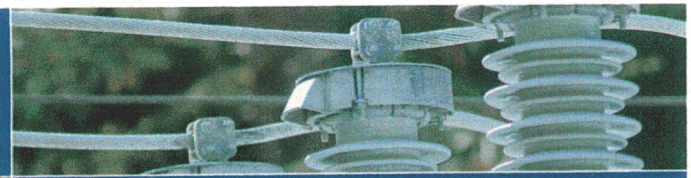

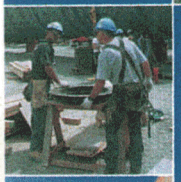

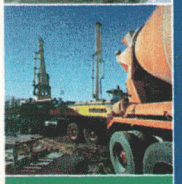

Community Benefits

- Construction
  - Employment opportunities
  - Money spent locally by contractors for food, lodging, fuel and other construction-related services
- Operations
  - Employment opportunities
  - Ongoing purchasing of goods and services
  - Community revenues generated due to the new facilities
- A good corporate citizen in TransCanada

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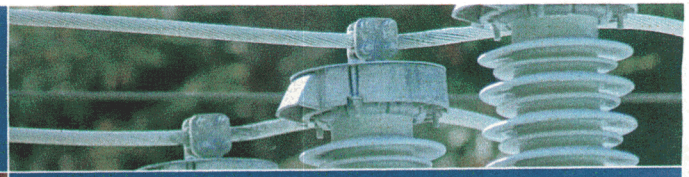

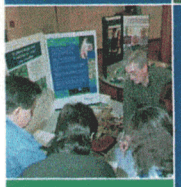

Public and Stakeholder Involvement

- Briefings with Stakeholders – January 2008
- Stakeholder Workshop #1 - February 7, 2008
- Open House #1 – February 28, 2008
- Door-to-door with Randolph Residents – May 2008
  - Visited 93 houses (talked with 28 families)
- Briefings with Stakeholders – June 2008
- Stakeholder Workshop #2 – June 17, 2008
- Open House and BBQ #2 – June 30, 2008

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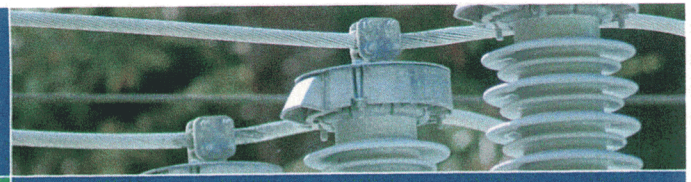

Permitting and Approval Process

- Certificate of Environmental Compatibility
  - Arizona Corporation Commission (ACC)
- Air Permits
  - Pinal Country Air Quality Control District (PCAQCD)
- Other Permits/Approvals
  - Re-zoning, Aquifer Protection Plan (APP), Conditional Use Permit, non-exempt well permits
  - Construction Permits

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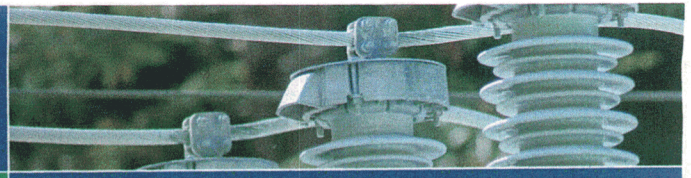

Project Schedule

• Public Involvement:	Q1 2008 – Ongoing
– Stakeholder Workshop #1	Feb. 7, 2008
– Community Open House #1	Feb. 28, 2008
– Stakeholder Workshop #2	June 17, 2008
– Open House #2	June 30, 2008
– Continuing stakeholder engagement	Throughout Project
• Permitting Phase:	Q1 2008 – Q3 2009
– 90-Day Notice Filing	March 20, 2008
– CEC Application Filing	Summer 2008
– Proposed CEC to ACC	180 Days Post Filing
• Construction Phase:	Q3 2009 – Q2 2010
• Commissioning Phase:	Q3 2010 – Q1 2011
• Facility Operation Date:	May 2011

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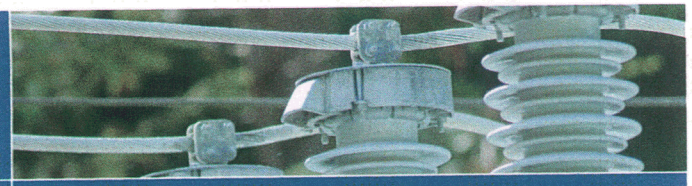

We want to hear from you

- Project Web Page
  www.transcanada.com/coolidge
- Toll-free Telephone Number
  1.866.382.0886
- Project E-mail Address
  cgs@transcanada.com

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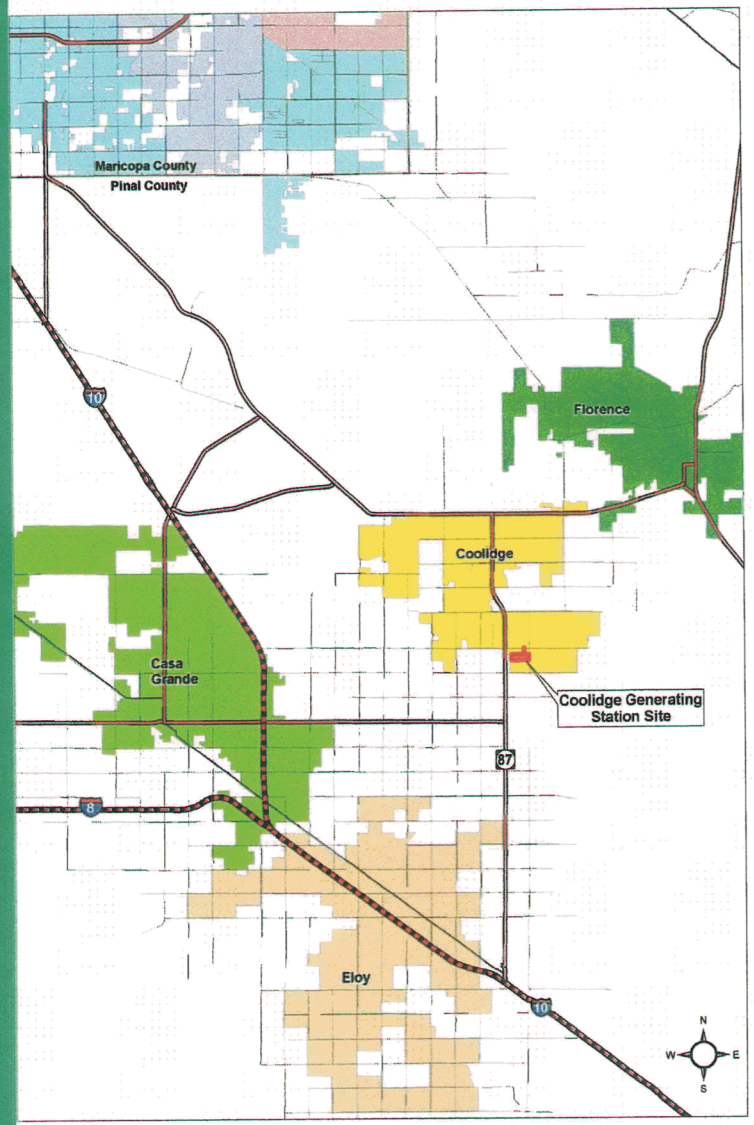
Project Location



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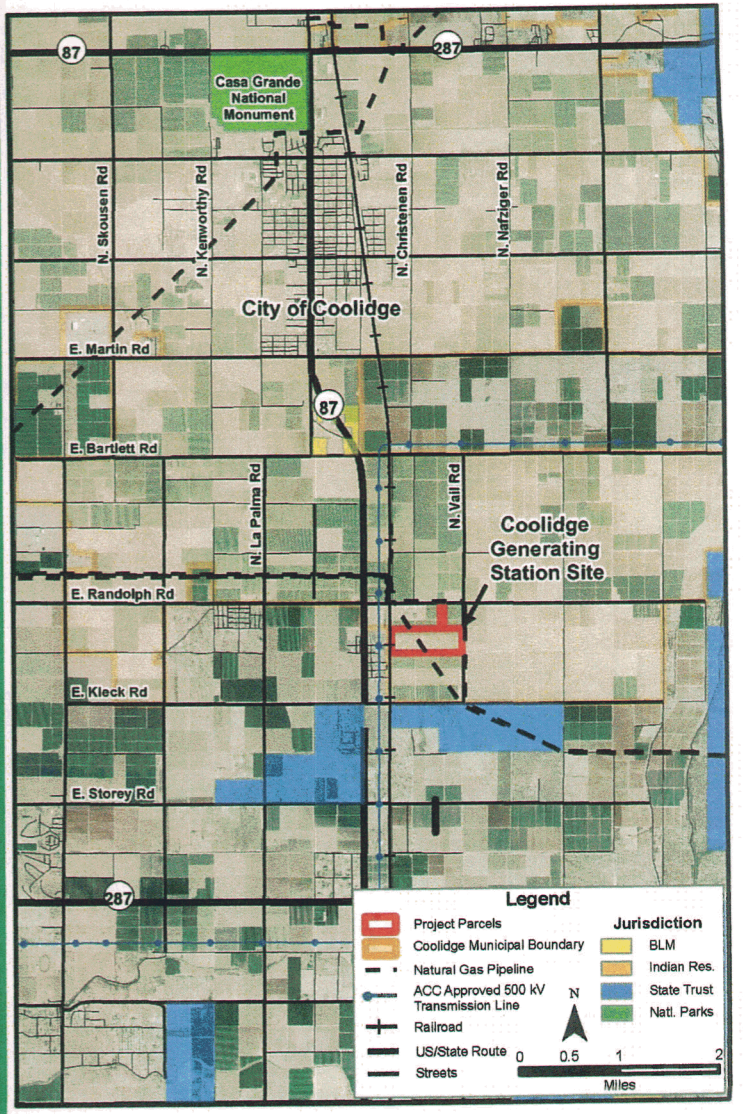
Project Area



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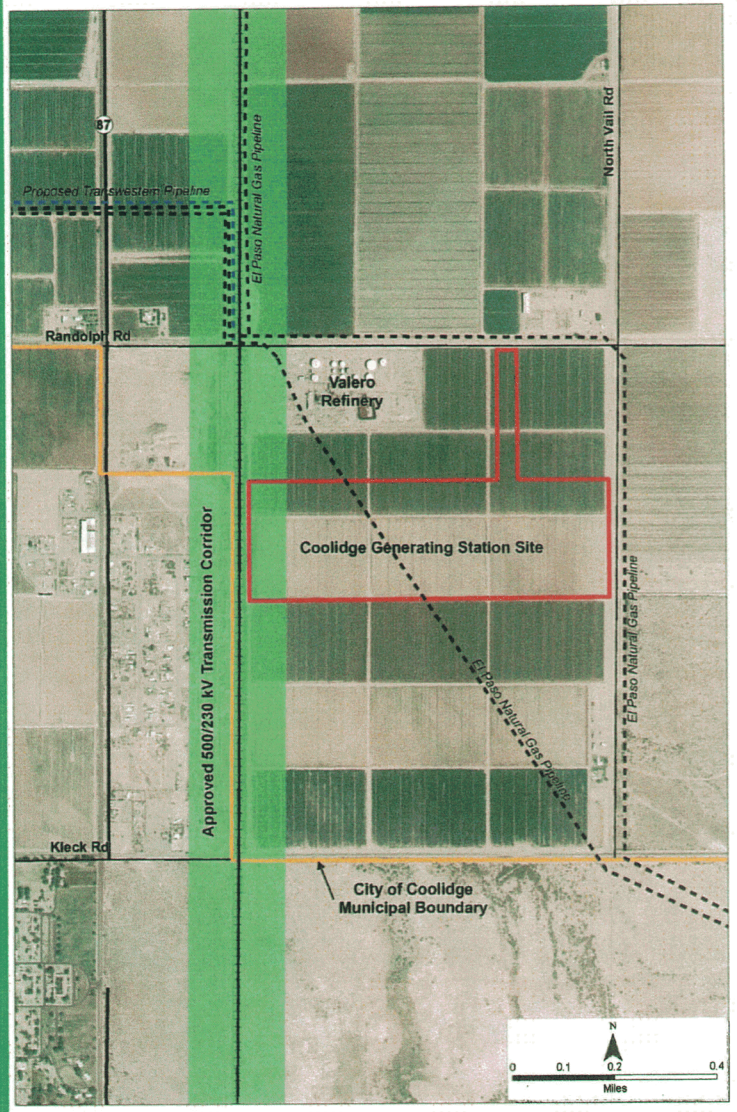
Project Site



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EXISTING VIEW

A

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Coolidge Generating Station Photosimulation

EAST RANDOLF RD. & NORTH VAIL RD. LOOKING SOUTHWEST

PROPOSED VIEW

6/11/08

Visual Environments www.visenv.com

EXISTING VIEW

B

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Coolidge Generating Station Photosimulation

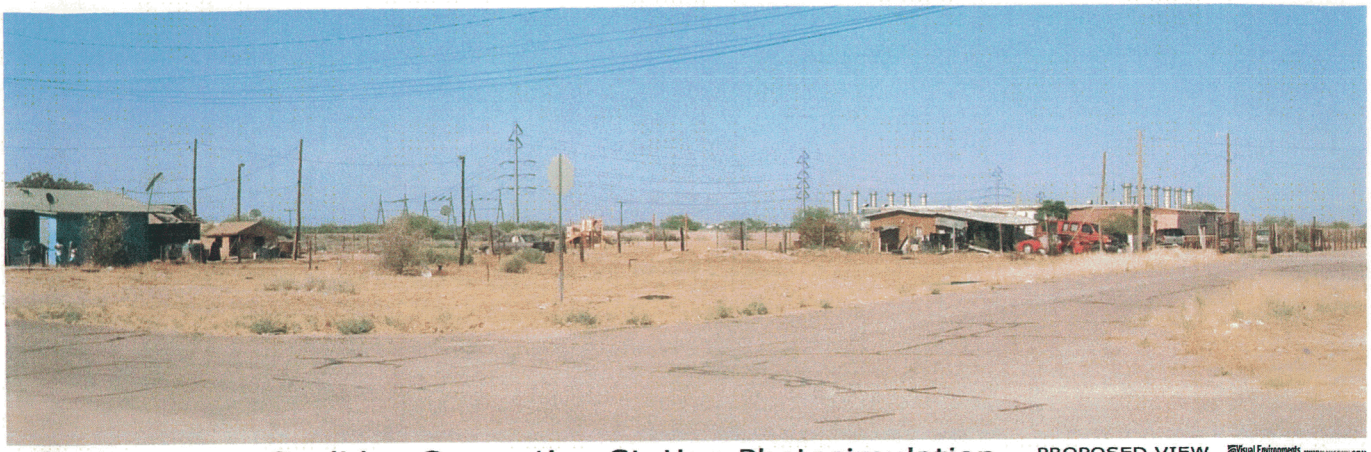
NORTH HWY. 87 & EAST KLECK RD. LOOKING NORTHEAST

PROPOSED VIEW

6/11/08

Visual Environments www.visenv.com

EXISTING VIEW



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Coolidge Generating Station Photosimulation

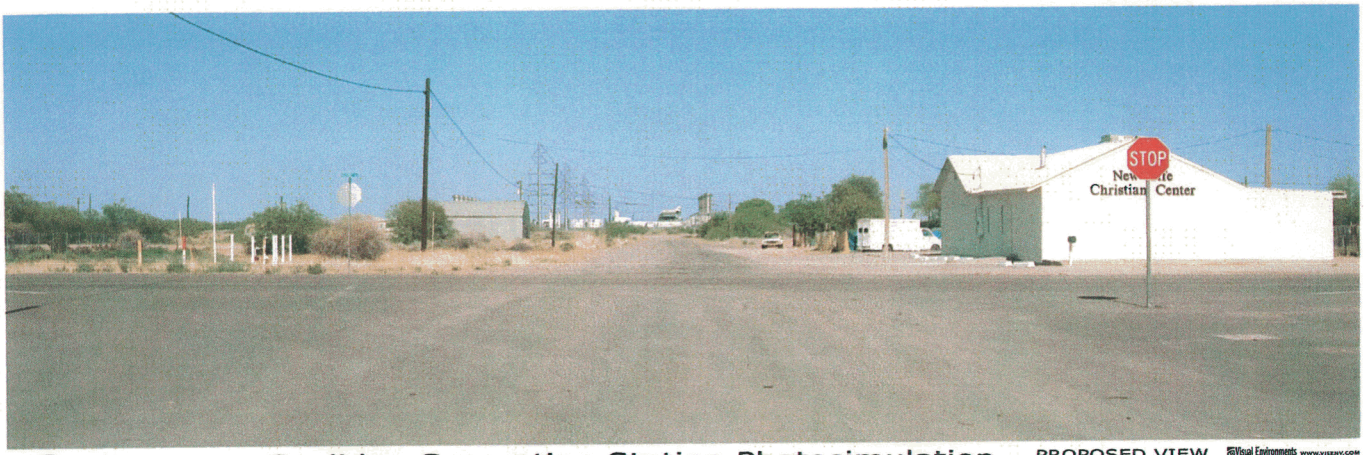
EAST MALCOLM X ST. & KENNEDY ST. LOOKING NORTHEAST

PROPOSED VIEW

6/11/08

Visual Environments www.visenv.com

EXISTING VIEW



D TransCanada In business to deliver

Coolidge Generating Station Photosimulation

NORTH HWY. 87. & BATEMAN ST. LOOKING EAST

PROPOSED VIEW

6/11/08

Visual Environments www.visenv.com

EXISTING VIEW

E

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Coolidge Generating Station Photosimulation

NORTH HWY. 87 & EAST RANDOLF RD. LOOKING SOUTHEAST

PROPOSED VIEW

6/11/08

Visual Environments www.visenv.com

EXISTING VIEW

F

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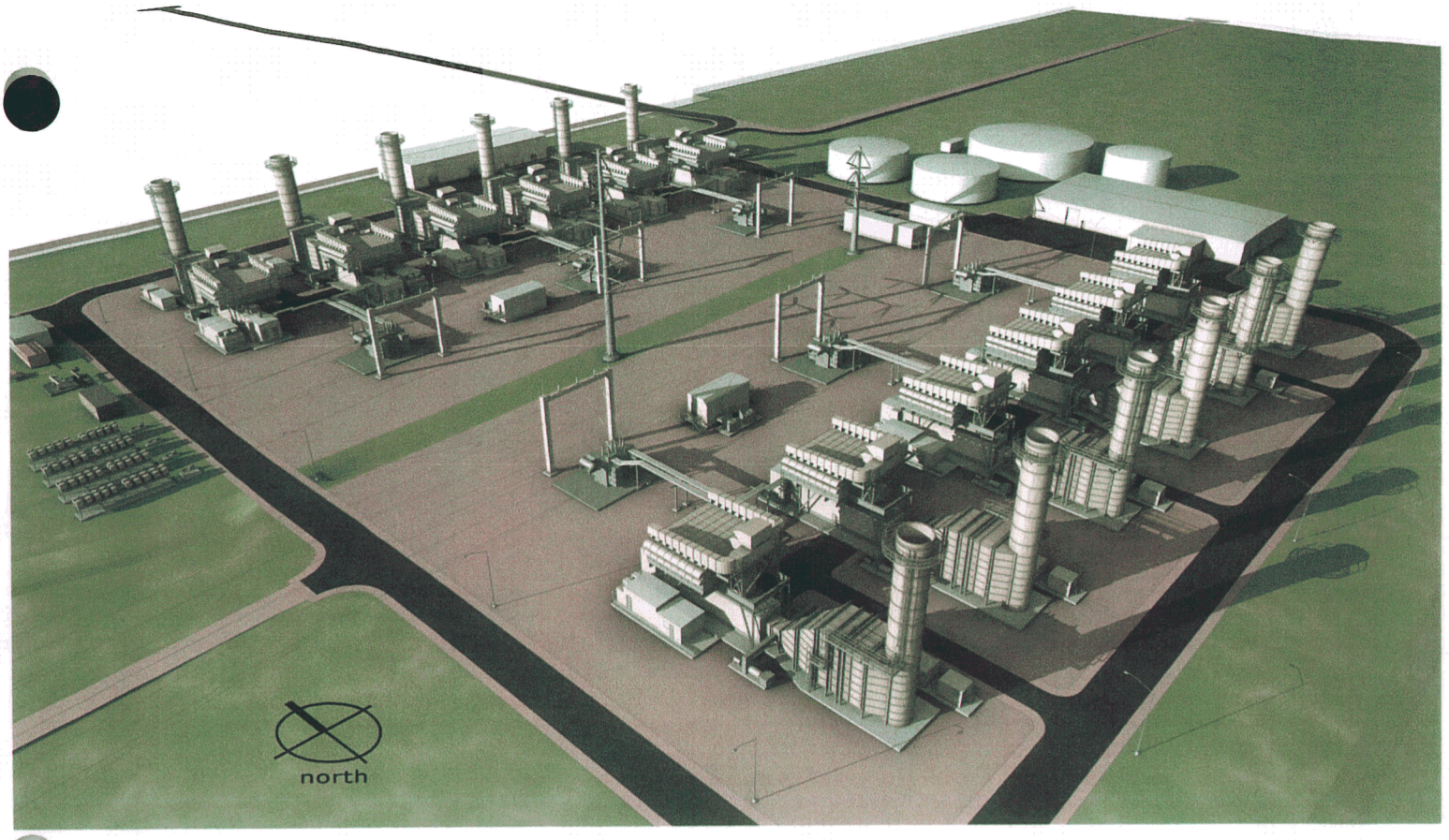
Coolidge Generating Station Photosimulation

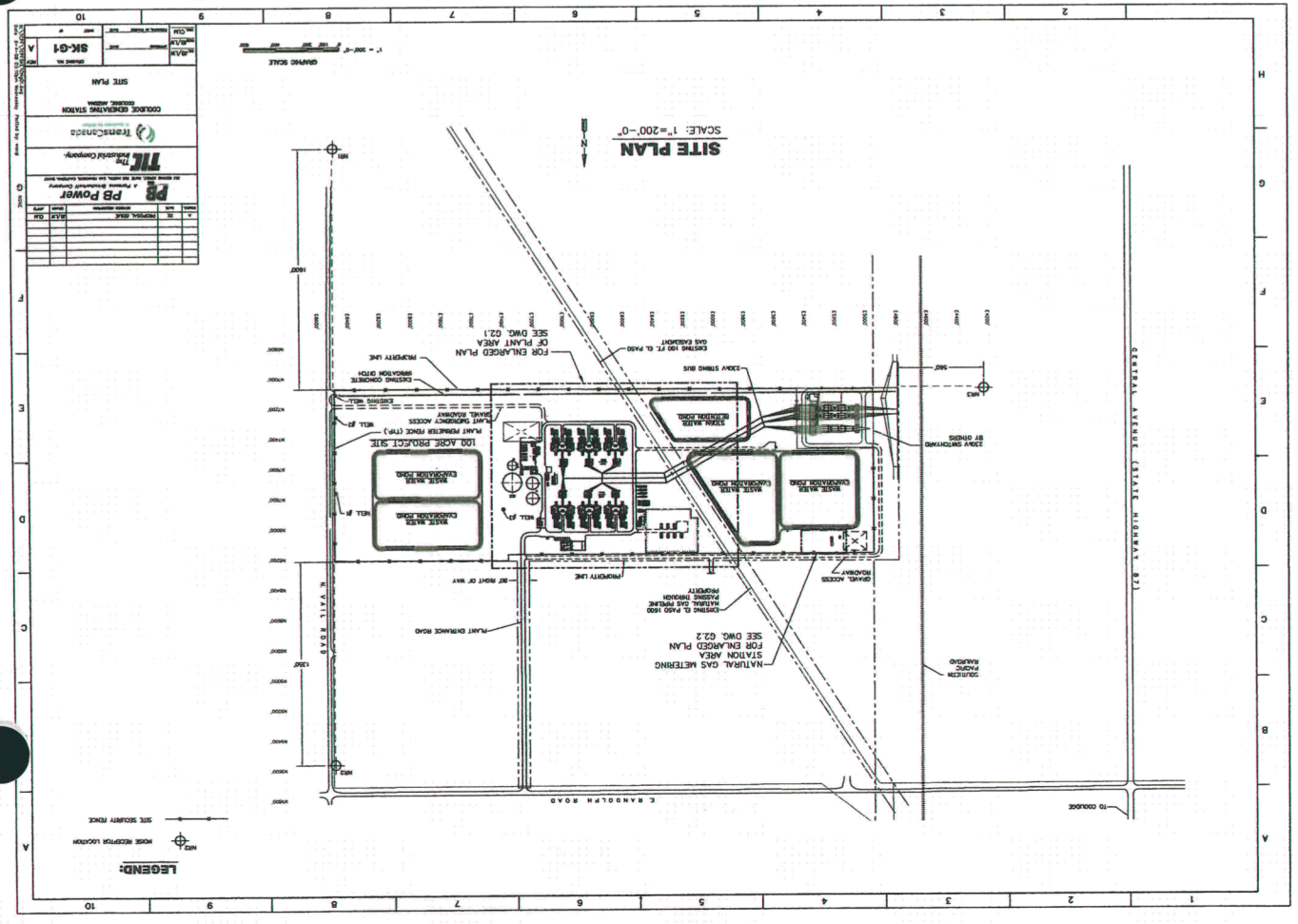
SOUTHBOUND NORTH HWY. 87 NORTH OF EAST RANDOLF RD.

PROPOSED VIEW

6/11/08

Visual Environments www.visenv.com


north


SITE PLAN
SCALE: 1"=200'-0"
N
100 ACRE PROJECT SITE
PLANT PERIMETER ROAD (TYP.)
PLANT SECONDARY ACCESS
EXISTING WELL
EXISTING CONCRETE IRRIGATION DITCH
PROPERTY LINE
FOR ENLARGED PLAN OF PLANT AREA SEE DWG. G2.1
EXISTING 100 FT. EL PASO GAS EASEMENT
230kV STRING BUS
STORM WATER RETENTION POND
WASTE WATER EVAPORATION POND
230kV SWITCHYARD BY OTHERS
CENTRAL AVENUE (STATE HIGHWAY 82)
GRAVEL ACCESS ROADWAY
NATURAL GAS METERING STATION AREA FOR ENLARGED PLAN SEE DWG. G2.2
EXISTING EL PASO 1600 NATURAL GAS PIPELINE PASSING THROUGH PROPERTY
PLANT ENTRANCE ROAD
N. VAIL ROAD
E. RANDOLPH ROAD
TO COOLIDGE
SQUIBLEGH ROADWAY
LEGEND:
NOISE RECEPTOR LOCATION
SITE SQUARE FEET
PB Power
TIC The Industrial Company
TransCanada
COOLIDGE GENERATING STATION
COOLIDGE, ARIZONA
SITE PLAN
SK-G1

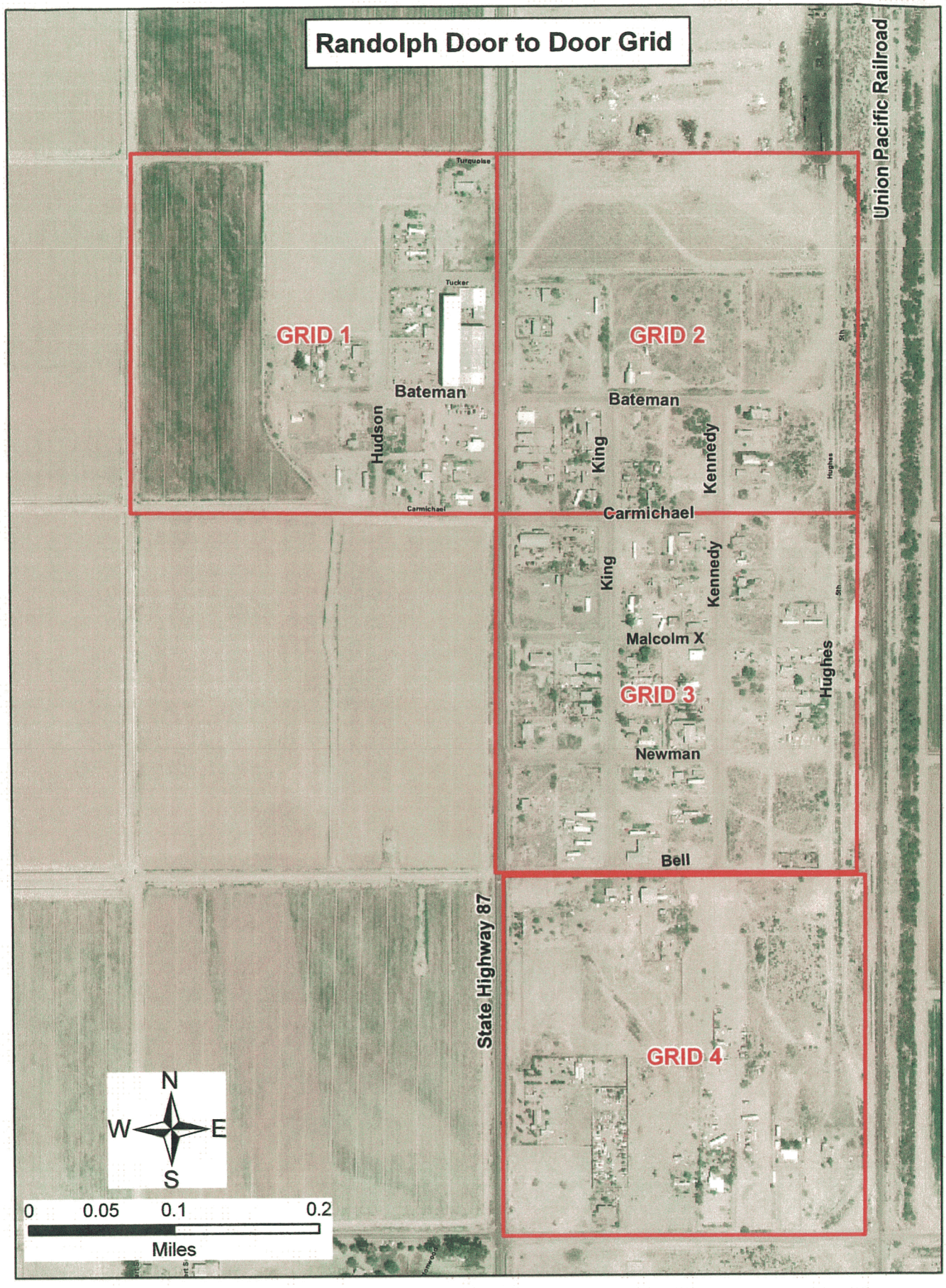
APPENDIX J-4

Door-to-Door Neighborhood Discussions

PARCEL ADDRESS	GRID	PRESENT	COMMENTS
4042 N. HUDSON	1	Not home	Left pkg. on door
4180 N. HUDSON	1	Couple home	Spoke to resident and they took info. Will attend Open House
4205 N. HUDSON	1	Beware of Dog	Left pkg. on gate
4248 N. 87 HWY.	1	Welding Factory	No where to leave pkg.
4592 E. BATEMAN	1	Woman home	Spoke to resident and they took info.
4605 E. BATEMAN	1	No Occupant	
4616 E. BATEMAN	1	Not home	Left on door
4630 E. BATEMAN	1	Not home	Left on door
4683 E. BATEMAN	1	No occupant	
4716 E. CARMICHAELEL	1	No occupant	
4719 E. BATEMAN	1	Man home	Spoke to resident and they took info.
4725 E. TUCKER	1	Beware of Dog	Left on gate
4730 E. CARMICHAEL	1	Woman at home	Spoke to resident and they took info.
4748 E. CARMICHAEL	1	Woman/kids home	Spoke to resident and they took info.
4025 N. KENNEDY	2	No Occupant	
4026 N. KING ST	2	No Occupant	
4045 N. KENNEDY	2	No Occupant	
4063 N. 87 HWY	2	Woman/kids home	Spoke to resident and they took info. Will attend Open House
4067 N. KENNEDY	2	Husband/wife home	Spoke to resident and they took info.
4077 N. 87 HWY	2	No Occupant	
4087 N. KENNEDY	2	Not home	Left pkg on door
4097 N. 87 HWY	2	No Occupant	
4103 N. KENNEDY	2	No Occupant	
4213 N. 87 HWY	2	Wall/no entrance	Left on fence
4245 N. 87 HWY	2	Husband/wife home	Heard about Project. Asked about employment. Will attend Open house
4247 N. 87 HWY	2	New Life Christian Ctr	Door Locked. Gave to boy outside. Said Grandpa Joel was Pastor.
4883 E. BATEMAN	2		
4909 E. BATEMAN	2	No Trespassing	2 large dogs in pen in yard
4930 E. CARMICHAEL	2	No Occupant	
4996 E. BATEMAN	2	No Occupant	
4996 E. CARMICHAEL	2	No Occupant	
5002 E. CARMICHAEL	2	The Acuna Family sign	No answer. Left on door
5133 E. BATEMAN	2	Joe and Jesse home	2 people outside, spoke with them, asked about employment.

PARCEL ADDRESS	GRID	PRESENT	COMMENTS
3627 N. KING ST	3	St. Paul Church of God	Left on door
3633 N. KING ST	3	Man home	Spoke to resident and they took info. Will attend Open House
3634 N. KENNEDY	3	Not home	
3634 N. KING ST	3	No Occupant	
3650 N. KING ST	3	No Occupant	
3668 N. KENNEDY	3	No Occupant	
3668 N. KING ST	3	2 little girls outside	Spoke to resident and they took info.
3685 N. 87 HWY	3	Not home	
3696 N. KENNEDY	3	Not home	
3696 N. KING ST	3		
3716 N. KING ST	3	Not home	
3743 N. KING ST	3	Not home	
3764 N. KENNEDY	3	No Occupant	
3766 N. HUGHES S	3	No Occupant	
3778 N. HUGHES S	3	No Occupant	
3780 N. KENNEDY	3	Not home	
3780 N. KING ST	3	2 men home	Interested in employ opps./ Will attend Open House
3792 N. HUGHES S	3		
3804 N. KING ST	3	No Trespassing	Left pkg. on gate
3805 N. KING ST	3	Older woman	Took pkg. Asked about pollution. Will attend Open House
3811 N. KING ST	3	One man	Spoke to resident and they took info. Will attend Open House
3816 N. KENNEDY	3	One man	Spoke to resident and they took info. Will attend Open House
3816 N. KING ST	3	Older couple	Spoke to resident and they took info. Will attend Open House
3829 N. KING ST	3		
3838 N. KING ST	3	No Occupant	
3845 N. KING ST	3	No Occupant	
3846 N. KENNEDY	3	No Occupant	
3846 N. KING ST	3	Church	
3885 N. KENNEDY	3	Woman home	Discussed other Industrial facilities in area, left pkg.
3899 N. KENNEDY	3	No answer	Left on door.
3915 N. KENNEDY	3	No Occupant	
3929 N. KENNEDY	3	No Occupant	
3975 N. KENNEDY	3	Man home	Spoke to resident and they took info.

PARCEL ADDRESS	GRID	PRESENT	COMMENTS
3986 N. KENNEDY	3		
3999 N. KING ST	3	Family of 3 home	Receptive to Project. Will attend Open House
4883 E. MALCOLM X	3	No answer	
4886 E. NEWMAN S	3	No answer	
4890 E. BELL ST	3	No occuupant	
4909 E. CARMICHAEL	3	Tire Yard	
4942 E. MALCOLM X	3	non accessible	
5002 E. MALCOLM X	3	No answer	
5007 E. NEWMAN S	3	2 men home	Will attend Open House
5041 E. CARMICHAEL	3	No occupant	
5042 E. MALCOLM X	3	No answer	
5049 E. NEWMAN S	3	No answer	
5131 E. MALCOLM X	3	Man home	Spoke to resident and they took info.
5155 E. MALCOLM X	3	No occuupant	
5177 E. MALCOLM X	3	No occupant	
	4		
3333 N. 87 HWY	4	Joyce's Place	Former APS employee. Can't attend OH.
3335 N. 87 HWY	4	Ramirez	No Trespassing Sign
4964 E. KLECK RD	4	Man home	Took 2 pkgs. One for Mother down the road. Will attend OH
4965 E. BELL ST	4	Woman home	Concerend about cleanliness. Took Pkg.
4972 E. KLECK RD	4	No Occupant	
5036 E. KLECK RD	4	No answer	
5108 E. KLECK RD	4	Woman home	Spoke to resident and they took info. Will attend Open House
5124 E. KLECK RD	4	No Trespassing	Left on gate
5160 E. KLECK RD	4	No Trespassing	


Randolph Door to Door Grid
Union Pacific Railroad
GRID 1
GRID 2
GRID 3
GRID 4
Turquoise
Tucker
Bateman
Hudson
Carmichael
King
Kennedy
Hughes
Malcolm X
Newman
Bell
State Highway 87
N
W
E
S
0
0.05
0.1
0.2
Miles

Turquoise
Tucker
4725
4205
4248
4245
4247
4213
GRID 1
4592
4616
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Hudson
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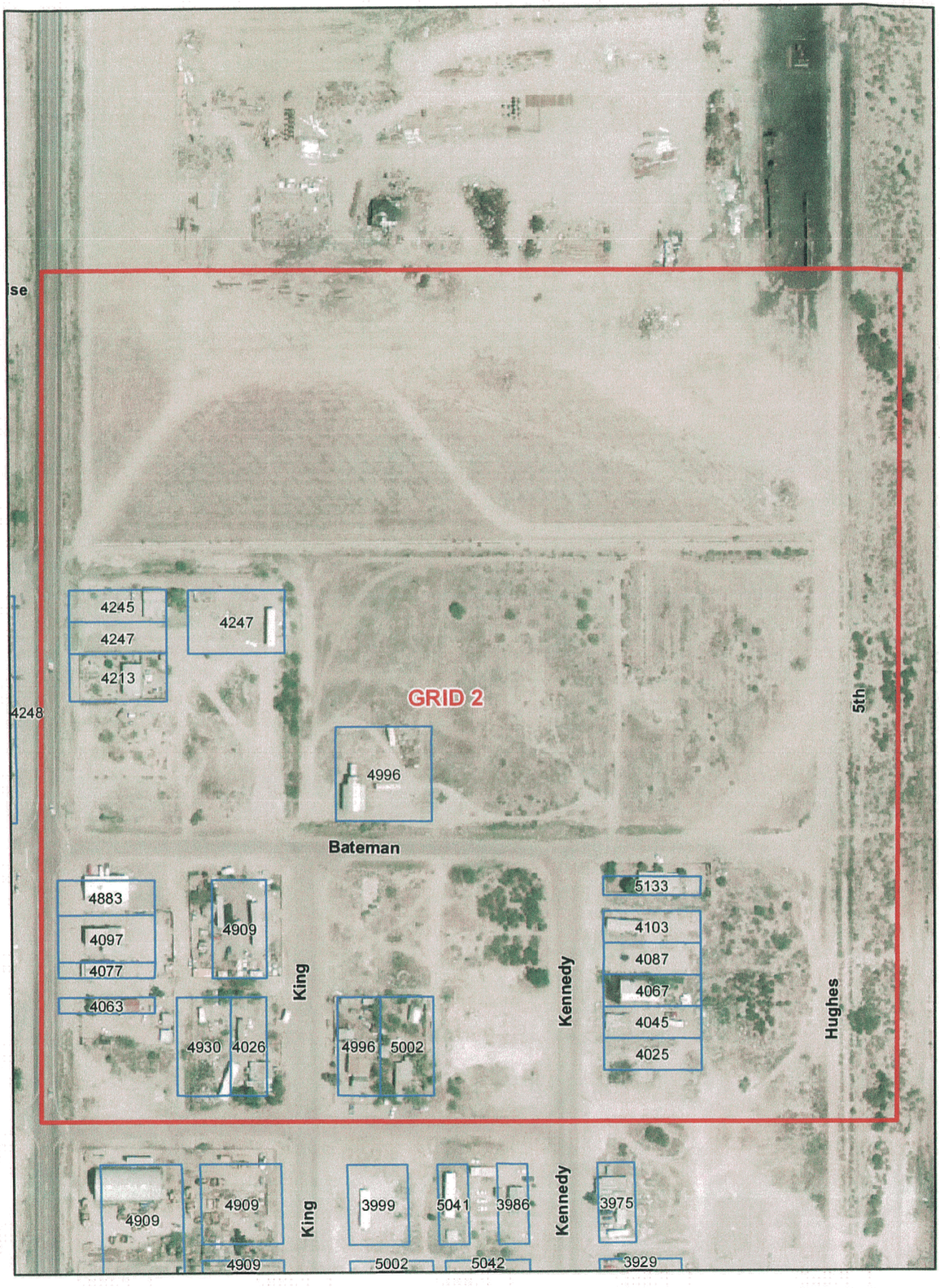
Carmichael


GRID 2
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Kennedy
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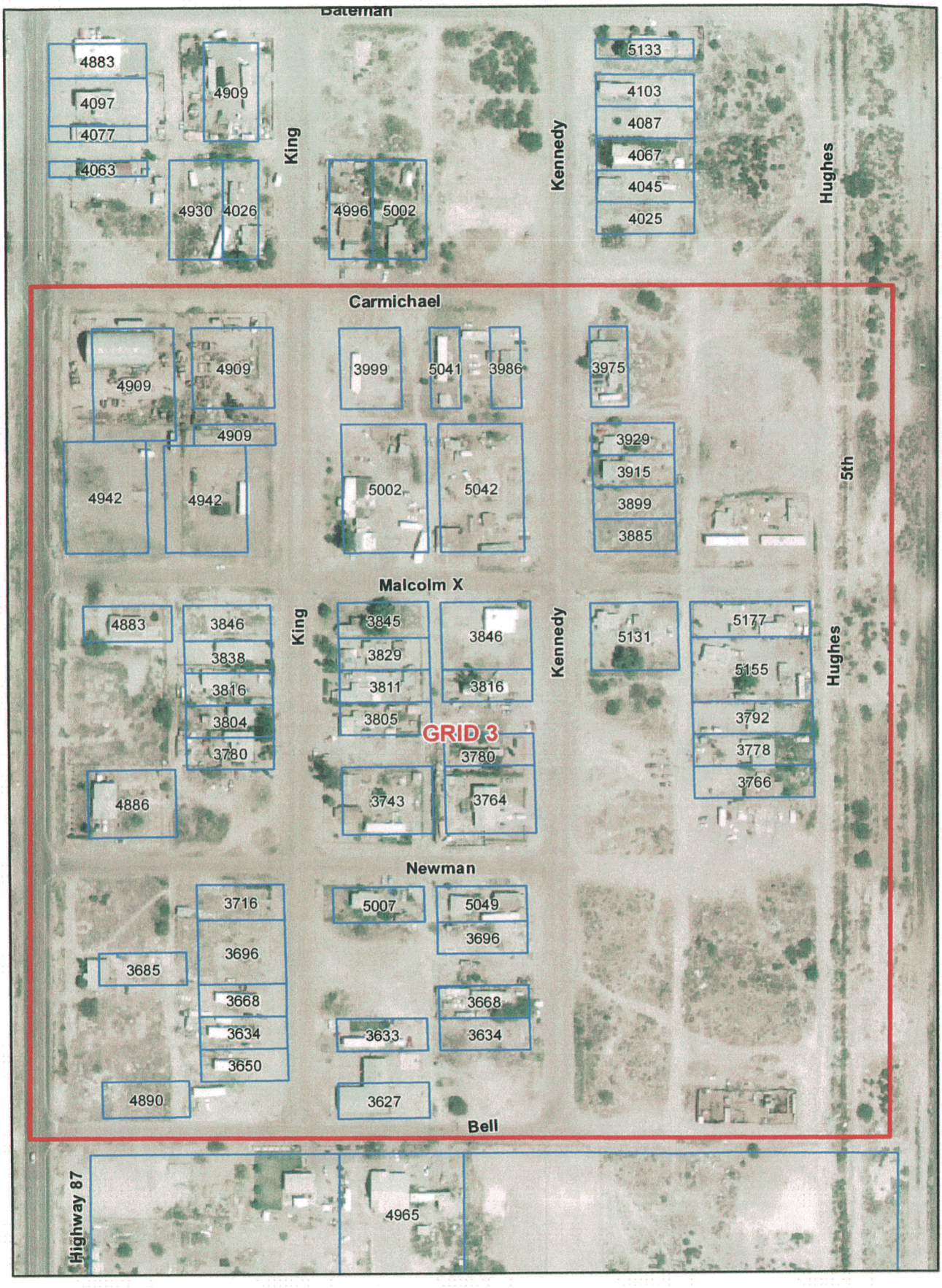
Bateman
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Kennedy
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4045
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Hughes
Carmichael
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Malcolm X
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4886
King
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3805
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3780
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3764
GRID 3
Kennedy
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Hughes
Newman
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Highway 87
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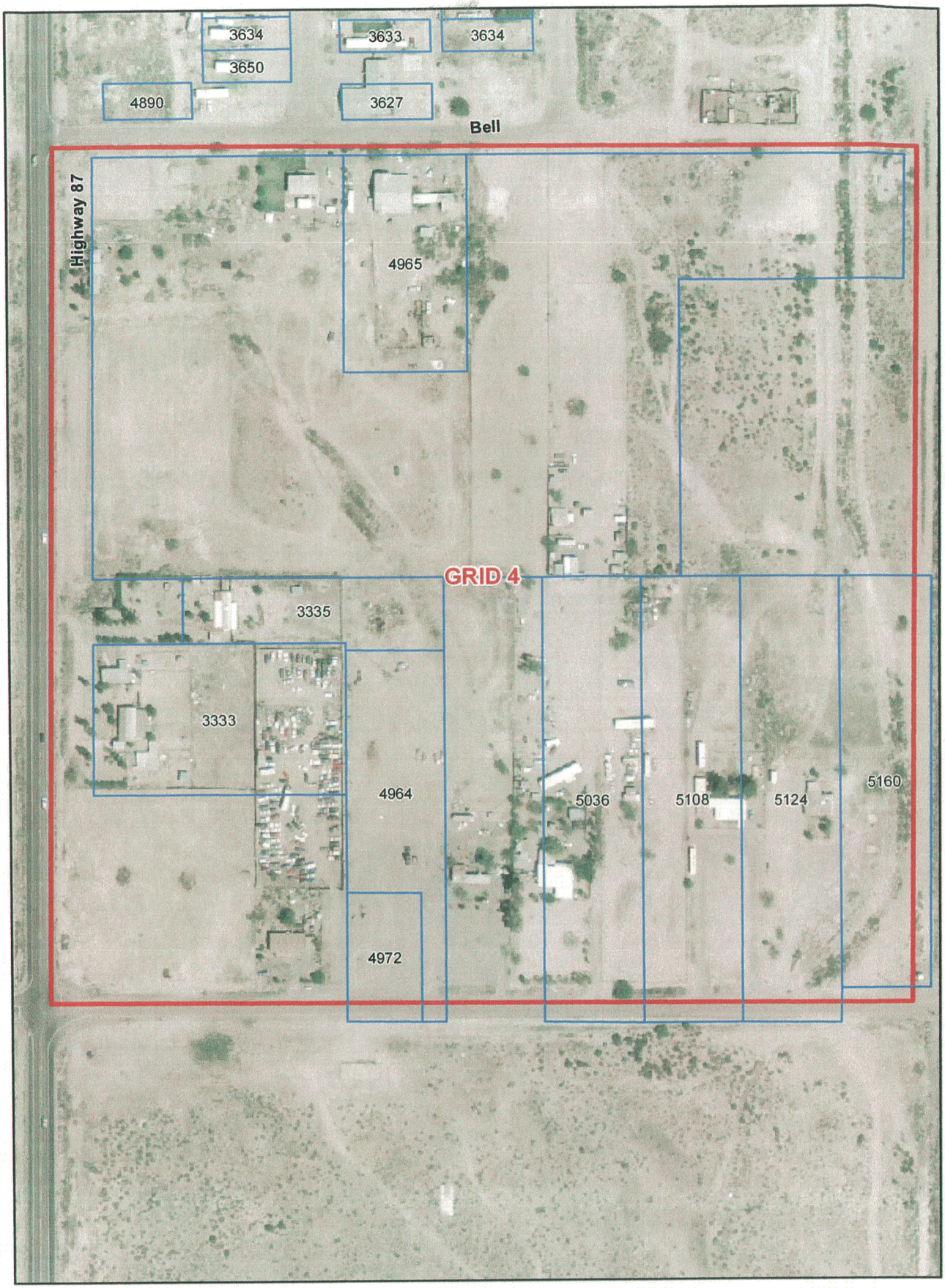
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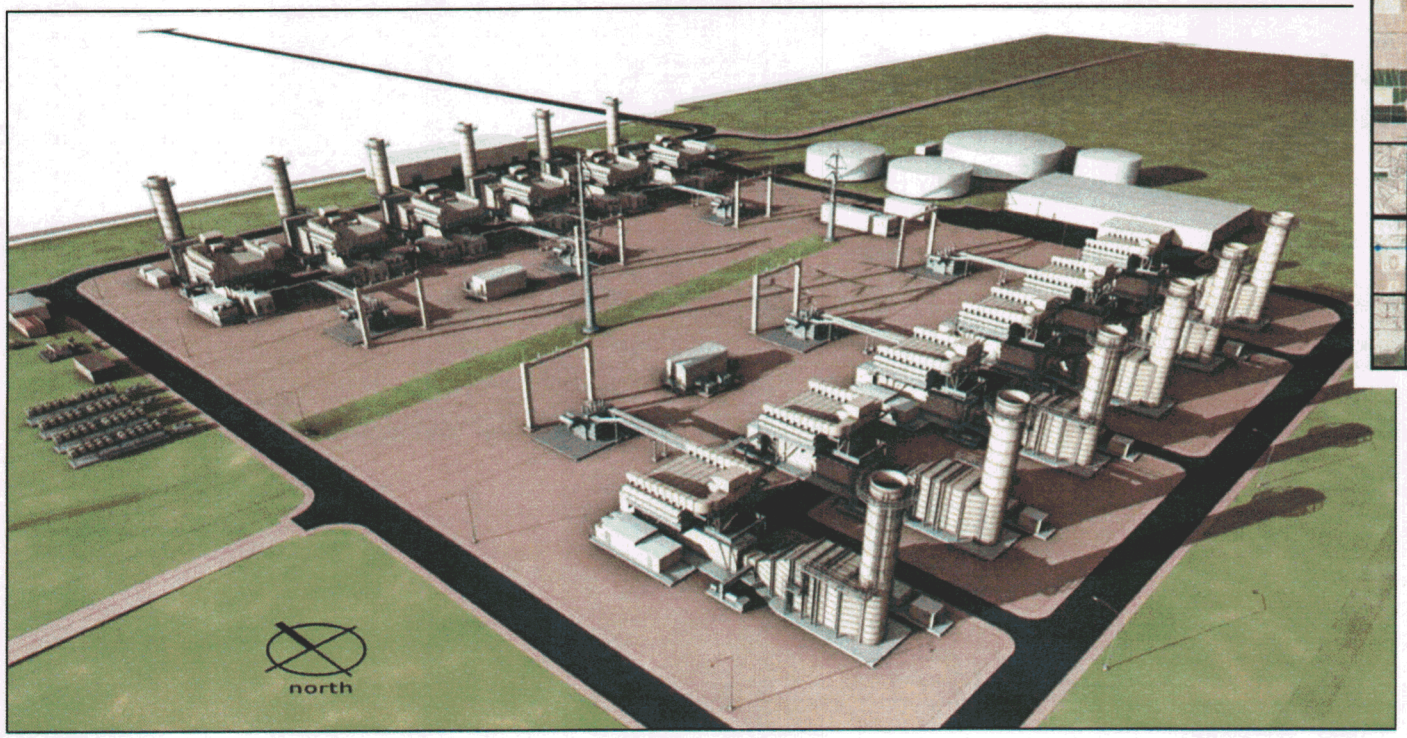
Highway 87
4965
GRID 4
3335
3333
4964
5036
5108
5124
5160
4972

Coolidge Generating Station Project



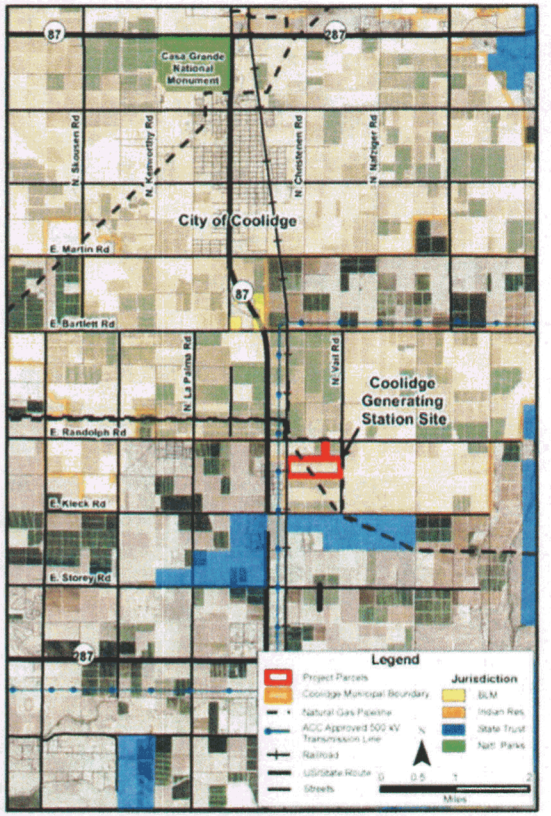
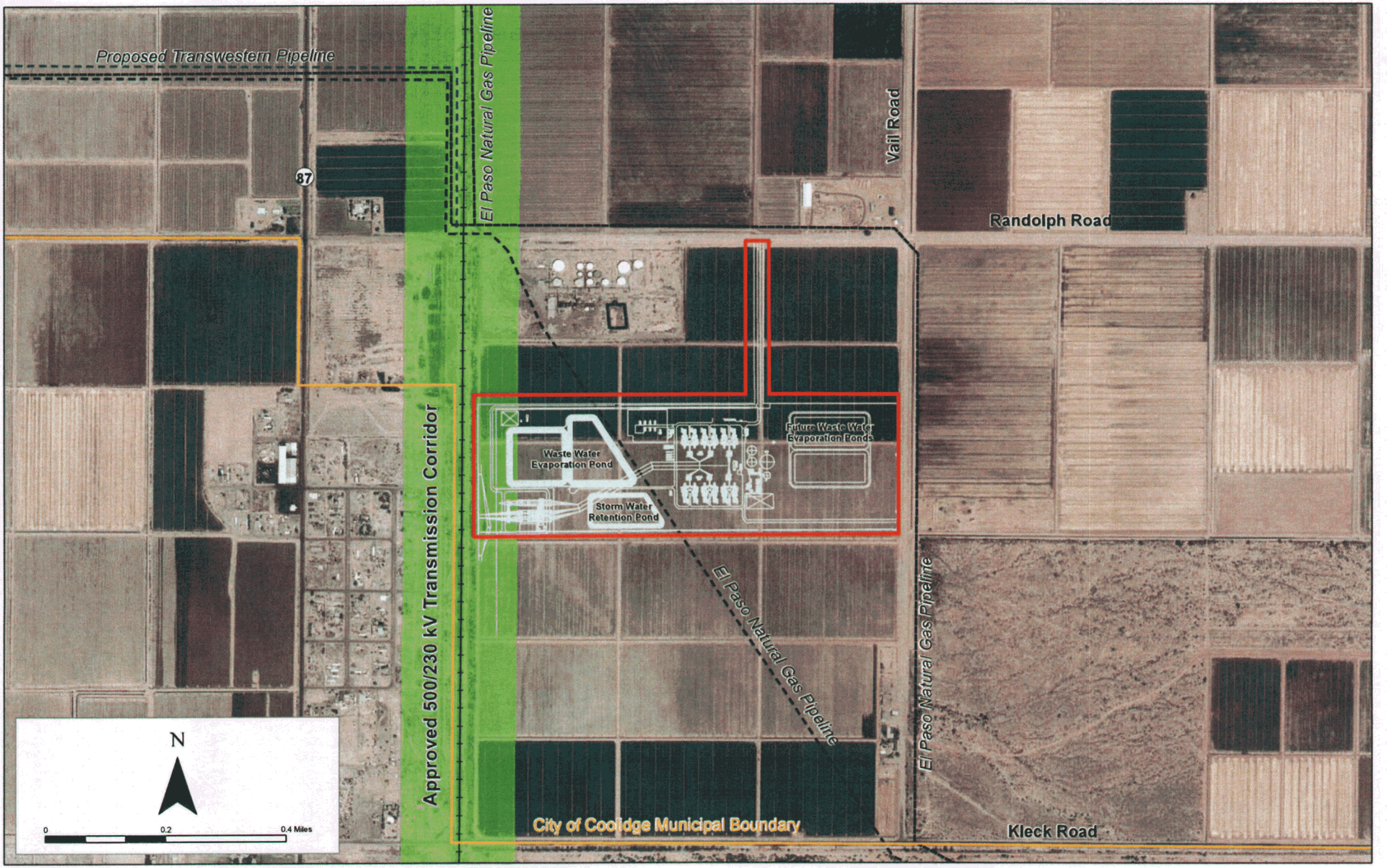


EXHIBIT
A-2
admitted


Proposed Transwestern Pipeline
El Paso Natural Gas Pipeline
Vail Road
87
Randolph Road
Future Waste Water Evaporation Ponds
Waste Water Evaporation Pond
Storm Water Retention Pond
Approved 500/230 kV Transmission Corridor
El Paso Natural Gas Pipeline
El Paso Natural Gas Pipeline
City of Coolidge Municipal Boundary
Kleck Road
N
0
0.2
0.4 Miles

ORIGINAL

BEFORE THE ARIZONA POWER PLANT AND TRANSMISSION LINE SITING COMMITTEE

In the matter of the Application of **Coolidge Power Corporation** in conformance with the requirements of Arizona Revised Statutes 40-360.03 and 40-360.06 for a Certificate of Environmental Compatibility authorizing the **Coolidge Generating Station,** a nominal 575 MW natural gas-fired, simple cycle generating facility located within the City of Coolidge in Pinal County, Arizona.	Docket No. L-00000HH-08-0422-00141 Case No. 141

Arizona Corporation Commission
DOCKETED
AUG 15 2008
DOCKETED BY

AZ CORP COMMISSION
DOCKET CONTROL

RECEIVED
2008 AUG 15 P 3:31

NOTICE OF HEARING

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PUBLIC COMMENT WILL BE TAKEN AT THE BEGINNING OF EACH HEARING DAY. PUBLIC COMMENT WILL ALSO BE TAKEN IN A SPECIAL EVENING SESSION ON TUESDAY, SEPTEMBER 30, 2008 BEGINNING AT 7:00 P.M., AT THE COOLIDGE YOUTH CENTER, 660 SOUTH MAIN STREET, COOLIDGE, ARIZONA 85228. Any interested member of the public may appear and present public comment during any of the times allotted for public comment noted above. A person may be limited to a single opportunity, and/or to a limited amount of time, to present comments, at the discretion of the Chairman of the Committee.

EXHIBIT
A-4
admitted

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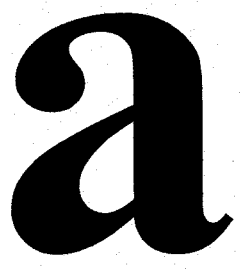
Dated this 14thth day of August, 2008.

John Foreman, Assistant Attorney General
Chairman, Arizona Power Plant and
Transmission Line Siting Committee



STATE OF ARIZONA

COUNTY OF PINAL } SS.

BEFORE THE ARIZONA POWER PLANT AND TRANSMISSION LINE SITING COMMITTEE

Docket No.
L-00000HH-08-0422-00141
Case No. 141

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Dated this 14th day of August, 2008.

/s/John Foreman
John Foreman,
Assistant Attorney General
Chairman, Arizona Power Plant and Transmission Line Siting Committee

No. of publications: 2; dates of publications: Aug. 19, 23, 2008.

Affidavit of Publication

DONOVAN M. KRAMER SR. first being duly sworn deposes and says: That he is a native born citizen of the United States of America, over 21 years of age, that he is publisher of the Casa Grande Dispatch, a daily newspaper published at Casa Grande, Pinal County, Arizona, Tuesday through Sunday of each week; that a notice, a full, true and complete printed copy of which is hereunto attached, was printed in the regular edition of said newspaper, and not in a supplement thereto, for TWO consecutive issues the first publication thereof having been on the 19TH

day of AUGUST A.D., 2008

Second publication AUGUST 23, 2008

Third publication _____

Fourth publication _____

Fifth publication _____

Sixth publication _____

CASA GRANDE DISPATCH

By _____
DONOVAN M. KRAMER SR., Publisher

Sworn to before me this 27th

day of August A.D., 2008

_____
Notary Public in and for the County of Pinal, State of Arizona

Official Seal
NOTARY PUBLIC
STATE OF ARIZONA
County of Pinal
ARMELIA M. SANCHEZ
My Commission Expires September 30, 2009

STATE OF ARIZONA

COUNTY OF PINAL } ss.

BEFORE THE ARIZONA POWER PLANT AND TRANSMISSION LINE SITING COMMITTEE

Docket No.
L-00000HH-08-0422-00141
Case No. 141

In the matter of the Application of Coolidge Power Corporation in conformance with the requirements of Arizona Revised Statutes 40-360.03 and 40-360.06 for a Certificate of Environmental Compatibility authorizing the Coolidge Generating Station, a nominal 575 MW natural gas-fired, simple cycle generating facility located within the City of Coolidge in Pinal County, Arizona.

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day of AUGUST A.D., 2008

Second publication AUGUST 23, 2008

Third publication _____

Fourth publication _____

Fifth publication _____

Sixth publication _____

CASA GRANDE DISPATCH

By _____
DONOVAN M. KRAMER SR., Publisher

Sworn to before me this _____

day of _____ A.D., 2008

_____
Notary Public in and for the County of Pinal, State of Arizona

Official Seal
NOTARY PUBLIC
STATE OF ARIZONA
County of Pinal
ARMELIA M. SANCHEZ
My Commission Expires September 30, 2009

Affidavit of Publication

STATE OF ARIZONA }
COUNTY OF PINAL } ss.

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day of **AUGUST** A.D., **2008**

Second publication **AUGUST 27,** **2008**

Third publication _____

Fourth publication _____

Fifth publication _____

Sixth publication _____

COOLIDGE EXAMINER

By Donovan M. Kramer SR

DONOVAN M. KRAMER SR., Publisher

Sworn to before me this 8th

day of September A.D. 2008

Debbie L Mumme

Notary Public State of Arizona
Pinal County
Debbie L Mumme
My Commission Expires
10/23/2009

Notary Public in and for the County of Pinal, State of Arizona

BEFORE THE ARIZONA POWER PLANT AND TRANSMISSION LINE SITING COMMITTEE

Docket No.
L-00000HH-08-0422-00141
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STATE OF ARIZONA
} ss.
UNTY OF PINAL

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By _____
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Sworn to before me this 8th

day of September A.D. 2008

Debbie L. Mumme

Notary Public State of Arizona
Pinal County
Debbie L Mumme
My Commission Expires
10/23/2009

Notary Public in and for the County of Pinal, State of Arizona

b

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Street, Apt. No.; or PO Box No.: 130 W Central Ave
City, State, ZIP+4: Coolidge AZ 85228

PS Form 3800, June 2002 — See Reverse for Instructions

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- Complete items 1, 2, and 3. Also complete item 4 if Restricted Delivery is desired.
- Print your name and address on the reverse so that we can return the card to you.
- Attach this card to the back of the mailpiece, or on the front if space permits.

1. Article Addressed to:
Hon. Thomas Shope
Mayor - City Coolidge
130 W. Central Ave
Coolidge AZ 85228

COMPLETE THIS SECTION ON DELIVERY

A. Signature: X Monica G. Martinez — ☐ Agent ☒ Addressee

B. Received by (Printed Name): Monica G. Martinez — C. Date of Delivery: 9-3-08

D. Is delivery address different from item 1? ☐ Yes
If YES, enter delivery address below: ☒ No

3. Service Type
☒ Certified Mail ☐ Express Mail
☐ Registered ☒ Return Receipt for Merchandise
☐ Insured Mail ☐ C.O.D.

4. Restricted Delivery? *(Extra Fee)* ☐ Yes

2. Article Number *(Transfer from service label)* 7003 0500 0000 9852 5684

PS Form 3811, August 2001 — Domestic Return Receipt — 102595-02-M-1540

SENDER: COMPLETE THIS SECTION

- Complete items 1, 2, and 3. Also complete item 4 if Restricted Delivery is desired.
- Print your name and address on the reverse so that we can return the card to you.
- Attach this card to the back of the mailpiece, or on the front if space permits.

1. Article Addressed to:

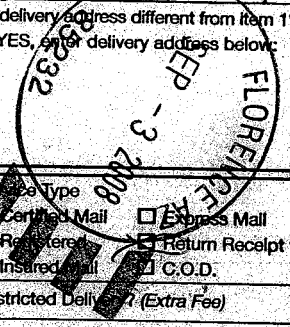
Ken Buchanan
Pinal County Planning Manager
31 N. Pinal St.
Florence, AZ 85232

COMPLETE THIS SECTION ON DELIVERY

A. Signature
X [signature] ☐ Agent ☐ Addressee

B. Received by (Printed Name) [illegible] C. Date of Delivery

D. Is delivery address different from item 1? ☐ Yes
If YES, enter delivery address below: ☐ No



3. Service Type
☐ Certified Mail ☐ Express Mail
☐ Registered ☐ Return Receipt for Merchandise
☐ Insured Mail ☐ C.O.D.

4. Restricted Delivery? (Extra Fee) ☐ Yes

2. Article Number (Transfer from service label) 7003 0500 0000 9852 5691

PS Form 3811, August 2001 Domestic Return Receipt 102595-02-M-1540

7003 0500 0000 9852 5691

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Pinal County

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Street, Apt. No.; or PO Box No. 31 N Pinal St
City, State, ZIP+4 Florence AZ 85232

PS Form 3800, June 2002 See Reverse for Instructions

SENDER: *COMPLETE THIS SECTION*

- Complete items 1, 2, and 3. Also complete item 4 if Restricted Delivery is desired.
- Print your name and address on the reverse so that we can return the card to you.
- Attach this card to the back of the mailpiece, or on the front if space permits.

1. Article Addressed to:

Robert F Flatly
City Manager
City of Coolidge
130 W Central Ave
Coolidge, AZ 85228

COMPLETE THIS SECTION ON DELIVERY

A. Signature
X Monica A Martinez ☐ Agent ☒ Addressee

B. Received by (Printed Name) Monica A Martinez C. Date of Delivery 9-30-8

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If YES, enter delivery address below: ☒ No

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Sent To Bob Flatly, City of Coolidge
Street, Apt. No.; or PO Box No. 130 W Central
City, State, ZIP+4 Coolidge AZ 85228

PS Form 3800, June 2002 See Reverse for Instructions

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LuAnn Kornegay

From: TrackingUpdates@fedex.com
Sent: Tuesday, August 12, 2008 3:05 PM
To: LuAnn Kornegay
Subject: FedEx Shipment 796051608596 Delivered

This tracking update has been requested by:

Company Name:	MOYES STOREY
Name:	LuAnn Kornegay
E-mail:	lkkornegay@lawms.com

Our records indicate that the following shipment has been delivered:

Reference:	TransCanada
Ship (P/U) date:	Aug 11, 2008
Delivery date:	Aug 12, 2008 3:00 PM
Sign for by:	A.MONTANA
Delivered to:	Receptionist/Front Desk
Service type:	FedEx Priority Overnight
Packaging type:	FedEx Box
Number of pieces:	1
Weight:	8.00 lb.
Special handling/Services:	Deliver Weekday

Tracking number: 796051608596

Shipper Information	Recipient Information
LuAnn Kornegay	Coolidge Public Libary
MOYES STOREY	Coolidge Public Libary
1850 N Central Avenue;Suite 1100	160 W CENTRAL AVE
PHOENIX	COOLIDGE
AZ	AZ
US	US
85004	85228

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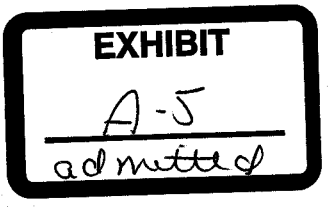

Brad Howard

TransCanada

EDUCATION

- **Masters of Environmental Science**
  Faculty of Environmental Design
  The University of Calgary

- **Bachelor of Arts**
  Environmental Studies
  Wilfred Laurier University

EXPERIENCE 22 Years

- **TransCanada**
  - **Project Manager – Energy Projects (Power Generation)**
  - **Manager Health Safety & Environment (Power Generation)**
  - **Environmental Advisor**

- **Turbo Resources – Refining & Retail Products Division**
  - **Environmental Manager**

- **PetroCanada**
  - **Environmental Advisor**

- **O'Connor Environmental**
  - **Environmental Remediation Technician**

Professional Courses

- Understanding U.S. Regulatory Processes
- Next Generation Environment Health & Safety Management
- Safety & Loss Management Fundamentals
- Modern Safety Management
- Environmental Auditing
- Environmental Processes at Energy Facilities
- Industrial First Aid
- H2S Alive

Mr. Howard has worked 18 years at TransCanada in roles of increasing scope and responsibility. He has extensive experience in Canada and the United State and has worked internationally in South America and Europe. Over the last 10 years Mr. Howard has been integral to the aggressive growth of TransCanada Energy's power generation business either as the Environmental Manager or more recently as Project Manager. Over this period TransCanada's power business has expanded from its initial two facility 400 megawatt operation in 1999 to the current 19 facility 10,900 megawatt portfolio.

The following provides a list of power generation projects that Mr. Howard has directly participated in either as project manager or environmental manager.

• Coolidge Generating Station	Arizona	575 MWs	12 LM6000 Simple Cycle
• Bridgeview Energy Facility	California	360 MWs	8 LM6000 Simple Cycle
• Carseland Facility	Alberta	80 MWs	2 LM6000 Cogeneration
• Redwater Facility	Alberta	40 MWs	1 LM6000 Cogeneration
• McKay River Facility	Alberta	165 MWs	1 GE7FA Cogeneration
• Bear Creek	Alberta	80 MWs	1 RR Trent Cogeneration
• Manchief Generation Facility	Colorado	320 MWs	2 Siemens V84 Simple Cycle
• Castleton	New York	65 MWs	1 GE Frame Cogeneration
• Ocean State Power	Rhode Island	520 MWs	4 GE 7EA Combined Cycle
• Bruce Power	Ontario	2700 MWs	8 Nuclear Reactors
• Curtis Palmer	New York	55 MWs	Run of River Hydro
• Cancarb Power	Alberta	25 MWs	Waste Heat

Other relevant projects and experience includes the development, acquisition, or permitting of:

- Natural Gas Pipeline Systems
  - Canada, United States, Holland
- Gas Processing Facilities
  - Canada, United States, Holland
- Natural Gas Storage Facilities
  - Canada, United States
- Crude Oil Pipelines
  - Canada, United States, Colombia
- Crude Oil and Refined Products Storage Terminals
  - Canada, United States, Colombia
- Petroleum Refineries
  - Canada, United States

Professional Skills

- Project Development
- Project Management
- Project Siting
- Regulatory Strategy and Environmental Planning
- Environmental Impact Assessment
  - Water
  - Noise
  - Visual
  - Biological
  - Air
  - Socio-Economic
- Community Consultation
- Environmental Auditing and Regulatory Compliance

b

Marisa Tosi

60 Glenview Dr SW
Calgary, AB
T3E-4H5
Home: (403) 244-5175
Cell: (403) 462-1096
marisa.tosi@shaw.ca

Education

B.Sc. in Mechanical Engineering Co-Op With Distinction, University of Alberta **April 1999**

Work Experience

TransCanada
Calgary, Alberta **March 2005-Present**

Power Development Engineering
Title: Power Development Engineer
Primary Job Description

- Contributing to technical development of power plant design and scope of work.
- Coordinating with internal engineering resources and EPC contractors to support development of project bid and ensuring design is accurately reflected and optimized in EPC deliverables.
- Developing EPC scope of work for competitive bidding process and ensuring technical deliverables from EPC contractors are timely.
- Working with commercial development team to ensure design is consistent with the requirements of the power purchase agreement
- Participating in negotiations and technical discussions with EPC contractors and with equipment and service suppliers.
- Providing technical input to the permitting process and ensuring design is aligned with permit requirements.
- Working with cost estimators to develop an all-in capital estimate inclusive of EPC estimate, owner's costs and risk dollars.
- Technical studies related to power generation facilities (Wind Power, Coal Gasification).
- Undertake technical evaluations associated with specific types of equipment (ex. LM6000 PD SPRINT gas turbines) to evaluate technical and commercial market risk and user experiences.
- Performing risk assessments of proposed engineering solutions and power project configuration.
- Presenting proposed operations and maintenance methodology to senior management.
- Representing the company in supplier discussions.
- Ensuring equipment configuration is consistent with company best practices for health and safety.
- Developing operations and maintenance long-term maintenance plan for submittal in power project bid submissions.

Key Projects

- 550 MW Portlands Energy Facility

The Portlands Energy Facility, located in downtown Toronto, is a 2*1 combined cycle plant, consisting of two (2) GE 7FA gas turbines, two (2) three-pressure HRSGs and a single condensing steam turbine.

- 500 MW LM6000 Simple Cycle Peaker

The simple cycle peaker, located in Arizona, consisted of twelve (12) GE LM6000 PC Sprint gas turbines.

- 360 MW LM6000 Simple Cycle Peaker

The simple cycle peaker, located in California, consisted of eight (8) GE LM6000 PD Sprint gas turbines.

- Belle Plaine Polygeneration Facility
- 80 MW Run of River Hydro Development – British Columbia

TransCanada
Calgary, Alberta **May 2004-February 2005**

Plant Engineering
Title: Project Engineer
Primary Job Description

- Provide project engineering support to power plants on an as needed basis.

- Responsible for justification and execution of LM6000 gas turbine fleet management role including developing the scope of work for maintenance outages, recommending repair techniques for parts, determining the technical justification for implementation of vendor recommended service bulletins and negotiating commercial agreements with vendors.
- Lead team to develop new methodology for technical and commercial risk assessment models for power plants to allow for more justified analysis of capital and operating projects..
- Complete technical and economic feasibility studies including a potential upgrade from a LM2500 gas turbine to a LM2500+ with Dry Low Nox combustor. Study included estimating the capital cost, evaluating the emission reductions and calculating the project economics. Project also involved working with other engineers to evaluate the revised performance and the impact of the new gas turbine on the steam cycle.
- Representing the company at conferences and in supplier discussions and negotiations.

TransAlta Utilities,
Calgary Alberta

January 2003-April 2004

Long Term Maintenance Development
Title: Project Engineer
Primary Job Description

- Develop long-term maintenance programs for existing plants based on OEM recommendations and technical evaluation of equipment condition assessments.
- Developed and scheduled the one year, five year and life cycle maintenance plans for all gas fired generation across the fleet.
- Developed business cases for maintenance based on commercial projection for asset and technical evaluation of asset condition.
- Work with engineering consultants to assist in performing condition assessments on equipment and determining appropriate scope of work for the asset.
- Develop long-term strategies to reduce maintenance costs and further optimize the maintenance plan.
- Evaluate the use of third parties for parts repairs and new parts procurement.
- Perform technical risk assessments associated with equipment to help justify maintenance program.
- Recipient of management award for recognition on excellence in five-year maintenance planning and budget development.
- Nominee for employee recognition award for teamwork and innovation.

TransAlta Utilities,
Calgary Alberta **June 2000-December 2002**

Operational Support
Title: Project Engineer
Primary Job Description

- Provide project engineering support to power plants on an as needed basis.
- Worked on team of four people planning two thirty-five day, $25 million dollar, major outages on 115 MW Alstom 11N2 gas turbines.
    - Responsible for purchasing, contracting and implementing parts logistics processes.
    - Assisted in developing high-level execution scope during outage.
    - Managed vendors and multiple in-house groups to ensure planning was on-track and deliverables were being met.
    - Coordinated with accounting, project controls and planners to develop appropriate reports for senior management on the status of the outage.
    - Worked on-site with crew and coordinated personnel.

TransAlta Utilities,
Calgary Alberta **June 1999-June 2000**
Leadership Development Program (LDP)

- LDP program was comprised of four, four-month rotations meant to introduce new engineers to various departments of the company.
- Rotations completed in Energy Marketing, Hydro Operations, Transmission Regulatory Affairs and Gas Plant Operational Support.

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Mr. Bryan Krawchyshyn, P. Eng., MBA

Work: (403) 920-6602 • Email: bryan_krawchyshyn@transcanada.com

Project Engineer – Transmission Interconnect ions
(Power Development Engineering)

EDUCATION

2001 – 2004 (Evenings)
University of Calgary, Calgary, A.B.
Faculty of Management, Masters of Business Administration
Graduation granted: April, 2005

1993 - 1998
University of British Columbia, Vancouver, B.C.
Electrical Engineering, Bachelor of Applied Science
Graduation granted: April, 1998

WORK EXPERIENCE

July 2007 – Present
TransCanada Energy, Calgary AB – Power Development Engineering
Supervisor: Gary Salsman

- Management of the high voltage transmission interconnection of multiple generating stations under development. Liaison with various regulator agencies, contractors, governmental boards and engineers to propose, develop and implement high voltage transmission line interconnections.

April 2003 – July 2007
Alberta Electric System Operator, Calgary AB – Transmission Engineering
Supervisor: Andrew Bennett

- Project management of multiple concurrent projects ranging in scope and size. Worked directly with stakeholders including major load and generation companies, regulated transmission owners, regulators and others. Specialization in interconnection of wind generation assets.

April 2002 – April 2003
SNC-Lavalin ATP, Calgary AB
(Note: Company change due to the sale of TransAlta Ultilities regulated assets to SNC-Lavalin/AltaLink)
Supervisor: Dan Shield
Key Responsibilities:

- Lead Electrical Engineer for new 240/138kV substation and interconnection to five 240kV and 138kV existing substations. Duties include project estimation, scheduling, modification of scope, outdoor substation design, equipment specification and purchase, team lead for five design engineers and multiple support staff, and cost control.
- Complete layout, protection and control of new Brookfield 536S 138kV substation and the interconnection between the existing Joffre 535S substation. Creation of all design documents and philosophies based on customer/client requirements and the protection and operation of AltaLink assets.

Aug 2000 – April 2002
TransAlta Utilities, Calgary AB - Transmission Projects
Supervisor: Gary Ritland / Dan Shield
Key Responsibilities:

- Complete protection and control design for 500kV substation and interconnection between combine cycle and existing coal fired power plant. Creation of all design documents and philosophies based on customer/client requirements and the protection and operation of TransAlta assets. Includes coordinating with on site plant personnel, field staff, contractors and suppliers throughout project execution. Attention to detail

design, schedule and budget requirements.

- Gleichen 179S: Phase I design of 138kV/25kV substation including creation of control single line, coordination with civil designers on grading and site prep, creation of plan and profile, grounding and control cable trenching details. Ordering of all outdoor equipment including airbreaks, breakers, inter-connection hardware. Coordinating design with land agents, civil designers, purchasers, drafters, project support, asset management, operations and maintenance, project management and construction supervisors. Assist in the preparation of construction bid documents.
- Shell Limestone: Created design package for addition of 138kV/13.8kV transformer and 13.8kV bus including addition of two circuit switchers and removal of faulting switch. Layout and termination of control and power cables, both indoor and outdoor. Assist in the preparation of construction contract.

May 1998 – July 2000

Kenonic Controls Limited, Calgary AB - Electrical Projects Sphere
Supervisor: Andy Kneubuhler
Key Responsibilities:

- Tarapoa Power Project: Calculated cable sizes and created cable run drawings, cable schedule and bid documents for cable purchase (power and control). Created termination schedule detailing all control cable terminations for generation skids, MCC and substation.
- **TransAlta** (Suncor): Performed design changes, added termination information and checked drafting for all substation drawings including CT/PT wiring, DC Distribution, Breaker Control, Breaker Fail, Airbreak Control, Breaker Fail, Breaker JBs, Auto Reclose and others. Created module and rack termination drawings for Millennium Substation located at Suncor. (Brent Easton, TAU)
- **TransAlta** (ANG Cochrane): Created complete design package for the addition of 138kV/25kV transformer and associated switchgear using existing transformer protection. Design included layout and modification of existing buswork, and layout/termination of control and power cables, both indoor and outdoor. Selection and ordering of outdoor materials including HV conductors and connectors. Liaison with contractors and field staff during construction. Assist in the preparation of construction contract.

Winter/Summer 1997

Syncrude Canada Limited, Fort McMurray, AB - Mine Maint./Reliability Team
Mentors: Ralph Eckl, Bob Lawrence
Technical Paper: Electricity Industry Restructuring in British Columbia
Technical Paper: North Mine Crusher Automation
Key Responsibilities:

- Designed and implemented a total engineering package for the installation of traffic lights and signboards. Supervised construction and approved design changes.
- Designed an engineering package for the construction and installation of a 600V auxiliary power supply junction box.
- Designed an engineering package and coordinated the construction of the electrical components for a heating and ventilation system.
- Represented the engineering team during the commissioning of many team projects.

Summer 1996

B.C. Hydro, Burnaby, B.C. - Engineering and Planning - Power Supply Team
Mentor: Darren Kahl
Technical Paper: Grounding Safety at the Aberfeldie Generating Station
Key Responsibilities:

- Analyzed the grounding grid at the Aberfeldie Generating Station for step and touch potentials and recommended additions and alterations in a complete engineering design package.
- Prepared a cost analysis for the recommended redesign of the Aberfeldie Generating

Station and presented it to the client.
- Prepared a design memorandum on the current procedure for selecting station service conductors run in underground conduit.
- Applied the underground conduit memorandum for the selection of station service conductors for the Stave Falls Replacement Project.

Summer/Fall 1995

Ian Hayward International Limited, Vancouver, B.C. - HV Transmission Design
Mentors: Brian Bolden, Dave Brown
Technical Paper: Substation Overhead Shielding Design
Technical Paper: Transmission Line Optimization: Tower Cost and Voltage Losses
Key Responsibilities:
- Assisted the engineering team with drafting requirements using AutoCAD 12.
- Reviewed and recommended design changes to the grounding grid and lightning protection of the Alumbrera Substation.
- Created a Lotus 123 spreadsheet for the control and tracking of transmission towers.

Mr. Bryan Krawchyshyn, P. Eng, MBA

Project Engineer - Energy Projects

Mr. Krawchyshyn is a project engineer with TransCanada with over 10 year's experience in high voltage transmission design and generation project interconnection experience. His responsibilities with TransCanada include project management, engineering and regulatory support of electrical power projects together with providing on-going technical support to business development activities.

Mr. Krawchyshyn has held intermediate positions with several major Canadian and International EPC and power companies as well as governmental regulating agencies including TransAlta Utilities, SNC-Lavalin and the Alberta Electric System Operator.

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OLIVER, James M., R.G.

Schlumberger WATER SERVICES

Profession:	Principal Hydrogeologist
Specialization:	Hydrogeology, Hydrology, Permitting, Environmental Investigation and Restoration
Years of relevant experience:	23

Qualifications and experience:

- Broad-based expertise and experience in aquifer sustainability evaluation, water supply development, groundwater flow modeling, permitting, water policy and rule development, contaminant hydrogeology, mine reclamation and trans-boundary aquifer management.
- Extensive experience with expert testimony, federal regulations and enforcement related to environmental projects.
- Project director and strategy lead for high-profile permitting projects for the mining, municipal and energy industries.
- Project experience in the US includes: Arizona, Oregon, Texas, Idaho, Florida, California, Washington, North Carolina, Minnesota, New Mexico, Utah, Colorado, Nevada, and New York.

Registrations and professional affiliations:

Registered Professional Geologist - Arizona (#30441)
Registered Geologist - Texas (#6111)
Registered Geologist/Hydrogeologist – Washington (#2172)
Memberships:
Valley Forward Executive Committee
Association of Groundwater Scientists and Engineers
American Water Works Association
Water Environment Federation
Arizona Hydrological Society
National Water Well Association

Education:

1985 BSc Hydrology, University of Arizona, Tucson, AZ
1988 - Post-Graduate Courses in Modeling Contaminant Fate, and Transport and Hydraulics, University of California, Berkeley Extension, 1988 and 1989

Professional Career:

August 2008 to present	**Principal Hydrogeologist, Schlumberger Water Services, Phoenix, Arizona**
	Principal Hydrogeologist and leadership role with Schlumberger Water Services. Responsible for technical direction and development of projects within the energy and municipal sectors. Technical lead for water supply and environmental projects for energy, municipal, mining and private clients.
March 2002 to August 2008	**Vice President, Western Water Resources-AMEC Earth & Environmental, Phoenix, Arizona**
	Vice President overseeing western water resource practice. Technical lead for numerous projects on behalf of municipalities, industrial, and federal clients related to water resource planning, policy development, sustainable supply assessment, and water transfer. Routinely worked with industrial, government, mining and energy client sectors.
June 1995 to March 2002	**Senior Associate Hydrogeologist, Brown and Caldwell, Phoenix, Arizona**
	Southwestern water resources practice leader overseeing growth and development of water supply practice. Technical work included Colorado River issues, municipal supply development, federal superfund site investigation, international water supply assessment, mining issues, reclaimed water use and groundwater recharge.
June 1994 to June 1995	**Senior Hydrogeologist, ASL Hydrologic, Phoenix, Arizona**
	Technical role managing projects related to water resource plan development, rural water supply assessment, Colorado River recharge and municipal well optimization.
March 1989 to June 1994	**Principal Hydrogeologist, PES Environmental, Novato, California**
	Project manager responsible for projects related to groundwater contamination of water supply aquifers. Work focused on technical assistance and litigation support associated with allocation of responsibility with federal superfund sites.
July 1985 to March 1989	**Staff Hydrogeologist, Harding Lawson Associates, Novato, California**
	Hydrogeologist overseeing projects related to assessment and characterization of soil and groundwater contamination.

Professional Experience:

Water Resources/Groundwater Recharge Evaluation:

Water Supply Development, City of Avondale, Arizona
Principal in charge. Mr. Oliver is the project lead for an ongoing development of City of Avondale groundwater supply. Work has included well permitting, well design, well contracting, exploratory boring program, well installation, well testing and well development. Additional work has included evaluation of vertical water quality and well design to maximize water quality.

Water Well Design and Installation, Kirkland Air Force Base, New Mexico
Principal in charge for design and installation of 1,700 gallon per minute production well for Kirkland Air Force Base. Work involved development of technical specifications, pilot hole drilling, vertical water quality testing, well design, well installation and well testing.

Water Supply Development, TransCanada, Coolidge, Arizona
Principal in charge. Mr. Oliver is the project lead for an ongoing project with TransCanada for the water supply development of a 575 Megawatt power plant in Coolidge Arizona. Work includes water supply planning strategy, hydrogeologic investigation of both water quantity and water quality, Arizona, exploratory boring analysis, production well installation and support project Aquifer Protection Permit.

Adequate Water Supply Model, Red Gap Ranch Water Farm, Flagstaff, Arizona
Principal in charge. Mr. Oliver is the project lead for an ongoing project with the City of Flagstaff to develop an adequate water supply model to show that after 100 years of pumping the project will not cause drawdowns in excess of state regulatory limits. The model simulates groundwater conditions in the C-aquifer and potential impacts to surface water sytems.

Drought Model Development, City of Phoenix, Phoenix, Arizona
Principal in charge. Mr. Oliver is the project lead for an ongoing project with the City of Phoenix to develop a drought simulation model. The purpose of the modeling project is to evaluate potential drought scenarios that may reasonable occur, and develop a model to simulate the City's response to meeting water demands. The drought simulations will evaluate shortage years in both the Colorado River watershed and the Salt/Verde River watersheds. In combination with dendochronology studies of tree rings, the drought analysis will extend the drought record period of over 500 years. Drought model simulations will be used the City to assess the need for infrastructure improvements or water supply augmentations to address reasonable drought conditions.

Aquifer Management Plan, City of Phoenix and City of Scottsdale, Arizona
Technical lead for development of a transboundary aquifer management plan for the Northeast Valley Aquifer System. Work performed on behalf of Phoenix and Scottsdale and included use of groundwater flow model to assess the impact of recharge and regional pumping on long-term water level conditions in the Northeast Salt River Valley. Results of plan provided recommendations on ways manage the long term sustainability of the aquifer and recognition of the impacts from other groundwater users within the valley.

Water Ranch Acquisition, City of Flagstaff, Arizona
Technical lead for review of water supply assessment for Red Gap Ranch. Assisted City of Flagstaff in review of sustainable resource development of a water ranch approximately 30 miles east of Flagstaff, Arizona. Work involved mode review, presentations to city council, and preparation of model comments. Results were used by the City to negotiate reduced price and eventual purchase of the ranch

Water Resource Evaluation, Hunt Building Corporation, Dell City, Texas
Principal Investigator. Evaluated karst aquifer in northwest Texas for development of a 45,000 acre-ft per year private water supply for City of El Paso. Work involved evaluation of sustainable water quantity and quality for export from Dell City, Texas. Investigations included

review of available literature, evaluation of farming practices, well evaluation, aquifer testing and water quality sampling. Results of the evaluation were presented to the El Paso Public utilities board and peer reviewed by outside consultant. Additional work included an engineering assessment of 90-mile pipe line and water treatment alternatives. Current work is continuing on export permits and brine disposal options.

Water Resource Supply Development, US Agency for International Development (AID), Honduras Groundwater Technical Lead. In connection with USAID monies allocated for Hurricane Mitch relief efforts, water resource plans are being developed for five Honduran communities. The work involves evaluation of groundwater basins, assessment of future water use and demand, evaluation of local hydrogeology, well installation, aquifer testing and development of mathematical models. Water supply plans are focused on long-term sustainability of water quantity and quality. Key elements of the plans include assessment of water resource availability, source water protection, well siting evaluation and future groundwater management.

Water Resource Evaluation, City of Scottsdale, Scottsdale, Arizona

Technical Lead on Recharge and Source Water Evaluation. Work with City of Scottsdale has involved installation of multiple groundwater production wells, bedrock analysis, injection well design, recharge assessments, revision of city wide groundwater flow model and development of a source water protection plan.

North Peoria Water Resource Evaluation, City of Peoria, Peoria, Arizona

Technical Lead. Performed a water resource evaluation to evaluate available water supplies for a recently expanded portion of North Peoria. As part of the investigation, hydrogeology was assessed in the region to classify the best available resource for the specific land area. Water use options included groundwater withdrawal, recharge and water import. City of Peoria currently uses the results of the investigation to inform potential land developers of the water resource options prior to residential development. Work also included and assessment of applicable regulations regarding water supply and water quality.

Water Resource Evaluation, West Texas Aquifers, Hunt Building Construction, El Paso, Texas

Principal Investigator. As per a memorandum of understanding between El Paso Water Utilities and Hunt Building corporation, a large scale water resource evaluation was perform in eight groundwater basins in west Texas. The purpose of the work was to evaluate the potential to develop additional municipal water supply for the City of El Paso. The evaluation primarily focused on review of available literature, however, field investigation was performed in basins that were potentially viable as a sustainable water supply. In Antelope Valley, work included well assessment, aquifer testing, vertical water quality sampling and development of a numerical groundwater model. Results of the investigation were summarized in a report and submitted to both the El Paso Water Utility and Hunt Building Corporation.

Water Resource Evaluation/ Well Field Development, City of Florence, Florence, Oregon

Principal Investigator. Evaluated available water resources for the coastal city of Florence, Oregon. Work involved evaluation of previous hydrogeological investigations and preparation of water balance model to estimate the potential impacts of future water development. The work focused on the surface water/groundwater interactions between withdrawals from a coastal lake and dunal aquifer system. Continuing work has involved rehabilitation of existing well field to address iron fouling in wells, development of a new well field and water use permitting associated with groundwater withdrawals near Munsel Creek.

Groundwater Recharge Evaluation, Gold Canyon Sewer Company, Apache Junction, Arizona

Principal Investigator. Gold Canyon Sewer Company operates a 1 mgd facility to treat domestic wastewater. Effluent disposal at the plant was limited to turf irrigation and inadequate disposal was available during winter months. Work has included performing an evaluation of potential disposal options and hydrogeologic investigation to the feasibility of using groundwater recharge basins. Recharge was the selected option and work expanded to include Aquifer Protection Permit modification, recharge permit preparation and NPDES permit notification. Currently, approximately three acres of groundwater recharge basins are being constructed at the facility.

Water Resource Supply Plan, City of Lake Havasu, Lake Havasu, Arizona

Principal Investigator. Prepared a water resources plan for City of Lake Havasu to assist the city in addressing water supply issues through the year 2060. The elements of the plan included an evaluation water demand projections, shortage year plan, water conservation plan, estimate of additional water supply needs, potential water sources and preliminary engineering evaluation of potential options. Work included working with legal counsel to assess legal availability to water, working with ADWR on Colorado River allocation issues and numerous presentations to city council.

Well Head Protection Plan, City of Show Low, Show Low, Arizona

Project Manager. Under an EPA Grant, completed a Well Head Protection/Source Water Protection plan for City of Show Low. Work included participation in stakeholder group meetings, development of mathematical model to simulate zone of contribution, preparation of draft well head ordinance and presentations to City of Show Low staff and council. Work included coordination with ADWR and EPA. The completed with the first accepted well head protection resolution in Arizona.

Groundwater Recharge , LOTT Project, Olympia, Washington

Technical Lead. The Lacy Olympia, Tumwater, Thurston County (LOTT) wastewater coalition, is currently developing satellite wastewater treatment facilities to reduce discharges to Budd Inlet of Puget Sound. The groundwater recharge phase of the work involves evaluation for the potential to recharge reclaimed water from treatment wetlands for each of the satellite wastewater treatment plants. Work has involved recharge feasibility investigations; recharge permitting and pilot recharge basin design and construction. Results of the pilot test recharge basins will be used to develop design for full-scale recharge basins to receive flows of up to 5 mgd.

Recharge Regulation Formation, Maricopa County Flood Control District (MCFCD), Phoenix, Arizona

Assisted MCFCD is preparation of regulations related to permitting recharge facilities on Flood Control Lands. Work with staff to prepare guidelines for modeling, structure design and long-term monitoring.

Groundwater Recharge, Cibola Valley Irrigation and Drainage District, Cibola, Arizona

Principal Investigator. Evaluated recharge of Colorado River water beneath the irrigation district. Work involved groundwater modeling of the proposed recharge, presentation of the results to regulatory agencies, and preparation of an Aquifer Storage and Recovery Permit. Evaluations included recharge estimates; storage time and volume; and costs for basin recharge and recovery.

Adequate Water Supply Evaluation, Whetstone Ranch, Benson, Arizona

Technical Reviewer. Provided technical evaluation for adequate water supply report for large development in southeastern Arizona. Work involved water resource evaluation, aquifer testing, and development of groundwater model to evaluate the impacts of proposed

groundwater withdrawals on the regional aquifer system. Based on the evaluation, Arizona Department of Water Resources (ADWR) approved the report for use in the water supply assessment.

Well Field Evaluation, City of Goodyear, Goodyear, Arizona

Principal Investigator. Evaluated well field expansion, well sitting, municipal well design, and groundwater modeling of proposed increased well extraction.

Groundwater Recharge Evaluation, San Pedro Sub-Watershed, Sierra Vista, Arizona

Groundwater Modeler. Performed groundwater modeling of proposed groundwater recharge of treated sewage effluent at various locations within the San Pedro River Sub-Watershed. Quantitatively assessed the potential impacts of groundwater recharge on the groundwater flow system and change in base flow in the San Pedro River. Qualitatively evaluated soil aquifer treatment and recharge basin design.

Water Resource Modeling, City of Goodyear, Goodyear, Arizona

Groundwater Modeler. Developed water resource model to predict the impact of city growth on available water resources. Model incorporated city population growth projects, agricultural retirement, groundwater recharge, and purchase of Central Arizona Project water.

Groundwater Recharge Evaluation, San Pedro Sub-Watershed, Sierra Vista, Arizona

Principal Reviewer. Reviewed groundwater flow model developed by University of Arizona for the Upper San Pedro Watershed. Work included review of previous and current modeling efforts, development of a primer on groundwater resources for the City of Sierra Vista, hydraulic well capture analysis, and public presentations.

Litigation Consultant/Litigation Support:

Wind River Resources, L.L.C., Application for a Permit to Transport Water Out of State (Permit NO. 33-9679), Arizona Office of Administrative Hearings, Beaver Dam Arizona.

Testifying Expert Witness. Mr. Oliver was recently involved as an expert witness to address groundwater water supply issues associated a permit to withdraw and export water out of Arizona from the Beaver Dam Wash area in northwestern Arizona. Testimony included a review of the permit, issues related to the impact of groundwater withdrawal and groundwater/surface water interaction. The majority of the testimony was been in regard to the effect of groundwater pumping on the long-term sustainability of the aquifer system and potential impacts of groundwater transfer.

Hudspeth County Underground Water Conservation District, Dell City, Texas

Testifying Expert Witness. Mr. Oliver is currently involved as an expert witness to address groundwater water supply issues associated with the Bone Springs/Victorio Peak Aquifer in west Texas. Work involved evaluation of District rules and aquifer management plan, validation permits, operation permits, assessment of existing and historic groundwater users, and sustainability of the aquifer system. The majority of the testimony as been in regard to the effect of groundwater pumping on the long-term sustainability of the aquifer system and potential impacts of groundwater transfer.

Little Colorado Adjudication, Confidential Client, Arizona

Litigation Consultant. Mr. Oliver was involved as a litigation consultant to address groundwater/surface water interaction issues associated with Little Colorado River Adjudication near Snowflake/Taylor area. Work involved local assessment of available groundwater and surface water supplies, evaluation of aquifer conditions, and preliminary development of a mathematical groundwater flow model. Work was performed for private water user.

Technical Expert, City El Paso, El Paso, Texas

Technical Expert. Listed as testifying expert in evaluation of source of spring water as related to damage to adjacent building structure. Performed hydrogeological analysis of spring system and performed groundwater sampling of spring water to evaluate water origin. Prepared technical report findings of spring analysis and commented on depositions. Case settled before trial or depositions and decision was favorable to the City.

Litigation Support, Phoenix, Arizona

Technical Lead. Principal Investigator and Technical Lead for work in support of litigation related to allocation of large VOC contamination plume. Work involved assessment of DNAPL sources, preferential pathway identification, critical review of groundwater and chemical transport model, review and estimation of remedial costs, and presentations to technical groups and regulatory agencies.

Litigation Support, Tucson, Arizona

Project Manager. Responsible for work involving strategy development, review of previous investigations, and preparation of information for outside expert. Project involved assessment of VOC contamination from various sources and assessment of source strength and multiple potentially responsible parties. Litigation Support, Phoenix, Arizona.

Litigation Support, Tucson, Arizona

Project Manager. Responsible for work involving strategy development, review of previous investigations, and preparation of information for outside expert. Project involved assessment of VOC contamination from various sources and assessment of source strength and multiple potentially responsible parties.

Arbitration Hearing for Cites versus Drew, Phoenix, Arizona

Expert Witness. Testimony related to the relationship between precipitation and runoff. Evaluation included review of precipitation, water quality, water use, vertical infiltration of water, and assessment of damage to adjacent buildings.

Large Off-Site Allocation of VOC Contamination, Mountain View, California

Litigation Consultant. Responsible for work involving source identification and allocation of financial responsibility for co-mingled contamination in groundwater. Work included allocations based on mass-in-place, source weighing, and modeling DNAPL dispersion. Allocations used numerical and analytical modeling of groundwater and contaminant transport.

Litigation Support, Santa Clara, California

Project Manager and Technical Lead. Project involved co-mingled hydrocarbon contamination from adjacent fuel service stations. Work involved review of previous investigations, source identification, plume mass/area modeling, and negotiations with regulatory agencies.

Litigation Support, Henry Mariani, Esq., Santa Clara, California

Project Manager. Provided litigation support involving source identification and allocation of petroleum contamination in soil and groundwater. Work involved source identification and fuel finger printing assessment.

Preliminary Endangerment Assessment, The Martin Group, Emeryville, California

Project Manager. Prepared a preliminary endangerment assessment (PEA) for a former industrial property in Emeryville. Investigations included evaluation of metal and hydrocarbon contamination in soil and groundwater, and risk assessment of migration pathways in soil, air, and water. Proposed remedial actions to mitigate potential endangerment to human health and the environment.

Groundwater Monitoring of Manufacturing Facility, Teledyne Components, Mountain View, California

Project Manager. In charge of sampling and reporting groundwater monitoring results from well network at federal Superfund site. Supervised sampling crews, evaluated chemical results, evaluated laboratory quality assessment/quality control (QA/QC) data, and prepared report.

Groundwater/Contaminant Transport Modeling:

Groundwater Recharge Feasibility Assessment - City of Lake Havasu, Arizona

As an extension of a water resource plan that was previously developed by AMEC staff, AMEC, under the direction of Mr. Oliver, is currently evaluating potential for wastewater injection at a planned wastewater treatment facility with a projected capacity of 3.5 million gallons per day at build out. The model development included preparation and calibration of a preliminary steady-state multi-layer groundwater flow model constructed using MODFLOW 2000 to simulate flow in an alluvial aquifer overlying complex bedrock aquifer conditions. The steady-state flow model was used as initial conditions to simulate the transient impact of different methods of groundwater recharge over a period of 18 years. This preliminary transient modeling coupled with an intensive review of geologic data was essential in identifying data gaps in the aquifer geometry that would limit the groundwater recharge options. AMEC recommended a program that utilized geophysical surveying with confirmation borings to further delineate bedrock topography. The new information is being utilized to revise the conceptual model for further transient modeling to assess the feasibility of a wide range of aquifer recharge options including vadose zone injection wells and/or ASR wells.

Groundwater Modeling, City of Phoenix, Phoenix, Arizona

Project Manager. Developed a groundwater model to simulate a proposed Aquifer Storage and Recovery (ASR) project in south Phoenix. Work involved construction of a MODFLOW model to predict the water-level impact from a 17 well, 40 mgd ASR well field. Numerous scenarios were evaluated to assess water level buildup during recharge and water drawdown during pumping. The modeling results were used to determining the feasibility of a ASR well field to providing a reliable alternative water supply.

Groundwater Modeling/ Assured Water Supply, DMJM, Peoria, Arizona

Project Manager. Developed a groundwater model to simulate a proposed aquifer drawdown for assured water supply evaluation for a large residential development. Work included preparation of a hydrology study and mathematical groundwater flow model to simulate groundwater withdrawals from the proposed development for 100 years. Results of the study were used in support of obtaining an assured water supply from Arizona Department of Water Resources.

Groundwater Model Review, Confidential Client, Phoenix, Arizona

Technical Lead. Prepared a review of a groundwater flow and chemical transport model developed for an extensive VOC groundwater contamination problem in Southeast Phoenix. Work involved critical review of groundwater model and solute transport assumptions for simulation of contaminant migration.

Groundwater Modeling, Mountain View, California

Groundwater Modeler. Constructed groundwater model representing proposed hydraulic containment system for VOC contamination at federal Superfund site that had suspected DNAPLs in the subsurface. Modeling involved review of existing models and field data, preparation of numerical simulation in MODFLOW, particle tracking using PATH3D, and hydraulic performance evaluation. Modeling results were peer reviewed and approved by outside consultants and EPA contractors.

Groundwater Modeling, Emeryville, California

Principal Investigator. Prepared groundwater flow model to simulate the effects of a proposed hydraulic barrier to be constructed near a groundwater contamination site. The purpose of the modeling was to simulate potential changes in groundwater flow gradients and contaminant movement due to emplacement of impermeable trench backfill in a deep sanitary sewer trench. Evaluated trench backfill material and induced recharge and variations in groundwater vertical and horizontal flow gradients.

Mining Facilities:

Lost Orphan Uranium Mine, Orphan Mine Respondents, Grand Canyon National Park, Arizona

Project Director overseeing Engineering Evaluation/Cost Analysis (EE/CA) of a former underground uranium mine along the south rim of the Grand Canyon. Work involves site characterization, assessment and quantification of remedial alternatives, streamlined risk evaluation (human and ecological) and assessment of natural resource damages. Technical issues include assessment of nature and extent of radiological waste rock, evaluation of technical impracticability of addressing uranium contaminated groundwater, exposure to both park visitors and sensitive ecological species, and cultural issues associated with a high visibility national park. Work is being overseen by U.S. National Park Service.

Church Rock Uranium Mine, Church Rock, New Mexcio

Project Director overseeing remedial cost estimation under an Engineering Evaluation/Cost Analysis (EE/CA) of a former underground uranium mine. Work involved site characterization, assessment and quantification of remedial alternatives, streamlined risk evaluation (human and ecological) and assessment of natural resource damages. Technical issues include assessment of nature and extent of radiological waste rock, and cultural issues associated Navajo cultural issues.

Cyprus Tohono Mine, Tohono O'odham Indian Reservation, Arizona

Project Director overseeing remedial feasibility study to assess potential remedial options for Cyprus Tohono copper mining facility. Elevated concentrations of both sulfate and uranium are present in soil and groundwater at the mine and there are other environmental issues associated with tailing impoundments, concentrator facilities, former underground workings and evaporation ponds. Remedial option evaluation includes screening of available technologies and quantification of estimated life-cycle costs for selected remedial options. Remedial evaluation includes both insitu and exsitu remedial options. Work is being performed pursuant to the U.S. EPA and Tohono O'odham Indian reservation.

Phelps Dodge Refinery Corporation, New York, New York

Project Director overseeing evaluation of a former copper smelter along New Town Creek in New York City. Work involves assessment and remedial options for elevated concentrations of metals, petroleum hydrocarbons and other organic associated with sediments in the creek. Purpose of the work is to develop remedial alternatives and allocate environmental liabilities

connected with the level of contamination, risk assessment and degree of natural resource damages.

Cortez Gold Mine, Nevada

Project hydrogeologist for review of groundwater extraction system related to pit dewatering and hydraulic control of groundwater contaminants. Work involved assessment of mine activities, water balance, nature and extent of contamination and dewatering needs. Numerical modeling was performed to simulate design optimization.

In-Situ Copper Mining Project, BHP Copper, Florence, Arizona

Injection/Recovering Modeling Manager and Senior Technical Review. Responsible for various tasks associated with the Aquifer Protection Permit (APP) application for a large in-situ copper mining project. Duties include, senior technical review and strategy development for regional groundwater and chemical transport models, aquifer test analysis, BADCT assessment, development of process optimization goals, and numerous Arizona Department of Environmental Quality (ADEQ) and Environmental Protection Agency presentations. Work involved critical assessment of groundwater flow in fractured medium and quantitative assessment of fate and transport of in-situ mining solutions.

Mine Aquifer Protection Permit, BHP Copper, Superior Arizona

Technical Lead. Evaluated issues related to groundwater characterization and numerical modeling associated with an APP for the former BHP copper mine in Superior, Arizona. Continuing work involves groundwater flow and quality evaluation, potential impacts of discontinuance of mine dewatering and modeling mine tailing infiltration.

Remedial Investigation/Feasibility Studies (RI/FS)

Federal Superfund Site Investigation, Arizona Public Service, Phoenix, Arizona

Project Director for focused remedial investigation and feasibility study for APS properties located with Operable Unit 3 of the Motorola 52nd Street Superfund Site. Work is being performed under an U.S. Environmental Protection Agency administrative order on consent. Technical work involves evaluation of VOCs in soil, soil vapor and groundwater at the APS facilities located with OU3. Work also involves extensive regulatory involvement and strategy planning; and review of other work within the superfund site.

MGP Site Evaluation, Arizona Public Service,Arizona

Project Director evaluating multiple sites that had former manufactured gas facilities (MGPs) at selected site in Arizona. Work involved assessing extent of soil and groundwater contamination at the former MGP facilities and estimating degree of environmental liability. Assessment included using risk assessment tools and working under the Arizona Department of Environmental Quality (ADEQ) voluntary remediation program. Work continued to include development of site characterization plans and remedial action plans.

Value Engineering Assessment, Tucson International Airport, Tucson, Arizona

Team hydrogeologist with value engineering team to review remedial option for cleanup of environmental liabilities associated with soil and groundwater contamination at an active airport. Work involved quickly assessing nature and extent of contamination based on previous studies and reviewing cost efficacy of the proposed remedial option. Work was performed during a concentrated one week effort that culminated in a presentation to the client on comments to the remedial approach and estimated costs.

Site Investigation and Remediation, Confidential Client, Tempe Arizona

Project Manager. Managed site investigation and remediation for site within the South Indian Bend Wash Superfund Site. Work has involved characterization of VOCs in soil, soil gas and groundwater and soil vapor extraction pilot testing. Other tasks have involved negotiations with state and federal regulatory agencies.

Site Investigation, Sobrato Development, Mountain View, California

Project Manager. Managed a VOC investigation in the Middlefield-Ellis-Whisman Group federal Superfund site in Mountain View. Investigation included VOC source identification, soil and groundwater sampling, aquifer testing, remedial design, and review of regional studies performed by other consultants.

Site Investigation - Potential Responsible Party (PRP) Identification, Sobrato Development/Inprint, Sunnyvale, California

Project Manager. Managed a VOC investigation and PRP identification for VOC groundwater contamination at a printing facility. Work included review of previous work, litigation consultation, source identification and separation of co-mingled VOC plumes in groundwater. Work involved extensive regulatory negotiation, and critical review of other consultants work.

Subsurface Soil Investigation, Remedial Investigation Report, Middlefield-Ellis-Whisman (MEW) RI/FS Group (Fairchild, Intel, and Raytheon)

Technical Lead. Responsible for presentation of soil chemistry data in remedial investigation (RI) report. Compiled soil chemistry data for over 4,000 soil samples from over 800 borings. Data were compiled from six different companies and presented in the form of extensive soil concentration maps for specific chemical and soil horizons.

Chemical Facility Investigation, Van Waters & Rogers, Inc., Portland, Oregon

Task Manager and Site Safety Officer. Investigated volatile and semi-volatile chemical contamination of soil and groundwater at a large chemical distribution facility. Involved in preparation of data management plan, evaluation of preliminary assessment of remedial alternatives, and conceptual design of initial corrective measures.

Subsurface Soil Investigation, Manufacturing Facility, Confidential Client, Mountain View, California

Drilling Manager. Supervised mud rotary and hollow-stem auger drilling crews. Conducted lithologic logging and extensive soil sampling on deep exploratory borings in a hazardous material spill site. Designed and installed shallow and deep groundwater monitoring wells for detection of low-level organic chemical contamination. Designed and installed contaminated groundwater extraction wells used for remedial action purposes.

Presentations/Publications

Water Environment & Federation Book Reviewer

Bouwer, H.; Back J.T. and Oliver J.M. Predicting Infiltration and Groundwater Mounding for Artificial Recharge. Journal of Hydrologic Engineering, October 1999 pp 350-356.

Oliver, J. and Sirjani, F. Numerical Simulation of Hydraulic Control for In-Situ Mining. 1997 Society of Mining Engineers Annual Meeting and Exhibit, Denver Colorado, February 24-27.

Oliver, J.M., Simulating The Effects of Groundwater Recharge. 9th Annual Symposium of the Arizona Hydrological Society, Prescott, Arizona, September 12-16, 1996.

Sirjani, F. and Oliver J.M. Numerical Simulation of Hydraulic Control for In-Situ Mining - Part 1 - Model Development. 9th Annual Symposium of the Arizona Hydrological Society, Prescott, Arizona, September 12-16, 1996.

Oliver, J.M. and Sirjani, F. Numerical Simulation of Hydraulic Control for In-Situ Mining - Part II - Model Simulations. 9th Annual Symposium of the Arizona Hydrological Society, Prescott, Arizona, September 12-16, 1996.

Oliver, J.M. Improving Groundwater Quality Through Optimal Well Field Development, American Water Works Association, Pacific Northwest Chapter, Eugene, Oregon, September 15, 2002.

Oliver, J.M. Defining Aquifer Sustainability in an Agricultural Water Transfer – The Dell City, Texas Experience. AWWA Water Sources Conference, January 2004.

Presenter at State Bar of Texas 6th, 7th and 8th, Annual "The Changing Face of Water Rights in Texas" course.

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RANDY SCHROEDER

EDUCATION

- **Masters of Science** (Environmental Science)
  Colorado State University
- **Bachelor of Science** (Natural Resource Management)
  Colorado State University

SPECIALTIES

- *Environmental Planning*
- *Permit Acquisition*
- *Strategy Development*
- *Environmental Impact Assessment*
- *Public Involvement*

CERTIFICATIONS/AFFILIATIONS

- Registered Environmental Professional, REP 5189
- Registered Environmental Assessor, REA 02735
- Registered Environmental Property Assessor, REPA 1011
- National Registry of Environmental Professionals
- National Association of Environmental Professionals
- International Association of Impact Assessment

EXPERIENCE *30 YEARS*

- **ENValue**
  Principal
- **Greystone**
  Principal
- **Espey, Huston and Associates**
  Project Manager
- **Stearns-Roger Engineering Corporation**
  Environmental Scientist

Mr. Schroeder has provided environmental services for the development of many projects throughout the country. He has developed and implemented comprehensive strategies for acquiring environmental permits for individual projects as well as for government and corporate policies and programs. He has prepared impact assessments and acquired permits for a variety of proposed energy and natural resource development projects. He has managed numerous public and interagency involvement processes and has successfully negotiated and resolved environmental disputes through use of his knowledge of technical issues, environmental laws, and regulatory processes.

Mr. Schroeder has provided environmental planning and permitting services for many energy projects throughout the United States. These projects have included many transmission lines, power generation projects, and pipelines.

He has conducted environmental siting and routing studies to identify the environmental constraints, avoidance areas, and opportunities associated with various siting alternatives. He has also prepared Environmental Impact Statements (EISs) and Environmental Assessments (EAs) to satisfy the requirements of the National Environmental Policy Act (NEPA) when federal lands or other federal jurisdiction is involved. He has also prepared the environmental documents necessary to satisfy State Siting Act requirements. He has managed the acquisition of other needed permits such as 404 permits for stream and wetland crossings, air permits, water discharge permits, and right-of-way permits. He has developed mitigation plans for these projects and has also prepared detailed Plans of Construction that itemize the various mitigation requirements for specific portions of the project.

Power Generation Projects

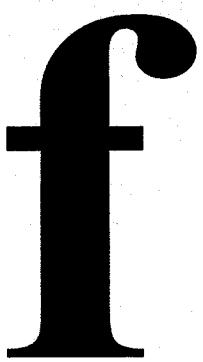
Mr. Schroeder has provided environmental services for many different types of power generation projects. These have included gas turbines, coal-fired plants, solar energy projects, wind energy projects, cogeneration projects, nuclear plants, waste-to-energy plants, and hydroelectric projects. Many of these projects have provided baseload power and many have been peaking plants. He also has worked on energy storage projects including pumped storage technology. Some of the power generation projects that Mr. Schroeder has helped permit include:

- Solar 250 MW CSP Siting Study
- NAEP 185 MW Peaking Project CEC
- Welton-Mohawk 500 MW Project CEC
- Sundance Energy 450 MW Project CEC
- Tehachapi Wind Project
- TC 500 MW Peaking Plant
- Blythe Energy 500 MW Power Plant
- Griffith Energy 600 MW Project CEC
- Repauno 2 MW Power Plant
- Adelanto 50 MW Peaking Plant
- SPR Acquisition Due Diligence
- Solar 100 MW Siting Study
- Westlake Energy 500 MW Power Plant
- Montezuma Energy Power Plant
- Colorado Power Plant Siting Study
- Pastoria 500 MW Power Plant
- Dry Fork Energy Storage Project
- Boulder Valley Pumped Storage Project
- Firth Cogeneration Project
- Rawhide Power Station
- Multiple 2000 MW Peaking Plant Siting
- Montana Power Due Diligence
- Oregon Trail 500 MW Power Plant
- CA/NV Geothermal Projects
- Desert Basin Due Diligence
- Buffalo IGCC 550 MW Power Plant
- Lakeside Power 500 MW Plant
- Mountain View 165 MW Power Plant
- Summit-Westward 500 MW Power Plant
- Solar Energy Research Institute
- Dave Johnson Power Plant
- Blue Diamond Pumped Storage Project
- Ketchikan Lakes Hydroelectric Project
- Brush Cogeneraion Unit
- Spiritwood Power Station
- TS Hydro Project
- SRC Gasification Project
- Antelope Power Station
- Fort St. Vrain Power Plant

Transmission Lines

Mr. Schroeder has provided environmental services for many transmission projects. The work he has done on these projects has been for utilities, independent power producers, and units of government. These transmission line projects he has worked on have included both stand-alone transmission projects and those associated with interconnection of planned generation projects. He has analyzed over 75 transmission projects ranging from 500kV and 345kV lines to 69kV lines. He has also worked on many substation projects. Some of the transmission / substation projects that Mr. Schroeder has worked on include:

- PV-PW 500 kV Line CEC
- Sunrise Power Link 500 kV Line
- Gardiner Park 345 kV Line
- PW-SEV 500 kV Line CEC
- Rockdale-West Middleton 345 kV Line
- Welton-Mohawk 230 kV Line
- DSWTP 500 kV Line
- BN-BS 230 kV Line
- Sundance Energy 230 kV Line
- Griffith Energy 230 kV Lines
- Westlake Energy 230 kV Line
- Chisago 345 kV Line
- CO-NM 345 kV Line
- Dry Fork Energy 230 kV Line
- Oregon Trail 345 kV Line
- Mountain View 230 kV Line
- CO-NM 230 kV Line
- Summit-Westward 230 kV Line
- Marys Lake 115 kV Line
- Blue Diamond 230 kV Line



kp environmental

Kenda Pollio, AICP

EDUCATION

- **Masters of Arts**
  (Political Science– International Environmental Policy)
  University of South Florida
- **Bachelor of Science**
  (Environmental/Urban & Regional Planning)
  Florida State University

CERTIFICATIONS/AFFILIATIONS

- AICP American Institute of Certified Planners

EXPERIENCE *17 Years*

- **kp environmental LLC**
  Principal and Project Manager
- **ARCADIS**
  Vice President and Principal
- **Greystone**
  General Manager/Senior Environmental Planner/P
  Manager
- **Golder Associates, Inc.**
  Senior Environmental Planner
- **Wade-Trim, Inc.**
  Business Team Leader, Environmental Planning
- **KBN Engineering and Associates, Inc./Golder Associates**
  Environmental Planner
- **Florida Department of Natural Resources**
  Planner IV

SPECIALTIES

- Environmental Planning
- Environmental Impact Assessment
- Permitting Strategy
- Public Involvement
- Local Government Compliance
- Environmental Planning
- Socioeconomics
- Visual Resources
- Recreational Planning
- International Projects

Ms. Pollio has recently formed kp environmental LLC. kp environmental is a new environmental consulting firm specializing in Environmental Project Management, Utility Development Project Strategic Planning and Public Process Planning.

Previously she was a General Manager of Greystone's Arizona offices and the San Diego office, as well as a Senior Environmental Planner and Project Manager specializing in linear corridor and right-of-way assessment, siting, acquisition, permitting, easements, and government compliance. She has conducted environmental assessments, public participation programming, land use planning and zoning, and socioeconomic planning. She has obtained federal, state, and local approvals for a variety of projects. She is familiar with local government zoning processes, state regulatory requirements throughout the United States, and federal compliance requirements for EISs, EAs, and ERPs that have been for FERC, BLM, USDA Forest Service, BOR, BIA and COE. She also has specialized in noise and air analysis for a variety of linear corridor projects. For these projects, Ms. Pollio has served in the capacities of technical lead, technical writer, editor, project coordinator, and project manager.

The following provides a comprehensive list of projects that Ms. Kenda Pollio has provided Project Management, project planning, land use analysis, public involvement and environmental

analysis. The environmental analysis has been in the form of providing and developing the following type of documents:

- Environmental Impact Statements
- Environmental Impact Reports
- Environmental Assessments
- Environmental Analysis
- Fatal Flaw Analysis
- Siting and Routing Studies and Reports
- Environmental Monitoring and Construction Documentation (POD/COMP Plans)

Ms. Pollio has developed Public Participation Programs and facilitated public consultation processes, public workshops and meetings both internationally and domestically. Public Participation Programs have included development of public outreach programs, stakeholder identification and coordination, NGO and elected official coordination, environmental education, development and publication of newsletters, interface with media and neighbors. She specializes in developing public involvement programs for generation and transmission projects. She has coordinated or attended over 75 public process venues including stakeholder workshops and Open Houses which totals over 600 public process meetings.

Expert Witness Testimony

She has provided expert witness testimony before the Arizona Transmission Line and Power Plant Siting Committee and the California Public Utilities Commission in the following cases:

- Sundance to Pinal South 230 kV Transmission Line Project – APS
- Desert Basin Power Plant to Pinal South Substation 230KV Transmission Line Project – SRP
- Palo Verde to Pinal West 500 kV Transmission Line – SRP
- Pinal West to Southeast Valley/Browning 230/500 kV Transmission Line – SRP
- Wellton-Mohawk Generating Facility – York Research
- Sunrise Powerlink 500kV Transmission Project – SDG&E

Transmission and Power Plant Projects:

- Coolidge Generating Facility and Transmission Line Project– TransCanada
- Solana Generating Station and 230 kV Transmission Line Project – Abengoa Solar
- Sunrise Powerlink 500kV Transmission Project – SDG&E
- Sundance to Pinal South 230 kV Transmission Line Project – APS
- North Gila to TS-8 230 kV Transmission Line Project – APS
- Desert Basin Power Plant to Pinal South Substation 230KV Transmission Line Project – SRP
- Palo Verde to Pinal West 500 kV Transmission Line – SRP
- Pinal West to Southeast Valley/Browning 230/500 kV Transmission Line – SRP
- Gardner Park to Central Wisconsin 345kV Project – ATC
- Morgan to Central Wisconsin 345kV Project – ATC
- Central Wisconsin to Werner West 345 kV Project – ATC
- Clintonville to Werner West 138 kV Project – ATC
- Blythe Energy Project and Transmission Line - Wisvest
- Blythe Energy Project Expansion, Caithness
- Repauno Power Plant Project, Repauno Products LLC
- Adelanto Peaking Plant and Transmission Line Project, Adelanto LLC
- Westlake Energy Power Plant and Transmission Line Project, Westlake Energy
- Wellton-Mohawk Generating Facility – York Research
- Solar Energy Siting Study – Confidential Client

- Montezuma Power Generation Project and 230 kV Transmission Line to Santa Rosa Substation – AES
- Desert Southwest 500kV Transmission Project, DSWP
- Sundance Energy Generation Project and Sundance to Coolidge Substation 230 kV Transmission Line – PPL Global
- Desert Southwest High Voltage Interconnection 500 kV Transmission Line Project – Confidential Client
- Griffith Energy Power Generation Project and Transmission Line, Griffith Energy LLC*\
- Valmont to Broomfield 115kV Electric Transmission Line Permitting, Tri-State*
- Interloken 230kV Electric Transmission Lines Permitting, Public Service of Colordao*
- Florida Georgia 500kV Transmission Line Site Certification and Permitting, FPC*
- Crane-Bridge-Plumosus 250kV Transmission Line Permitting, FPL*
- DeBary-Winter Springs 230kV Transmission Line Permitting, FPL*
- San Pedro de Macoris-Hainmosa 230kV Transmission Line EIS, Dominican Republic, World Bank
- Environmental Impact Statement for 500kV Transmission Line in Henan Province China, Asian Development Bank
- Limon Generation Facility, Transmission Line and Natural Gas Pipeline, Tri-State*
- Colorado-New Mexico 230kV Interconnection Project, Tri-State*
- Mountain Home Energy Project, Transmission Line, MVP Power
- Buffalo Power Plant 520 MW and Transmission Line Project, BPI
- Navitas White Wind Farm and Transmission Line, Western Area Power Administration
- San Luis Rio Colorado Power Plant and Transmission Line, Northbranch and Western Area Power Administration*
- Metro Conversion 115kV to 230 kV Transmission Project, Public Service of CO
- Platte River Power Authority Substation and Transmission Line Interconnection Colorado, Platte River Power Authority
- Tucson Power Project, AES
- North Fiber Project and 230kV Transmission, Tri-State*
- OrangeCo Cogeneration and Transmission Line, Polk County, Florida, PPP*
- Mulberry Ethanol Facility and Cogeneration and Transmission Line, Polk County Florida, MELP*
- Regional Environmental Assessment of Coal Power Plants and the associated Transmission Line and Transportation Routes and Ports (Chennai and Ennore Ports) in Madras (Chennai) India, Asian Development Bank
- Environmental Monitoring Puerta Plata Power Plant, Puerto Playa Dominican Republic, Confidential Client
- Environmental Social Soundness Assessment for Combined Cycle Power Plant – Port Qasim, Karachi, Pakistan.
- Environmental Social Soundness Assessment for Power Plant - Quetta, Pakistan.

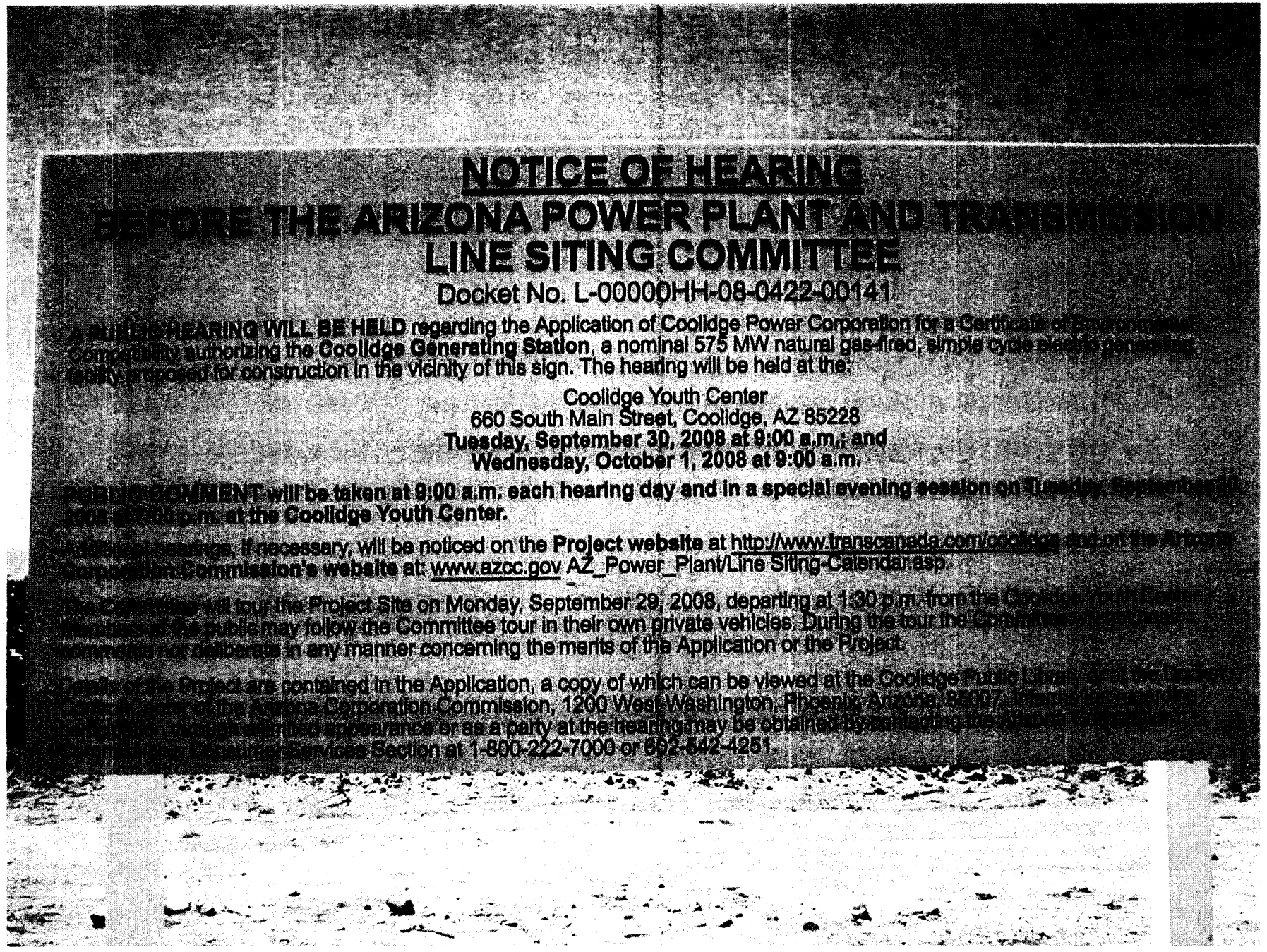
Other Linear Facility Projects

- Wellton Mohawk Natural Gas Pipeline – WMIDD*
- Yuma Lateral Natural Gas Pipeline
- Phoenix Pipeline Project Permitting, Southwest Gas
- Sunshine Pipeline Natural Gas Transmission Line, Sunshine Pipeline*
- Rockport to Rawhide Natural Gas Pipeline Permitting, PRPA
- Gas Pipeline Alternatives Analysis, FPC
- Denver Metro Loop, Metro Media Fiber Network
- Environmental Assessment for a Fuel Transport Route, Bombay India, Asian Development Bank

- Cross Florida Greenway State Recreation and Conservation Area, FDEP, central Florida*
- US 98 PDE for Florida Department of Transportation*
- US 98 Re-Evaluation Study for Florida Department of Transportation*
- Hike and Bike Trail, Port Richey, Florida, City of Port Richey*

Other Environmental Projects

- Natural Gas Storage Facility Siting Study, Unocal
- Arizona Refinery, AZ Clean Fuels
- Pinellas County Bike Standards, Pinellas County, Florida*
- Seminole County Natural Resource Management Plan, Seminole County, Florida*
- Charlotte County Horse Arena, Charlotte County, Florida*
- Hike and Bike Trail, Port Richey, Florida
- Waterfront Master Plan, Port Richey, Florida
- Proposed Florida Horse Park and Agriculture Center, FDACS, Marion County, Florida*
- Recreational Facilities Assessment, Department of Natural and Environmental Resources, Puerto Rico*
- Greenway and Trails Plan for City of Cajamarca, Cajamarca, Peru*



NOTICE OF HEARING
BEFORE THE ARIZONA POWER PLANT AND TRANSMISSION LINE SITING COMMITTEE

Docket No. L-00000HH-08-0422-00141

A PUBLIC HEARING WILL BE HELD regarding the Application of Coolidge Power Corporation for a Certificate of Environmental Compatibility authorizing the **Coolidge Generating Station**, a nominal 575 MW natural gas-fired, simple cycle electric generating facility proposed for construction in the vicinity of this sign. The hearing will be held at the:

Coolidge Youth Center
660 South Main Street, Coolidge, AZ 85228
Tuesday, September 30, 2008 at 9:00 a.m.; and
Wednesday, October 1, 2008 at 9:00 a.m.

PUBLIC COMMENT will be taken at 9:00 a.m. each hearing day and in a special evening session on Tuesday, September 30, 2008 at 7:00 p.m. at the Coolidge Youth Center.

Additional hearings, if necessary, will be noticed on the **Project website** at http://www.transcanada.com/coolidge and on the Arizona Corporation Commission's **website** at: www.azcc.gov AZ_Power_Plant/Line Siting-Calendar.asp.

The Committee will tour the Project Site on Monday, September 29, 2008, departing at 1:30 p.m. from the Coolidge Youth Center. Members of the public may follow the Committee tour in their own private vehicles. During the tour the Committee will not hear comments or deliberate in any manner concerning the merits of the Application or the Project.

Details of the Project are contained in the Application, a copy of which can be viewed at the Coolidge Public Library and at the Docket Control Center of the Arizona Corporation Commission, 1200 West Washington, Phoenix, Arizona, 85007. Information regarding participation as an intervenor, limited appearance or as a party at the hearing may be obtained by contacting the Arizona Corporation Commission Consumer Services Section at 1-800-222-7000 or 602-542-4251.

Coolidge Generating Station

Arizona Power Plant and Transmission Line Siting Committee Hearing

September 30 – October 1, 2008

EXHIBIT
A-6
admitted

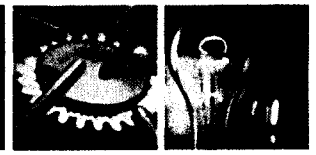
TransCanada
In business to deliver

Today's Agenda

- Applicant Introduction and Background
- Project Need
- Project Description
  - Technical Description
  - Electrical Interconnection
  - Gas Supply
  - Water / Wastewater
- Environmental Compatibility
- Other Environmental Permits / Processes
- Public Information Program
- Summary and Conclusion

TransCanada

Panel 1 – Applicant / Project Facts



Project Manager	Brad Howard
Electrical Engineer	Bryan Krawchyshyn
Project Engineer	Marisa Tosi

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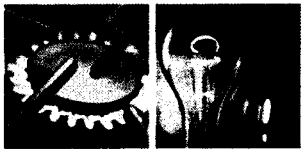
Who is TransCanada?



- Major North American energy company
- Competitively positioned in power generation, pipelines, and energy infrastructure
- Over $30 billion of premium energy assets (Dec. 31, 2007)
- 3,850 employees – almost half in the U.S.
- Strong financial position

Dow Jones Sustainability Indexes

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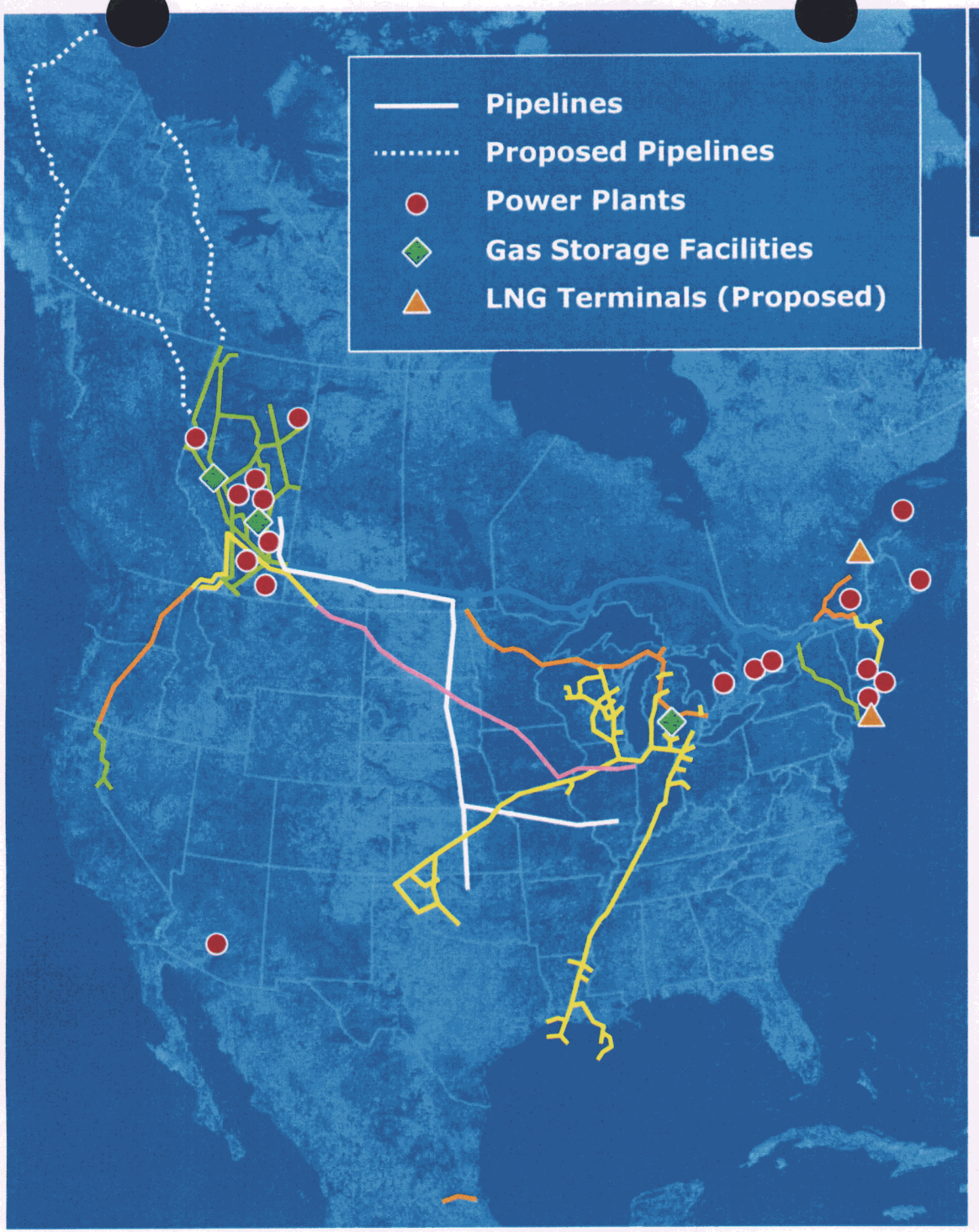


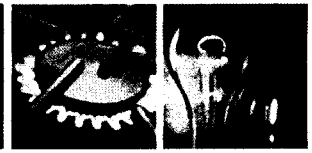
TransCanada Corporation (TSX/NYSE: TRP)

Portfolio of Quality Assets

- 19 power plants
- 10,900 megawatts
- 36,500 mi of wholly owned pipeline
- Interests in an additional 4,800 mi of pipeline
- 15 Bcf/d pipeline capacity
- 3 natural gas storage facilities
- Multiple pipeline projects and LNG terminals in development

TransCanada

Project Need



- Project developed in response to SRP Request for Proposal
- 20 year Power Purchase Agreement (PPA)
- SRP has exclusive use of 100% of power generated
- Major growth in SRP's Central Arizona service territory requires additional peaking power
- Project provides up to 575 MWs of quick-start capacity:
  - Peak power ramping
  - Reserve capacity
  - Renewables (solar/wind) firming
- Project fills a portion of SRP's near term need

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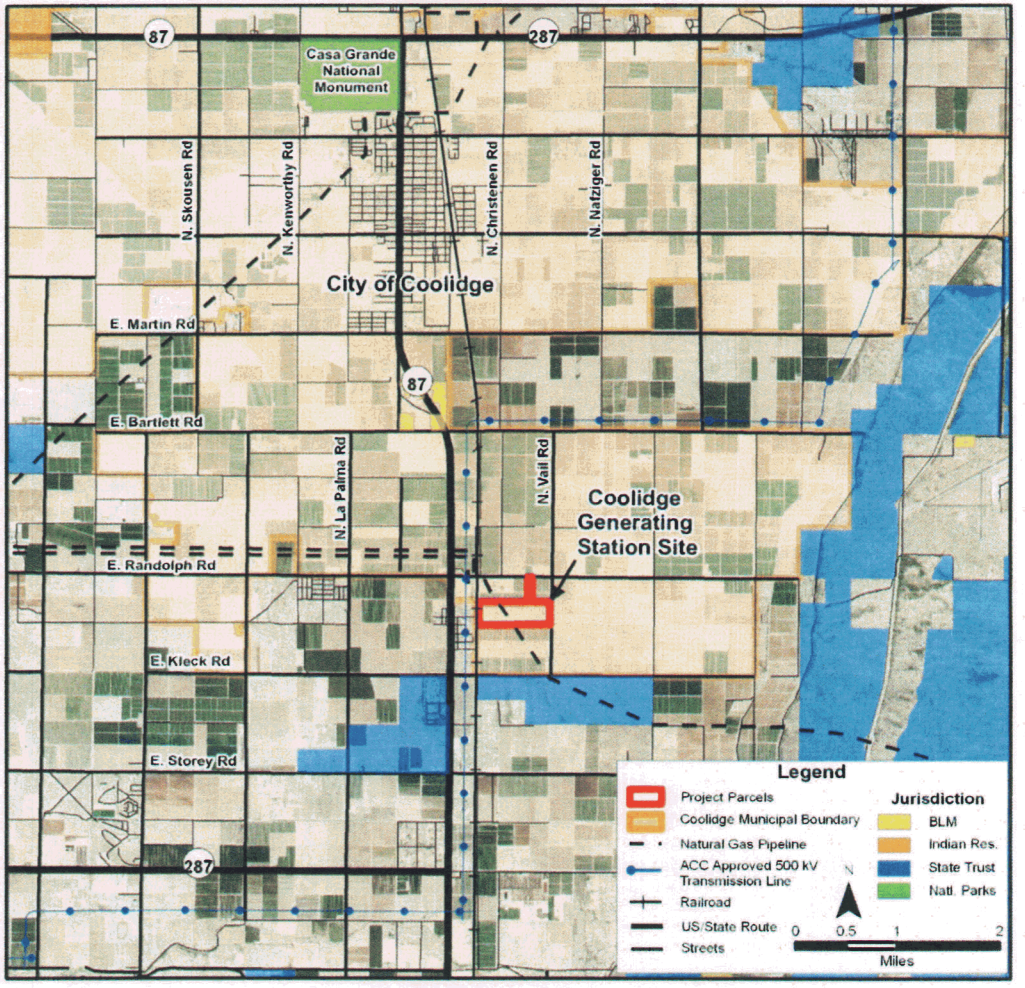
Proposed Project Schedule

- Permitting Phase: Q1 2008 – Q3 2009
- Construction Phase: Q3 2009 – Q2 2010
- Commissioning Phase: Q3 2010 – Q1 2011
- **Commercial Operation Date: May 1, 2011**

TransCanada

Project Location

Located within the City of Coolidge, Pinal County



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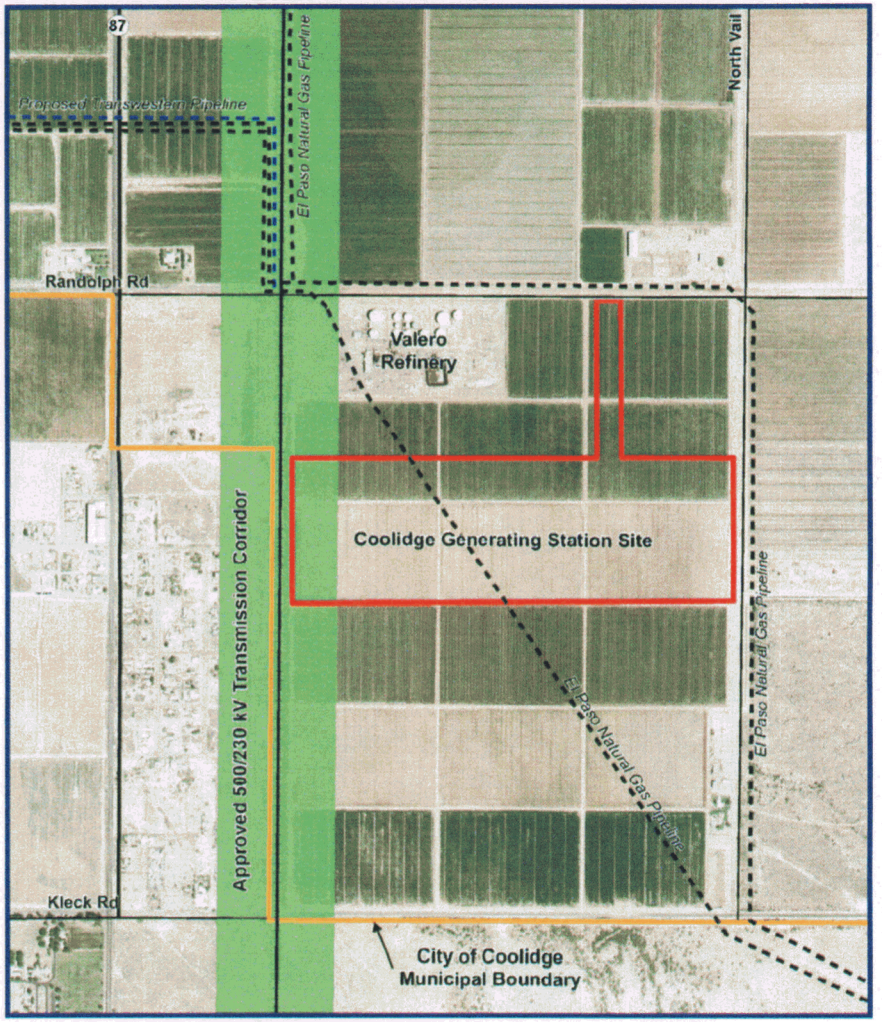
Project Site

- 100 acres of industrial zoned land
- Disturbed agricultural land
- No sensitive habitat
- Proximate access to gas and transmission lines
- Immediately adjacent industrial land use activities



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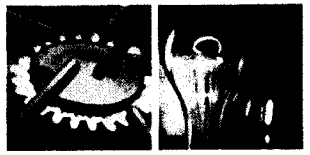
Project Site Advantages



- Selected Project Site to minimize environmental impacts
- Adjacent to existing industrial operations
  - Refinery, interstate pipelines, compressor facility, electrical transmission system, fabrication facility, rail transportation system
- Within City of Coolidge zoned industrial park
- Minimal off-site infrastructure required
  - Adjacent to new high-voltage transmission system
  - 3 interstate gas transportation pipelines serve the area
  - Proven on-site water supply

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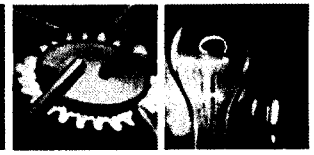
Water Source



- Water will be supplied from on-site wells
- Rights to approximately 276 acre-feet/year of groundwater
  - Type 1 grandfathered rights through conversion of the irrigation grandfathered rights appurtenant to irrigated farmland on Project Site
  - Project recharging 6,000 acre-feet of CAP water in Hohokam Irrigation District
- In any given year, SRP may also provide necessary additional water if additional dispatch required
- Project's entire use of groundwater will be offset with portfolio of recharged renewable CAP water

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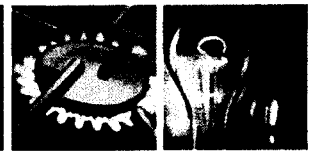
Facility Overview



- 12 X LM6000 simple-cycle gas turbines (no steam turbine)
  - Low water consumption
  - Low air emissions, controlled by state-of-the-art technology
- Associated ancillary equipment (balance of plant)
- Short transmission interconnection to new on-site switchyard
- Quick start – 10 minutes (will qualify as reserve capacity)
- Dispatch expectations: peaking loads, reserve capacity, firming of renewables
- High availability (98% summer and 96% non-summer)

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Project Technology

- General Electric LM6000 turbine technology
- Aircraft derivative / exceptional reliability history
- Relatively small footprint & low stack height
- Requires minimal water
- Low air emissions
- Project to use only clean natural gas fuel (no secondary fuel)
  - Uses least carbon-intensive fossil fuel, in high efficiency technology
  - Produces relatively low greenhouse gas emissions

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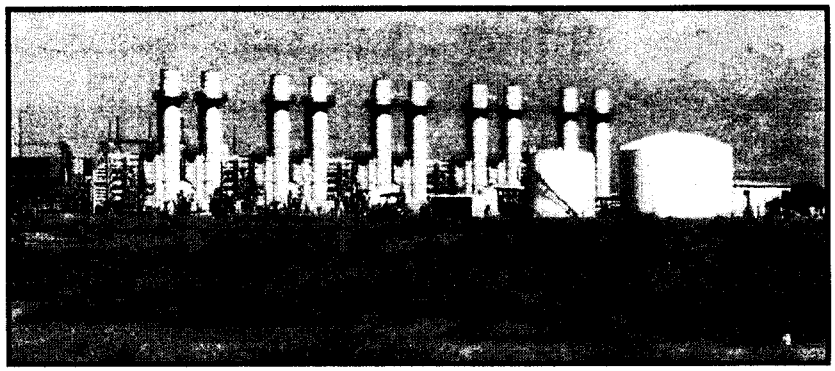
Project Technology (continued)

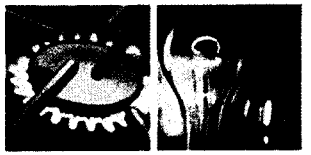
- 12 LM6000s in compact back-to-back configuration
- Same technology as ACC recently approved Northern Arizona Energy Project (4 LM6000s)
- Very similar to nearby Sundance Energy Project (10 LM6000s, but in linear configuration)



Photograph of Existing Sundance Energy Project

TransCanada

Electrical Interconnection



- Project will interconnect to the 230 kV circuit of SRP's Certificated new Pinal West – SEV/Browning 500/230 kV transmission line
  - Immediately adjacent to Project Site
  - Under construction
- Responsibilities for electrical interconnection
  - Applicant: On-site interconnection from generators to new switchyard ("transmission line" – covered by CEC)
  - SRP: New switchyard and loop-in/out interconnection from switchyard to Pinal West – SEV/Browning transmission system (single span not subject to CEC)

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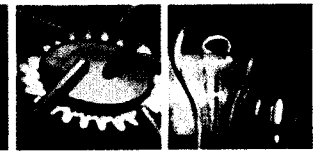
Gas / Fuel Supply

- Project will be fueled solely by pipeline quality natural gas (no secondary fuel)
- SRP will be responsible for purchase and delivery of natural gas fuel supply to Project
- Two independent gas supply sources:
  - Existing El Paso gas pipeline via a new compressor site being constructed just north of Project Site
  - TransWestern Pipeline system is being extended to a location near Project Site
  - Each pipeline independently capable of providing needed Project gas supply

TransCanada

Gas / Fuel Use

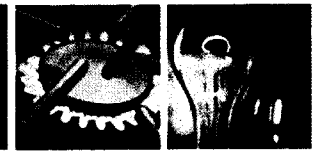


- Project expected to use approximately 5,000 MMBtu/hr
  - Based on design condition of 103°F ambient temperature*
  - Net plant output at this design condition approximately 512 MW

Similar to conditions when peaking plant like Project most likely to run

TransCanada

Water Use



- Water will be used by the Project for two primary purposes:
  1. Minimize the formation of air emissions
     - Water is injected into the CTG combustors to inhibit the formation of air pollutants
  2. Increase fuel efficiency and power output of the CTGs
     - Water is used in an evaporative system to reduce the temperature of the inlet air stream into the turbine to increase mass flow of air
     - The SPRINT system sprays micro-droplets of water into the inter-stage air stream where the droplets evaporate to reduce air temperature and increase the mass flow of air
- Other water use include sanitary, maintenance, and housekeeping

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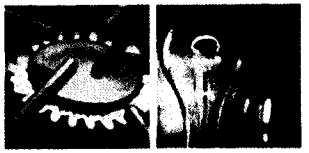
Water Use (continued)



- Project will require approximately 1,250 gpm peak flow from wells into RO/demin treatment system to produce about 900 gpm of process water
- Expected to use approximately 140 acre-feet /year (at likely annual operating profile)
  - 140 acre-feet/year equivalent to irrigating 20-25 acres of alfalfa
  - Project will consume less water than previously used to irrigate the 100-acre Project Site

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Wastewater

- Wastewater peak flow expected to be approximately 435 gpm
- Wastewater streams produced from:
  - RO raw water treatment system reject
  - Turbine inlet air evaporative system bleed-off
- Wastewater piped to the wastewater evaporation ponds
  - Two initial 5-acre ponds (12 feet deep)
  - Two additional ponds may be built if plant operations demonstrate need
  - Ponds designed to meet BADCT requirements of APP
    - Double-lined with leak detection

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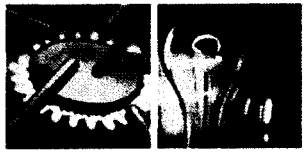
Panel 2 – Environmental Compatibility



Environmental Expert Randy Schroeder

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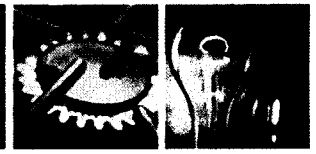
Environmental Compatibility



- Factors to consider in issuing CEC (ARS 40-360.06)
  - Existing plans
  - Fish, wildlife, plants
  - Noise & interference with communication signals
  - Recreation
  - Scenic, historical, archaeological resources
  - Total environment of area
  - Practicability of achieving objectives
  - Costs
  - Biological wealth / rare species habitats
  - Compliance with air / water pollution standards
  - Compliance with other ordinances, plans, regulations

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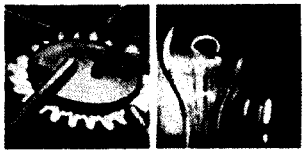
Environmental Compatibility (cont.)



- Consistency with existing plans
  - Consistent with City planning and zoning
    - Project Site is zoned industrial
    - Within City-planned Industrial Park
  - Adjacent to other existing and planned industrial operations
- Fish, wildlife, plants
  - Agricultural land – no native habitats impacted

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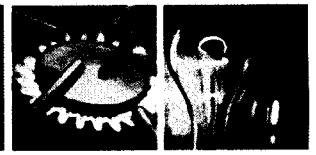
Environmental Compatibility (cont.)



- Noise
  - Local area already influenced by existing noise sources (e.g. Highway 87, railroad, other industrial uses)
  - Project noise at nearest receptors nearly same as background levels
  - Projected noise from Project < 55 dBA at nearest residence (approximately 2200 feet away from the power block / turbines)
- Interference with communication signals
  - None projected

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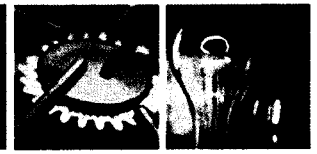
Environmental Compatibility (cont.)

- Public recreation
  - No recreation planned for Site
  - No nearby recreation sites / use affected by Project
- Scenic areas / historic resources
  - Project visually similar to other existing / planned industrial uses in area
  - No known historic / archaeological resources impacted
    - Site previously disturbed by agricultural activities
    - Class I and Class III surveys completed
- Total environment
  - Minimal land use impacts
  - Low water use offset by recharged CAP water
  - Low air emissions, noise impacts, and visual impacts

TransCanada

Environmental Compatibility (cont.)



- Practicability of achieving objectives
  - Technology best suited to meet need for peaking power, reserve capacity and renewable firming
  - Proven technology
  - Proven development and operating capability
- Costs
  - This site helps reduce costs to SRP customers because of limited need for off-site interconnection infrastructure
- Biological wealth / rare species habitat
  - No rare, endangered, or sensitive species affected
  - Agricultural lands – no native habitats

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Environmental Compatibility

- Compliance with air pollution standards
  - Pinal County Air Quality Control District (PCAQCD)
  - Minor Source air permit approval pending
    - Regulatory Permit Limits: 250 T/yr for criteria pollutants
    - Filed application with PCAQCD on August 11, 2008
    - Expect permit by mid-2009
  - Compliant with all applicable district, state, & federal requirements
- Compliance with water pollution standards
  - Seeking Aquifer Protection Permit (APP)
    - Governs evaporation ponds (zero discharge)
    - Pre-application meeting completed
    - Expect permit process to be completed by mid-2009

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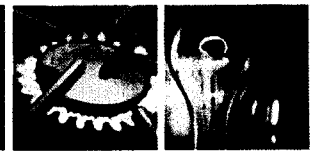
Environmental Compatibility (cont.)



- Compliance with other ordinances, plans, regulations
  - Complies with City planning / zoning
  - Complies with County planning / regulations
  - Complies with State regulations
  - Will comply with all applicable building codes and applicable regulations

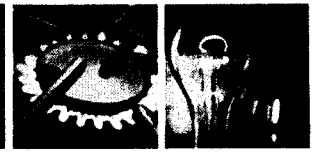
TransCanada

Panel 3 – Public Outreach

Environmental Planner — Kenda Pollio

TransCanada

Public and Stakeholder Involvement



- Three phases of public process:
  - Phase I – Project need, benefit, site location & schedule
  - Phase II – Detailed site layout and pre-permit filing
  - Phase III – Notification of CEC public hearing
- Meeting venues
  - Jurisdictional briefings (state, county, city)
  - Stakeholder workshops
  - Open houses
  - Door-to-door information discussions

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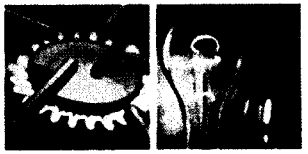
Public and Stakeholder Involvement (cont.)



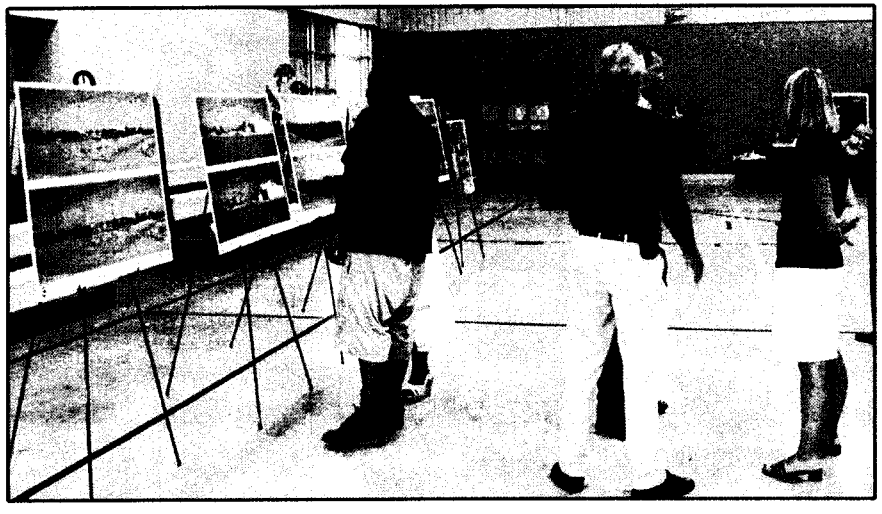
- Additional information tools
  - Brochures or information packages mailed to individuals
  - Project web page www.transcanada.com/coolidge
  - Project toll-free number: 1-866-382-0886
  - Public notices placed in local newspapers
  - Posters in public locations through Coolidge and Randolph
  - Notices mailed to all zip code addresses within 7 mile radius of the site
  - Door-to-door discussions with Randolph residents
  - Second door-to-door discussion with Randolph and all residents within 2 miles

TransCanada

Public and Stakeholder Involvement (cont.)

Phase I – Project need, benefit, site location and schedule

- Jurisdictional briefings (state, county, city) – January 2008
- Stakeholder workshop #1 – February 7, 2008
- Open house #1 – February 28, 2008



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Public and Stakeholder Involvement (cont.)

Phase II – Detailed site layout & pre-permit filing

- Door-to-door – Randolph residents – May 2008
  - Visited 93 houses (spoke with 28 families)
- Jurisdictional briefings (state, county, city) – June 2008
- Stakeholder workshop #2 – June 17, 2008
- Open house and BBQ #2 – June 30, 2008
- Presentation to four southern tribes – July 25, 2008

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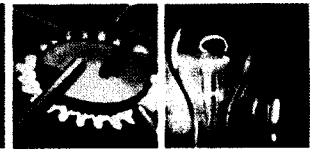
Public and Stakeholder Involvement (cont.)

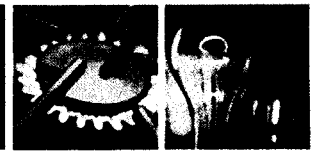


Phase III – CEC Hearing

- Sign notification on Project Site
- Door-to-door notification of the CEC hearing
  - Community of Randolph and all houses within 2 miles of the Project Site
    - Visited approximately 400 homes

TransCanada

Public and Stakeholder Involvement (cont.)



- Results to date:
  - Letter of support from City of Coolidge
  - Letter of support from Pinal County Economic Development Foundation
  - Positive public comments
  - Public questions about Project addressed
  - No known public opposition raised to date

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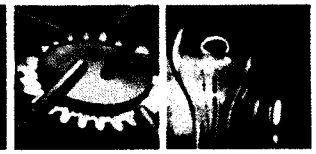
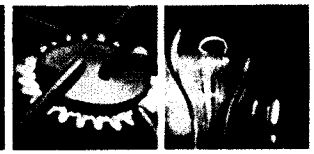
Summary



- Needed to serve Arizona load
- 100% dedicated to Arizona utility (SRP) dispatch
- Appropriate for the industrial-area site selected
- Engineered & located to minimize impacts on the environment
- Supported by local government
- Extensive public outreach found no known opposition

TransCanada

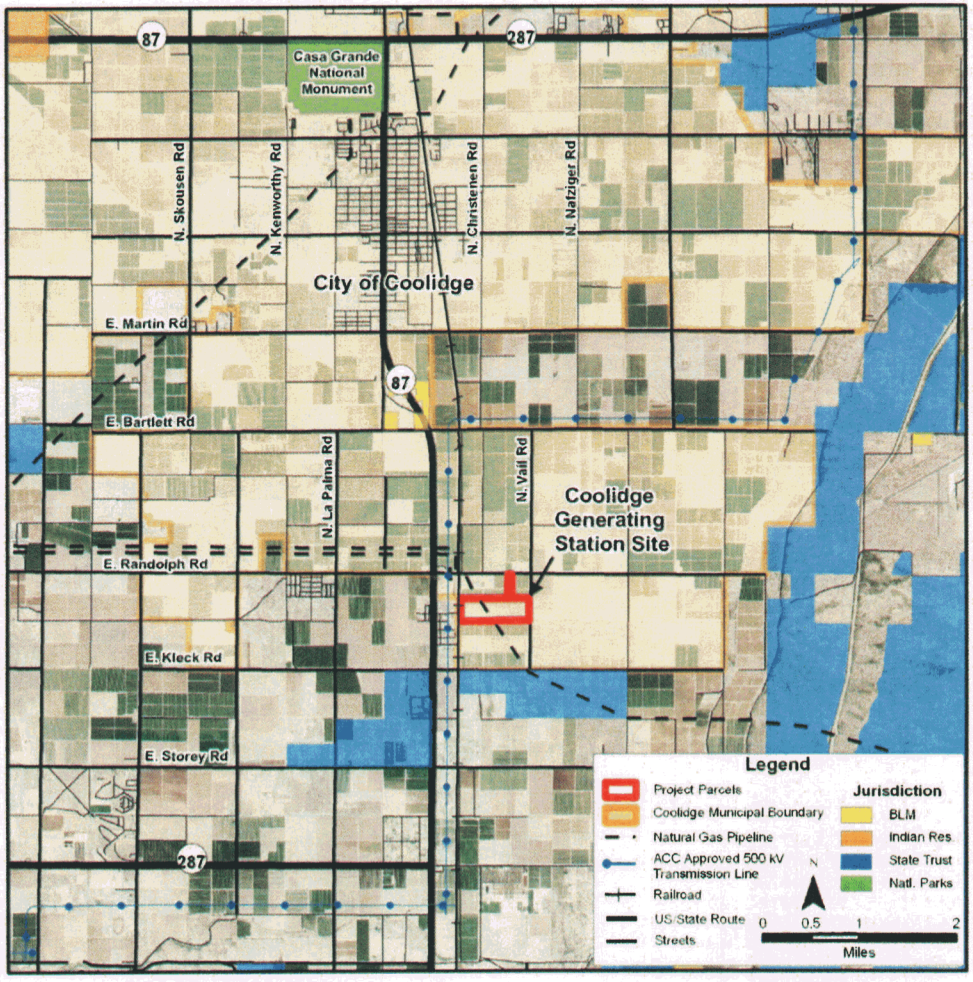
Conclusion



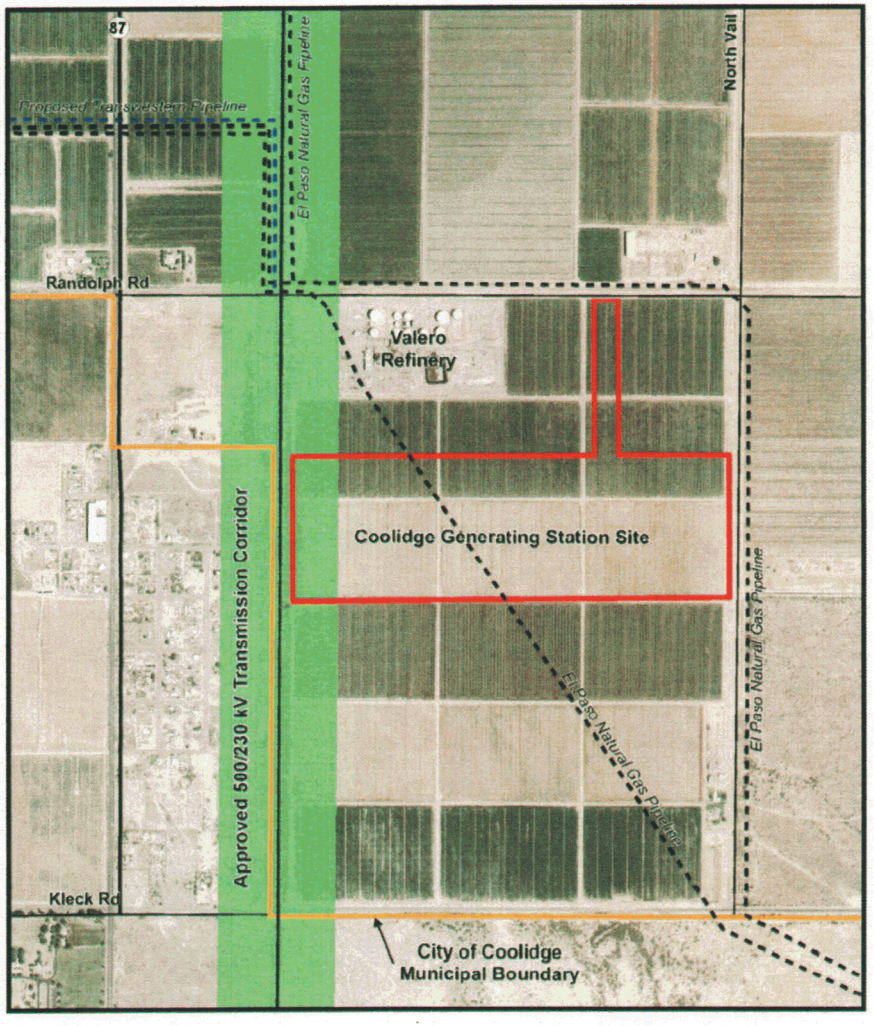
Applicant respectfully requests the issuance of a Certificate of Environmental Compatibility for the Coolidge Generating Station Project

TransCanada

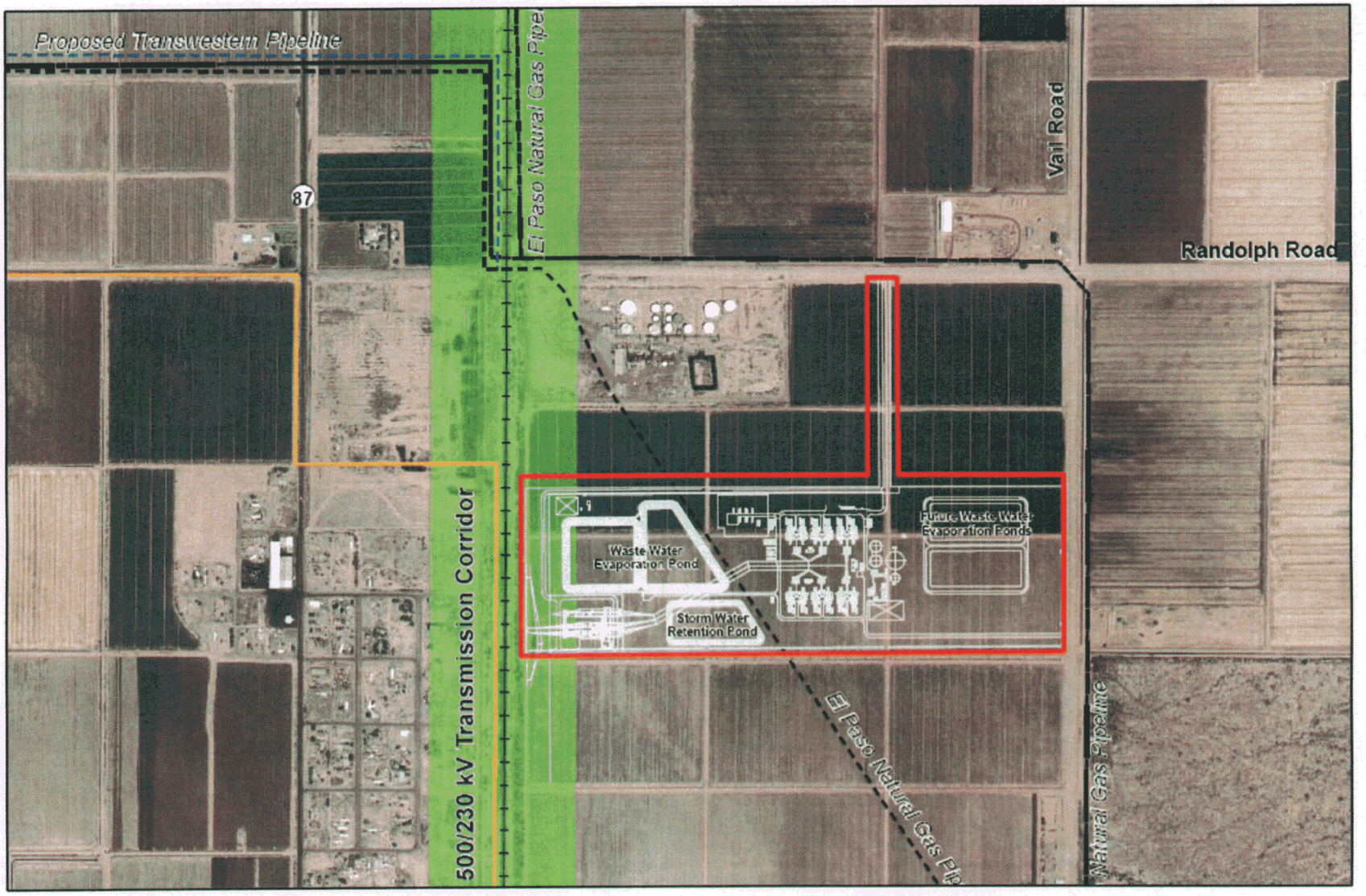
Regional Aerial View

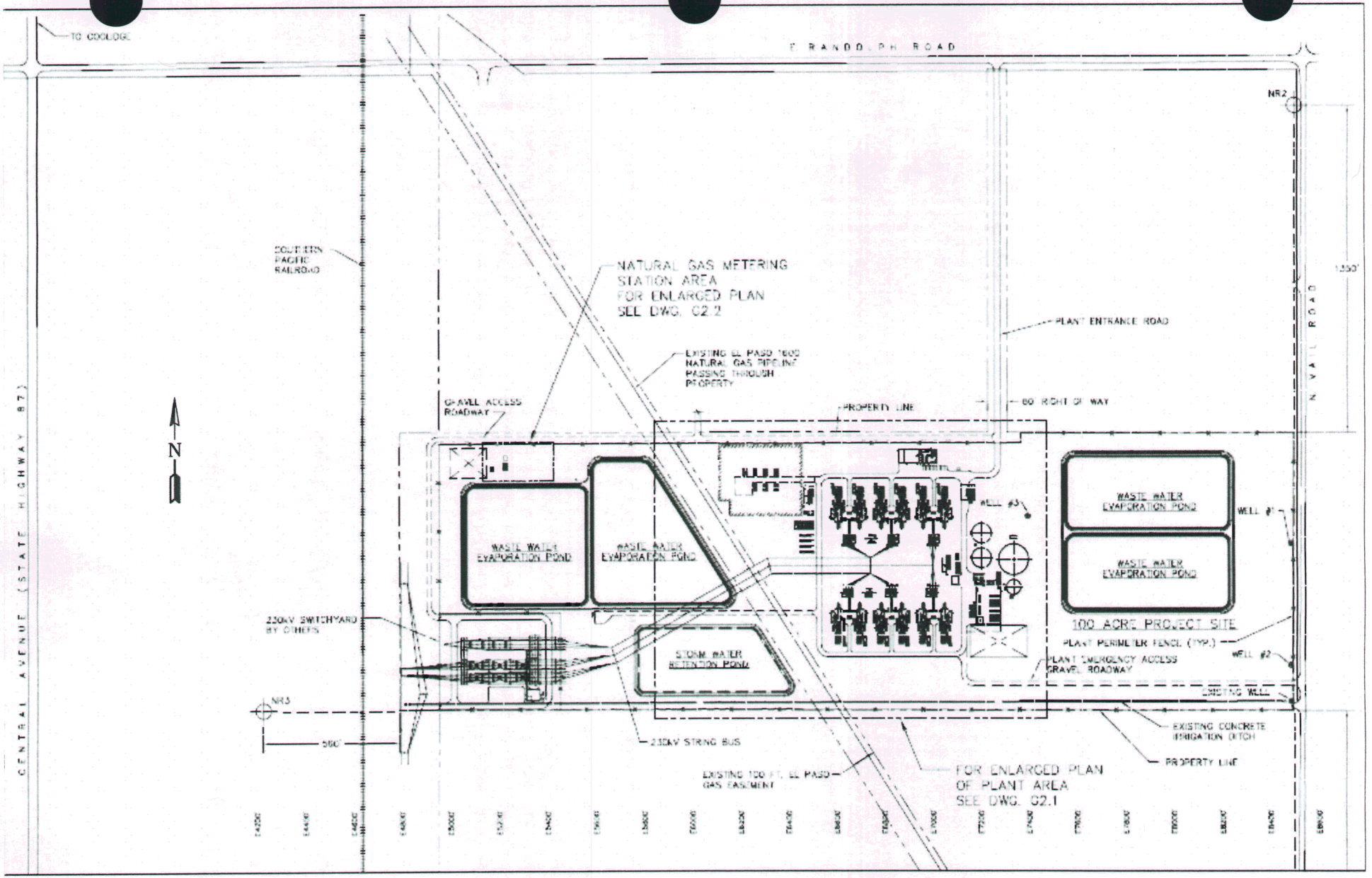


Site Location



Site Location

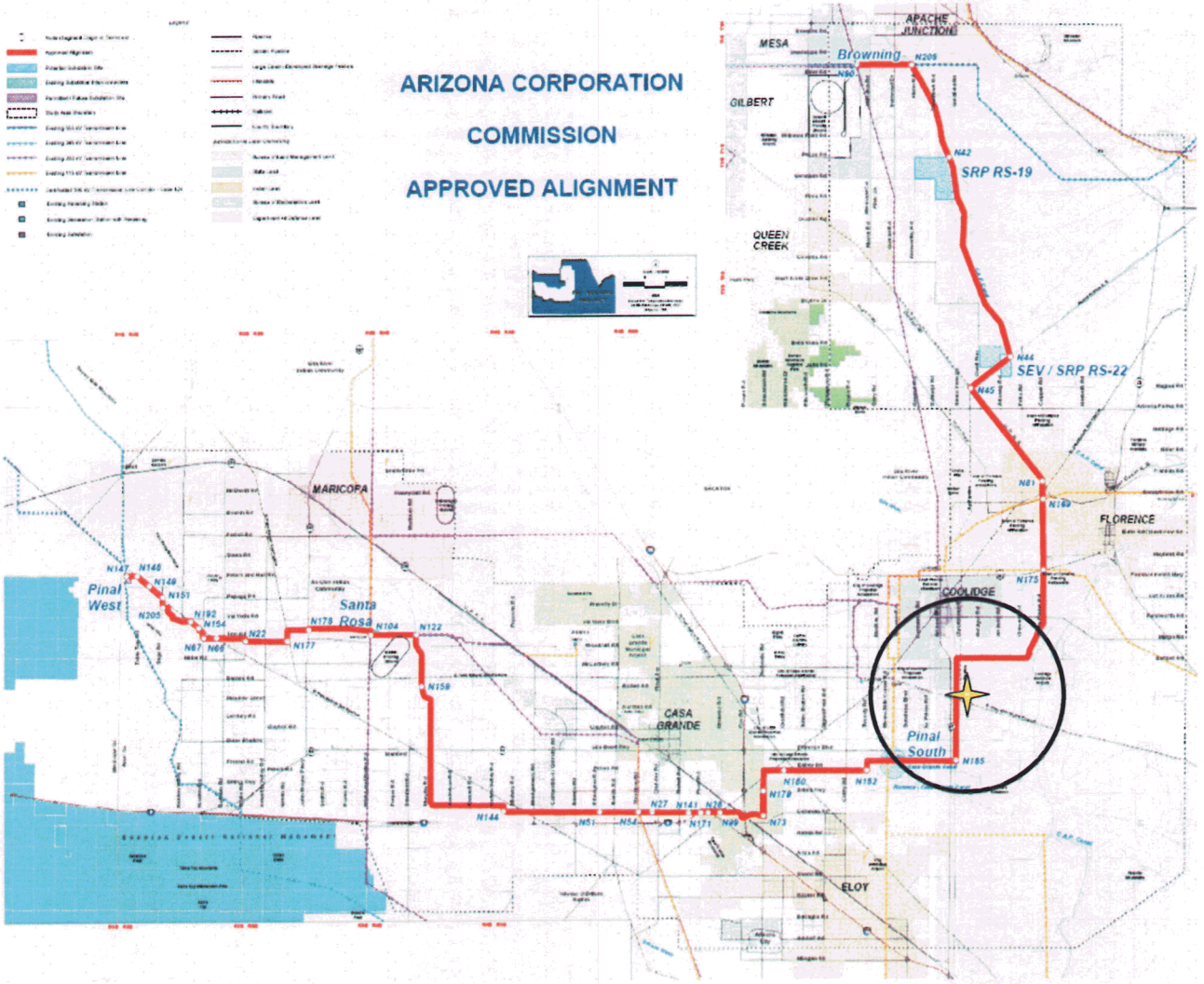




Coolidge Generating Station

Site Layout

Location Relative to SRP Pinal West – Southeast Valley 500/230kV Transmission Line



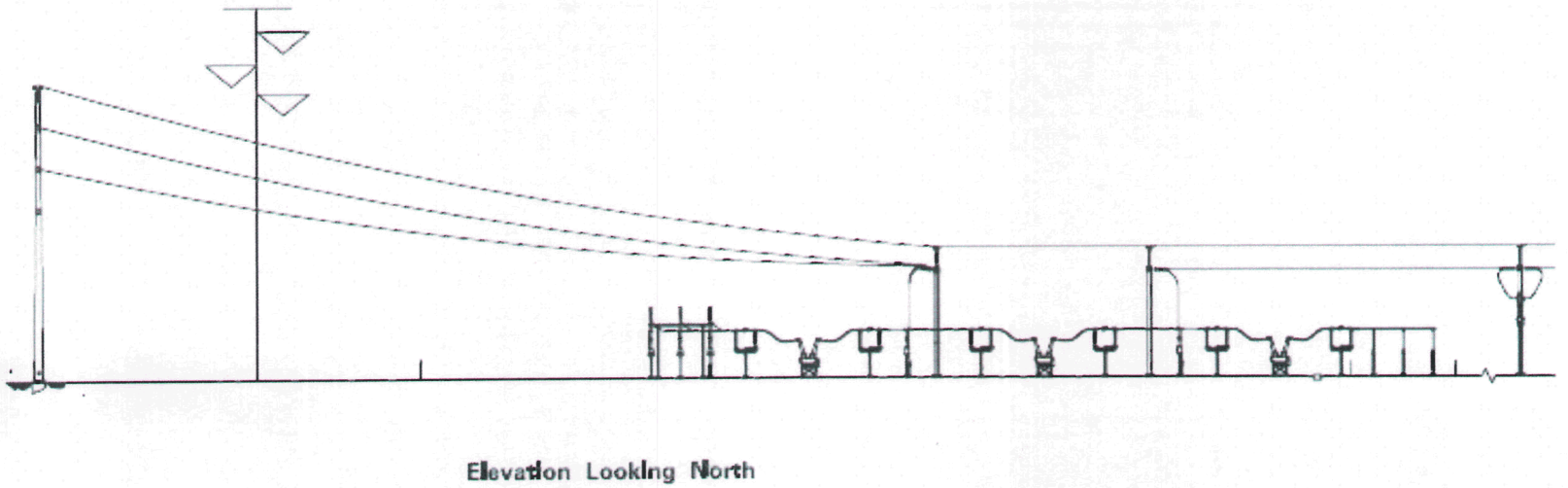


Figure 4-5

Elevation Drawing

Randolph Switchyard and Transmission Interconnection

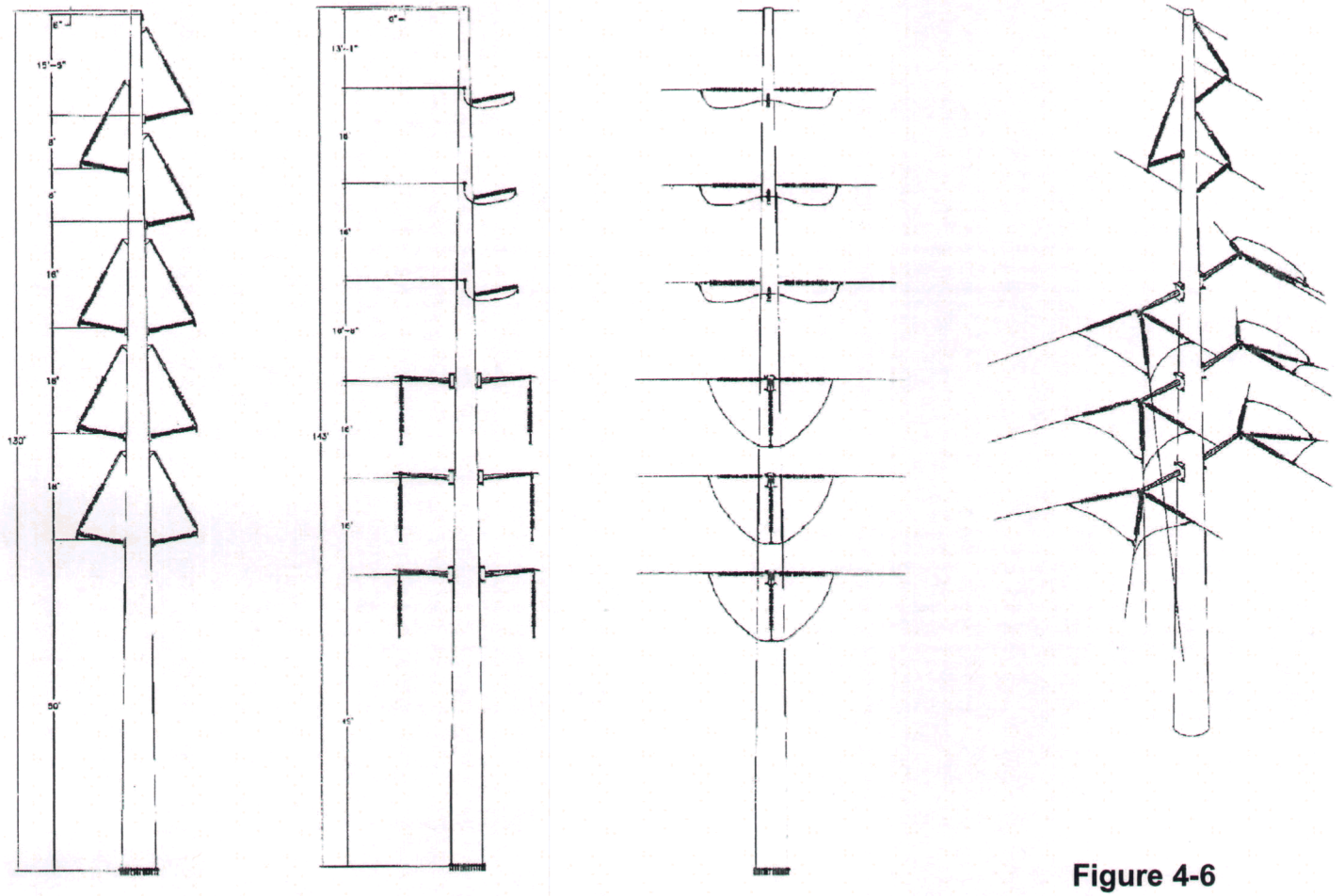
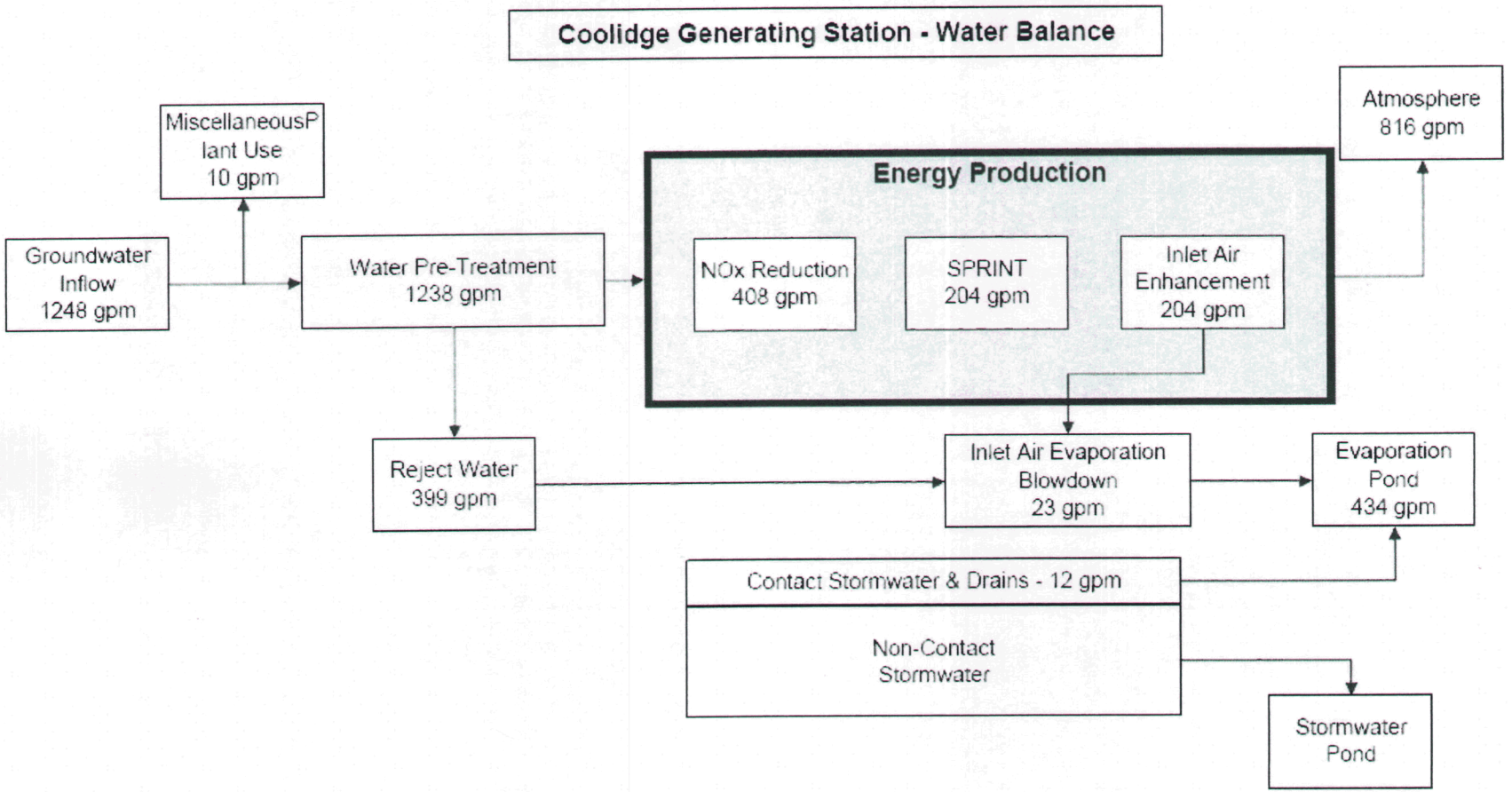
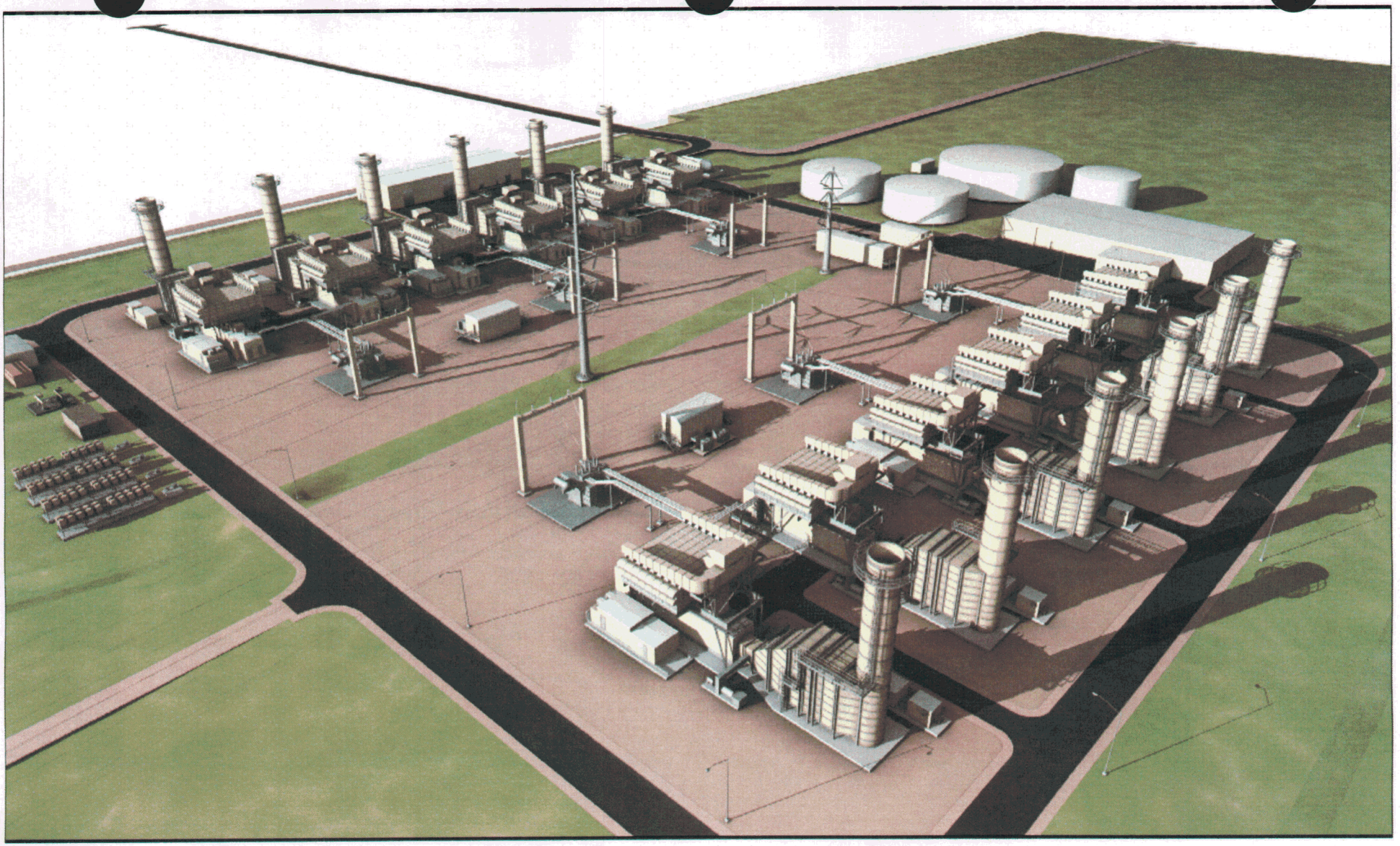


Figure 4-6

Transmission Interconnection Structures
GSU to Switchyard


Coolidge Generating Station - Water Balance
MiscellaneousP lant Use 10 gpm
Groundwater Inflow 1248 gpm
Water Pre-Treatment 1238 gpm
Energy Production
NOx Reduction 408 gpm
SPRINT 204 gpm
Inlet Air Enhancement 204 gpm
Atmosphere 816 gpm
Reject Water 399 gpm
Inlet Air Evaporation Blowdown 23 gpm
Evaporation Pond 434 gpm
Contact Stormwater & Drains - 12 gpm
Non-Contact Stormwater
Stormwater Pond



Coolidge Generating Station
Project Visual Rendering

Existing View
Traveling South on Highway 87

Visual Simulation
Traveling South on Highway 87

Existing View

Corner of Randolph Road and Vail Road

Visual Simulation

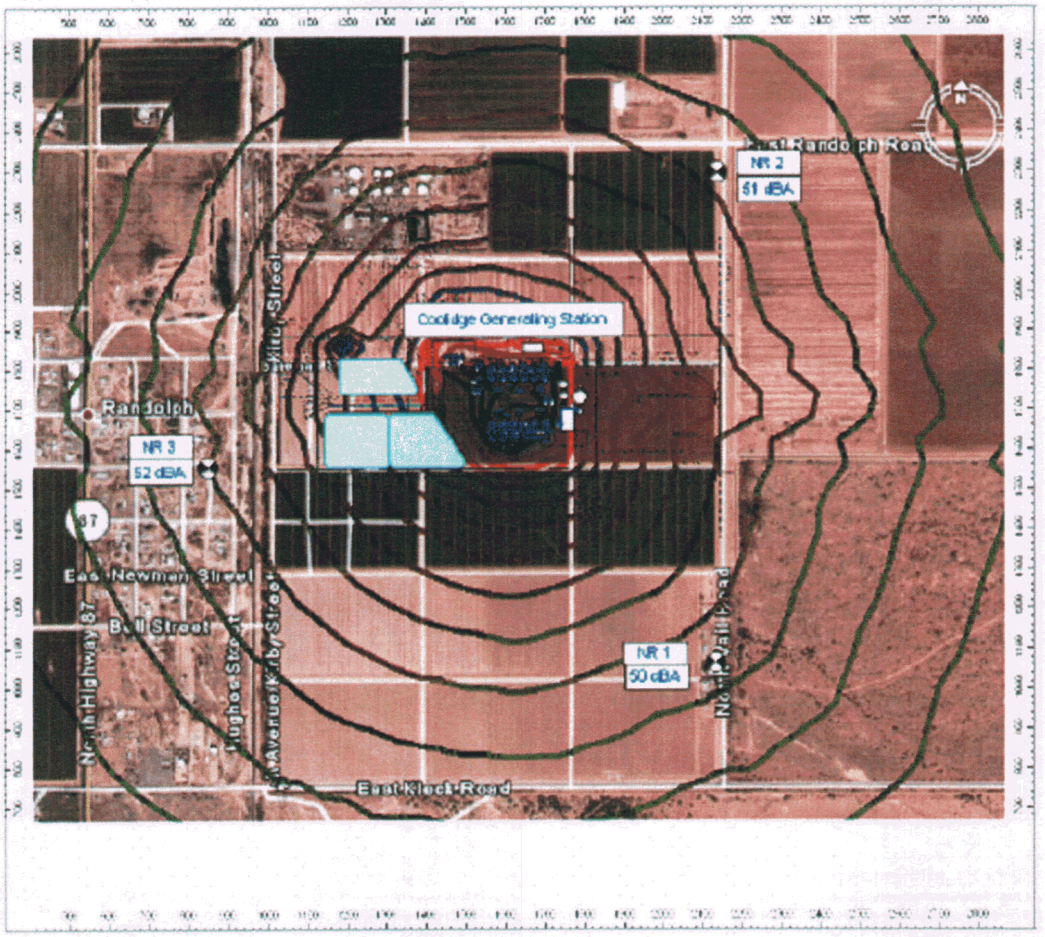
Corner of Randolph Road and Vail Road

Existing View

Corner of Highway 87 and Bateman Street

Visual Simulation

Corner of Highway 87 and Bateman Street

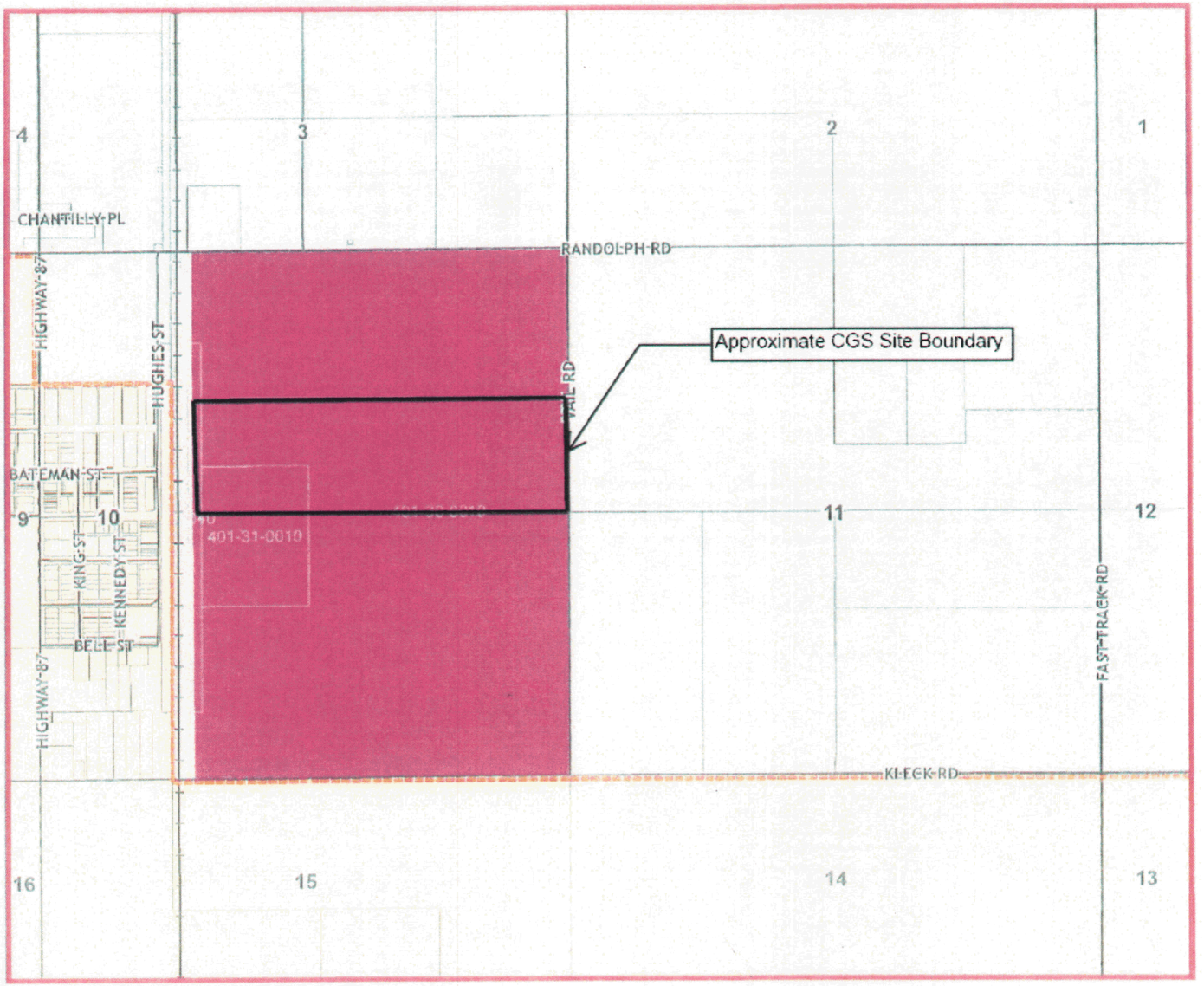


Noise Modeling Results

Table I-1
Examples of Sound Levels in dB from Various Locations

Location	Sound Level (dB)
Inside an Average Residence	45
Light Traffic at 100 feet	50
Inside a Private Business	52
Inside a Large Store	60
Traffic near a Freeway	65
Normal Conversation (@ 3 feet)	65
Freight Train at 100 feet	75

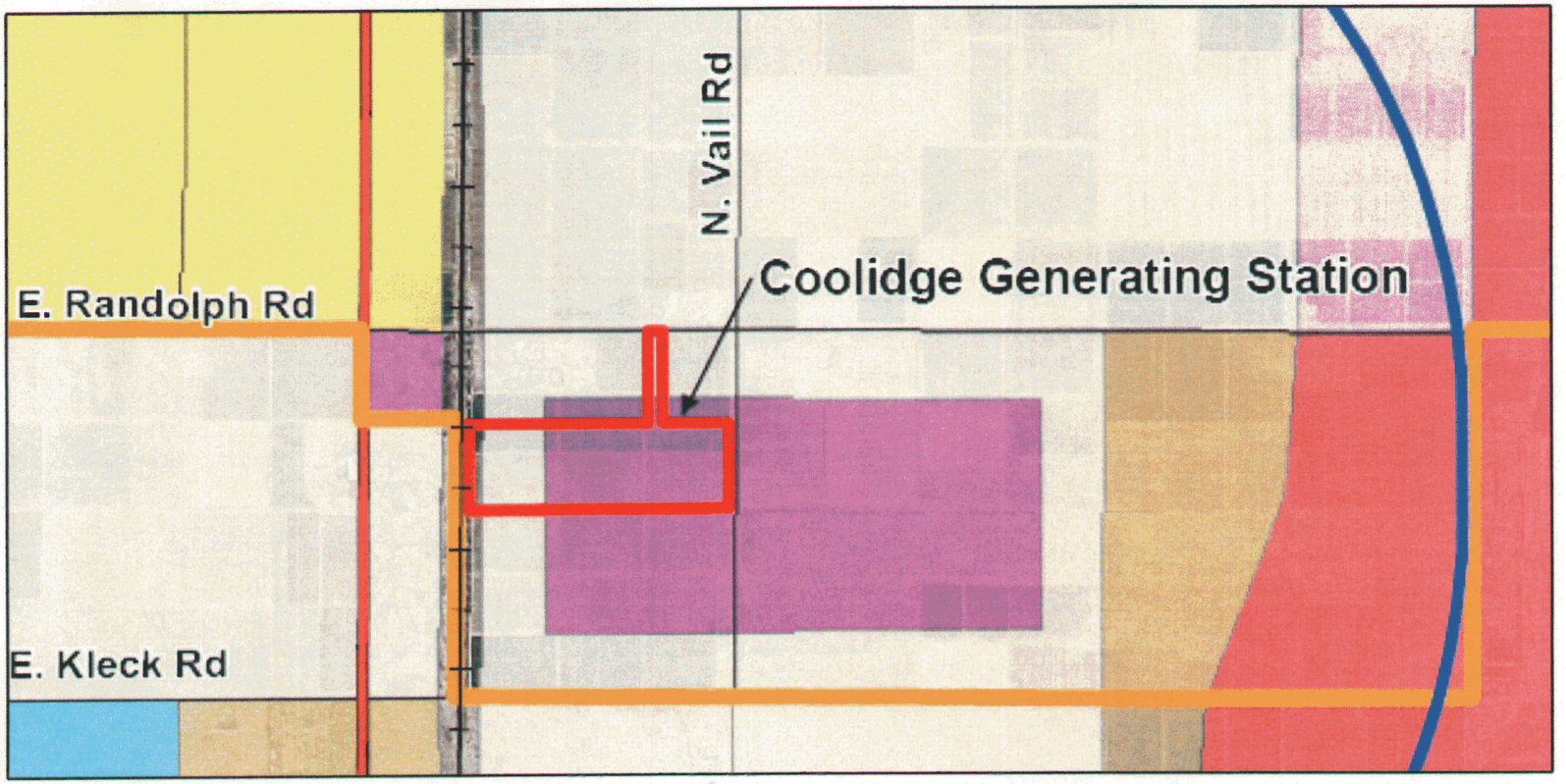
Source: EPA 1974



Area Zoned Industrial by City of Coolidge

Zoning Case # 08-04-011

Approved 6/9/08

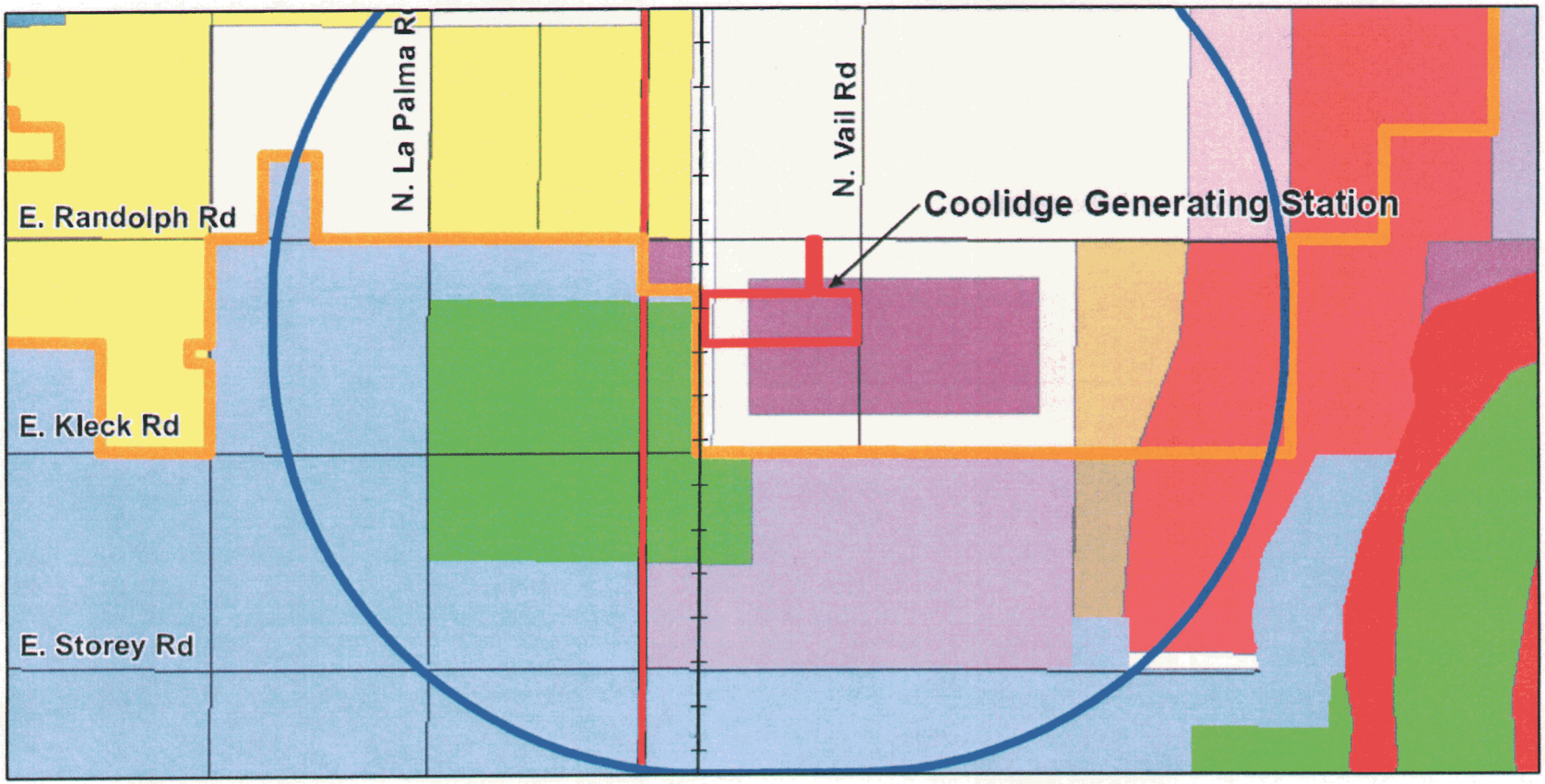


City of Coolidge Land Use Plan

12/2007

City of Coolidge Land Use Plan

- Low Density Single Family
- Very Low Density Single Family
- Medium Density Single Family
- Low Density Multi-Family
- Medium Density Multi-Family
- Master Planned Community
- Mixed Use
- Commerce Park
- Industrial
- Neighborhood Commercial
- Regional Commercial
- Regional Mixed Use



Pinal County
Land Use Plan
2007

Pinal County Land Use

- Industrial
- Natural Resource
- Rural
- Rural Community
- Transitional

John D. Coggins
Manager, Resource Planning and Development

Mail Station ISB669
PO Box 52025
Phoenix, AZ 85072-2025

September 23, 2008

Docket Control
Arizona Corporation Commission
1200 W. Washington
Phoenix, AZ 85007

Re Application of Coolidge Power Corporation, Arizona Corporation Commission Docket No. L-00000HH-08-0422-00141 (Case No. 141)

Dear Sir/Madam

I am writing on behalf of Salt River Project Agricultural Improvement and Power District ("SRP") in support of the Application filed by Coolidge Power Corporation for a Certificate of Environmental Compatibility ("CEC") in Case No. 141. The Application seeks a CEC for the Coolidge Generating Station, a nominally-rated 575 MW natural gas-fired, simple cycle peaking plant. SRP has entered into a 20-year power purchase agreement for all of the output from the facility.

Due to the dramatic growth in SRP's central Arizona service territory over the past several years and the anticipated continuing growth over the next decade and beyond, SRP has identified and announced a need for up to 2,500 MW of intermediate and peaking generation to meet its customers' electricity requirements. While current growth has slowed due to recent changes in the economy, SRP estimates the overall impact of the slowdown will be to delay the full amount of this need by about one to two years (from 2020 to 2021 or 2022).

SRP's most immediate resource need is for quick-start peaking generation, for several reasons. First, in addition to electricity demand driven by population growth, SRP has seen a significant increase in individual customer usage primarily due to larger homes and increased use of electronics. This increase in individual customer usage occurs in large part during times of peak electrical demand for SRP's system. Second, quick start peaking generation helps to ensure resource availability and increases system reliability during peak times when the system is particularly stressed. Third, multiple quick-start units will allow SRP to more efficiently follow its load over the course of a day. Fourth, quick-start peaking generation provides a reliable backup for

EXHIBIT
A-7
admitted

renewable wind and solar generation, which SRP is continuing to add to its resource portfolio.

Although the Coolidge Generating Station meets only a portion of SRP's anticipated needs for new peaking generation, it is a necessary component of SRP's plans to meet those needs. In addition, the Coolidge Generating Station will provide other benefits to SRP due to its location in the Coolidge area adjacent to the already sited Pinal West to SEV/Browning Transmission Project. The facility will interconnect at the 230 kV level and will provide voltage support to the local area and to SRP's transmission and distribution system in Pinal County.

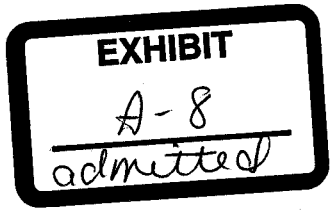
If you have any questions, please feel free to contact me.

Sincerely,

John D. Coggins
Manager, Resource Planning and Development

cc: John Foreman

a



AGREEMENT BETWEEN HOHOKAM IRRIGATION AND DRAINAGE DISTRICT AND COOLIDGE POWER CORPORATION PROVIDING FOR THE DELIVERY OF IN-LIEU WATER FOR WATER STORAGE AT A GROUND WATER SAVINGS FACILITY

PARTIES

This Agreement is made this 13th day of August, 2008, by and between HOHOKAM IRRIGATION AND DRAINAGE DISTRICT, an irrigation district formed in accordance with the provisions of A.R.S. §§ 48-2901, *et seq.*, ("Hohokam") and COOLIDGE POWER CORPORATION, ("Coolidge" or "Storer") a Delaware corporation, for the delivery, storage and possible future recovery of In-Lieu Water at a Groundwater Savings Facility owned by Hohokam pursuant to A.R.S. § 45-801.01 et seq.

RECITALS

WHEREAS:

A. Storer desires water resources to be available to address the water needs of its future operations.

B. Hohokam possesses a Groundwater Savings Facility Permit from the Arizona Department of Water Resources authorizing the storage of fifty-five thousand acre-feet per year (55,000 AFY) of Central Arizona Project ("CAP") water.

C. Storer is or will be a party to one or more contracts with the Central Arizona Water Conservation District ("CAWCD") enabling it to purchase CAP Water.

D. Storer desires to deliver CAP Water to Hohokam at its Groundwater Savings Facility for which Storer holds or will hold a Water Storage Permit.

E. Hohokam provides water for agricultural use to farmers and agribusiness within Pinal County and desires to use CAP Water for its irrigation needs in order to reduce its Pumped Water use, in accordance with its Groundwater Savings Facility Permit.

F. Hohokam desires to purchase CAP Water from Storer and Storer desires to sell to Hohokam such CAP Water under the terms and conditions herein.

AGREEMENT

NOW, THEREFORE, for and in consideration of the mutual covenants set forth herein, Storer and Hohokam agree to the following terms and conditions:

1. Definitions.

1.1. "ADWR" shall mean the Arizona Department of Water Resources.

1.2. "CAP Water" shall mean the Central Arizona Project water that Storer has the legal right to purchase and use.

1.3. "CAWCD" shall mean the Central Arizona Water Conservation District.

1.4. "Delivery" or "Delivered" shall mean CAP Water purchased by Storer, made available in the CAWCD canal in quantities and on delivery dates requested by Hohokam at the designated point specified by Hohokam and received by Hohokam.

1.5. "Effective Date" shall be the date immediately prior to the date of first Delivery of In-Lieu Water to Hohokam.

1.6. "Facility Permit" shall mean Permit No.72-534489.0003 issued by ADWR to Hohokam to operate a Groundwater Savings Facility pursuant to A.R.S. § 45-801.01 *et seq.*, and any amendments or supplements thereto.

1.7. "Groundwater Savings Facility" shall mean a Groundwater Savings Facility pursuant to A.R.S. § 45-812.01, for which a Facility Permit has been issued.

1.8. "Hohokam" shall mean Hohokam Irrigation and Drainage District.

1.9. "In-Lieu Water" shall mean CAP Water meeting the definition contained in A.R.S. § 45-802.01 (9), purchased by Storer for Delivery to Hohokam under this Agreement.

1.10. "Long-Term Storage Credits" shall have the same meaning as defined in A.R.S. § 45-802.01 and further means those credits accrued by Storer through the storage of In-Lieu Water pursuant to this Agreement, as determined by the requirements of A.R.S. § 45-852.01.

1.11. "Long-Term Storage Account" means an account established pursuant to A.R.S. § 45-852.01.

1.12. "Pumped Water" shall mean water withdrawn from any of the wells within Hohokam's Service Area.

1.13. "Service Area" shall mean Hohokam's service area as shown on Exhibit "A" which is attached to this Agreement.

1.14. "Storer" shall mean Coolidge Power Corporation, a Delaware corporation authorized to do business in the state of Arizona.

1.15. "Water Storage Permit" shall mean the permit issued by ADWR to Storer for storage of In-Lieu Water at the Groundwater Savings Facility pursuant to A.R.S. § 45-801.01 *et seq.*

2. Obligations of Hohokam.

2.1. Purpose of Use. Hohokam shall use the In-Lieu Water Delivered under this Agreement for agricultural irrigation, to replace, on a gallon-for-gallon basis, Pumped Water within the Service Area.

2.2. Quantity of In-Lieu Water. Hohokam shall accept Delivery of any and all In-Lieu water ordered by Storer on Hohokam's behalf in accordance with this Agreement. To the extent that In-Lieu Water is available in 2008, Storer shall purchase from CAWCD up to six thousand acre-feet (6,000 AF) of In-Lieu Water in quantities and on delivery dates scheduled by Storer at the request of Hohokam during the term of this Agreement, unless otherwise mutually agreed in writing, and its delivery shall be directed to Hohokam. Any such purchase and

Delivery of In-Lieu Water shall be subject to the terms and conditions of the applicable Facility and Water Storage Permits issued by ADWR.

2.2.1 In the event that Hohokam orders In-Lieu Water but then refuses delivery of the same, Hohokam shall pay to Storer its cost of the In-Lieu Water purchased from CAWCD in accordance with Subsection 2.2 of this Agreement, less any reimbursement received by Storer for undelivered in-Lieu Water from CAWCD. Any such payment shall be made by Hohokam to Storer within thirty (30) days from the date of an invoice or statement prepared by Storer that lists the quantity of undelivered In-Lieu Water and the reimbursement from CAWCD, together with all appropriate supporting documentation.

2.3 Monthly Meter Reading. All In-Lieu Water Delivered pursuant to this Agreement shall be measured with equipment furnished and installed by CAWCD and operated and maintained by CAWCD in accordance with ADWR standards and requirements. The results of such measurement shall be subject to monitoring and verification, in cooperation with Hohokam, from time to time by Storer.

2.4 Points of Delivery. Hohokam shall take Delivery of the In-Lieu Water at the Hohokam CAP Turnout(s).

2.5 Water Quality Standard. Hohokam shall be responsible for meeting all applicable federal, state, or local water quality standards for its use of the In-Lieu Water and may decline to take Delivery of any In-Lieu Water Hohokam determines to be unsuitable for irrigation use under said standards. In-Lieu Water determined to be unsuitable for irrigation shall not be subject to the payment obligations of Sections 2.7 and 3.5, except to the extent Hohokam takes Delivery of the In-Lieu Water.

2.6 In-Lieu Water Charge Per Acre-Foot.

2.6.1 Hohokam shall pay Storer Twenty-five Dollars ($25) per acre-foot for In-Lieu Water Delivered ("Base Water Price") during calendar year 2008.

2.6.2 In determining the amount of In-Lieu Water Delivered that Hohokam pays for, no deduction shall be made for system losses in Hohokam's distribution system as may be recognized in the Facility Permit, Arizona state law, or applicable rules, regulations or orders of ADWR.

2.7 Maintenance of Records; Reporting. Hohokam shall maintain all records and accounts of deliveries, storage and uses of the In-Lieu Water under this Agreement. Hohokam shall provide Storer all records, accounts, reports, and plans necessary for Storer to file any reports or other documentation required under the terms of its Water Storage Permit. Hohokam shall file all reports and documentation required under the Facility Permit. Copies of all such records, accounts, reports, plans or other documents shall be made available to Storer.

2.8. Ineligible In-Lieu Water. If Storer fails to receive Long-Term Storage Credits for Delivered In-Lieu Water due to reasons within Hohokam's control, Hohokam shall pay to Storer the actual costs incurred by Storer for such ineligible Delivered In-Lieu Water. As used herein, the term, "Hohokam's control" specifically excludes actions by Hohokam's landowners who, for whatever reason, fail to file annual groundwater withdrawal and use reports with ADWR, provided, however that Hohokam shall use reasonable efforts to persuade any such landowner to file such annual reports.

2.9. Interruptibility of In-Lieu Water Deliveries: Curtailments. Hohokam acknowledges the interruptible nature of the In-Lieu Water supply to be furnished under this Agreement. Storer shall not be liable for any damages to Hohokam resulting from curtailment, interruptions, discontinuances or reductions in supply or undeliverable water that are beyond the control of Storer. Hohokam shall only be obligated to pay the fees set forth in Sections 2.7 hereof for the amount of the actual In-Lieu Water Delivered to Hohokam's CAP turnout(s).

2.10. Interference with Contract. Subject to the limitations of Section 2.2, nothing herein shall preclude Hohokam from entering into agreements to accept water and/or effluent for storage by others; provided, however, any such agreement executed after the effective date of this Agreement shall not contain a scheduling priority higher than that of Storer.

3. Obligations of Storer.

3.1. Water Storage Permit. Storer shall be responsible for securing and maintaining a Water Storage Permit as a condition precedent to any In-Lieu Water being delivered to the Groundwater Savings Facility.

3.2. Delivery of In-Lieu Water. During the term of this Agreement, Storer shall order and arrange for the Delivery of mutually agreed upon amounts of In-Lieu Water to be delivered through the CAP aqueduct to Hohokam. Storer shall provide administrative assistance reasonably required to achieve Delivery of any ordered In-Lieu Water to Hohokam.

3.3. Quality of In-Lieu Water. Storer makes no representations or warranties as to the quality of any In-Lieu Water Delivered hereunder and is under no obligation to construct or furnish water treatment facilities to maintain or improve the quality of any In-Lieu Water Delivered pursuant to this Agreement.

3.4. Billing. Upon receipt of a monthly statement from CAWCD indicating the amount of In-Lieu Water billed to Storer, Storer shall issue a bill to Hohokam monthly for the In-Lieu Water to be delivered under this Agreement. The bill will be for the actual amount of In-Lieu Water for which Storer has been billed by CAWCD, times the In-Lieu Water Charge set forth in Section 2.6. The amount billed shall be paid within thirty (30) days from the date of the bill.

3.5. Accounting. Within thirty (30) days of Storer's receipt of its Long-Term Storage Account report from ADWR reflecting the In-Lieu Water stored pursuant to this Agreement, Storer shall prepare an accounting of all In-Lieu Water ordered and Delivered to Hohokam and all payments for In-Lieu Water paid by Hohokam under Section 3.4, and any adjustment thereto, pursuant to Subsections 2.2.1, 2.5, 2.8 and 2.9 of this Agreement. Within thirty (30) days of Hohokam's receipt of said accounting, Hohokam shall pay to Storer any additional amounts that may be due to Storer, or Storer shall refund to Hohokam any overpayments made by Hohokam.

3.6. Accrual of Credits. Pursuant to its Water Storage Permit, Storer shall accrue Long-Term Storage Credits in its Long-Term Storage Account for the In-Lieu Water Delivered to Hohokam and may use them at its sole discretion. Storer shall notify Hohokam of the applicable Storage Account number within thirty (30) days of receipt by Storer.

3.7. No Interference with Hohokam. Nothing herein shall be construed to require Hohokam to construct or replace any facility to take, deliver or recharge In-Lieu Water under this Agreement. Notwithstanding the foregoing, Hohokam shall be obligated to pay any costs incurred by Storer for In-Lieu Water as a result of Hohokam's failure to take delivery of such

In-Lieu Water due to Hohokam's decision not to construct or replace any facility necessary to take delivery of such In-Lieu Water.

4. Recovery of Long-Term Water Storage Credits.

4.1. Recovery of Credits. Storer may recover its Long-Term Storage Credits from any location and at any time as may be permitted by Arizona law.

5. Term and Termination.

5.1. Term. Subject to the provisions of Subsection 5.5 of this Agreement, this Agreement shall be deemed to be effective as of the Effective Date as defined in Paragraph 1.5

5.2. Storer's Termination Right. Subject to the provisions of Subsection 5.5 of this Agreement:

5.2.1 In the event that Storer cannot secure In-Lieu Water, Storer is no longer eligible to obtain Long-Term Storage Credits, or it is impracticable or not feasible due to regulatory or financial reasons, including but not limited to changes in ADWR's current calculation of the accrual of Long-Term Storage Credits for Groundwater Savings Facilities, Storer may terminate its storage of In-Lieu Water under this Agreement without further obligation upon written notice to Hohokam.

5.3. Hohokam's Termination Right. Subject to the provisions of Subsection 5.5, in the event that Hohokam is unable to utilize In-Lieu Water due to regulatory changes, unsuitability of water for irrigation, weather conditions, Acts of Nature or God, flooding, crop failure or other natural disaster, Hohokam may terminate this Agreement without further obligation or consequence upon written notice to Storer, provided that Hohokam pays Storer for all costs incurred by Storer for the In-Lieu Water ordered under Subsections 2.3 and 3.2 of this Agreement, but not Delivered.

5.4. Insolvency or Bankruptcy. Notwithstanding any of the above, Storer shall have the right to terminate this Agreement in the event that Hohokam becomes insolvent or initiates bankruptcy proceedings, loses its Facility Permit or fails to meet its operating or Groundwater Savings Facility plan of operation.

5.5. Survival of Storer's Recovery Rights. Any termination under this Section 5, or any expiration of this Agreement under the terms and conditions set forth herein, shall not affect the recovery of Storer's Long-Term Storage Credits from within Hohokam's Service Area

6. Assignment.

6.1. Assignment by Storer. Storer may assign all or a portion of its obligations and rights under this Agreement to any successors or assigns without prior written consent of Hohokam, provided that each such successor-in-interest or assignee is bound by each and every term and condition of this Agreement applicable to Storer, and provided further that Hohokam shall not be obligated to recover Long-Term Storage Credits on behalf of any such assignee unless Hohokam and the assignee agree otherwise.

6.2. Assignment of Long-Term Storage Credits. Storer, in its sole discretion, may assign its Long-Term Storage Credits without prior consent of Hohokam, provided that Hohokam shall not be obligated to recover Long-Term Storage Credits on behalf of any such assignee under the terms of this Agreement unless Hohokam and the assignee agree otherwise.

6.3. Assignment by Hohokam. Hohokam may not assign all or a portion of its rights and obligations under this Agreement to any successors or assigns without the prior written consent of Storer, which consent shall not be unreasonably withheld. Further, Hohokam shall not sell or transfer the In-Lieu Water Delivered under this Agreement to others or allow the use by others of the In-Lieu Water outside the Service Area without prior written consent of Storer.

7. Indemnification/Hold Harmless.

7.1. Hohokam shall hold the United States, CAWCD, and Storer harmless from any damage or claim of damage of any nature whatsoever for which there is legal responsibility, including property damage, personal injury, or death arising out of or connected with Hohokam's control, carriage, handling, use, disposal, or distribution of In-Lieu Water delivered pursuant to this Agreement. Nothing in this Agreement shall make Hohokam responsible for or require Hohokam to indemnify anyone, including Storer, for any degradation of the aquifer associated with use of In-Lieu Water instead of Pumped Water.

7.2. Storer shall hold Hohokam harmless from any damage or claim of damage of any nature whatsoever for which there is legal responsibility, including property damage, personal injury, or death arising out of or connected with Storer's control, carriage, handling, use, disposal, or distribution, if any, of In-Lieu Water Delivered pursuant to this Agreement. Nothing in this Agreement shall make Storer responsible for or require Storer to indemnify others, including Hohokam, for any degradation of the aquifer associated with the use of In-Lieu Water instead of Pumped Water, or the recovery of any water stored pursuant to this Agreement.

7.3. Storer and Hohokam shall work together to mitigate any costs incurred by either Party for any In-Lieu Water ordered, but not Delivered due to the conditions set forth in Subsections 2.5, 3.7 or 5.3 of this Agreement.

8. Notices.

8.1. Any and all notices, demands or requests required or permitted hereunder shall be in writing and shall be effective upon personal delivery or two (2) business days after being deposited in the U. S. Mail, registered or certified, return receipt requested, postage prepaid, or one (1) business day after being deposited with any commercial air courier or express service, addressed as follows; provided, however, that communications regarding scheduling and delivery coordination may be made by email or fax, or orally and confirmed by e-mail or fax, and such communications shall be deemed effective upon confirmation of receipt by the recipient by email or fax reply to the original sender:

If to Storer:

Coolidge Power Corporation
Attn: Lauri Newton, Esq.
1400 SW Fifth Aveue, Ste. 900
Portland, OR 97201
Lauri_Newton@TransCanada.com

with a copy to:

Moyes Sellers & Sims
Attn: Jay I. Moyes, Esq.
1850 N. Central Ave., Ste.1100
Phoenix, AZ 85004
jimoyes@lawms.com

If to Hohokam: Hohokam Irrigation & Drainage District
Attn: Cliff Cauthen, General Manager
142 South Arizona Boulevard
Coolidge, Arizona 85228
cliffcauthen@hohokam.tuccoxmail.com

8.2. For purposes of providing notice, any communication sent by facsimile or by electronic mail shall not be deemed effective notice hereunder, but shall instead be given, if at all, solely as a courtesy to the other Party.

9. **Governing Law.**

9.1. This Agreement and the rights, duties and obligations of the Parties hereto shall be governed and construed in accordance with the substantive laws of the State of Arizona. The characterization hereunder, or by the Director of ADWR, of Pumped Water as groundwater is not binding for any other purpose and is not intended for use and shall not be used as evidence of the validity, invalidity, nature, legal character, extent or relative priority of any water right or source of water in any administrative or judicial proceeding except one arising directly from the Director's determination pursuant to Chapter 3.1, Title 45, Arizona Revised Statutes, regarding whether In-Lieu Water Delivered pursuant to this Agreement was Delivered on a gallon-for-gallon substitute basis in lieu of groundwater that otherwise would have been pumped by recipient Hohokam from the Pinal Active Management Area.

9.2. This Agreement shall only be amended or modified upon the written agreement of the Parties; provided however, in the event that there are changes in ADWR's current calculation of the accrual of Long-Term Storage Credits at Groundwater Savings Facilities, the Parties shall renegotiate the charge for In-Lieu Water payable under this Agreement.

10. **Effective Date.**

10.1. This Agreement shall become effective after its execution by both Parties and upon receipt of all regulatory and other approvals necessary for the implementation thereof. The deliveries of In-Lieu Water under this Agreement shall commence as soon as possible thereafter.

11. **Miscellaneous Provisions.**

11.1 Late Payments; Remedies. Any amount due pursuant to the terms and conditions of this Agreement that remains unpaid for a period of thirty (30) days after the due date shall be deemed to be delinquent. Delinquent payments shall incur interest at the rate of (a) twelve percent (12%) per annum from and after the date of delinquency of any such payment, or (b) four percent (4%) over either the Bank of America's or State of Arizona's then-applicable prime interest rate, whichever is lower. If a Party to this Agreement disputes a portion of any bill, invoice or similar statement ("Statement") from the other Party for payment of any amount due hereunder, then the Party receiving the Statement shall timely pay the undisputed portion of the Statement. With respect to any disputed portion of the Statement, or any other dispute arising under this Agreement, either Party shall be free to pursue any available remedy in law or equity.

11.2 Good Standing; Authority. Each of the Parties represents and warrants to the other (i) that it is duly formed, validly existing and in good standing under all applicable laws; and (ii) that the individual(s) executing this Agreement on behalf of the respective Party is authorized and empowered to bind the Party on whose behalf each such individual is signing.

11.3 No Third Party Beneficiaries. It is the express intent of the Parties that there not be, nor shall there ever be, any third party beneficiaries to this Agreement.

11.4 Entire Agreement. This Agreement, including the attachments and exhibits, each of which is incorporated by reference as if fully set forth herein, constitutes the entire agreement between the Parties pertaining to the subject matter contained in this Agreement. All prior and contemporaneous covenants, agreements, representations, warranties and understandings of the Parties, oral or written, are superseded by and merged into this Agreement.

COOLIDGE POWER CORPORATION,
A Delaware corporation

By: _____

Title: Vice President

By: _____
RON COOK

Title: VICE PRESIDENT – TAXATION

HOHOKAM IRRIGATON & DRAINAGE DISTRICT, a political subdivision of the state of Arizona

By: _____
Chairman of the Board

LEGAL
CONTENT

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COOLIDGE POWER CORPORATION,
A Delaware corporation

By: _____

Title: _____

By: _____

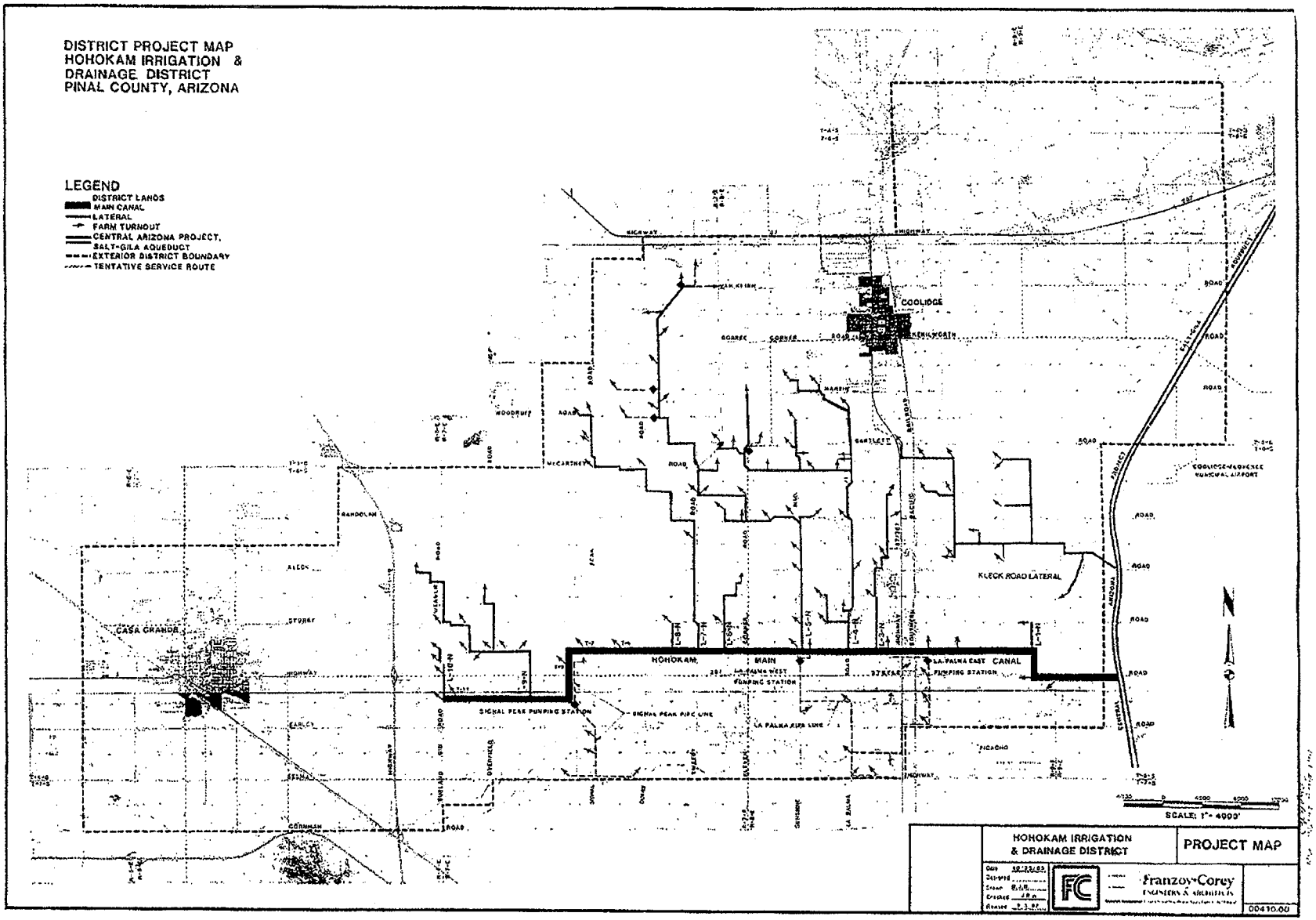
Title: _____

HOHOKAM IRRIGATON & DRAINAGE DISTRICT, a political subdivision of the state of Arizona

By: _____
Chairman of the Board

EXHIBIT A

DISTRICT PROJECT MAP
HOHOKAM IRRIGATION &
DRAINAGE DISTRICT
PINAL COUNTY, ARIZONA



FACILITY CONSENT TO WATER STORAGE

Pursuant to A.R.S. § 45-871.01(E)(1), this letter serves as consent from Hohokam Irrigation and Drainage District ("HIDD") allowing TransCanada Corporation/Coolidge Power Corporation, Application No. _____, to store up to 6,000 acre-feet of CAP Water at the Hohokam Irrigation District Groundwater Savings Facility ("GSF") in accordance with GSF permit number 72-534489.0003 in the calendar year 2008.

Signature: _____

Hohokam Irrigation and Drainage District

Printed Name: Clifford Cauthen

Title: General Manager

Company: Hohokam Irrigation and Drainage District

Date: 7-1-08

b

AGREEMENT BETWEEN THE CENTRAL ARIZONA WATER CONSERVATION DISTRICT AND COOLIDGE POWER CORPORATION PROVIDING FOR THE DELIVERY OF EXCESS CENTRAL ARIZONA PROJECT WATER

This Agreement is made as of the ___ day of _____, 2008, in pursuance generally of the Act of June 17, 1902 (32 Stat 388), and acts amendatory thereof or supplementary thereto, including but not limited to the Boulder Canyon Project Act of December 21, 1928 (45 Stat. 1057), as amended, the Reclamation Project Act of August 4, 1939 (53 Stat. 1187), as amended, the Reclamation Reform Act of October 12, 1982 (96 Stat. 1263), and particularly the Colorado River Basin Project Act of September 30, 1968 (82 Stat. 885), as amended (the "Basin Project Act"), between the CENTRAL ARIZONA WATER CONSERVATION DISTRICT ("CAWCD"), and COOLIDGE POWER CORPORATION (the "Contractor"), with its principal place of business in Coolidge, Arizona

RECITALS

A. The Basin Project Act provides, among other things, that for the purposes of furnishing irrigation and municipal and industrial ("M&I") water supplies to water deficient areas of Arizona and western New Mexico through direct diversion or exchange of water, control of floods, conservation and development of fish and wildlife resources, enhancement of recreation opportunities, and for other purposes, the Secretary shall construct, operate, and maintain the Central Arizona Project ("CAP").

B. The United States and CAWCD have entered into Contract No. 14-06-W-245, amendment No. 1, dated December 1, 1988 (the "Repayment Contract"), which is

incorporated by reference, providing for the delivery of water and repayment of costs of the CAP.

C. The United States and CAWCD have entered into the Stipulation Regarding a Stay of Litigation, Resolution of Issues During the Stay and for Ultimate Judgment upon the Satisfaction of Conditions, filed with the United States District Court on May 3, 2000, in Central Arizona Water Conservation District v. United States, No. CIV 95-625-TUC-WDB (EHC), No. CIV 95-1720-PHX-EHC (Consolidated Action) (the "Stipulation"), which modifies the Repayment Contract in certain respects

D. Paragraph 5(d)(2) of the Stipulation grants CAWCD the exclusive right to sell or use Excess Water

E. The Contractor is in need of a water supply and desires to contract with CAWCD for Incentive Recharge Water, which is specifically priced Excess Water made available for recharge purposes only.

AGREEMENT

Repayment Contract and Stipulation Controlling

1. The Contractor expressly approves and agrees to all the terms presently set out in the Repayment Contract and Stipulation, or as such terms may be hereafter amended, and agrees to be bound by the actions to be taken and the determinations to be made under those agreements, except as otherwise provided herein. In the event of any inconsistency between this Agreement and the Repayment Contract, the provisions of the Repayment Contract, as modified by the Stipulation, shall be controlling. Definitions included in the Repayment Contract and Stipulation are applicable to this Agreement. The first letters of terms so defined are capitalized herein.

Delivery of Water by CAWCD

2. In so far as Project Water supplies and the delivery capability of the Project will permit, and subject to the provisions of the Repayment Contract and Stipulation, CAWCD will deliver Incentive Recharge Water to the Contractor in an amount, and at a water service charge, to be determined in accordance with the terms of the Agreement. The determination of whether Incentive Recharge Water is available for delivery in any Year, and, if so, the amount of such Incentive Recharge Water that is available for delivery under this Agreement in any Year, is a determination within the exclusive discretion of CAWCD; Provided, however, That delivery of Incentive Recharge Water under this Agreement shall be subject to the prior satisfaction of all water deliveries scheduled pursuant to a long-term contract or subcontract for Project Water service, as that term is used in the Stipulation.

Term

3. The initial term of this Agreement expires on December 31 of the year in which it is executed. This Agreement will be automatically renewed for successive one-year terms unless either party notifies the other by October 1 of any year that it does not wish to renew the Agreement for the following year or unless sooner terminated in accordance with Article 6 or Article 11.

Conditions Relating to Delivery and Use

4. The delivery and use of water under this Agreement is conditioned on the following, and the Contractor hereby agrees that:

(a) All uses of Project Water and Return Flow shall be consistent with Arizona water law unless such law is inconsistent with the Congressional directives applicable to the Central Arizona Project.

(b) Project Water made available pursuant to this Agreement shall be used within Contractor's service area or place of use for direct or indirect recharge purposes only. The Contractor's service area or place of use is described in Exhibit A, which is incorporated by this reference, and may be amended by the contractor from time to time.

(c) The system or systems through which Project Water is conveyed after delivery to the Contractor shall consist of pipelines, canals, distribution systems, or other conduits, which will prevent excessive conveyance losses.

(d) Project Water furnished pursuant to this Agreement shall be delivered through Project Works for use directly or by exchange as permitted by law.

(e) Project Water furnished to the Contractor pursuant to this Agreement may not be resold or transferred, but the Contractor may enter into an arrangement with a groundwater savings facility allowed under state law to store Project Water.

(f) The Contractor shall not pump, or within its legal authority, permit others to pump groundwater from within the exterior boundaries of the Contractor's service area for use outside of said service area unless such pumping is permitted under Title 45, Chapter 2, Arizona Revised Statutes, as it may be amended from time to time, and CAWCD, and the Contractor shall agree, or shall have previously agreed, that a surplus of groundwater exists and drainage is or was required; Provided, however, That such pumping may be approved by CAWCD, and approval shall not be unreasonably withheld, if such pumping is in accord with the Basin Project Act and upon submittal by the Contractor of a written certification from the Arizona Department of Water Resources or its successor agency that the pumping and transportation of groundwater is in accord with Title 45, Chapter 2, Arizona Revised Statutes, as it may be amended from time to time.

(g) Notwithstanding any other provision of this Agreement, Project Water shall not be delivered to the Contractor unless and until the Contractor has obtained final environmental clearance from CAWCD for the system or systems through which Project Water is to be conveyed after delivery to the Contractor at the Contractor's Project delivery point.

(h) The Contractor may direct that Incentive Recharge Water made available pursuant to this Agreement be delivered to a groundwater savings facility for indirect recharge pursuant to a separate agreement between the Contractor and the operator of the groundwater savings facility; Provided, however, that:

(i) Incentive Recharge Water shall be used by an identified groundwater user on a gallon-for-gallon substitute basis directly in lieu of groundwater as provided in A.R.S. § 45-812.01.

(ii) The Contractor and the operator of the groundwater savings facility must demonstrate to CAWCD's satisfaction that they have the appropriate permits issued by the Arizona Department of Water Resource.

(iii) Where the operator of the groundwater savings facility is in agricultural entity participating in CAWCD's target pricing program, only Project Water over and above the amount of Project Water taken by the agricultural entity in the immediately preceding year, not including Incentive Recharge Water, may qualify as Incentive Recharge Water.

(iv) The Contractor shall provide CAWCD a copy of its agreement with the operator of the groundwater savings facility for Incentive Recharge Water.

(i) Only Project Water for which the Contractor receives long-term storage credits from the Arizona Department of Water Resources may qualify as Incentive Recharge Water. In determining the amount of Project Water that qualifies as Incentive Recharge Water in any year, any long-term storage credits earned by storing CAP water that are recovered by the Contractor in that year shall be deducted from the long-term storage credits received by the Contractor in that year.

(j) Upon the expiration of this Agreement, CAWCD will determine whether any Project Water delivered pursuant to this Agreement did not qualify as Incentive Recharge Water for the reasons specified in section 4)g)(iii) or 4(h) of this Agreement. For any such Project Water not qualifying as Incentive Recharge Water, CAWCD will bill the Contractor for the difference between the water service charge for Incentive Recharge Water and the standard M&I water service charge.

Procedure for Ordering Water

5. (a) On or before the date of execution of this Agreement, or as soon thereafter as is practicable, CAWCD will notify the Contractor of the amount of Incentive Recharge Water available for delivery during the first Year under this Agreement (the initial Year of water delivery). The Contractor shall, within a reasonable period of time as determined by CAWCD, submit a written schedule to CAWCD showing the quantity of Incentive Recharge Water desired by the Contractor during each month of the initial Year of water delivery. CAWCD will review the requested schedule and determine whether Incentive Recharge Water is available for delivery in the initial Year of water delivery, and, if so, the amount of Incentive Recharge Water available for delivery under this Agreement during such Year. Within thirty (30) days of CAWCD's receipt of the Contractor's requested schedule,

CAWCD shall determine and furnish to the Contractor the water delivery schedule for the initial Year of water delivery which shall show the amount of Incentive Recharge Water projected to be delivered to the Contractor during each month of such Year, contingent upon the Contractor remaining eligible to receive water under all terms contained herein

(b) The amounts, times, and rates of delivery of Incentive Recharge Water to the Contractor during each Year subsequent to the initial Year of water delivery shall be in accordance with a water delivery schedule for that Year. Such schedule shall be determined in the following manner:

(i) On or before July 1 of each Year beginning with July 1 of the initial Year of water delivery, CAWCD shall issue a notice of availability of Incentive Recharge Water to the Contractor.

(ii) On or before October 1 of each Year beginning with October 1 of the initial Year of water delivery, the Contractor shall submit in writing to CAWCD a water delivery schedule indicating the amounts of Incentive Recharge Water desired by the Contractor during each month of the following Year.

(iii) Upon receipt of the schedule, CAWCD shall review it together with all other water delivery schedules, and determine whether Incentive Recharge Water is available for delivery in the following Year, and, if so, the amount of Incentive Recharge Water available for delivery under this Agreement in the following Year

(iv) On or before November 15 of each Year beginning with November 15 of the initial Year of water delivery, CAWCD shall determine and furnish to the Contractor the water delivery schedule for the following Year which shall show the amount of Incentive Recharge Water to be delivered to the Contractor during each month of that Year,

contingent upon the Contractor remaining eligible to receive water under all terms contained herein

(c) The monthly water delivery schedules may be amended upon the Contractor's written request to CAWCD. Proposed amendments shall be submitted by the Contractor to CAWCD no later than 15 days before the desired change is to become effective, and shall be subject to review and modification in like manner as the schedule. CAWCD shall notify the Contractor of its action on the Contractor's requested schedule modification within 10 days of CAWCD's receipt of such request.

(d) The Contractor shall hold CAWCD, its officers, agents, and employees, harmless on account of damage or claim of damage of any nature whatsoever arising out of or connected with the actions of CAWCD regarding water delivery schedules furnished by or to the Contractor.

Contractor's Project Delivery Point, Measurement
and Responsibility for Distribution of Water

6. (a) Incentive Recharge Water furnished to the Contractor pursuant to this agreement shall be delivered to the Contractor at such point(s) on the Water Supply System as are agreed upon in writing by CAWCD and the Contractor. All such point(s) shall hereinafter be referred to as the "Contractor's Project delivery point."

(b) Unless CAWCD and the Contractor agree by contract to the contrary, the Contractor shall construct and install, at its sole cost and expense, all connection facilities required to convey water furnished to the Contractor pursuant to this Agreement to the Contractor's service area or place of use, as the case may be. The Contractor shall furnish, for written approval by CAWCD, drawings and specifications showing all connection facilities to be constructed or installed within the Water Supply System right-of-way, and shall obtain

such approval before commencing construction or installation of such facilities. All facilities constructed, installed, operated or maintained on the Water Supply System right-of-way by or for the Contractor shall be subject to such further agreements and to such restrictions and regulations as to type, location, method of installation, operation, and maintenance as may be prescribed by CAWCD.

(c) The Contractor shall construct, operate, and maintain its connection facilities and appurtenant works in a good and workmanlike manner and in full compliance with the laws of the State of Arizona and with all laws, regulations, and orders of the United States affecting such operations. The failure of the Contractor after due notice to construct, operate, and maintain its connection facilities and appurtenant works in a good and workmanlike manner or to abide by any of the terms and conditions of any applicable laws, regulations, or orders, shall cause this Agreement to be subject to immediate termination at the option of CAWCD. The Contractor shall reimburse CAWCD within thirty (30) days of Contractor's receipt of a statement for the costs of repairing any damage to Project facilities or Project rights-of-way caused by or arising out of the Contractor's activities under this Agreement

(d) Upon termination of this Agreement, the Contractor shall promptly remove, at its sole cost and expense, all connection facilities constructed or installed on the Water Supply System right-of-way and restore said right-of-way and all Project facilities affected to their condition immediately prior to the construction or installation of such connection facilities. If the Contractor fails to remove said connection facilities and restore said right-of-way and Project facilities within thirty (30) days after receiving any written notice from CAWCD to do so, CAWCD may remove said connection facilities and restore

said right-of-way and Project facilities at the Contractor's cost and expense, and within thirty (30) days after receiving written demand from CAWCD to do so, the Contractor shall pay CAWCD, as specified in such written demand, for all costs and expenses incurred by CAWCD in removing said connection facilities and restoring said right-of-way and Project facilities.

(e) If the Contractor's Project delivery point is a Project turnout or Project turnouts constructed by the United States, and if the Contractor intends to convey water furnished to the Contractor pursuant to this agreement through connection facilities owned or operated by others, the use by the Contractor of such connection facilities shall be the subject of written agreement(s) between the Contractor and the owner(s) or operator(s) of such connection facilities, and all such agreements shall include such terms and conditions as may be required by CAWCD and shall be subject to the prior, written approval of CAWCD before becoming binding upon the parties thereto.

(f) Unless the Contractor's Project delivery point is a Project turnout or Project turnouts constructed by the United States, all water delivered from the Water Supply System shall be measured with equipment furnished and installed by the Contractor and operated and maintained by the Contractor at the Contractor's sole cost and expense. The results of such measurements shall be reported to CAWCD in such manner and at such time(s) as CAWCD may prescribe. Upon the request of CAWCD, the accuracy of such measurements shall be investigated by the Contractor, and any errors which are determined to have occurred therein shall be adjusted; Provided, however, That in the event the parties cannot agree on the required adjustment, CAWCD's determination shall be conclusive.

(g) If the Contractor's Project delivery point is a Project turnout or Project turnouts constructed by the United States, all water delivered from the Water Supply System shall be measured with equipment furnished and installed by the United States and operated and maintained by CAWCD. Upon the request of the Contractor, or CAWCD, the accuracy of such measurement shall be investigated by CAWCD and the Contractor, and any errors which are mutually determined to have occurred therein shall be adjusted; Provided, however, That in the event the parties cannot agree on the required adjustment, CAWCD's determination shall be conclusive

(h) Neither the United States nor CAWCD shall be responsible for the control, carriage, handling, use, disposal, or distribution of water beyond the Contractor's Project delivery point. The Contractor shall hold the United States and CAWCD harmless on account of damage or claim of damage of any nature whatsoever for which there is legal responsibility, including property damage, personal injury, or death arising out of or connected with the control, carriage, handling, use, disposal, or distribution of water beyond the Contractor's Project delivery point.

Interruptions and Reductions

7. In addition to the right of the United States under Subarticle 8 3(a)(iv) of the Repayment Contract to temporarily discontinue or reduce the amount of water to be delivered, CAWCD may discontinue or reduce the quantity of water to be furnished to the Contractor as herein provided for the purposes of investigation, inspection, construction, testing, maintenance, repair, or replacement of any of the Project facilities or any part thereof. CAWCD may also discontinue or reduce the quantity of water to be furnished to the Contractor if there is insufficient Project Water or Project delivery capacity to deliver the

Contractor's water order, the water orders of other contractors of Excess Water service, and all water deliveries scheduled pursuant to a contract with the United States or a subcontract with the United States and CAWCD providing for Project Water service for a period of 50 years or more. So far as feasible, CAWCD shall attempt to coordinate any such discontinuance or reduction with the Contractor and to give the Contractor due notice in advance of such discontinuance or reduction. In case of emergency, no notice need be given. The United States, its officers, agents, and employees, and CAWCD, its officers, agents, and employees, shall not be liable for damages when, for any reason whatsoever, any interruption, discontinuance, or reduction in delivery of water occurs. If any such discontinuance or temporary reduction results in deliveries to the Contractor of less water than what has been paid for in advance, the Contractor shall be entitled to be reimbursed for the appropriate proportion of such advance payments prior to the date of the Contractor's next payment of water service charges or the Contractor may be given credit toward the next payment of water service charges if the Contractor should so desire.

No Long-Term Commitment to the Delivery of Project Water

8. Nothing in this Agreement shall be construed as an allocation of Project Water to the Contractor, nor shall this Agreement entitle the Contractor to any Project Water other than as provided herein.

Quality of Water

9. CAWCD does not warrant the quality of any Project Water furnished under this Agreement and is under no obligation to construct or furnish water treatment facilities to maintain or better the quality of any Project Water. The Contractor waives its right to make a claim against the United States, CAWCD, or any other Project subcontractor or contractor on

account of the quality of Project Water or any changes in water quality caused by the commingling of Project Water with other water.

Water Service Charges

10. (a) The Contractor shall pay in advance water service charges established annually by CAWCD. On or before the date of execution of this Agreement, or as soon thereafter as is practicable, CAWCD shall furnish the Contractor with the Contractor's water service charges for the initial Year of water delivery (the "initial Year"). Within a reasonable time of receipt of said charges, but prior to the delivery of water, the Contractor shall advance to CAWCD, in monthly installments payable on or before the first day of each month of the initial Year, as determined by CAWCD, the water service charges due for Incentive Recharge Water scheduled for delivery in the initial Year. For each subsequent Year, CAWCD will establish water service charges, and CAWCD will notify the Contractor of the amount of such charges on or before November 15 preceding each said subsequent Year. The Contractor shall make payments of such charges in monthly installments due on or before the first day of each month of said subsequent Year, as determined by CAWCD, for Incentive Recharge Water scheduled for delivery in said subsequent Year. The Contractor shall pay in advance all water service charges established by CAWCD for Incentive Recharge Water scheduled for delivery under this Agreement; Provided, however, That the Contractor shall be relieved of the pumping energy portion of the water service charges associated with any Project Water scheduled for delivery that is not delivered to the Contractor.

(b) The payment of all water service charges when due under this Agreement is a condition precedent to delivery of Incentive Recharge Water.

(c) The obligation of the Contractor to pay CAWCD as provided in this Agreement is a general obligation of the Contractor notwithstanding the manner in which the obligation may be distributed among the Contractor's water users and notwithstanding the default of individual water users in their obligations to the Contractor.

Termination of Contract

11. If the Contractor remains in arrears in the payment of any charges due CAWCD for a period of 60 days or more, CAWCD may terminate this Agreement, which termination shall be effective 30 days after mailing written notice of termination to the Contractor. The Contractor shall remain obligated to pay all charges to be paid under this Agreement during the time period until and including the date of termination. The Contractor's obligation to pay any amounts due but unpaid as of the date of termination shall survive termination of this Agreement. CAWCD's right to terminate this Agreement as provided in this Article 11 shall be in addition to the other rights of CAWCD under this Agreement and to all other rights provided by law.

Charges for Delinquent Payments

12. (a) The Contractor shall be subject to interest, administrative and penalty charges on delinquent installments or payments. The Contractor shall pay an interest charge for each day the payment is delinquent beyond the due date. When a payment becomes 60 days delinquent, the Contractor shall pay an administrative charge to cover additional costs of billing and processing the delinquent payment. When a payment is delinquent 90 days or more, the Contractor shall pay an additional penalty charge of 6 percent per year for each day the payment is delinquent beyond the due date. Further, the Contractor shall pay any fees incurred for debt collection services associated with a delinquent payment.

(b) The interest charge rate shall be the greater of the rate prescribed quarterly in the Federal Register by the Department of the Treasury for application to overdue payments, or the interest rate of 0.5 percent per month prescribed by Section 6 of the Reclamation Project Act of 1939 (Public Law 76-260). The interest charge rate shall be determined as of the due date and remain fixed for the duration of the delinquent period.

(c) When a partial payment on a delinquent account is received, the amount received shall be applied first to the penalty and administrative charges, second, to the accrued interest, and third to the overdue payment.

Rules, Regulations and Determinations

13. (a) The parties agree that the delivery of water or the use of Federal facilities pursuant to this Agreement is subject to Reclamation law, as amended and supplemented, and the rules and regulations promulgated by the Secretary of the Interior under Reclamation law.

(b) The Contracting Officer shall have the right to make determinations necessary to administer this Agreement that are consistent with the expressed and implied provisions of this Agreement, the laws of the United States and the State of Arizona, and the rules and regulations promulgated by the Secretary of the Interior. Such determinations shall be made in consultation with CAWCD and the Contractor.

Compliance with Environmental Laws

14. The Contractor, in carrying out this Agreement, shall comply with all applicable environmental laws and regulations of the United States and the State of Arizona and shall obtain all required permits or licenses from the appropriate Federal, State or local authorities.

Equal Opportunity

15. During the performance of this Agreement, the Contractor agrees as follows:

(a) The Contractor will not discriminate against any employee or applicant for employment because of race, color, religion, sex, or national origin. The Contractor will take affirmative action to ensure that applicants are employed, and that employees are treated during employment, without regard to their race, color, religion, sex, or national original. Such action shall include, but not be limited to the following: employment, upgrading, demotion, or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship. The Contractor agrees to post in conspicuous places, available to employees and applicants for employment, notices to be provided by the Contracting Officer setting forth the provisions of this nondiscrimination clause.

(b) The Contractor will, in all solicitations or advertisements for employees placed by or on behalf of the Contractor, state that all qualified applicants will receive consideration for employment without discrimination because of race, color, religion, sex, or national origin.

(c) The Contractor will send to each labor union or representative of workers with which it has a collective bargaining agreement or other contract or understanding, a notice, to be provided by the Contracting Officer, advising said labor union or worker's representative of the Contractor's commitments under Section 202 of Executive

Order 11246 of September 24, 1965, as amended, and shall post copies of the notice in conspicuous places available to employees and applicants for employment.

(d) The Contractor will comply with all provisions of Executive Order No. 11246 of September 24, 1965, as amended, and of the rules, regulations, and relevant orders of the Secretary of Labor.

(e) The Contractor will furnish all information and reports required by said amended Executive Order and by the rules, regulations, and orders of the Secretary of Labor, or pursuant thereto, and will permit access to its books, records, and accounts by the Contracting Officer and the Secretary of Labor for purposes of investigation to ascertain compliance with such rules, regulations, and orders

(f) In the event of the Contractor's noncompliance with the nondiscrimination clauses of this agreement or with any of such rules, regulations, or orders, this agreement may be canceled, terminated, or suspended, in whole or in part, and the Contractor may be declared ineligible for further Government contracts in accordance with procedures authorized in said amended Executive Order, and such other sanctions may be imposed and remedies invoked as provided in said amended Executive Order, or by rule, regulation, or order of the Secretary of Labor, or as otherwise provided by law.

(g) The Contractor will include the provisions of paragraphs (a) through (g) in this paragraph in every subcontract or purchase order unless exempted by rules, regulations, or orders of the Secretary of Labor issued pursuant to Section 204 of said amended Executive Order, so that such provisions will be binding upon each subcontractor or vendor. The Contractor will take such action with respect to any subcontract or purchase order as may be directed by the Secretary of Labor as a means of enforcing such provisions, including sanctions for noncompliance; Provided, however, That in the event the Contractor becomes involved in, or is threatened with, litigation with a subcontractor or vendor as a result of such direction, the Contractor may request the United States to enter into such litigation to protect the interests of the United States.

Compliance With Civil Rights Laws and Regulations

16. (a) The Contractor shall comply with Title VI of the Civil Rights Act of 1964 (42 U.S.C. 2000d), Section 504 of the Rehabilitation Act of 1975 (Public Law 93-112, as amended), the Age Discrimination Act of 1975 (42 U.S.C. 6101, et seq.) and any other applicable civil rights laws, as well as with their respective implementing regulations and guidelines by the U.S. Department of the Interior and/or Bureau of Reclamation.

(b) These statutes require that no person in the United States shall, on the grounds of race, color, national origin, handicap, or age, be excluded from participation in, be denied the benefits of, or be otherwise subjected to discrimination under any program or activity receiving financial assistance from the Bureau of Reclamation. By executing this agreement, the Contractor agrees to immediately take any measures necessary to implement

this obligation, including permitting officials of the United States to inspect premises, programs, and documents

(c) The Contractor makes this agreement in consideration of and for the purpose of obtaining any and all Federal grants, loans, contracts, property discounts or other Federal financial assistance extended after the date hereof to the Contractor by the Bureau of Reclamation, including installment payments after such date on account of arrangements for Federal financial assistance which were approved before such date. The Contractor recognizes and agrees that such Federal assistance will be extended in reliance on the representations and agreements made in this article, and that the United States reserves the right to seek judicial enforcement thereof.

Books, Records, and Reports

17. The Contractor shall establish and maintain accounts and other books and records pertaining to administration of the terms and conditions of this Agreement, including: the Contractor's financial transactions, water supply data, project operation, maintenance and replacement logs, and Project land and right-of-way use agreements; the water users' land-use (crop census), land ownership, land-leasing and water-use data; and other matters that CAWCD may require. Reports thereon shall be furnished to CAWCD in such form and on such date or dates as CAWCD may require. Subject to applicable Federal laws and regulations, each party to this Agreement shall have the right during office hours to examine and make copies of each other party's books and records relating to matters covered by this Agreement.

Notices

18. Any notice, demand, or request authorized or required by this Agreement shall be deemed to have been given, on behalf of CAWCD, when mailed, postage prepaid, or delivered to Jay I. Moyes, Esq., Moyes Sellers & Sims, 1850 N. Central Avenue, Suite 1100, Phoenix, Arizona 85004, and on behalf of the Contractor when mailed, postage prepaid, or delivered to the General Manager, Central Arizona Water Conservation District, P.O. Box 43020, Phoenix, Arizona 85080-3020. The designation of the addressee or the address may be changed by notice given in the same manner as provided in this Article for other notices.

Assignment Limited—Successors and Assigns Obligated

19. The provisions of this Agreement shall apply to and bind the successors and assigns of the parties hereto, but no assignment or transfer of this Agreement or any right or interest therein shall be valid until approved in writing by CAWCD.

IN WITNESS WHEREOF, the parties hereto have executed this Agreement No. ____ effective the day and year first above-written.

CENTRAL ARIZONA WATER
CONSERVATION DISTRICT

Attest: _____
Secretary

By: _____
President

COOLIDGE POWER CORPORATION

Attest: _____

By: _____ WILLIAM C. TAYLOR

Title: _____

Title: VICE-PRESIDENT Director

wpdocs\incentive\Coolidge Power Corp
221 01

Attest: _____

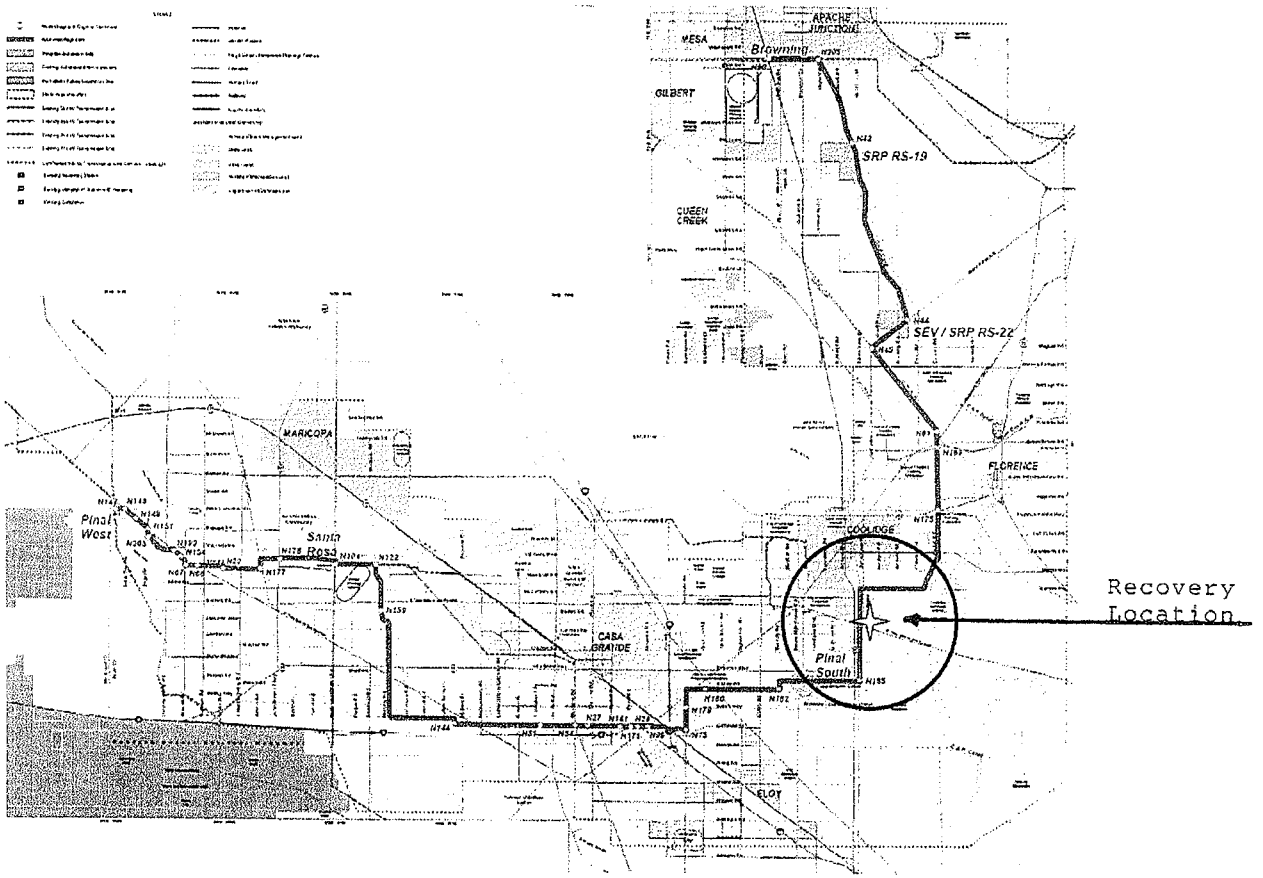
By: _____

Title: _____

Title: Michael E. Hachey, Director

LEGAL
CONTENT

EXHIBIT A


APACHE JUNCTION
MESA
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GILBERT
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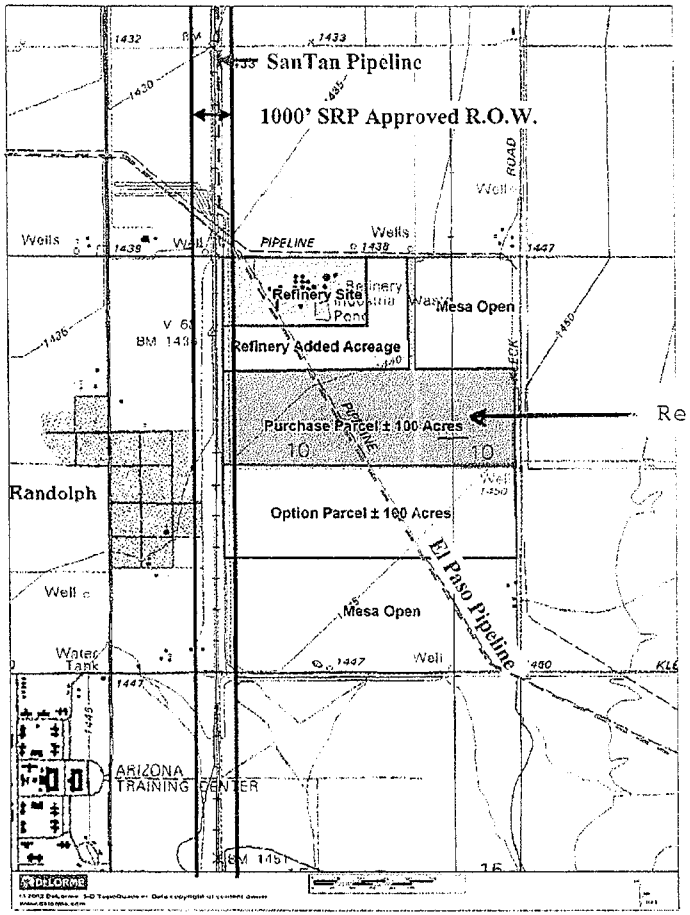
MARICOPA
FLORENCE
COOLIDGE
Pinal West
Santa Rosa
CASA GRANDE
Pinal South
ELOY
Recovery Location


SanTan Pipeline
1000' SRP Approved R.O.W.
Refinery Site
Refinery Added Acreage
Mesa Open
Purchase Parcel ± 100 Acres
Option Parcel ± 100 Acres
Recovery Location
El Paso Pipeline
Randolph
ARIZONA TRAINING CENTER
Water Tank
Wells
Well
PIPELINE
ROAD

Arizona State Parks

"Managing and conserving natural, cultural,

Arizona Corporation Commission
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AZ CORP COMMISSION
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September 10, 2008

John Foreman, Assistant Attorney General
Attorney General's Office
1275 W. Washington Street
Phoenix, AZ 85007

ORIGINAL

Janet Napolitano
Governor

State Parks
Board Members

Chair
William C. Scalzo
Phoenix

Arlan Colton
Tucson

Reese Woodling
Tucson

Tracey Westerhausen
Phoenix

William C. Cordasco
Flagstaff

Larry Landry
Phoenix

Mark Winkleman
State Land
Commissioner

Kenneth E. Travous
Executive Director

Arizona State Parks
1300 W. Washington
Phoenix, AZ 85007

Tel & TTY: 602.542.4174
www.azstateparks.com

800.285.3703 from
(520 & 928) area codes

General Fax:
602.542.4180

Director's Office Fax:
602.542.4188

Re: Receipt of Notice of Hearing before the Arizona Power Plant and Transmission Line Siting Committee Concerning a Certificate of Environmental Compatibility (CEC) Authorizing the Coolidge Generating Station, City of Coolidge, Pinal County, Arizona
(SHPO Project No. SHPO-2008-1139)

Dear Mr. Foreman:

The State Historic Preservation Office (SHPO) has received a Notice of Hearing for the Coolidge Generating Station Project. The project is to establish a new natural gas fired, simple-cycle power plant that will supply power during periods of peak electricity demands. The project consists of 12 General Electric LM6000 PC SPRINT NxGen combustion turbine generators (CTGs) designed to produce up to 575 MW of net electrical output, and a 230 kV transmission line to connect the generators to a new switchyard. The construction encompasses 100 acres of private land in Pinal County, Arizona, in Township 6 South, Range 8 East, Section 10 N1/2.

We are communicating with you as Chairman of the Power Plant and Transmission Line Siting Committee of the Arizona Corporation Commission (ACC), the lead agency for purposes of compliance pursuant to A. R. S. 41-861 through 41-865, A. R. S. 41-841 through 41-844, Executive Order 2006-14, and A. R. S. 40-360.06 (A) (5) enacted to protect and preserve Arizona's cultural resources. Our advice to a state agency under state statute should not be construed or used in any way to substitute for or limit our advice to a federal agency under federal law. If a federal agency has an undertaking related to the above-referenced project, that agency will need to consult with our office directly under Section 106 of the National Historic Preservation Act.

A Class III intensive cultural resources survey of the 100-acre parcel is required for this project, to identify all historical and archaeological resources in the project area before ground disturbance begins. This correspondence is to notify you that as of today's date of September 10, 2008, we have not yet received the results of the cultural resources survey, and will need to comment on the findings; the project's effect upon any cultural resources located within the Area of Potential Effect; the State and National Register eligibilities of any resources identified during the survey; and any further cultural resource work recommendations for the property, before making a finding of effect. Due to the large volume of project compliance reviews across the state, we

EXHIBIT
A-9
admitted

generally require a 30-day review period once the survey results are received in our office for review and response.

We appreciate consultation with our office concerning the proposed Coolidge Generating Station Project. We look forward to receiving the results of the Class III intensive survey and having the opportunity to comment before the CEC is issued. Thank you for considering Arizona's cultural resources in the planning efforts. If you have any concerns or questions, please contact me at (602) 542-7137 or cgibson@azstateparks.gov.

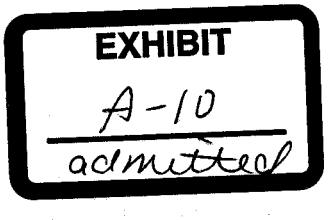
Sincerely,

Connie Thompson Gibson

Connie Thompson Gibson, RPA
Archaeologist & Compliance Specialist
Arizona State Historic Preservation Office

Cc: Patricia T. Mitchell, Senior Project Archaeologist, kp environmental, LLC
Leigh Kuwanwisiwma, Director, Hopi Cultural Preservation Office

a



City of Coolidge
Office of the City Manager

130 W. Central Ave
Coolidge, AZ 85228
(520) 723-5361

11 August 2008

Mr. John Foreman, Esq.
Chairman
Arizona Transmission & Line Siting Committee
1275 West Washington
Phoenix, Arizona 85007

Dear Chairman Foreman:

On behalf of the City of Coolidge, it is my pleasure to submit this letter in support of the proposed TransCanada Coolidge Generating Station. TransCanada has worked with the City of Coolidge to solicit our input and share information about the project for more than two years.

Coolidge officials have been included throughout TransCanada's stakeholder engagement and public involvement process and we are supportive of the 575-megawatt peaking facility which is to be located within the City's designated industrial park area.

In summary, the City of Coolidge is supportive of TransCanada's investment of approximately $500 million in our community and the new jobs that it will create. Please do not hesitate to contact me with any questions.

Sincerely,

Robert Flatley
City Manager

cc: Brad Howard, TransCanada

b

Central Arizona
Regional Economic Development Foundation

540 N Camino Mercado, Suite 2
Casa Grande, AZ 85222
Phone 520-836-6868
Fax 520-836-4898
www.caredf.org

July 30, 2008

Mr. John Foreman, Esq.
Chairman
Arizona Transmission & Line Siting Committee
1275 W. Washington
Phoenix, Arizona 85007

Dear Chairman Foreman:

On behalf of the Central Arizona Regional Economic Development Foundation (CAREDF), I am writing to express support for the proposed TransCanada Coolidge Generating Station. CAREDF is an organization that exists to promote economic development throughout Central Arizona, including the City of Coolidge and Pinal County. We have a long and successful history of working together to attract new investment and jobs and we are enthusiastic about TransCanada's plan to build the approximately $500 million, 575-megawatt peaking facility.

TransCanada proactively reached out to CAREDF and has included our organization in its stakeholder engagement and public involvement process. We are supportive of the investment in the City of Coolidge as well as the jobs created, the overall economic impact, and the creation of important energy infrastructure to serve Pinal County and the region.

Thank you for your consideration. If you have any questions, please let me know.

Sincerely,

Barry Albrecht
CEO/Executive Director

cc: Brad Howard, TransCanada

c

L-00000HH-08-0422-00141

ORIGINAL

ARIZONA CORPORATION COMMIS

UTILITY COMPLAINT FORM

Investigator: Trish Meeter **Phone:** [redacted] **Fax:** [redacted]

Priority: Respond Within Five Days

Opinion No. 2008 71337 **Date:** 9/9/2008

Complaint Description: 10P Power plant opinions, whether in favor or opposed.
N/A Not Applicable

	First:	Last:	
Complaint By:	Henry	Brock	
Account Name:	Henry Brock		**Home:** (000) 000-0000
Street:	[redacted]		**Work:**
City:	Casa Grande		**CBR** [redacted]
State:	AZ **Zip:** 85294		**is:** Cellular

Utility Company. Miscellaneous ACC Questions

Division: Misc.

Contact Name: Unknown **Contact Phone:** (000) 000-0000

Nature of Complaint:

Docket No. L00000HH-08-0422-00141

9/9
Caller requests that his opinions regarding the linesiting be docketed and reviewed by staff. He believes that past approvals for facility construction in his area have not lived u p to the promises to be environmentally friendly. He believes it would be cleaner and more beneficial to create 1 big nuclear plant instead of these individual power sources. He believes there now will be three power stations in his area if approval is given.
End of Complaint

Utilities' Response:

Investigator's Comments and Disposition:

Advised caller his opinion will be docketed.
End of Comments

Date Completed: 9/9/2008

Opinion No. 2008 - 71337

AZ CORP COMMISSION
DOCKET CONTROL

2008 SEP 10 P 3:20

RECEIVED

Arizona Corporation Commission
DOCKETED
SEP 10 2008
DOCKETED BY

BEFORE THE ARIZONA POWER PLANT AND TRANSMISSION LINE SITING COMMITTEE

In the matter of the Application of **Coolidge Power Corporation** in conformance with the requirements of Arizona Revised Statutes 40-360.03 and 40-360.06 for a Certificate of Environmental Compatibility authorizing the **Coolidge Generating Station,** a nominal 575 MW natural gas-fired, simple cycle generating facility located within the City of Coolidge in Pinal County, Arizona.	)	Docket No. L-00000HH-08-0422-00141 Case No. 141

NOTICE OF FILING

Applicant, Coolidge Power Corporation, hereby provides Notice of Filing the attached Tour Itinerary and map.

RESPECTFULLY SUBMITTED this 22 day of September, 2008.

MOYES SELLERS & SIMS

Jay I. Moyes
1850 N. Central Avenue, Suite 1100
Phoenix, Arizona 85004
(602) 604-2141

ORIGINAL & 25 copies of the Foregoing were filed with Docket Control on the 23 day of September, 2008.

EXHIBIT
A-11
admitted

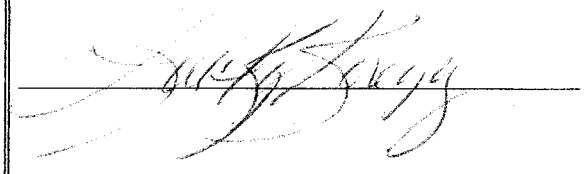
Copies of the foregoing were mailed this 23 day of September, 2008, to:

John Foreman, Chairman
Arizona Power Plant and Transmission
Line Siting Committee
1275 W. Washington
Phoenix, AZ 85004

Bob Gray
Utilities Division
Arizona Corporation Commission
1200 West Washington Street
Phoenix, Arizona 85007
bgray@azcc.gov

Maureen A. Scott
Senior Staff Counsel
Arizona Corporation Commission
1200 West Washington Street
Phoenix, Arizona 85007
mscott@azcc.gov

Arizona Reporting Service
2200 N Central Avenue #501
Phoenix, AZ 85004



Coolidge Generating Station Project
Site Tour
Start 1:30 p.m.
September 29, 2008
L-00000HH-08-0422-00141

0 **Stop 0** Coolidge Youth Center, 660 S. Main Street, Coolidge, AZ 85337

- From the Coolidge Youth Center proceed north two blocks to Coolidge Avenue.
- Turn left (West) on Coolidge Avenue and travel approximately 0.36 miles to the traffic light at the intersection of Arizona Boulevard/Highway 87.
- Turn left (South) on Arizona Boulevard and travel approximately 3.6 miles to the intersection of Highway 87 and Randolph Road.
- Turn left (East) on Randolph Road and proceed 0.8 miles

1 **Stop 1** Intersection of Randolph Road and proposed access road to plant site. The proposed plant site would be located to the south.

- From Stop 1 continue east on Randolph Road approximately 0.3 miles to the intersection of Randolph and Vail Roads.
- Turn right (South) on Vail Road and travel 0.5 miles to the southeast corner of the proposed plant site.

2 **Stop 2** Southeast corner of the plant site.

- From Stop 2 continue 0.5 miles south on Vail Road to the intersection of Vail and Kleck Roads.
- Turn right (West) on Kleck Road and travel two miles to Highway 87.
- Turn right (North) on Highway 87 and travel approximately 0.4 miles to the intersection of Highway 87 and Malcolm X Street (**Stop 3**).

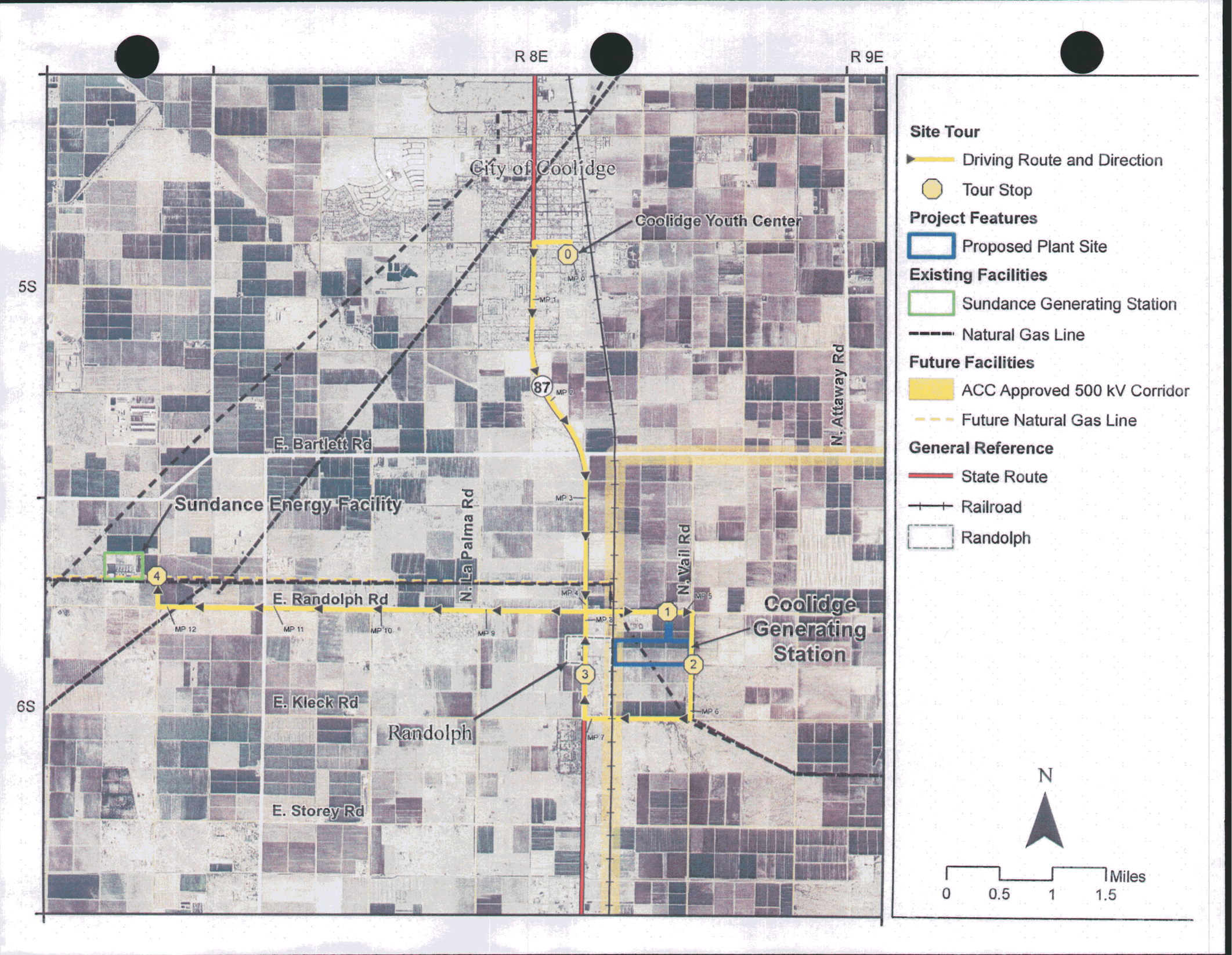
3 **Stop 3** East Malcolm X Street and Highway 87. The proposed plant site would be to the east.

- From Stop 3 the tour will travel north Highway 87 approximately 0.5 miles to the intersection of Highway 87 and Randolph Road.
- Turn left (west) on Randolph Road and travel 4.0 miles to the intersection of Randolph and Tweedy Roads.
- Turn right (North) on Tweedy Road and travel approximately 0.3 miles to the entrance of Sundance Power Plant.

4 **Stop 4** is the Sundance Power Plant

- Turn around and head south on Tweedy Road to Randolph Road.
- Turn left (East) on Randolph Road and proceed 4.0 miles to Highway 87.
- Turn left (North) on Highway 87 and travel approximately 3.6 miles to Coolidge Avenue.
- Turn right (East) on Coolidge Avenue and travel approximately 0.36 miles to Main Street.
- Turn right on Main Street and proceed two blocks to the Coolidge Youth Center, where the Route Tour will end.

Committee members attending the route tour can meet at the Francisco Grande Hotel at 1:00 p.m. or the Coolidge Youth Center at 1:30 p.m. Tour will begin promptly at 1:30am and is expected to take approximately 1-1.5 hours. A cooler of beverages will be provided in the tour van. The lead vehicle and van may pull off the road at the designated stops.


R 8E
R 9E
5S
6S
City of Coolidge
Coolidge Youth Center
N. Attaway Rd
E. Bartlett Rd
Sundance Energy Facility
N. La Palma Rd
N. Vail Rd
E. Randolph Rd
Coolidge Generating Station
E. Kleck Rd
Randolph
E. Storey Rd
0
MP 0
MP 1
87
MP 2
MP 3
MP 4
MP 5
MP 6
MP 7
MP 8
MP 9
MP 10
MP 11
MP 12
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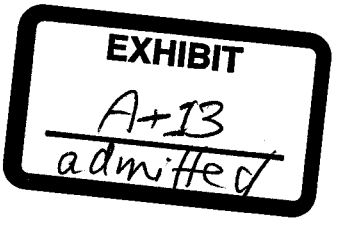
4
Site Tour
Driving Route and Direction
Tour Stop
Project Features
Proposed Plant Site
Existing Facilities
Sundance Generating Station
Natural Gas Line
Future Facilities
ACC Approved 500 kV Corridor
Future Natural Gas Line
General Reference
State Route
Railroad
Randolph
N
Miles
0
0.5
1
1.5

John D. Coggins
Manager, Resource Planning and Development

Mail Station ISB669
PO Box 52025
Phoenix, AZ 85072-2025

September 30, 2008



Docket Control
Arizona Corporation Commission
1200 W. Washington
Phoenix, AZ 85007

Re: Application of Coolidge Power Corporation, Arizona Corporation Commission Docket No. L-00000HH-08-0422-00141 (Case No. 141)

Dear Sir/Madam:

I am writing on behalf of Salt River Project Agricultural Improvement and Power District ("SRP") to provide information in support of the Application filed by Coolidge Power Corporation for a Certificate of Environmental Compatibility ("CEC") in Case No. 141. As I indicated in my letter of September 23, 2008, SRP has signed a 20-year PPA for the output from the Coolidge Generation Station (CGS) that is the subject of Case 141. In response to questions posed to Coolidge Power Corporation by Arizona Corporation Commission (ACC) Utilities Division Staff (Staff), SRP provides the following general information regarding the operation of CGS:

- From an operational perspective, CGS will be dispatched by SRP in a manner essentially the same as a plant that is owned by SRP.

- SRP expects that the CGS will be operated and maintained by the Coolidge Power Corporation in the same way that SRP operates and maintains its own facilities. CGS personnel qualified to operate and maintain the facility will be continuously in contact with SRP dispatchers via phone or other communication devices.

- SRP has the right to dispatch any number of the available generating units at any time. Dispatch can be accomplished via phone or other communications devices, including remote start capability in the SRP control center.

- Coolidge Power Corporation will provide and maintain the capability for remote start-up, shutdown, and changes in generation levels of each unit. Each unit will be capable of starting and achieving base load within 10 minutes.

- SRP is responsible for delivering fuel to the facility and for transmission to accept generation from the facility. Coolidge Power Corporation is responsible for construction of the facilities required to interconnect the plant with the El Paso and TransWestern pipelines.

- Planned outages of the facility will be coordinated between Coolidge Power Corporation and SRP through the implementation of an operating committee.

- For planned and unplanned, full or partial outages of CGS, SRP is responsible for securing replacement capacity and energy. In one particular circumstance, Coolidge Power Corporation may deliver replacement capacity and energy to SRP, but is not required to do so.

- Coolidge Power Corporation will not plan or schedule major maintenance activities in the summer months without the prior consent of SRP. Efforts will be made to minimize all outages during the summer months.

- In the same manner that SRP must occasionally provide replacement resources for generating facilities owned by SRP, SRP will utilize its portfolio of owned generation resources, long and short term power purchases, other resources included in operating reserves (e.g., reserve sharing arrangements or demand side management capabilities), and supplemental spot market purchases to respond to any planned or unplanned outages at CGS.

If you have any questions, please feel free to contact me.

Sincerely,

John D. Coggins
Manager, Resource Planning and Development

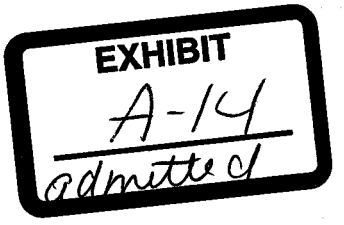
cc: John Foreman

BEFORE THE ARIZONA CORPORATION COMMISSION

COMMISSIONERS

JEFF HATCH-MILLER, Chairman
WILLIAM A. MUNDELL
MARC SPITZER
MIKE GLEASON
KRISTIN K. MAYES

Arizona Corporation Commission
DOCKETED
AUG 25 2005
DOCKETED BY



IN THE MATTER OF THE APPLICATION OF SALT RIVER PROJECT AGRICULTURAL IMPROVEMENT AND POWER DISTRICT ON BEHALF OF ITSELF AND ARIZONA PUBLIC SERVICE COMPANY, SANTA CRUZ WATER AND POWER DISTRICTS ASSOCIATION, SOUTHWEST TRANSMISSION COOPERATIVE, INC. AND TUCSON ELECTRIC POWER IN CONFORMANCE WITH THE REQUIREMENTS OF ARIZONA REVISED STATUTES SECTION 40-360, et. seq., FOR A CERTIFICATE OF ENVIRONMENTAL COMPATIBILITY AUTHORIZING CONSTRUCTION OF THE PINAL WEST TO SOUTHEAST VALLEY/BROWNING PROJECT INCLUDING THE CONSTRUCTION OF TRANSMISSION LINES FROM PINAL WEST TO THE BROWNING SUBSTATION AND OTHER INTERCONNECTION COMPONENTS IN PINAL AND MARICOPA COUNTIES, ARIZONA.

Docket No. L-00000B-04-0126

Case No. 126

DECISION NO. 68093

The Arizona Corporation Commission ("Commission") has conducted its review, pursuant to A.R.S. § 40-360.07. The Commission finds and concludes that the Certificate of Environmental Compatibility ("CEC") issued by the Arizona Power Plant and Transmission Line Siting Committee ("Committee") is hereby granted as modified and amended by this Order. The Commission notes that the list of public hearing dates contained in the CEC inadvertently omitted mention that public hearings were held on April 8, 2005

The Commission modifies the CEC by: (1) granting approval to construct along a modified route, described herein by deletion and insertion, and deleting Exhibit A and replacing it with new

Exhibit A; (2) deleting Exhibit B page 2 of 3 and replacing it with a new Exhibit B page 2 of 3; (3) deleting conditions 8, 13, 24, and 25 and substituting new conditions 8, 13, 24, and 25; and (4) adding additional conditions 28, 29, and 30, all as follows:

Amended alignment:

Delete the following language (found on page 8, line 18):

The alignment turns north within a 1000-foot corridor paralleling Valley Farms Road to an existing Western 115 kV transmission line (N185-N175, 12.9 miles) in Section 8 or Section 9, Township 5 South, Range 9 East. The alignment turns west paralleling the existing Western 115 kV transmission line to Christiansen Road with a 0.5 mile corridor on either side of the alignment centerline on the existing Western 115 kV Transmission Line (N175-N174, 4.0 miles). The alignment then turns north along Christiansen Road between Section 10 and Section 11, Township 5 South, Range 8 East until it intersects with the UPRR in Section 22, Section 23, Section26 or Section 27, Township 4 South, Range 8 East, with a 0.5 mile corridor on either side of the alignment centerline of Christiansen Road. The alignment continues north, following the UPRR until it converges with the Magma Railroad in Section 26 or Section 35, Township 3 South, Range 8 East, with a 0.5 mile corridor on either side of the alignment centerline of the UPRR. (N174-N188-N166-N119-N120-N45, 8.7 miles). The alignment then extends northeast, paralleling the Magma Railroad to the site of the proposed Southeast Valley (SEV) Substation. This segment would also have a 0.5 mile corridor on either side of the alignment centerline of the Magma Railroad (N45-N44, 2.4 miles).

Substitute the following language for the deleted language:

The alignment turns north paralleling Valley Farms Road within a 1000-foot corridor until it intersects the Union Pacific Railroad ("UPRR") (N185-N175-N169-N81). The alignment continues northwest, parallel to the UPRR within a 0.5 mile corridor on each side of the alignment centerline of the UPRR, until it converges with the Magma Railroad (N81-N45). It then extends northeast, paralleling the Magma Railroad within a 1000-foot-wide corridor, to the proposed SEV/SRP RS-22 Substation (N45-N44).

Delete the following language (found on page 10):

The approved substation configurations are as shown in Applicant's Exhibits G-9, G-10, G-11, G-12, G-14, and G-15 in the Application, and are attached to this Certificate as Exhibit C.

Substitute the following language for the deleted language:

The approved substation configurations are as shown in Applicant's Exhibits G-9, G-10, G-11, G-12, G-14, and G-15 in the Application. Applicant's Exhibit G-1 and G-2 provide representations of typical structures associated with the Project. Applicant's Exhibits G-1, G-2, G-9, G-10, G-11, G-12, G-14, and G-15 are attached to this Certificate as Exhibit C.

Delete Exhibit A, Substitute new Exhibit A.

The Commission modifies the CEC by deleting CEC conditions 8, 13, 24, and 25 and substituting new Conditions 8, 13, 24, and 25 as follows:

8. Should an archaeological, paleontological, or historic site or object be discovered on state, county or municipal land during plan-related activities, the person in charge is required to notify promptly the Director of the Arizona State Museum and take reasonable steps to secure and maintain the resource's preservation pursuant to state law (*i.e.*, A.R.S. § 41-844). If human remains and/or funerary objects are encountered on private land during the course of any ground disturbing activities relating to the development of the subject property, Applicant shall cease work on the affected area of the Project and notify the Director of the Arizona State Museum in accordance with A.R.S. § 41-865.

13. Within 120 days of the effective date of the Commission's decision regarding the Certificate, the Applicant shall erect and maintain signs throughout the entire approved Certificate corridor providing public notice that the property is the possible site of a future transmission line or substation. Applicant shall place signs in prominent locations at reasonable intervals such that the public is notified along the full length of the transmission line. The signs shall advise: a.) the site has been approved for the construction of Project facilities including 500 kV lines, 230 kV lines and substations, as applicable; b.) the expected date of completion of the Project facilities; and c.) a phone number for information regarding the Project.

24. Applicant shall provide copies by certified mail of this Certificate to appropriate city and county planning agencies, to the county board of supervisors, mayor and town council of

appropriate cities, the Arizona Department of Real Estate, the Attorney General's Office, SHPO, AGFD and ASLD.

25. Prior to the date this transmission line is put into commercial service, the Applicant shall provide homebuilders and developers within one mile of the center line of the certificated route the identity, location, and a pictorial depiction of the type of power line being constructed, accompanied by a written description, and encourage the developers and homebuilders to include this information in the developers' and homebuilders' homeowners' disclosure statement.

The Commission modifies the CEC by adding new conditions 28, 29, and 30 as follows:

28. Applicant shall work in good faith with homeowners, homeowners associations and potential developers to avoid existing and future homes along the approved route.

29. Within three (3) years of the effective date of the Commission's decision for the Project, the Applicant shall determine a tentative center line for the transmission line and location of the substations and shall erect and maintain signs providing public notice that the property is the site of a future transmission line or substation. Applicant shall place signs in prominent locations at reasonable intervals such that the public is notified along the full length of the transmission line. The signs shall advise: a.) the site has been approved for the construction of Project facilities including 500 kV lines, 230 kV lines and substations, as applicable; b.) the expected date of completion of the Project facilities; and c.) a phone number for public information regarding the Project.

30. Within 90 days of securing all or any portion of the easement for the transmission line, the Applicant shall record such easement with either the Pinal County Recorder's Office or the Maricopa County Recorder's Office, as appropriate.

In addition, the Commission makes the following Findings of Fact:

1. The route approved by this Order from the Santa Rosa Substation to the proposed Pinal South Substation through the southern edge of the City of Casa Grande does not alleviate the need for additional facilities to the northern part of Casa Grande. Continued growth will necessitate the siting and construction of additional transmission lines and substations to serve that area. Because of the lack of adequate utility corridors in the City of Casa Grande's General Plan, the

Project Participants shall pursue good faith efforts with the City of Casa Grande to establish utility corridors to address future transmission concerns.

2. The route approved by this Order does not alleviate the need for additional facilities to serve the Town of Florence. The siting and construction of additional transmission lines and substations will be required to provide service to that area. Because of the lack of adequate utility corridors in the Town of Florence's General Plan, the Project Participants shall pursue good faith efforts with the Town of Florence to establish utility corridors to address future transmission concerns.

3. Additional facilities will likely be needed to connect the Desert Basin and Sundance power plants to the grid. The Project Participants shall pursue good faith efforts with the Cities of Casa Grande and Coolidge and the Town of Florence to establish utility corridors to address future transmission concerns.

The Commission further finds and concludes that:

(1) the Project is in the public interest because it aids the state in meeting the need for an adequate, economical and reliable supply of electric power; (2) in balancing the need for the Project with its effect on the environment and ecology of the state, the conditions placed on the CEC by the Committee and as modified by the Commission effectively minimize its impact on the environment and ecology of the state; (3) the conditions placed on the CEC by the Committee and as modified by the Commission resolve matters concerning the need for the Project and its impact on the environment and ecology of the state raised during the course of proceedings, and as such, serve as the findings of fact on the matters raised; and (4) in light of these conditions, the balancing in the broad public interest results in favor of granting the CEC as modified by the Commission.

. . .

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. . .

. . .

THE CEC ISSUED BY THE SITING COMMITTEE IS INCORPORATED HEREIN AND IS APPROVED AS MODIFIED BY ORDER OF THE ARIZONA CORPORATION COMMISSION

Jeffrey McHatch-Miller
CHAIRMAN

William A. Mundell
COMMISSIONER

COMMISSIONER

COMMISSIONER

COMMISSIONER

IN WITNESS WHEREOF, I BRIAN C. MCNEIL, Executive Director of the Arizona Corporation Commission, have hereunto, set my hand and caused the official seal of this Commission to be affixed at the Capitol, in the City of Phoenix, this 25th day of August, 2005.

BRIAN C. MCNEIL
Executive Director

DISSENT: _____

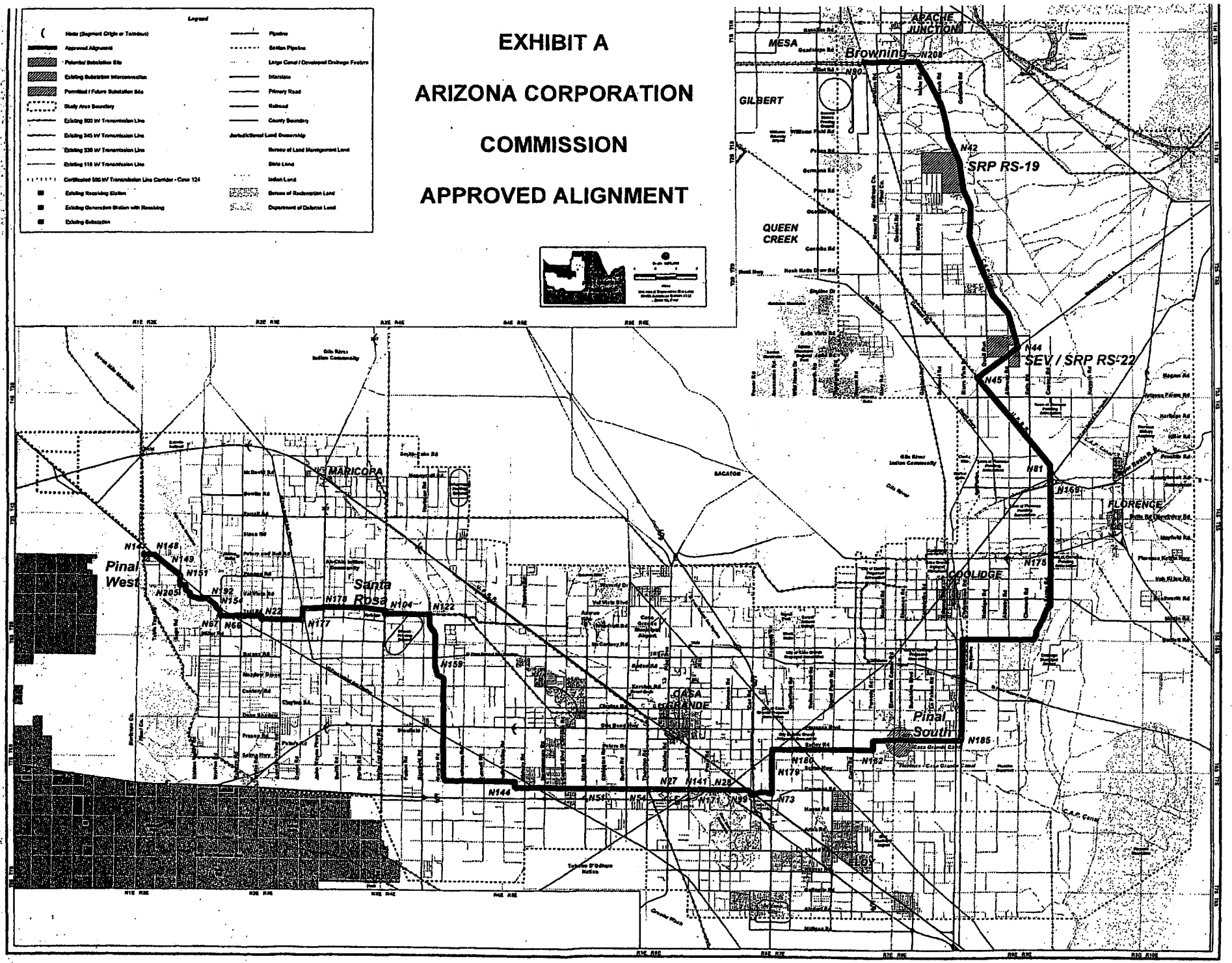
DISSENT: _____

EXHIBIT A

EXHIBIT A

ARIZONA CORPORATION COMMISSION

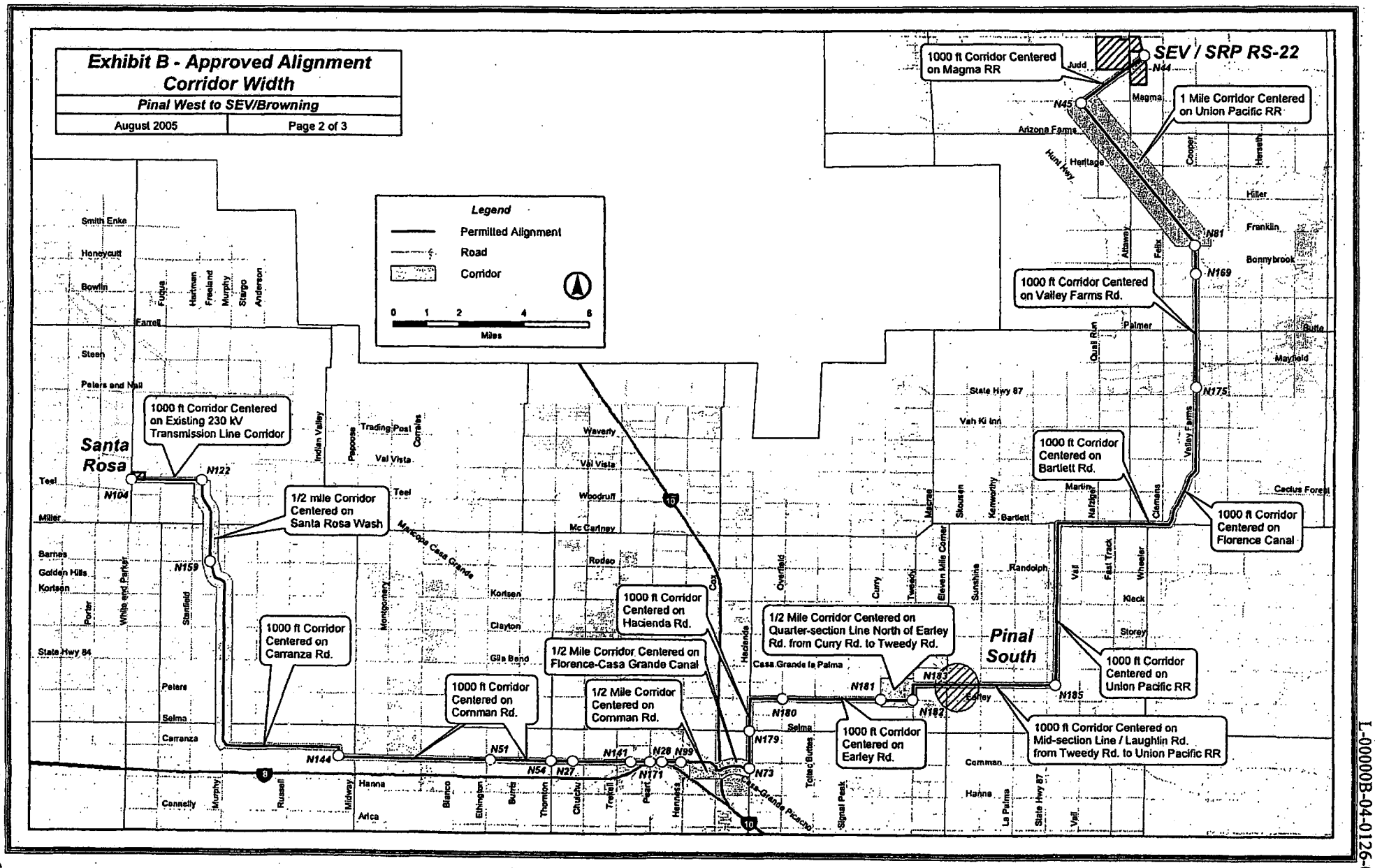
APPROVED ALIGNMENT



Decision No. 68093

L-00000B-04-0126-00000

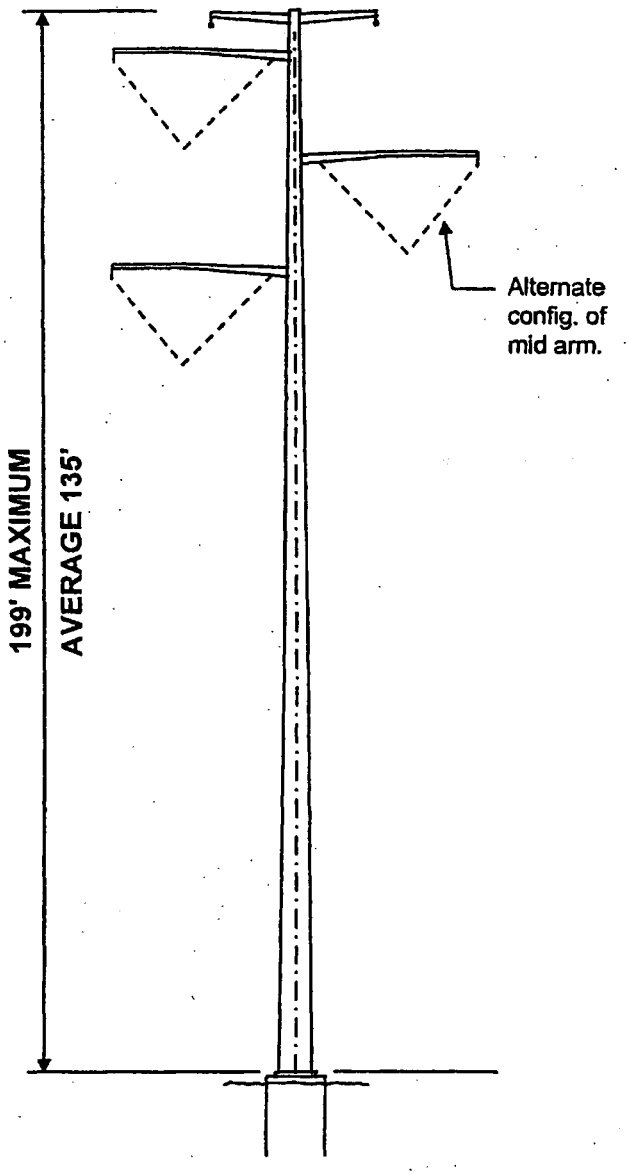
EXHIBIT B
Page 2 of 3



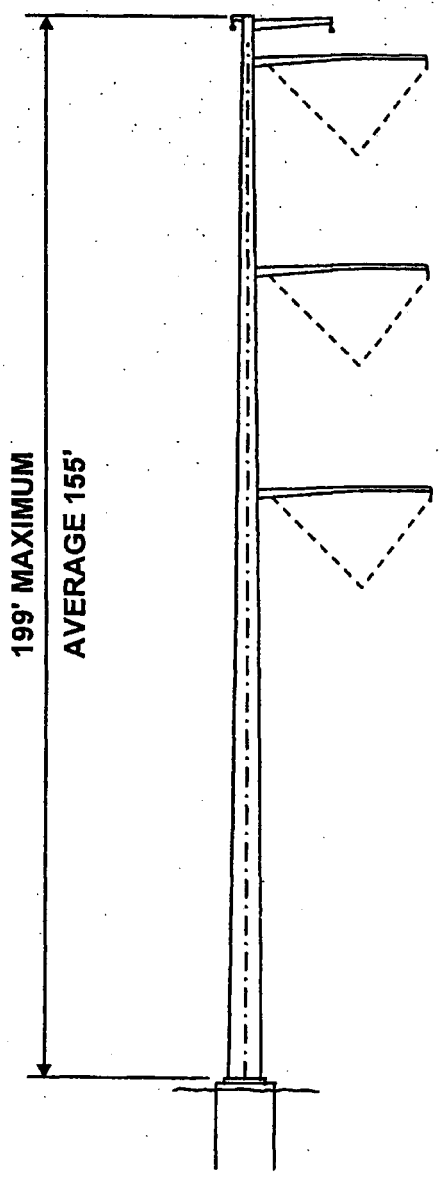
Decision No. 68093

L-000000B-04-0126-00000

EXHIBIT C



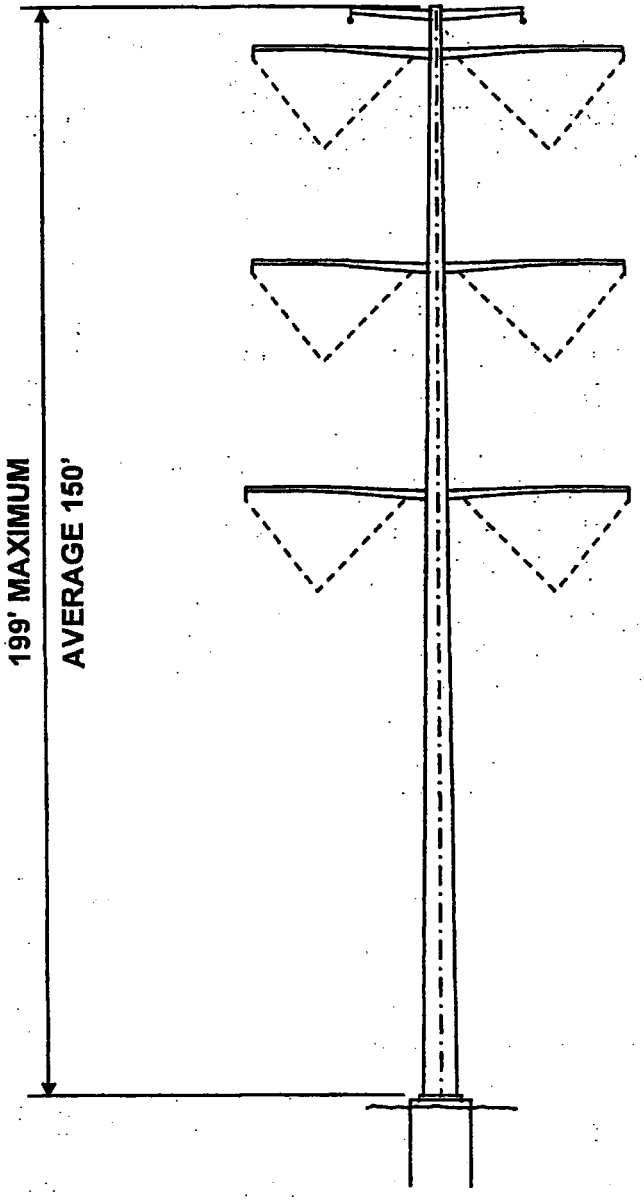
DELTA



VERTICAL

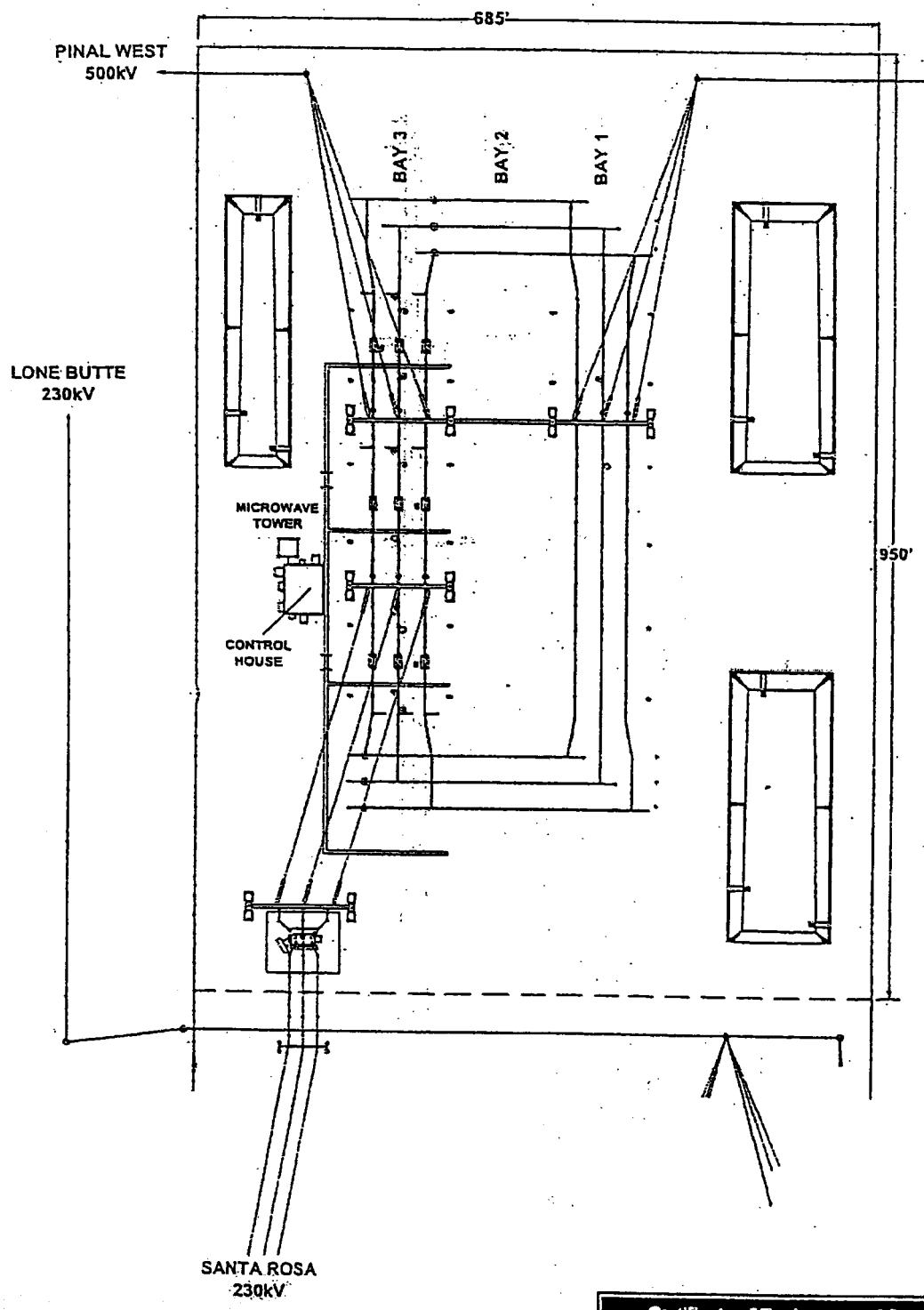
Insulator assemblies may consist of: V-string, I-string, braced I-string, horizontal vee, post, braced post, etc. and in suspension or dead-end application.

Certificate of Environmental Compatibility		
Exhibit G-1 **Single Circuit Tubular Type Steel Structures**		
Pinal West to Southeast Valley/Browning Project		
Date: 10.07.04	Exhibit G-1	Author: mv



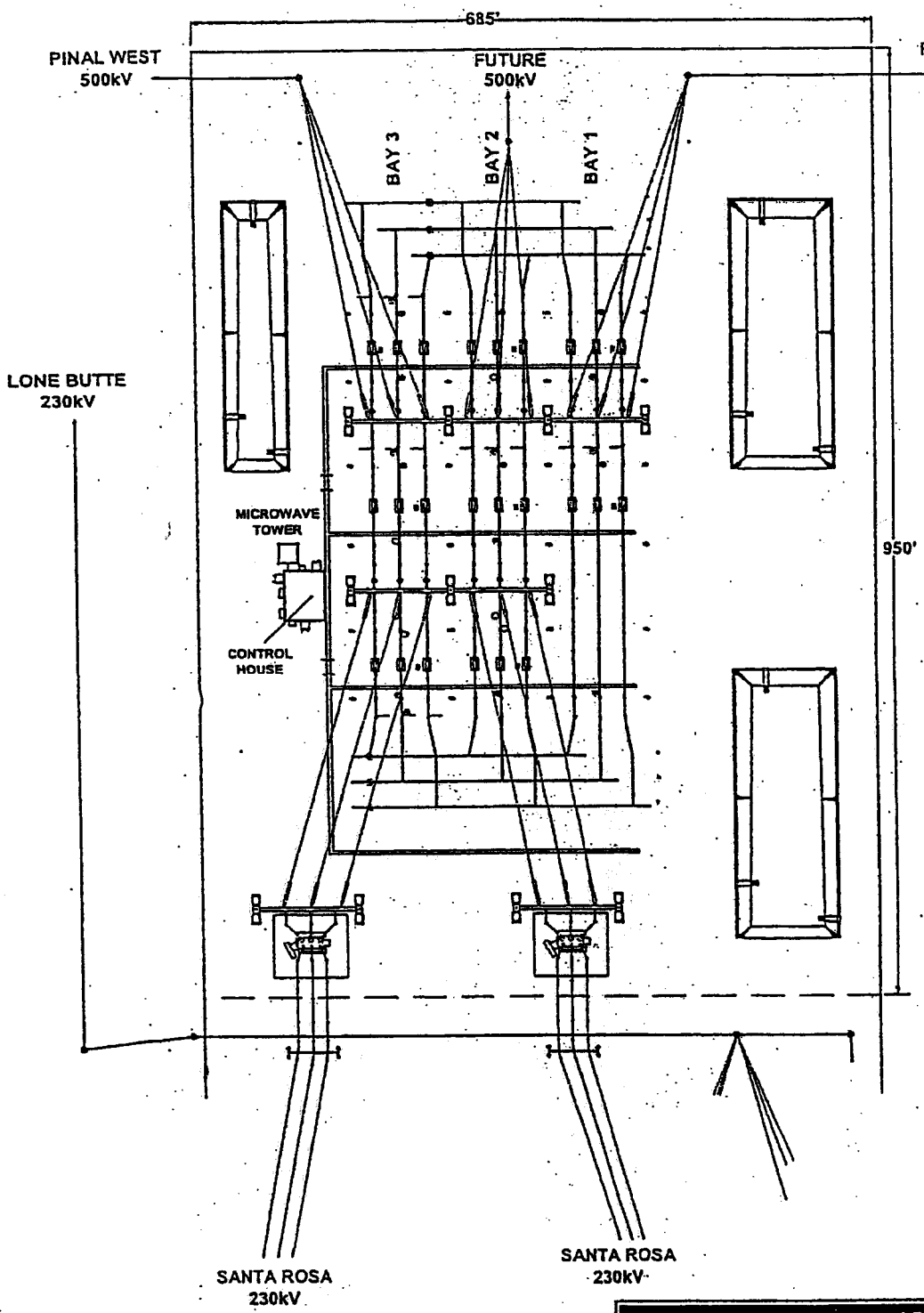
Insulator assemblies may consist of: V-string, I-string, braced I-string, horizontal vee, post, braced post, etc. and in suspension or dead-end application.

Certificate of Environmental Compatibility		
Exhibit G-2 **Double Circuit Tubular Type Steel Structure**		
Pinal West to Southeast Valley/Browning Project		
Date: 10.07.04	Exhibit G-2	Author: mv



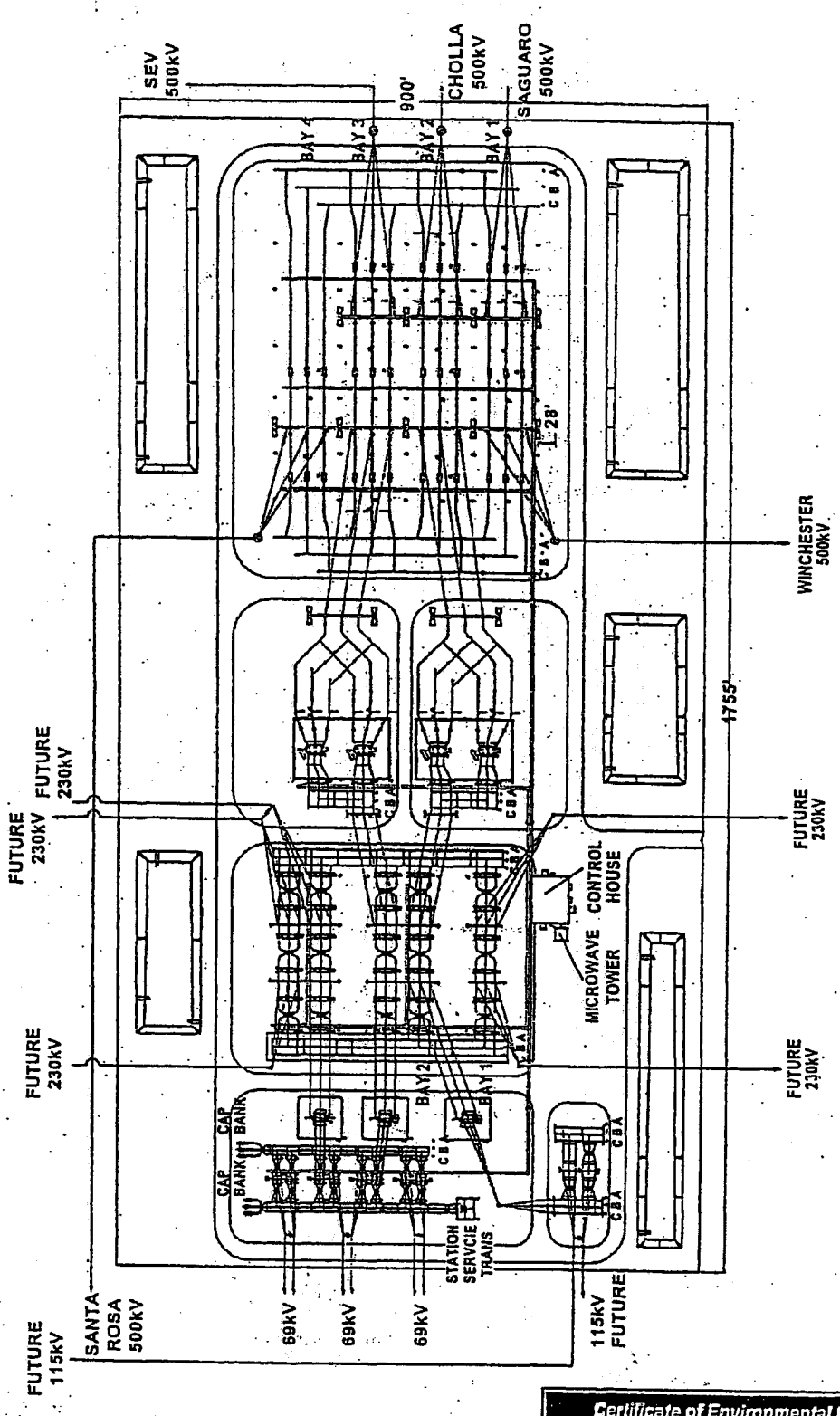
North

Certificate of Environmental Compatibility		
Exhibit G-9 Santa Rosa Substation – Initial General Arrangement		
Palo Verde to Pinal West Project		
Date: 10.06.04	Exhibit G-9	Author: mv

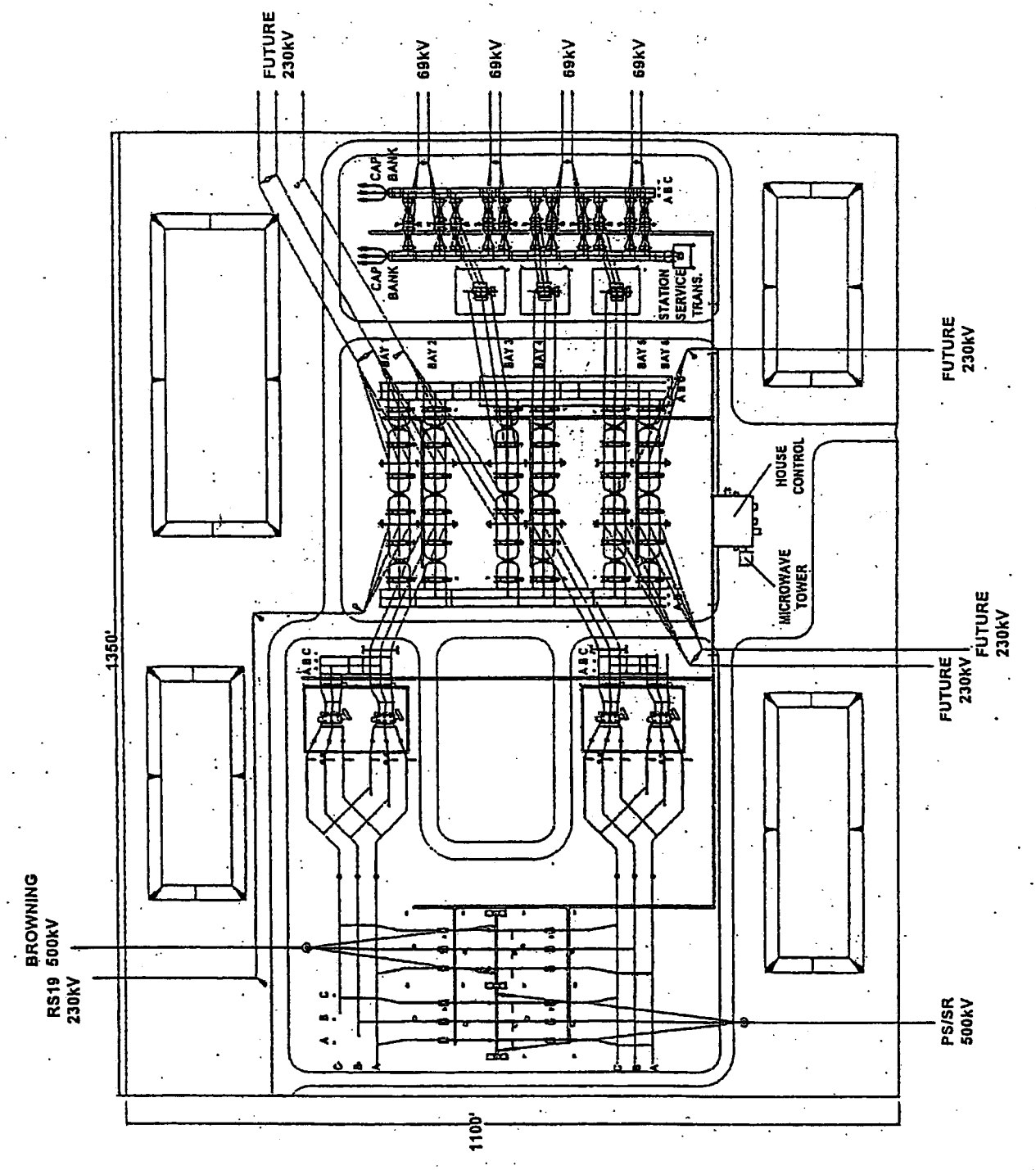


North

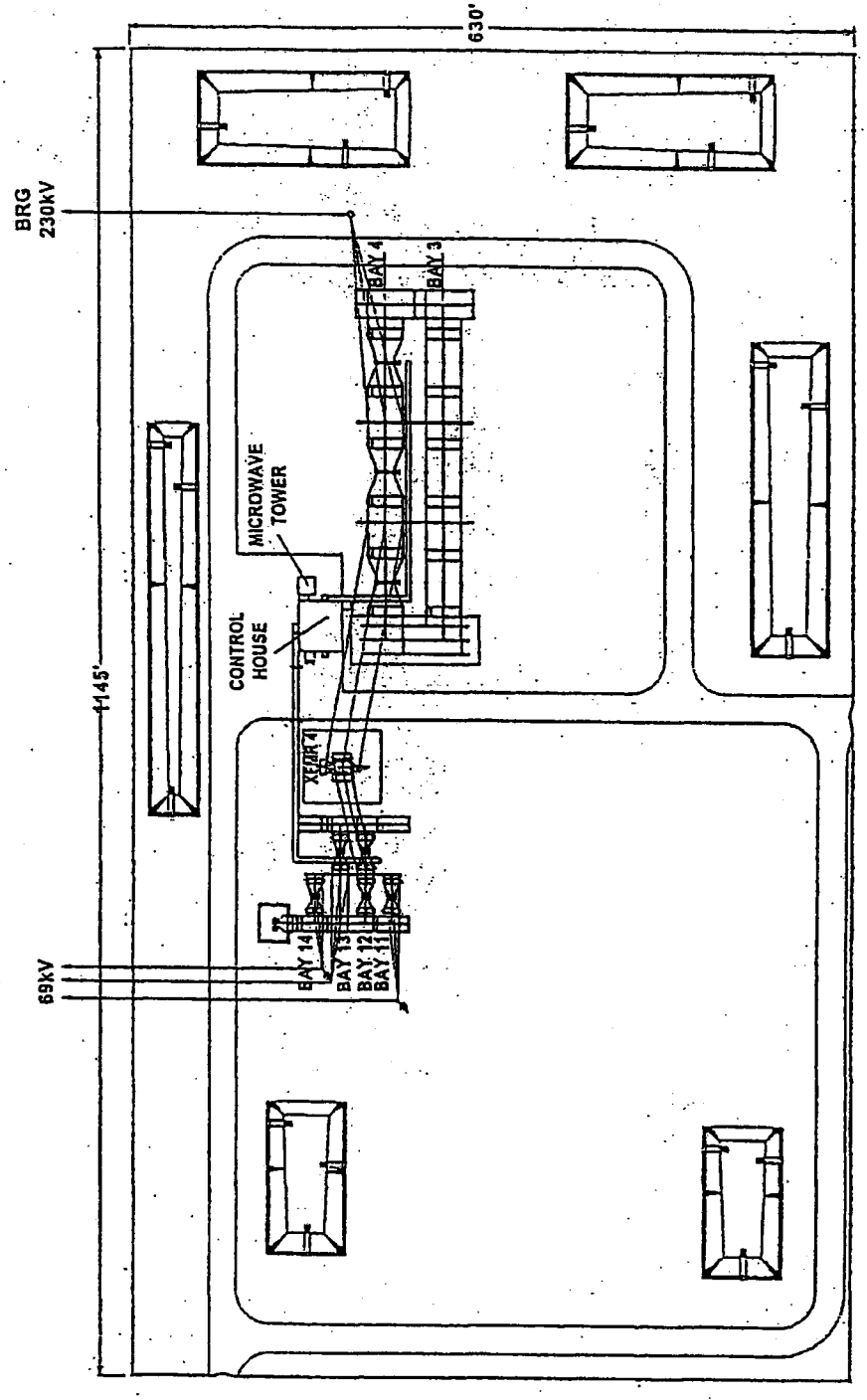
Certificate of Environmental Compatibility		
Exhibit G-10 Santa Rosa Substation – Ultimate General Arrangement		
Pinal West to Southeast Valley/Browning Project		
Date: 10.07.04	Exhibit G-10	Author: mv



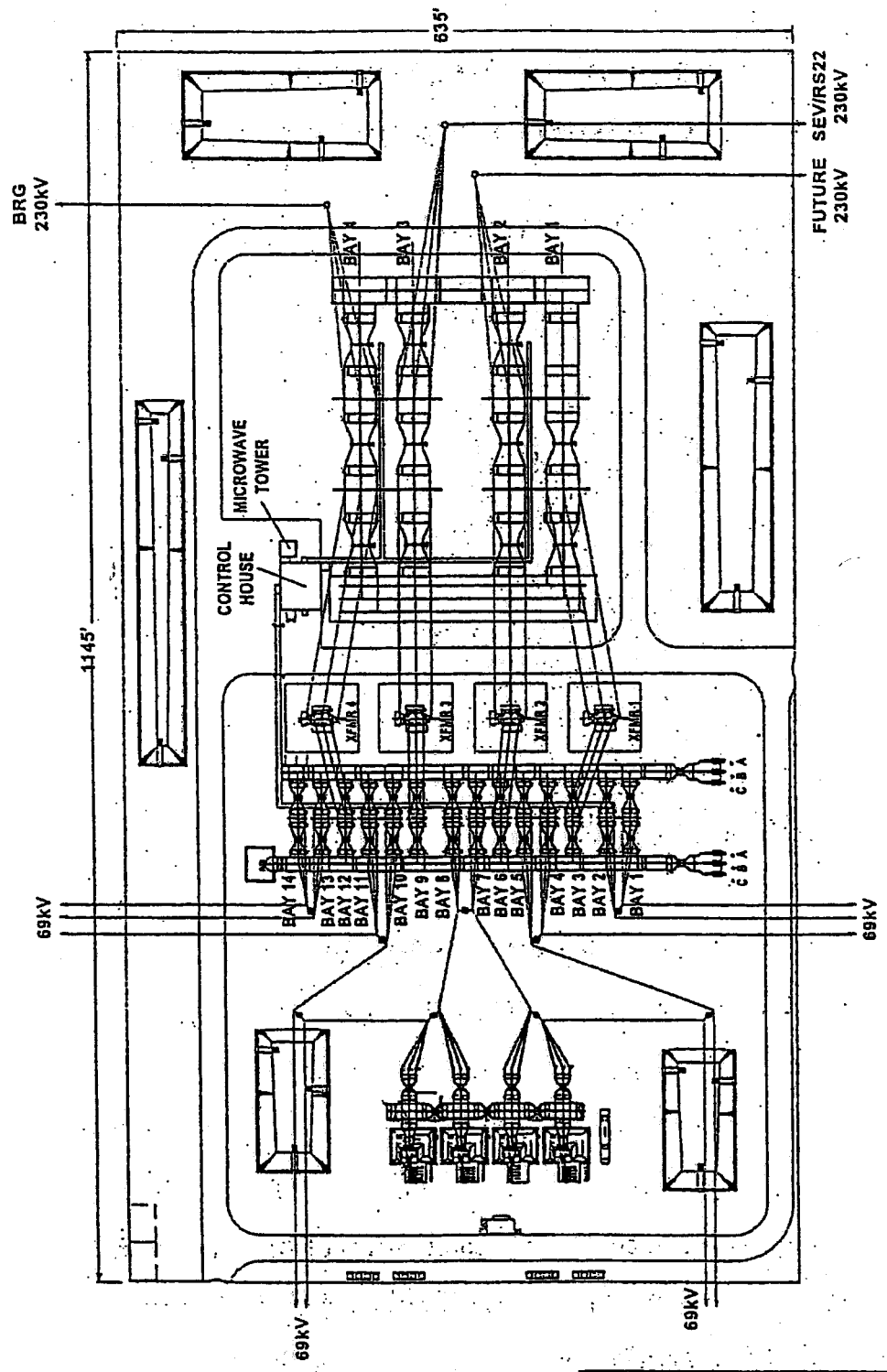
Certificate of Environmental Compatibility		
Exhibit G-11 Pinal South Substation – General Arrangement		
Pinal West to Southeast Valley/Browning Project		
Date: 10.07.04	Exhibit G-11	Author: mv



Certificate of Environmental Compatibility		
Exhibit G-12 SEV Substation – Ultimate General Arrangement with Pinal South		
Pinal West to Southeast Valley/Browning Project		
Date: 10.07.04	Exhibit G-12	Author: mv



Certificate of Environmental Compatibility		
Exhibit G-14 RS-19 Substation – Initial General Arrangement		
Pinal West to Southeast Valley/Browning Project		
Date: 10.07.04	Exhibit G-14	Author: mv



Certificate of Environmental Compatibility		
Exhibit G-15 RS-19 Substation – Ultimate General Arrangement		
Pinal West to Southeast Valley/Browning Project		
Date: 10.07.04	Exhibit G-15	Author: mv

BEFORE THE ARIZONA POWER PLANT AND TRANSMISSION LINE SITING COMMITTEE

IN THE MATTER OF THE APPLICATION OF SALT RIVER PROJECT AGRICULTURAL IMPROVEMENT AND POWER DISTRICT ON BEHALF OF ITSELF AND ARIZONA PUBLIC SERVICE COMPANY, SANTA CRUZ WATER AND POWER DISTRICTS ASSOCIATION, SOUTHWEST TRANSMISSION COOPERATIVE, INC. AND TUCSON ELECTRIC POWER IN CONFORMANCE WITH THE REQUIREMENTS OF ARIZONA REVISED STATUTES SECTION 40-360, et. seq., FOR A CERTIFICATE OF ENVIRONMENTAL COMPATIBILITY AUTHORIZING CONSTRUCTION OF THE PINAL WEST TO SOUTHEAST VALLEY/BROWNING PROJECT INCLUDING THE CONSTRUCTION OF TRANSMISSION LINES FROM PINAL WEST TO THE BROWNING SUBSTATION AND OTHER INTERCONNECTION COMPONENTS IN PINAL AND MARICOPA COUNTIES, ARIZONA.	Docket No. L00000B-04-0126 Case No. 126

CERTIFICATE OF ENVIRONMENTAL COMPATIBILITY

Pursuant to notice given as provided by law, the Arizona Power Plant and Transmission Line Siting Committee ("Committee") held public hearings on November 29 and 30, 2004; December 16 and 17, 2004; January 7, 10 and 11, 2005; February 14 and 15, 2005; March 9, 10, 22 and 23, 2005; April 14 and 15, 2005, May 10, 2005 and June 7, 2005, all in conformance with the requirements of Arizona Revised Statutes ("A.R.S.") § 40-360, *et seq.*, for the purpose of receiving evidence and deliberating on the Application of Salt River Project Agricultural Improvement and Power District ("Applicant") for a Certificate of Environmental Compatibility ("Certificate") on behalf of itself and other project participants in the above-captioned case. Route tours were

conducted on January 20, March 2 and March 29, 2005.

The following members and designees of members of the Committee were present at one or more of the hearings for the evidentiary presentations, tours and/or for the deliberations:

Laurie A. Woodall	Chairman, Designee for Arizona Attorney General, Terry Goddard
Ray Williamson	Designee for Chairman, Arizona Corporation Commission
Paul Rasmussen	Designee for Director, Arizona Department of Environmental Quality
Mark McWhirter	Designee for Director, Energy Department, Arizona Department of Commerce
Sandie Smith	Appointed Member
Jeff McGuire	Appointed Member
Margaret Trujillo	Appointed Member
A. Wayne Smith	Appointed Member
Michael Whalen	Appointed Member
Michael Palmer	Appointed Member

The Applicant was represented by Kenneth C. Sundlof of Jennings, Strouss & Salmon, P.L.C. and Laura Raffaelli of Salt River Project Agricultural Improvement and Power District. The following parties were granted intervention pursuant to A.R.S. § 40-360.05:

INTERVENING PARTY	*REPRESENTED BY:*
Arizona Corporation Commission	Lisa Vandenberg, Diane Targovnik, Janice Alward and Keith Layton
Walter Meek	Pro Se
Miller Holdings, Inc.	John R. Dacey

City of Casa Grande	K. Scott McCoy
Del Mar Development The Knorr family	Roger K. Ferland and Michelle DeBlasi
Curry Road Group Mike Hastings San Tan Tillage Company David M. and Rebecca Daley Coolidge Investment Properties, L.L.C.	Roger K. Ferland and Michelle DeBlasi
Casa Grande Mountain Limited Partnership	Leonard M. Bell
Walker Butte 700, L.L.C. Walker Butte 300, L.L.C. Walker Butte Granite, L.L.C. Magic Lake 80, L.L.C. Skousen & Highway 87, L.L.C. Hunt & Hooper, L.L.C. Sonoran 382, L.L.C. MLC Farms, L.L.C. General Hunt Properties, Inc. Skousen, CR and Elaine TRS	Lawrence V. Robertson, Jr.
Save Our Valley Association (SOVA)	Lawrence V. Robertson, Jr. and David West
Westpac Development Corporation Robson Communities, Inc. Langley Properties, L.L.C. Vistoso Partners, L.L.C. Pulte Home Corporation, Inc. Jacob Roberts Gail Robertson Lonesome Valley Farms The Francisco Grande Hotel and Golf Resort (and surrounding property), owned and operated by FG Partners, L.L.P. The Mahaganapati Temple of Arizona Sun Valley Farms Unit 5 Homeowners Association, Inc. Karolyn Clough Wanda Wood Jean Stout Linda Beres Brenda Scott Jackie Guthrie	Court S. Rich

Aspen Farms, L.L.C. Dwayne Dobson	
Pivotal Sandia, L.L.C. First American Title Company, as Trustee of its Trust Nos. 8572, 8573 and 8574 Wuertz Farming Limited Company, L.L.C. Sundance Farms Limited Partnership, L.L.P. McKinney Farming Company Sarah Wuertz Gregory Wuertz Carol Wuertz Behrens David Wuertz	Karrin Kunasek Taylor and William E. Lally
Trinity Baptist Church	Roger K. Ferland and Michelle DeBlasi
Meritage Homes Corporation	James J. Heiler
Town of Florence	James E. Mannato
Vanguard Properties, Inc. Road Runner Resorts, LLC CMR Casa Grande, LLC Florence Copper, Inc.	Steven A. Hirsch and Rodney W. Ott

At the conclusion of the hearings, the Committee, having received the Application, the appearances of the parties, the evidence, testimony and exhibits presented at the hearings, and being advised of the legal requirements of A.R.S. §§ 40-360 to 40-360.13, upon motion duly made and seconded, voted to grant the Applicant a Certificate (Case No. 126) for authority to construct the following facilities as requested and described in the Application and modified by the conditions herein: a transmission line beginning at the recently permitted Pinal West Substation (Case No. 124) and ending at the existing Browning Substation, along with related substations, as described below (the "Project").

The transmission line alignments and substation locations are depicted on Exhibit A to this Certificate and are described as follows ("N" references are to the node numbers depicted on Exhibit A)

The alignment approved consists of a 1000-foot corridor, 500 feet on each side of

the center line of the roadways and linear features (canals, railroads, pipelines and washes) described herein, except where specifically noted. The Applicant is granted a half-mile corridor in those segments specifically described herein and depicted in the attached Exhibit B.

Pinal West to Santa Rosa

Applicant is granted authority to construct a single circuit 500 kV transmission line on the following alignment. Originating at the Pinal West Substation site located in Section 18, Township 5S, Range 2E near the Maricopa and Pinal County line, the alignment extends east, parallel to Amigos Road within a 1000-foot corridor until it intersects with the El Paso Natural Gas ("EPNG") pipeline corridor (N147-N148, 0.5 mile) in Section 18, Township 5 South, Range 2 East. The alignment continues within a 1000-foot corridor southeast along the EPNG corridor until it intersects with Sage Road (N148-N149-N151, 1.6 miles) between Section 20 and Section 21, Township 5 South, Range 2 East. The alignment then parallels Sage Road within a 1000-foot corridor south to Mayer Boulevard (N151-N205, 0.5 mile). The alignment turns east within a 1000-foot corridor along Mayer Boulevard to Harvest Hills Trail in Section 21, Township 5 South, Range 2 East, then parallels Harvest Hills Trail until it converges with the EPNG corridor (N205-N192, 1.8 miles) in Section 27, Township 5 South, Range 2 East. The alignment continues within a 1000-foot corridor southeast along the EPNG corridor to the Santa Rosa Canal (N192-N154, 0.5 mile). The alignment then parallels the Santa Rosa Canal south within a one-half mile wide corridor until it intersects with Teel Road (N154-N67, 0.6 mile) between Sections 26 and Section 35, Township 5 South, Range 2 East. The alignment turns east within a 1000-foot corridor, continuing along Teel Road. In the vicinity of the Mahaganapati Temple of Arizona site (the "Temple") in Section 35, Township 5 South, Range 2 East, the line will be located in Section 26, Township 5

South, Range 2 East on the north side of Teel Road. Once past the Temple, the line will continue east along Teel Road until intersecting with Green Road (N67-N66-N22-N177, 4.2 miles). The alignment then follows Green Road north between Section 29 and Section 28, Township 5 South, Range 3 East within a 1000-foot corridor to the midsection line north of Teel Road in Section 28, Township 5 South, Range 3 East, then east paralleling the midsection line to John Wayne Parkway (N177-N178, 1.6 miles). The alignment continues east from John Wayne Parkway in a 500-foot corridor on the south side of and paralleling the Ak-Chin Indian Community boundary, to the existing Santa Rosa Substation. (N178-N104, 3.2 miles) in Section 30, Township 5 South, Range 4 East.

Applicant is granted authority to construct a 500/230 kV substation located on approximately 15 acres adjacent to the existing Santa Rosa 230/69 kV Substation, located in Section 30, Township 5 South, Range 4 East.

Santa Rosa to SEV

Applicant is granted authority to construct a 500 kV transmission line with an option for a 500/230 kV double circuit on all or part of its length, on the following alignment. From the Santa Rosa Substation, the 500 kV alignment extends east, within a 1000-foot corridor paralleling the existing Arizona Public Service ("APS") and Western Area Power Administration ("Western") 230 kV transmission lines until intersecting with the Santa Rosa Wash flood control channel (N104-N122, 2.2 miles) in Section 28, Township 5 South, Range 4 East. The alignment turns south, at the Santa Rosa Wash and follows the Santa Rosa Wash within a one-half mile corridor to Barnes Road (N122-N159, 2.6 miles) in Section 8, Township 6 South, Range 4 East. The alignment continues south within a one-half mile corridor until its intersection with Carranza Road between Section 3 and Section 10, Township 7 South, Range 4 East, then turns east in a 1000-foot

corridor parallel to Carranza Road until it intersects with the quarter-section line between Indian Valley and Midway Roads in Section 12, Township 7 South, Range 4 East; the alignment then travels south down the quarter-section line between Indian Valley and Midway Roads to Cornman Road, which is one-half mile north of I-8 (N159-N144, 9.6 miles). The alignment extends east in a 1000-foot corridor paralleling Cornman Road between Section 6 and Section 7, Township 7 South, Range 5 East to Henness Road between Section 10 and Section 11, Township 7 South, Range 6 East. The alignment continues east within a one-half mile corridor until it jogs south, following Cox Road to the midsection line in Section 11 or Section 12, Township 7 South, Range 6 East, where the alignment turns east to cross I-10, south of the I-10/UPRR intersection. After crossing I-10, the route jogs north following the I-10 right of way in Section 12, Township 7 South, Range 6 East to the Florence-Casa Grande Canal and continues east within a one-half mile corridor following the Florence-Casa Grande Canal, until its intersection with Sunland Gin Road (N144-N51-N54-N27-N141-N171-N28-N99-N73, 12.8 miles) which is located between Section 12, Township 7 South, Range 6 East and Section 7, Township 7 South, Range 7 East. The alignment then turns north within a 1000-foot corridor and parallels Sunland Gin Road, which becomes Hacienda Road at Cornman Road, to Selma Highway (N73-N179, 1.2 miles). The alignment continues north within a 1000-foot corridor until its intersection with Earley Road between Section 30 and Section 31, Township 6 South, Range 7 East. At Earley Road, the alignment turns and goes east in a 1000-foot corridor to Curry Road (N179-N180-N181, 5.0 miles) in Section 26, Township 6 South, Range 7 East. . At Curry Road the alignment continues east along Early Road to Tweedy Road within a one-half mile corridor between Early Road and the midsection line to the north in Section 26, Township 6 South, Range 7 East. At Tweedy Road the alignment goes north between Section 26 and Section 25, Township

6 South, Range 7 East to the midsection line north of Earley Road and then turns east within a 1000-foot corridor paralleling the midsection line in Section 25, Township 6 South, Range 7 East to the vicinity of the existing Electrical District Number 2 ("ED2") Substation (N181-N182-N183, 2.7 miles).

Applicant is granted authority to construct a new 500/230/115/69 kV Substation located on approximately 50 acres of land in Section 30, Township 6, South, Range 8 East (referred to in the Application as Pinal South).

From the ED2 Substation and the proposed Pinal South Substation site, the alignment continues within a 1000-foot corridor east paralleling Laughlin Road midsection line in Section 30, Township 6 South, Range 8 East until it intersects with the UPRR (N183-N185, 3.0 miles) in Section 27, Township 6 South, Range 8 East. The alignment turns north paralleling the UPRR until it intersects with Bartlett Road between Section 34, Township 5 South, Range 8 East and Section 3, Township 6 South, Range 8 East. The alignment turns east within a 1000-foot corridor paralleling Bartlett Road until it intersects with the Florence Canal in Section 32, Township 5 South, Range 9 East or Section 6, Township 6 South, Range 9 East; the alignment continues northeast paralleling the Florence Canal until it intersects with Valley Farms Road between Section 29 and Section 28, Township 5 South, Range 9 East. The alignment turns north within a 1000-foot corridor paralleling Valley Farms Road to an existing Western 115 kV transmission line (N185-N175, 12.9 miles) in Section 8 or Section 9, Township 5 South, Range 9 East. The alignment turns west paralleling the existing Western 115 kV transmission line to Christensen Road with a 0.5 mile corridor on either side of the alignment centerline on the existing Western 115 kV Transmission Line (N175-N174, 4.0 miles). The alignment then turns north along Christensen Road between Section 10 and Section 11, Township 5 South, Range 8 East until it intersects with the UPRR in Section 22, Section 23, Section

26 or Section 27, Township 4 South, Range 8 East, with a 0.5 mile corridor on either side of the alignment centerline of Christensen Road. The alignment continues north, following the UPRR until it converges with the Magma Railroad in Section 26 or Section 35, Township 3 South, Range 8 East, with a 0.5 mile corridor on either side of the alignment centerline of the UPRR. (N174-N188-N166-N119-N120-N45, 8.7 miles). The alignment then extends northeast, paralleling the Magma Railroad to the site of the proposed Southeast Valley (SEV) Substation. This segment would also have a 0.5 mile corridor on either side of the alignment centerline of the Magma Railroad (N45-N44, 2.4 miles).

Applicant is granted authority to construct a 500/230 kV Substation located on approximately 50 acres of land in Section 24, Township 3 South, Range 8 East and Section 19, Township 3 South, Range 9 East (referenced in the Application as 'SEV'). The proposed SEV Substation would also include co-location of a proposed 230/69 kV Substation (referenced in the Application as 'RS-22').

SEV to Browning

Applicant is granted authority to construct a double circuit 500/230 kV transmission line with the following alignment. From the proposed SEV/RS-22 Substation, the alignment extends in a northwesterly direction, paralleling the Central Arizona Project ("CAP") Canal within a one-half mile wide corridor on the west side of the CAP Canal from Judd Road north to Roberts Road. From Roberts Road the alignment continues northwesterly in a 1000-foot corridor on the west side of the CAP Canal to the quarter-section line north of Chandler Heights Boulevard in Section 23, Township 2 South, Range 8 East. In order to jog around the Rittenhouse Auxiliary Airfield the alignment north of the quarter-section line north of Chandler Heights Boulevard continues along the CAP Canal within a corridor 1000-feet wide on the west

side and one-half mile wide on the east side of the CAP Canal to the mid-section line north of Pima Road in Sections 10 or Section 11, Township 2 South, Range 8 East.

Applicant is granted authority to construct a 230/69 kV Substation located on approximately 15 acres of land in Sections 3, 4, 10 or 15, Township 2 South , Range 8 East. (referenced in the Application as 'RS-19').

The alignment then continues parallel to the CAP Canal within a 1000-foot corridor on the west side of the CAP Canal until it intersects with the existing Silver King to Browning 500 kV transmission line (Case No. 16) (N44-N42-N208, 15.0 miles) in Section 8, Township 1 South, Range 8 East. The alignment then goes west paralleling the Silver King - Browning line within a 1000-foot corridor until terminating at the existing Browning Substation (N208-N90, 2.7 miles) in Section 12, Township 1 South, Range 7 East.

From the CAP Canal to the existing Browning Substation (N208-N90), the existing Silver King to Browning single circuit 500 kV transmission line will be rebuilt to a double circuit 500/230 kV line.

The approved substation configurations are as shown in Applicant's Exhibits G-9, G-10, G-11, G-12, G-14, and G-15 in the Application, and are attached to this Certificate as Exhibit C. This approval shall not limit the ability of the Applicant to make reasonable improvements, replacements, additions or modifications as needed to operate the system in a safe, reliable and efficient manner.

This Certificate is granted upon the following conditions:

1. This authorization to construct the Project will expire twenty (20) years from the date the Certificate is approved by the Arizona Corporation Commission, unless construction is completed to the point that the line is capable of operating at its rated capacity by that time; provided, however,

that prior to such expiration the Applicant may request that the Arizona Corporation Commission extend the time limitation.

2. Applicant shall obtain all required approvals and permits necessary to construct the Project.

3. Applicant shall comply with all existing applicable laws, air and water pollution control standards and regulations, ordinances, master plans and regulations of the United States, the State of Arizona, Maricopa County, Pinal County and any other governmental entities having jurisdiction.

4. The Applicant will sponsor an intensive pedestrian survey for cultural resources of the previously un-inspected portions of the final right-of-way and will continue to consult with the State Historic Preservation Office ("SHPO") to identify and evaluate any cultural resources present.

5. The Applicant will continue to consult with SHPO to reach a determination of impact. If the result is a determination of negative impacts, the Applicant will consult with SHPO to resolve the negative impacts.

6. The Applicant will avoid and/or minimize impacts to properties considered eligible for inclusion in the State or National Register of Historic Places to the extent possible. Spanning over historic-period roads, canals and railroads is considered an acceptable form of avoidance.

7. If the Applicant decides that Register-eligible archaeological sites cannot be avoided, then the Applicant will consult with SHPO to plan and implement a mitigation plan.

8. Should an archaeological, paleontological, or historic site or object be discovered during plan-related activities, the person in charge is required

to notify promptly the Director of the Arizona State Museum and take reasonable steps to secure and maintain the resource's preservation pursuant to state law (*i.e.*, A.R.S. § 41-844). If human remains and/or funerary objects are encountered during the course of any ground disturbing activities relating to the development of the subject property, Applicant shall cease work on the affected area of the Project and notify the Director of the Arizona State Museum in accordance with A.R.S. § 41-865.

9. Applicant shall consult an archeologist during construction activities in applicable areas, as determined by SHPO, to advise Applicant in connection with any additional archeological studies that may be required and any mitigation efforts for archeological sites that may be affected by the construction of the Project.

10. After construction, the Applicant, in conjunction with any applicable land managing agency, shall allow Arizona Site Stewards, a volunteer-staffed SHPO program, to periodically inspect archeological sites within the corridor for vandalism or other damage.

11. The Applicant shall follow the Arizona State Land Department's instructions, if any, regarding the treatment of State Register of Historic Places-eligible properties situated on Arizona State Land Department land in consultation with SHPO.

12. In consultation with SHPO and the applicable land-managing agency, the Applicant will consider and assess potential direct and indirect impacts to eligible properties related to new access roads or any existing access roads that require blading.

13. Within 45 days of securing easements or right of way for the Project, the Applicant shall erect and maintain signs providing public notice that the property is the site of a future transmission line or substation. Applicant shall place signs in prominent locations at reasonable intervals such that the public is notified along the full length of the transmission line. The signs shall advise: a.) the site has been approved for the construction of Project facilities including 500 kV lines, 230 kV lines and substations, as applicable; b.) the expected date of completion of the Project facilities; and c.) a phone number for public information regarding the Project.

14. Applicant shall monitor all ground clearing or disturbing activities that may affect sensitive habitat. If a special status species is encountered, Applicant shall retain a biological monitor to ensure proper actions are taken with regard to such species.

15. Applicant shall design the transmission lines so as to minimize impacts to raptors.

16. Where practicable, the Applicant shall use existing roads for construction and access. The Applicant shall minimize vegetation disturbance outside of the power-line right of way, particularly in drainage channels and along stream banks, and shall re-vegetate native areas of construction disturbance outside of the power-line right of way after construction has been completed.

17. A. The Applicant shall make every reasonable effort to identify and correct, on a case-specific basis, all complaints of interference with radio or television signals from operation of the line and related facilities.

B. The Applicant shall maintain written records for a period of five (5)

years of all complaints of radio or television interference attributable to operation of the line, together with the corrective action taken in response to each complaint. All complaints shall be recorded and include notations as to the corrective action taken. Complaints not leading to a specific action or for which there was no resolution shall be noted and explained. The record shall be signed by the Project owner and also the complainant, if possible, to indicate concurrence with the corrective action or agreement with the justification for a lack of action.

18. The Applicant shall, to the extent feasible, minimize the destruction of native plants during the Project construction and shall comply with the notice and salvage requirements of the Arizona Native Plant Law.

19. The Applicant shall use non-specular conductor and dulled surfaces for transmission line structures.

20. The following condition is to ensure transmission system safety and reliability when a transmission structure is placed within one hundred feet of an existing natural gas or hazardous liquid pipeline, excluding distribution lines as defined by the Code of Federal Regulations, 49 C.F.R. § 192.3 (2001). Under such circumstances, the Applicant shall:

(a) Provide the appropriate grounding and cathodic protection studies to show that the transmission line results in no material adverse impacts to such existing natural gas or hazardous liquid pipeline, whose right-of-way is a hundred feet or less from the transmission structure, when both are in operation. Additionally, Applicant shall use its best efforts to insure that future natural gas and hazardous liquid pipelines result in no material adverse impact to the

transmission lines. A report of the studies shall be provided to the Commission by the Applicant as part of its compliance with the Certificate. If material adverse impacts are noted in the studies, Applicant shall take appropriate steps to ensure such material adverse impacts are mitigated. Applicant shall provide to the Commission written documentation of the actions that were taken and provide documentation showing that material adverse impacts were mitigated.

(b) Adopt a written mitigation plan outlining all reasonable steps to be taken to protect all electric facilities associated with the transmission line as a result of this Project from any potential hazards that could occur whenever a transmission line structure is placed 100 feet or less from any such existing pipeline or its contents. The plan shall indicate the proposed corrective action to mitigate identified potential hazards. A potential hazard includes, but is not limited to, a rupture or explosion resulting from the pipeline. The written mitigation plan shall be provided to the Commission by the Applicant as part of its compliance with this Certificate and shall be subject to review and comment by Commission Staff. Applicant shall implement the written mitigation plan during a hazard as part of its compliance with this Certificate.

21. The Applicant shall submit a self-certification letter annually until construction is complete, identifying which conditions contained in the CEC have been met. Each letter shall be submitted to the Utilities Division Director beginning on August 1, 2006, describing conditions that

have been met as of June 30 of that year. Attached to each certification letter shall be documentation explaining, in detail, how compliance with each condition was achieved. Copies of each letter, along with the corresponding documentation, shall also be submitted to the Arizona Attorney General and Department of Commerce Energy Office.

22. Before construction on this Project may commence, the Applicant must file a construction mitigation and restoration plan with ACC Docket Control.

The goals of the Plan will be to:

Avoid impacts where practical;

Where impacts are unavoidable, minimize impacts; and

Focus on site preparation to facilitate natural processes of revegetation and drainage.

Other key elements of the Plan, when not inconsistent with the respective land management agencies or local owners' requirements, are to:

Emphasize final site preparation to encourage natural revegetation;

Avoid (*i.e.*, preserve), where practical, mature native trees;

Stipulate a maximum construction corridor width;

Reserve topsoil and native plant materials from right-of-way before grading, and respread over the right-of-way after construction is complete;

Imprint the restored right-of-way to provide indentations to catch seed and water;

Implement best management practices to protect the soil;

Apply restoration methods that have been shown to work in the

desert environment; and

Prevent the spread of noxious weeds or other undesirable species.

23. The authority granted by this Certificate includes the authority to construct a 230 kV circuit on the 500 kV structures (authorized within this Certificate), between the Santa Rosa and SEV Substations. This authority is contingent on the following:

(a) The Applicant will identify proposed use of the 230 kV facilities in a January 2006 filing of the annual ten year plan submittals. The Applicant will include the 230 kV facilities and the required technical study work in each subsequent ten year plan filing until the 230 kV facilities are constructed.

(b) Prior to beginning construction of a 230 kV circuit on any portion of the route between the Santa Rosa and SEV Substations, Applicant shall submit to the Utilities Division of the Arizona Corporation Commission ("ACC Staff") a written study that describes the proposed 230 kV circuit and provides all available study results of a system reliability analysis relating to the proposed circuit, including but not limited to, studies demonstrating that the proposed 230 kV circuit meets NERC/WECC reliability criteria as well as any other criteria utilized by the Commission at the time of filing. The study will also identify the needs and objectives of the stakeholders, address how the 230 kV circuit will best meet the regional needs of the stakeholders and address how the 230 kV circuit will be incorporated with other long term 230 kV plans identified to meet the load serving needs of the region. The study will also address

issues of reliability relating to consolidation of these lines on common structures, the use of common corridors and interconnection of facilities. The study work will be performed in an open and collaborative manner open to all stakeholders in a regional forum, such as the CATS-HV Technical Study Work Group.

(c) Upon the submission of the study work described in subsection b (in the paragraph above) to the ACC Staff, the Applicant shall make a compliance filing with Docket Control documenting said study work submission. The ACC Staff shall then docket within 90 days a Staff Report with regard to the Applicant's study work. The Staff Report shall include a Staff recommendation as to whether a hearing should be held in the matter as well as Staff's recommendation as to whether the Commission should approve the Applicant's request to attach a 230 kV circuit line to the 500 kV structures. Regardless of whether the matter proceeds to hearing, the Commission shall make the final determination whether the Applicant is authorized to construct the 230 kV circuit on any portion of the common 500 kV line structures spanning from Santa Rosa to the SEV Substations. Only upon receipt of an affirmative determination from the Commission, may the Applicant construct the 230 kV circuit described in subsection a.

(d) A request for approval of a particular 230 kV circuit shall not preclude subsequent requests for other 230 kV circuits.

With respect to the Project, Applicant shall participate in good faith in state and regional transmission study forums, and shall coordinate transmission expansion plans related to the Project to resolve transmission constraints in a timely

manner.

24. Applicant shall provide copies of this Certificate to appropriate city and county planning agencies, SHPO, AGFD and ASLD.

25. Applicant shall work with homebuilders and developers along the route to encourage them to include the identity and location of the certificated route in the homebuilders' and homeowners' disclosure statements.

26. Applicant shall publish a copy of this certificate and the attachments on Applicant's project website within 10 days of approval by the Corporation Commission. Such publication shall continue until all necessary right-of-way has been obtained.

27. Upon the start of construction for each of RS-19, Pinal South and Southeast Valley substations, Applicant shall work with the applicable jurisdictions to determine appropriate landscaping/visual mitigation for the particular site.

GRANTED this 8 day of June, 2005.

THE ARIZONA POWER PLANT AND TRANSMISSION LINE SITING COMMITTEE

By Laurie A. Woodall
Laurie A. Woodall, Chairman

APPROVED BY ORDER OF THE ARIZONA CORPORATION COMMISSION

Chairman Commissioner Commissioner

Commissioner Commissioner

In Witness Hereof, I, Brian C. McNeil, Executive Secretary of the Arizona Corporation Commission, set my hand and cause the official seal of this Commission to be affixed, this _____ day of _____, 2005.

By_____
Brian C. McNeil
Executive Secretary

Dissent

EXHIBIT A

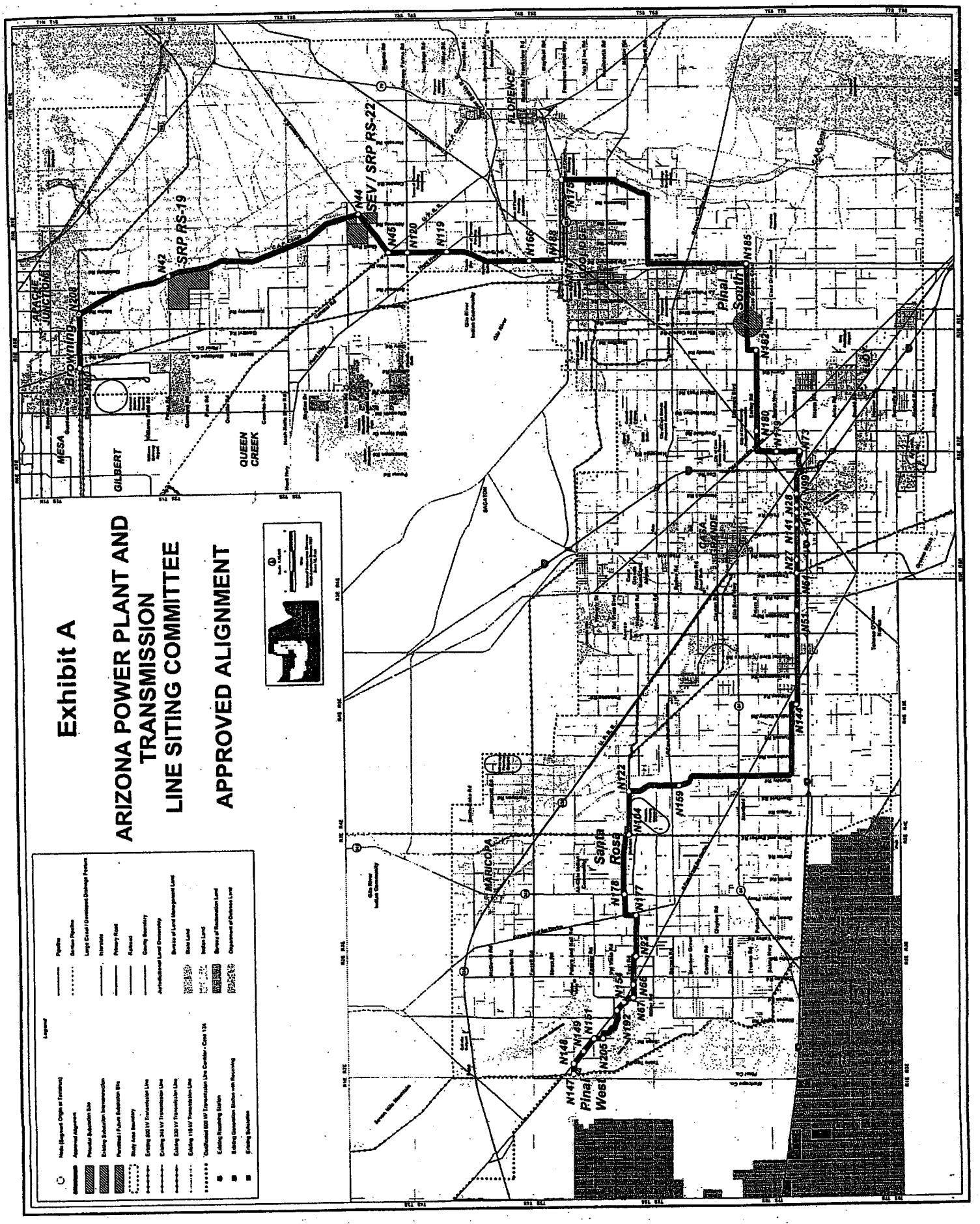


Exhibit A
ARIZONA POWER PLANT AND TRANSMISSION LINE SITING COMMITTEE
APPROVED ALIGNMENT
Legend
Point (Segment Origin or Terminus)
Approved Alignment
Potential Substation Site
Existing Substation Interconnection
Permitted / Future Substation Site
Study Area Boundary
Existing 500 kV Transmission Line
Existing 345 kV Transmission Line
Existing 230 kV Transmission Line
Existing 115 kV Transmission Line
Proposed 500 kV Transmission Line Corridor - Case 136
Existing Roadway Station
Existing Generation Station with Receiving Substation
Existing Substation
Pipeline
Section Pipeline
Large Canal / Dominant Drainage Feature
Interstate
Primary Road
Railroad
County Boundary
Jurisdictional Land Ownership
Bureau of Land Management Land
State Land
Indian Land
Bureau of Reclamation Land
Department of Defense Land
SRP RS-19
SEV / SRP RS-22
APACHE JUNCTION
Browning
MESA
GILBERT
QUEEN CREEK
FLORENCE
Pinal South
Santa Rosa
MARICOPA
Pinal West
N42
N208
N44
N45
N120
N119
N166
N188
N179
N185
N182
N180
N73
N28
N27
N141
N144
N159
N122
N104
N178
N177
N2
N151
N66
N67
N192
N205
N149
N148
N147

EXHIBIT B

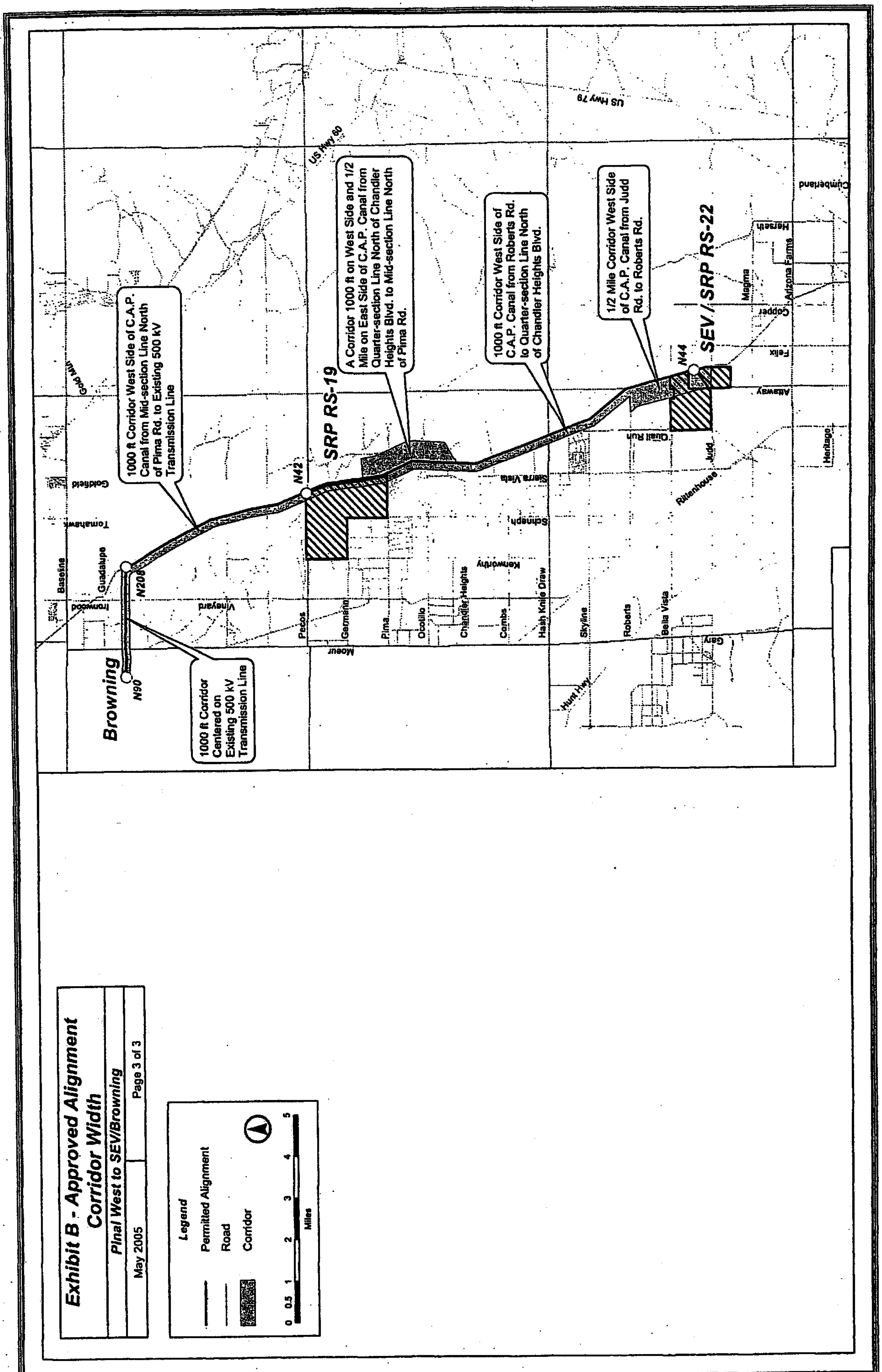
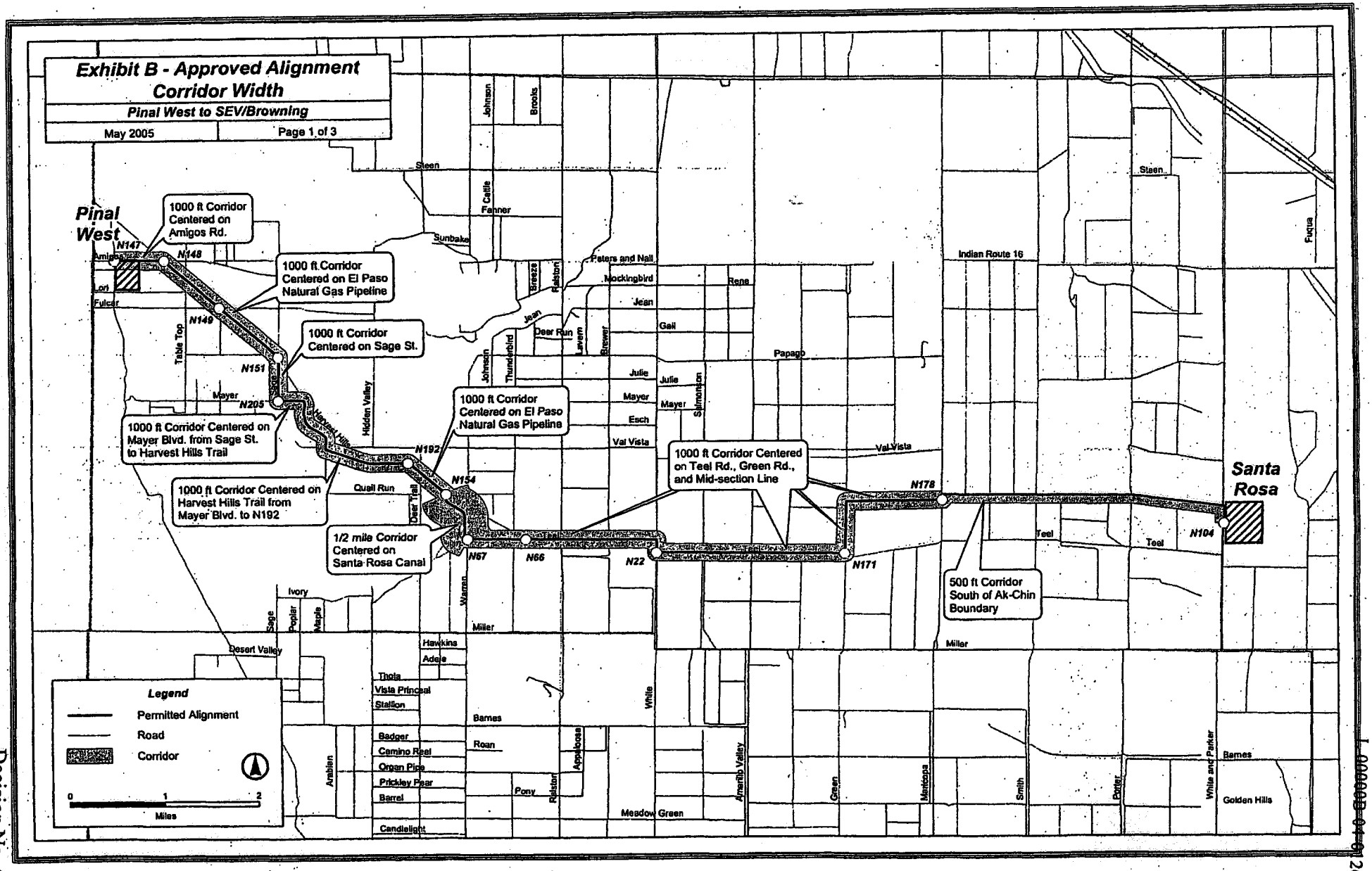


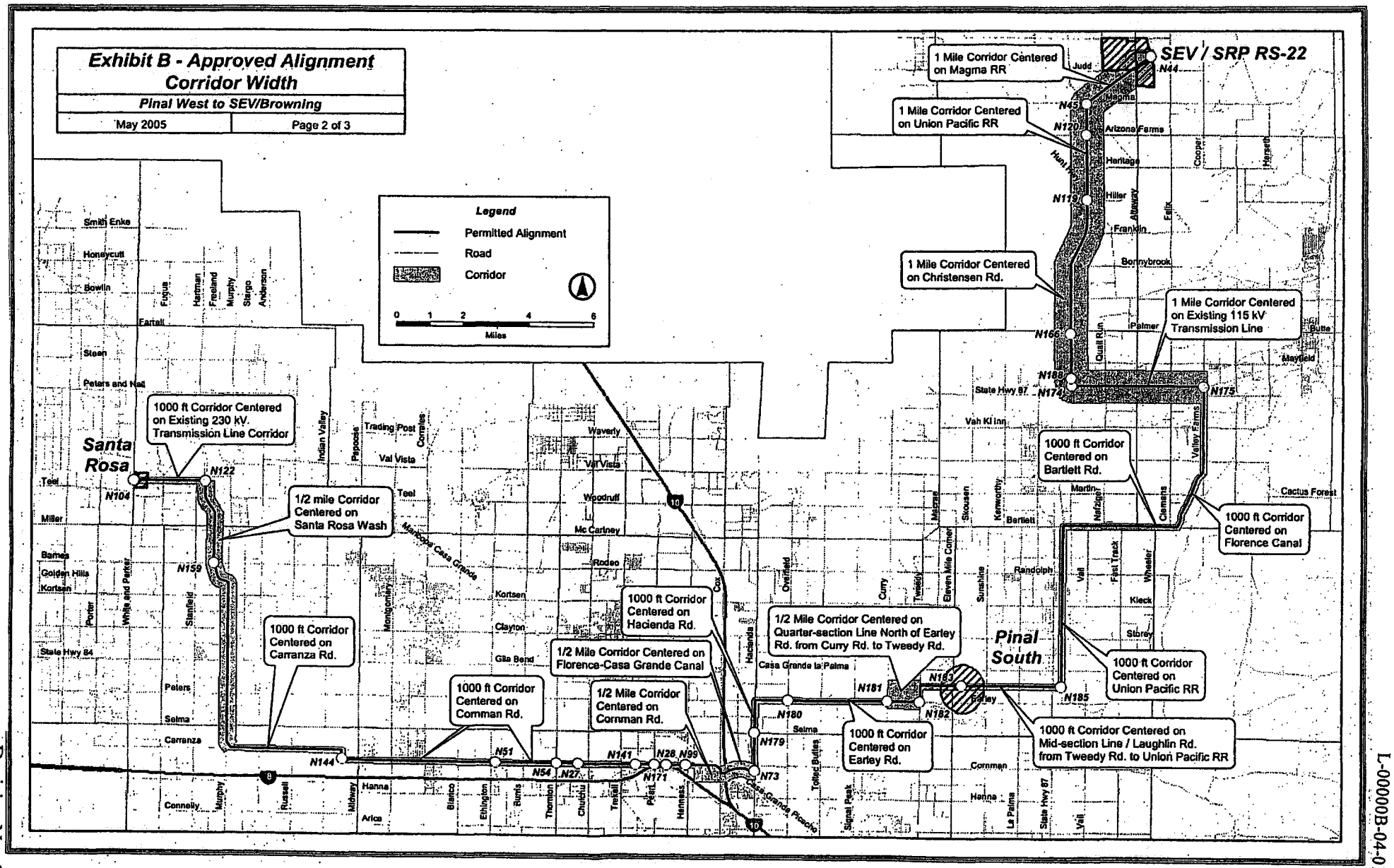
Exhibit B - Approved Alignment
Corridor Width
Pinal West to SEV/Browning
May 2005
Page 3 of 3
Legend
Permitted Alignment
Road
Corridor
Miles
Browning
N90
N208
N42
N44
SRP RS-19
SEV / SRP RS-22
1000 ft Corridor Centered on Existing 500 kV Transmission Line
1000 ft Corridor West Side of C.A.P. Canal from Mid-section Line North of Pima Rd. to Existing 500 kV Transmission Line
A Corridor 1000 ft on West Side and 1/2 Mile on East Side of C.A.P. Canal from Quarter-section Line North of Chandler Heights Blvd. to Mid-section Line North of Pima Rd.
1000 ft Corridor West Side of C.A.P. Canal from Roberts Rd. to Quarter-section Line North of Chandler Heights Blvd.
1/2 Mile Corridor West Side of C.A.P. Canal from Judd Rd. to Roberts Rd.
US Hwy 60
US Hwy 79
Baseline
Guadalupe
Tomahawk
Goldfield
Ironwood
Vineyard
Pecos
Germann
Pima
Ocotillo
Chandler Heights
Combs
Hash Knife Draw
Skyline
Roberts
Bella Vista
Gary
Hunt Hwy
Kenworthy
Schnepf
Sierra Vista
Quail Run
Judd
Rittenhouse
Attaway
Felix
Copper
Magma
Arizona Farms
Heritage
Cumberland
Meridian

EXHIBIT C



Decision No. 68093

I-000000-04-0126-00000



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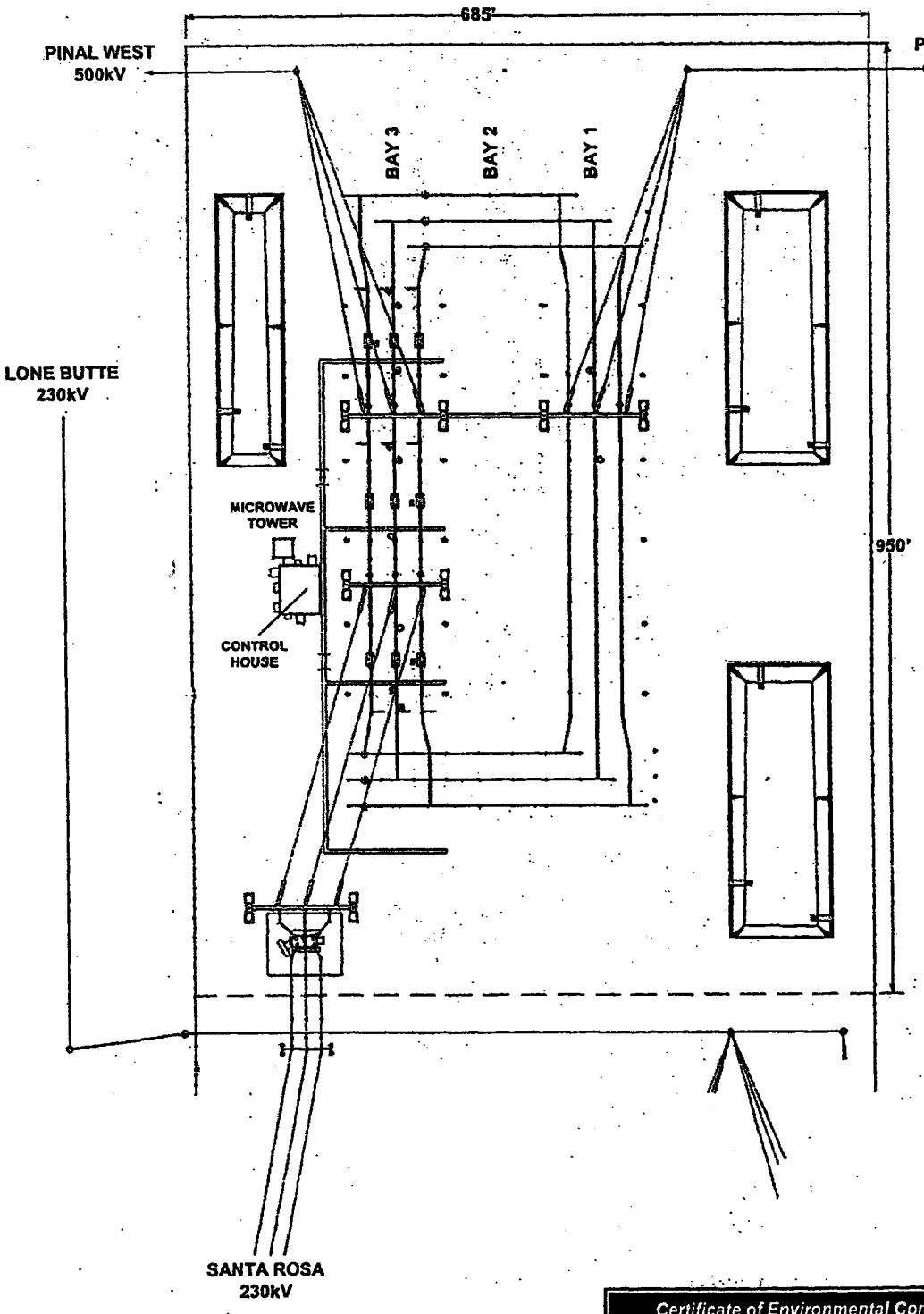
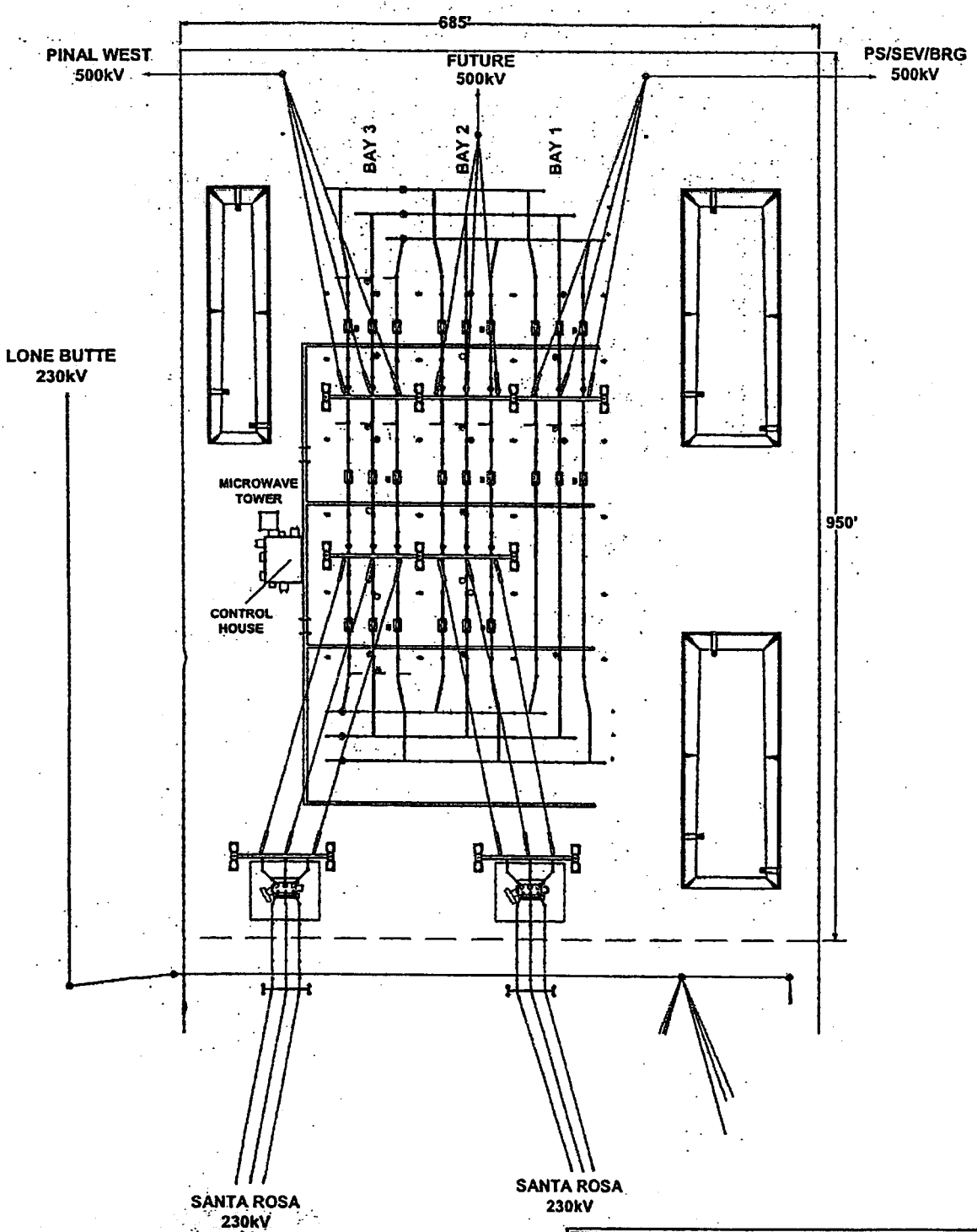


North

Certificate of Environmental Compatibility		
Exhibit G-9 **Santa Rosa Substation – Initial General Arrangement**		
Palo Verde to Pinal West Project		
Date: 10.06.04	Exhibit G-9	Author: mv



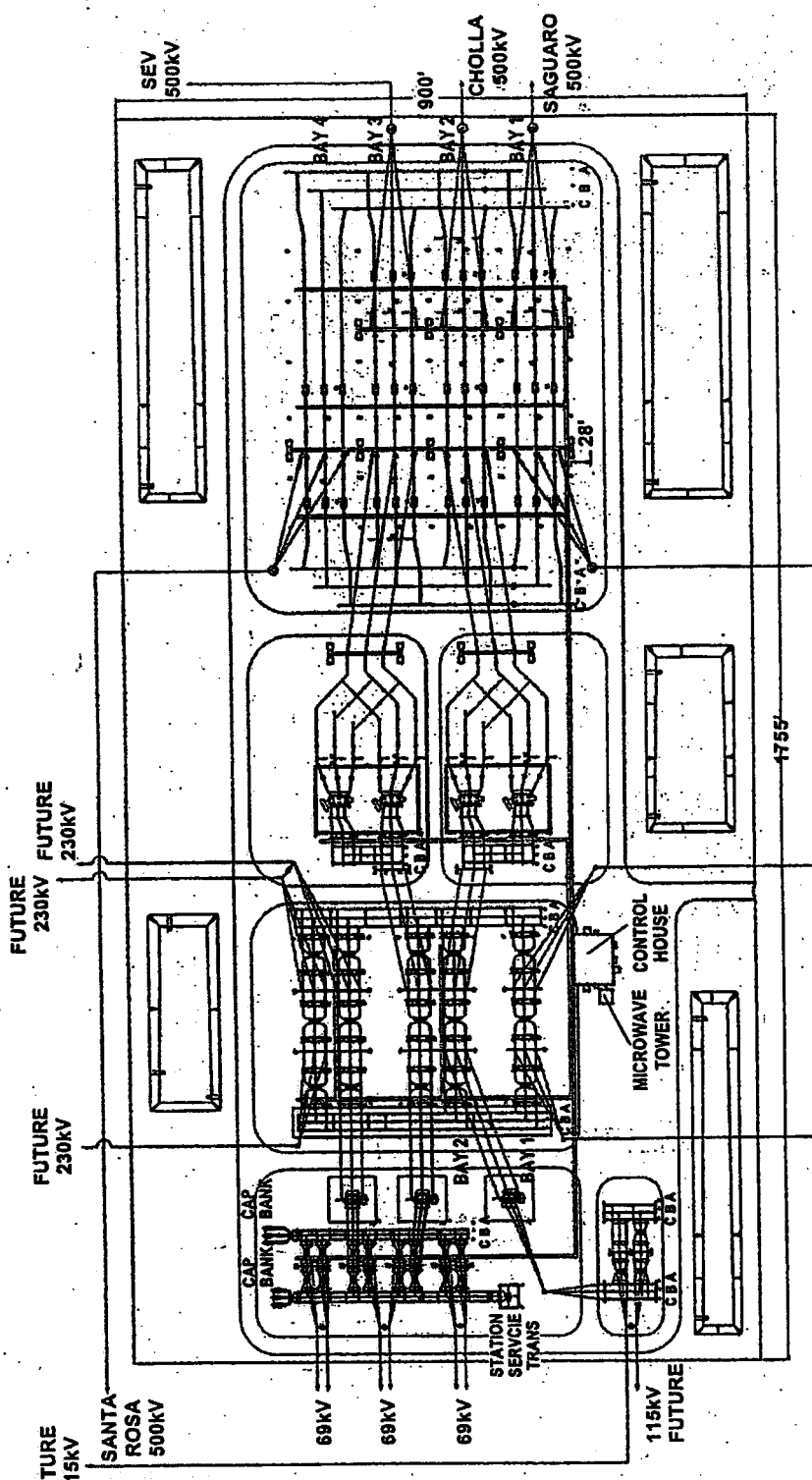
Certificate of Environmental Compatibility

Exhibit G-10
Santa Rosa Substation – Ultimate General Arrangement

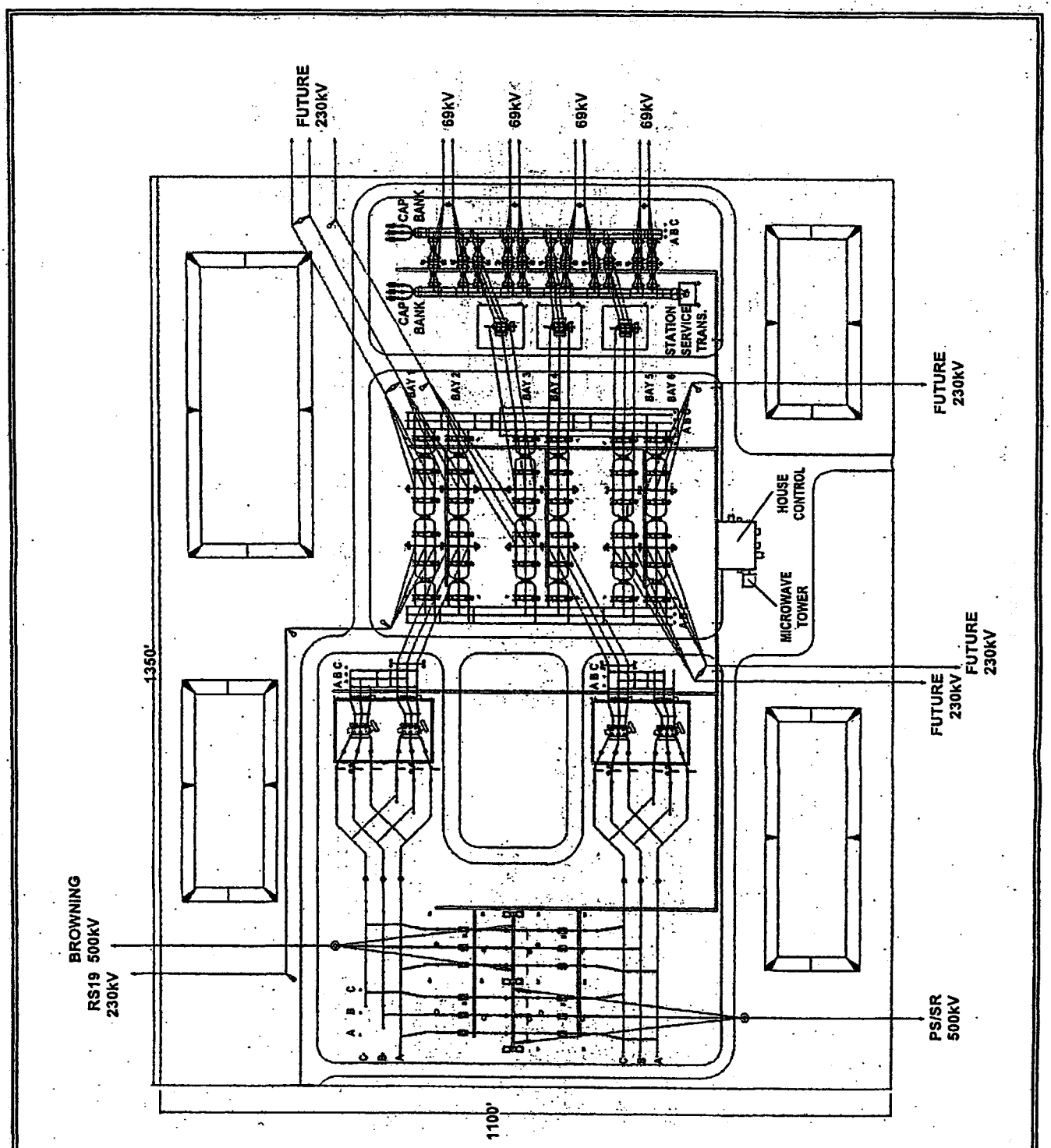
Pinal West to Southeast Valley/Browning Project

Date: 10.07.04	Exhibit G-10	Author: mv

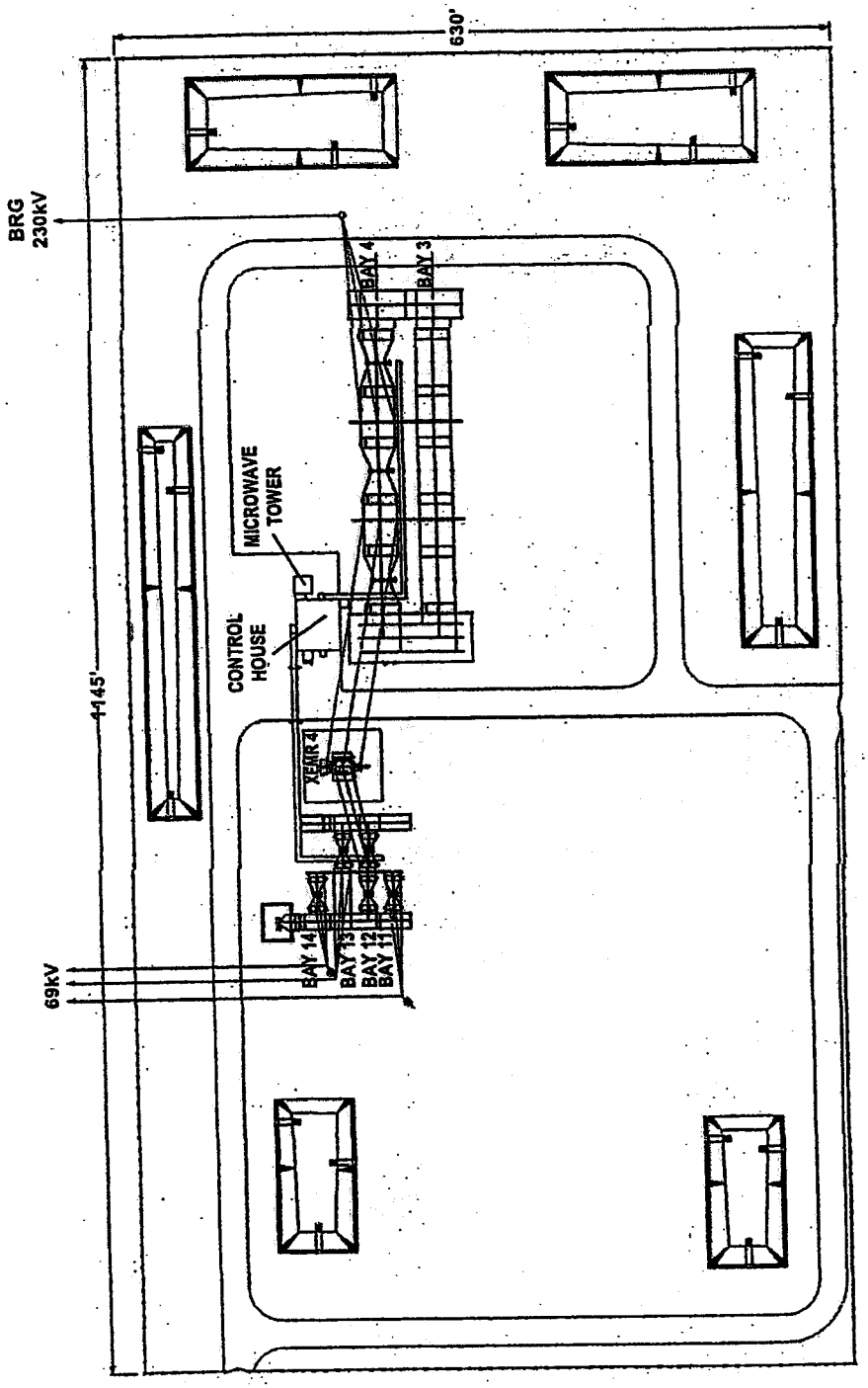
North



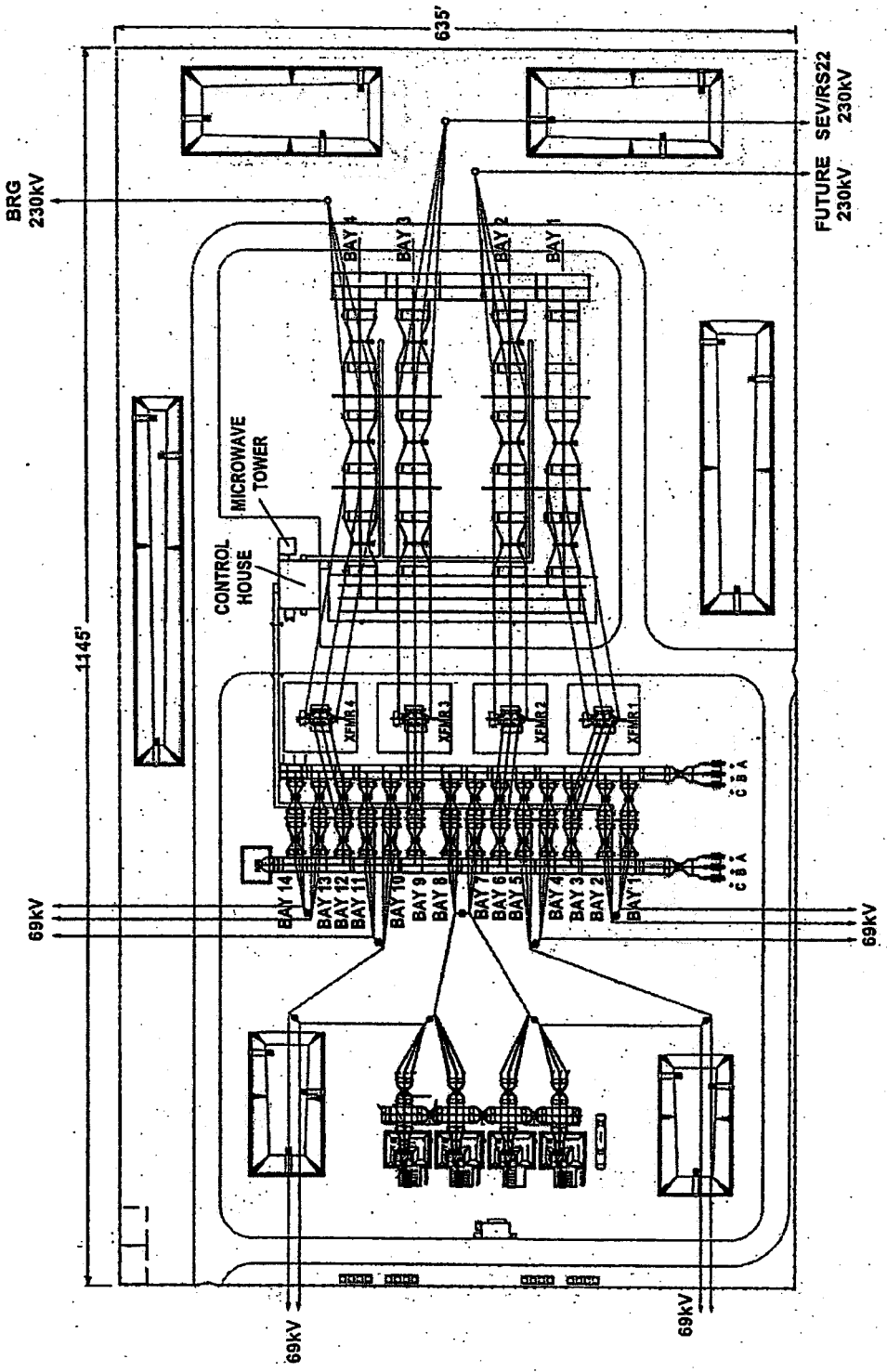
Certificate of Environmental Compatibility		
Exhibit G-11 **Pinal South Substation – General Arrangement**		
Pinal West to Southeast Valley/Browning Project		
Date: 10.07.04	Exhibit G-11	Author: mv



Certificate of Environmental Compatibility		
Exhibit G-12 **SEV Substation – Ultimate General Arrangement with Pinal South**		
Pinal West to Southeast Valley/Browning Project		
Date: 10.07.04	Exhibit G-12	Author: mv



Certificate of Environmental Compatibility		
Exhibit G-14 **RS-19 Substation – Initial General Arrangement**		
Pinal West to Southeast Valley/Browning Project		
Date: 10.07.04	Exhibit G-14	Author: mv



Certificate of Environmental Compatibility		
Exhibit G-15 **RS-19 Substation – Ultimate General Arrangement**		
Pinal West to Southeast Valley/Browning Project		
Date: 10.07.04	Exhibit G-15	Author: mv