



**DOCKET**  
**06-AFC-2**

DATE NOV 06 2006

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November 6, 2006  
322752

Mr. Robert Worl  
1516 Ninth Street  
Sacramento, CA 95814-5512

Subject: AES Highgrove Project (06-AFC-2)  
Data Response, Set 1A

Dear Bob:

On behalf of the AES Highgrove LLC, please find attached one original and 12 copies of Data Response, Set 1A, in response to Staff's Data Requests dated October 5, 2006. This filing contains the following large documents:

- Drainage, Erosion, and Sediment Control/Stormwater Pollution Prevention Plan (Appendix 8.14AR1)
- Phase II Environmental Site Assessment, Retention Basins, Riverside Canal Power Company, Grand Terrace, California, March 1999; prepared for Thermo Ecotek Corporation by Golder Associates, Inc. (Attachment WM-82A)
- Phase II Environmental Site Assessment Highgrove Generating Station, March 1998; prepared by Golder Associates, Inc. for Thermo Ecotek Corporation. (Attachment WM-82B)
- Highgrove Generating Station Phase II Environmental Site Assessment, June 6, 1997; Prepared by Geraghty & Miller, Inc. for SCE. (Attachment WM-82C)

Due to the size of these documents, only five hard copies are being filed with the Commission. However, an electronic copy of these Data Responses, Set 1A and the above-referenced attachments have also been included on CD-ROM.

Please call me if you have any questions.

Sincerely,

CH2M HILL

John L. Carrier, J.D.  
Program Manager

c: Project File  
Proof of Service List

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# **AES HIGHGROVE PROJECT (06-AFC-2)**

## **DATA RESPONSE, SET 1A**

Submitted by  
**AES Highgrove, LLC.**

November 6, 2006



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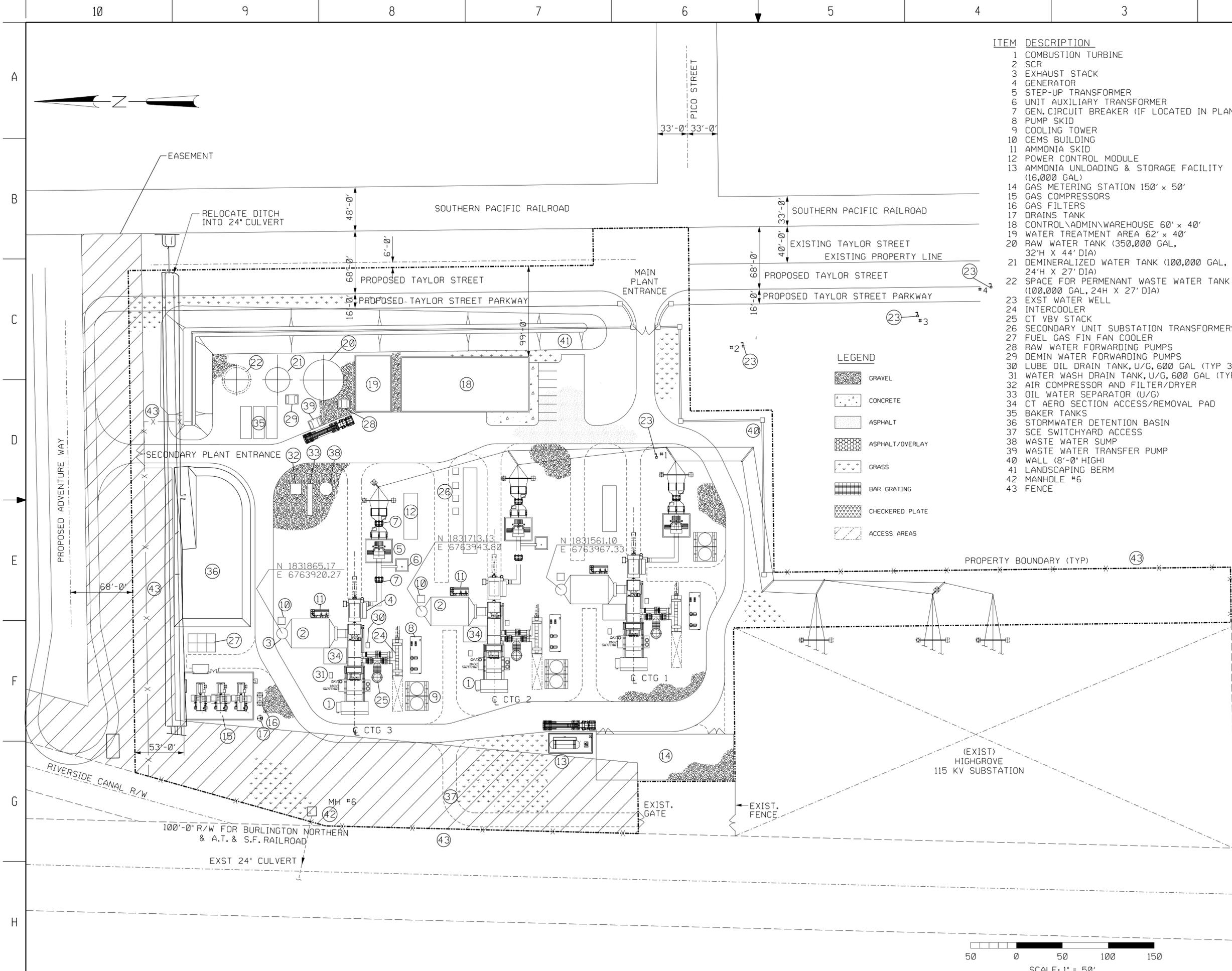
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**AES HIGHGROVE PROJECT  
(06-AFC-2)  
DATA RESPONSES, SET 1A**

## INTRODUCTION

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Attached are AES Highgrove, LLC's (AES) responses 1 through 85 for the AES Highgrove peaking project (Highgrove) (06-AFC-02). The CEC Staff served these data requests on Oct 5, 2006, as part of the discovery process for the Highgrove project. The responses are presented in the same order as CEC Staff presented them and are keyed to the Data Request numbers (1 through 85). New or revised graphics or tables are numbered in reference to the Data Request topic and number. For example, the first table used is in response to Air Quality Data Request #4; therefore, it is be numbered Table AQ4-1. The exception to this rule is the revised General Arrangement drawing, which was originally presented in the AFC as Figure 2.2-1. AES has modified the site layout based upon new detention basin sizing and improved access for fire protection. The new General Arrangement is attached as Figure 2.2-1R. The modifications resulted in a relocation of the detention basin from the south side of the Project Site to the north side, optimizing drainage patterns for the site. Additionally, to make room for a continuous fire access road around the perimeter of the site, the layout of the major equipment and stacks have moved slightly. As a result of these changes, AES will be revising its air quality model and will submit the new modeling data under separate cover. Because the change in stack location is not significant, AES does not expect any changes to the impact analysis. Where applicable, the Data Responses have been prepared using the revised General Arrangement unless noted in the Data Response.



- | ITEM | DESCRIPTION   |
|------|---|
| 1    | COMBUSTION TURBINE  |
| 2    | SCR   |
| 3    | EXHAUST STACK   |
| 4    | GENERATOR   |
| 5    | STEP-UP TRANSFORMER   |
| 6    | UNIT AUXILIARY TRANSFORMER  |
| 7    | GEN. CIRCUIT BREAKER (IF LOCATED IN PLANT)                        |
| 8    | PUMP SKID   |
| 9    | COOLING TOWER   |
| 10   | CEMS BUILDING   |
| 11   | AMMONIA SKID  |
| 12   | POWER CONTROL MODULE  |
| 13   | AMMONIA UNLOADING & STORAGE FACILITY (16,000 GAL)                 |
| 14   | GAS METERING STATION 150' x 50'                                   |
| 15   | GAS COMPRESSORS   |
| 16   | GAS FILTERS   |
| 17   | DRAINS TANK   |
| 18   | CONTROL\ADMIN\WAREHOUSE 60' x 40'                                 |
| 19   | WATER TREATMENT AREA 62' x 40'                                    |
| 20   | RAW WATER TANK (350,000 GAL, 32'H X 44' DIA)                      |
| 21   | DEMINEALIZED WATER TANK (100,000 GAL, 24'H X 27' DIA)             |
| 22   | SPACE FOR PERMENANT WASTE WATER TANK (100,000 GAL, 24H X 27' DIA) |
| 23   | EXST WATER WELL   |
| 24   | INTERCOOLER   |
| 25   | CT VBV STACK  |
| 26   | SECONDARY UNIT SUBSTATION TRANSFORMERS                            |
| 27   | FUEL GAS FIN FAN COOLER   |
| 28   | RAW WATER FORWARDING PUMPS  |
| 29   | DEMIN WATER FORWARDING PUMPS                                      |
| 30   | LUBE OIL DRAIN TANK, U/G, 600 GAL (TYP 3)                         |
| 31   | WATER WASH DRAIN TANK, U/G, 600 GAL (TYP)                         |
| 32   | AIR COMPRESSOR AND FILTER/DRYER                                   |
| 33   | OIL WATER SEPARATOR (U/G)   |
| 34   | CT AERO SECTION ACCESS/REMOVAL PAD                                |
| 35   | BAKER TANKS   |
| 36   | STORMWATER DETENTION BASIN  |
| 37   | SCE SWITCHYARD ACCESS   |
| 38   | WASTE WATER SUMP  |
| 39   | WASTE WATER TRANSFER PUMP   |
| 40   | WALL (8'-0" HIGH)   |
| 41   | LANDSCAPING BERM  |
| 42   | MANHOLE #6  |
| 43   | FENCE   |

- LEGEND**
- GRAVEL
  - CONCRETE
  - ASPHALT
  - ASPHALT/OVERLAY
  - GRASS
  - BAR GRATING
  - CHECKERED PLATE
  - ACCESS AREAS

REV	DATE	DESCRIPTION	DRAWN	CHECKED	DESIGNER	ENGINEER	LEAD	PROJ ENGR	MANAGER
A	11/06/06	ISSUED FOR REVIEW					VJB		

PRELIMINARY STATUS DATE REPRESENTS GENERAL DESIGN CONCEPTS BASED ON ASSUMPTIONS. REVIEWED NOT CHECKED.

APPROVED STATUS DATE REPRESENTS REVIEWED AND APPROVED DESIGN. ANY PORTION MARKED 'HOLD' RETAINS PRELIMINARY STATUS.

ORIGINATING PERSONNEL	PROFESSIONAL ENGINEER'S SEAL
DRAWN BY CLS	
CHECKED BY	
LEAD DESIGNER V. BRUNO	
ENGINEER/TECH SPECIALIST	
PROJECT ENGINEERING MANAGER	
PROJECT MANAGER G. BAXTER	

**Zero Harm** Leadership No Incidents Safe Behavior

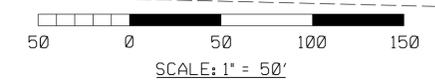
ORIGINALLY PREPARED UNDER THE RESPONSIBLE SUPERVISION OF  
 PE: \_\_\_\_\_ STATE: \_\_\_\_\_  
 LIC. NO.: \_\_\_\_\_ DATE: \_\_\_\_\_

**WorleyParsons**  
resources & energy

CLIENT/PROJECT TITLE  
AES/HIGHGROVE

SITE PLAN  
GENERAL ARRANGEMENT  
FIGURE 2.2-1 REV. 1

SCALE 1"=50'	DRAWING SIZE ANSI D (22" x 34")
WORLEYPARSONS DWG. NO. HIGH-0-DW-111-002-001	REV A



# AES HIGHGROVE PROJECT (06-AFC-2) DATA RESPONSES, SET 1A

**Technical Area:** Air Quality

**CEC Authors:** Joe Loyer

## BACKGROUND

AES proposes three possible mitigation strategies for air quality impacts. Staff believes that each strategy raises timing and implementation issues. First, for CO only, AES notes that if the South Coast Air Quality Management District (District) is re-designated as attainment of the federal CO standards by the U.S. Environmental Protection Agency (USEPA), the District would not require CO offsets. Currently, the USEPA expects the re-designation to be completed in late December of 2006. However, federal re-designation can be a multi-year process and still might not occur in the time frame of this licensing proceeding. Second for CO, VOC, and PM10, AES proposes to purchase ERCs on the open market, where they are in short supply. Third, AES identified the Priority Reserve as an option for credits.

The AFC does not provide documentation that sufficient CO, VOC or PM10 ERCs have been secured, either through option contracts or outright ownership, or that the applicant has made a good faith effort to purchase ERCs as required for the Priority Reserve program. For staff to complete its preliminary analysis, evidence needs to be provided by the applicant that credits are being secured.

## DATA REQUESTS

1. Please identify any CO, VOC or PM10 ERCs owned by the applicant or any affiliate that the District might require to be surrendered as a condition for participation in the Priority Reserve. Please include the ERC number, the pollutant type and amount in pounds per day, and ERC source location and name.

**Response:** AES Highgrove LLC (AES) intends to participate in the Priority Reserve Program to obtain some of its PM<sub>10</sub> offsets from the Priority Reserve Bank. In the unlikely event that the CO is not redesignated and AES is unable to purchase a sufficient quantity of CO ERCs on the open market, AES will seek to obtain CO offsets from the Priority Reserve Bank.

AES submitted with the AFC a complete offset strategy, which has been deemed confidential by the Executive Director of the CEC, and provides some of the information requested above. The additional information requested by Air Quality Data Requests 1, 2 and 3 will be filed as a supplement to that confidential filing, entitled Supplemental Confidential Offset Strategy. We urge Staff to rely on the Preliminary Determination of Compliance (PDOC), which, when issued by the Air District, will demonstrate how the Project would comply with all District Rules including those requiring offsets.

**AES HIGHGROVE PROJECT  
(06-AFC-2)  
DATA RESPONSES, SET 1A**

2. Please provide option contracts and /or evidence of acquisition of ERCs for CO.

**Response:** Please see Supplemental Confidential Offset Strategy filed under a request for confidentiality.

3. If the applicant is unable to adequately respond to Data Requests 1 and 2 above, please provide a status report starting November 1, 2006. Please provide this report monthly until the applicant identifies option contracts and/or evidence of acquisition of ERCs for the CO, VOC and PM10 liability of the project, or until the start of project Air Quality Evidentiary Hearings. The report should be specific to each pollutant and provide new information and update information from previous monthly status reports as appropriate. The reports should include the following information for all inquiries and acquisitions:

- a. contact names and telephone numbers;
- b. company or source names;
- c. pollutant credit types and amounts in lbs/day;
- d. ERC certificate numbers;
- e. the methods of emission reductions (e.g., shutdown, reduction of hours of operation, emission controls, etc.);
- f. the status of ERC or option negotiations;
- g. the location of the emission reduction credits.

**Response:** Please refer to our Supplemental Confidential Offset Strategy. AES will continue to update the CEC Staff by filing the Confidential Monthly Status Reports beginning December 1, 2006.

**BACKGROUND: FINE PARTICULATE MATTER (PM2.5)**

The applicant has not provided any discussion about mitigation of the facility's PM2.5 impacts (generally 100 percent of natural gas combustion particulate matter is PM2.5) on the local and regional air quality. Because the District does not have an offset program for PM2.5, staff is concerned that the Priority Reserve program and PM10 ERC program will not be able to specifically provide PM2.5 equivalent credits, thereby making it difficult to conclude that the project's PM2.5 liability is mitigated.

**DATA REQUEST**

4. Please provide proposal(s) to mitigate the facility's potentially significant PM2.5 impacts.

**Response:** As stated in the Background to this Data Request, the District does not have an offset program for PM<sub>2.5</sub>. AES believes securing emission reduction credits from the SCAQMD's Priority Reserve will mitigate any potential impacts related to the project's PM<sub>2.5</sub> emissions, for the reasons outlined below.

# **AES HIGHGROVE PROJECT (06-AFC-2) DATA RESPONSES, SET 1A**

Priority Reserve Credits are unique to the South Coast Air Basin. This pool of emission reduction credits was established with the June 1990 amendments to the SCAQMD Regulation XIII, its New Source Review regulation. This pool of credits and a defined rate for future funding of the credit pool was developed to ensure that sufficient offsets would be available for innovative technology projects, research operations and essential public service projects, such as schools, hospitals, sewage treatments plants, landfills, and other similar facilities. Emission reduction credits were to be made available to eligible projects at no cost. The SCAQMD has funded the Priority Reserve pool with stationary source emission reductions from its New Source Account, including "orphan shutdown credits."

Temporary access to the Priority Reserve pool of emission credits was provided to Electric Generating Facilities (EGF) under certain conditions for projects with applications submitted between 2001 and 2003. Recognizing that there is a significant need to increase energy production to avoid the type of energy crisis that California experienced in 2000-2001, the SCAQMD has proposed to again provide access to emissions reduction credit access for EGFs through its Priority Reserve pool of credits. The mechanism to affect this access will be proposed modifications to District Rule 1309.1.

While there are now ambient air quality standards for  $PM_{2.5}$ , State Implementation Plans (SIP), including the District's Air Quality Management Plan (AQMP), are in the developmental stages and are not required to be completed before 2007. Changes to the New Source Review (NSR) rules and programs to specifically identify  $PM_{2.5}$  will occur later. Thus, both the traditional Emission Reduction Credits (ERCs) and Priority Reserve pool of credits list particulate emissions as  $PM_{10}$ . Conversion to  $PM_{2.5}$  or issuance of  $PM_{2.5}$  emissions credits would not be expected until after the changes to the NSR program and rules are effected.

Presently, there is no official listing of  $PM_{2.5}$  ERCs or accounting of the  $PM_{2.5}$  portion of ERCs or Priority Reserve credits, as there has been no requirement for agencies such as the SCAQMD to track this information. However, since both ERCs and Priority Reserve credits are derived from stationary source emission reductions, the fraction of  $PM_{2.5}$  in  $PM_{10}$  credits should be reflective of existing stationary source emissions. Both the SCAQMD and CARB have published South Coast Air Basin emission inventories that have identified both  $PM_{10}$  and the subset  $PM_{2.5}$  emissions for stationary, area and mobile sources. The SCAQMD's 2007 AQMP, which will contain the SCAQMD's latest emission inventory, is currently in preparation.

The most current published emission inventory information is contained in the California Almanac of Emissions and Air Quality, 2006 Edition. Using source-specific PM speciation profiles, CARB has developed  $PM_{10}/PM_{2.5}$  emission inventories that cover the period from 1975 through 2020. Speciation data from the Almanac for the period from 1990 through 2005 have been excerpted from the Almanac, because these data should more accurately reflect emission reductions that the District accumulated for the Priority Reserve pool of credits. A summary of these speciated data is presented in Table AQ4-1. As shown in Table AQ4-1, directly

## AES HIGHGROVE PROJECT (06-AFC-2) DATA RESPONSES, SET 1A

emitted PM<sub>2.5</sub> emissions, over the period from 1990 to 2005, constituted 79.7 to 85.7 percent of stationary source PM<sub>10</sub> emissions. Thus, it is reasonable to assume that the PM<sub>2.5</sub> fraction of PM<sub>10</sub> ERCs or Priority Reserve credits that would be used to offset emissions from proposed EGFs would be approximately 80 percent.

TABLE AQ4-1

South Coast Air Basin – Directly Emitted PM<sub>10</sub>/PM<sub>2.5</sub> Stationary Source Emissions (tons/day, annual average)

Summary Category Name	1990		1995		2000		2005	
	PM <sub>10</sub>	PM <sub>2.5</sub>						
Fuel Combustion	12.163	12.003	7.940	7.833	7.710	7.599	6.320	6.253
Waste Disposal	0.433	0.403	0.281	0.263	0.370	0.311	0.444	0.420
Cleaning and Surface Coating	0.728	0.701	0.048	0.046	0.135	0.130	0.535	0.407
Petroleum Production and Marketing	2.578	2.354	2.048	1.871	1.279	0.951	1.109	0.895
Industrial Processes	11.173	7.736	8.380	5.122	8.259	5.560	7.318	4.552
Total Stationary Sources	27.075	23.198	18.698	15.136	17.753	14.550	15.726	12.527
<b>PM<sub>2.5</sub> Percent</b>		<b>85.7</b>		<b>80.9</b>		<b>82.0</b>		<b>79.7</b>

Source: California Air Resources Board, The California Almanac of Emissions and Air Quality – 2006 Edition

As stated on Table 8.1B-9 of the AFC, AES must acquire 333.3 pounds per day of emission reduction credits to offset the project's PM<sub>10</sub> liability in accordance with the District's New Source Review Rules. AES has acquired ERCs from the market which will be used to offset the AES Highgrove PM<sub>10</sub> emission liability. The remainder of the PM<sub>10</sub> offset liability will be satisfied by the use of credits from the Priority Reserve. As stated above, the majority of PM<sub>10</sub> credits (approximately 80%) from the Priority Reserve are attributable to shutdowns from combustion sources, which are therefore equivalent to reductions of PM<sub>2.5</sub>. Assuming as little as two-thirds (220 pounds per day) of the total offsets required are obtained from the Priority Reserve, and assuming 80 percent of the Priority Reserve PM<sub>10</sub> credits consist of reductions attributable to combustions sources (and therefore all PM<sub>2.5</sub>) the total amount of PM<sub>2.5</sub> emission reductions offset by the project by using Priority Reserve credits will be 176 pounds per day.

The emission reductions required to comply with the District New Source Review Rule penalize a peaker project such as Highgrove. The offset liability is based on a "worst case day" calculation. To obtain the "worst case day," the emissions produced during the month of the year during which the worst case emissions are likely to occur (for example, the month of July) is divided by 30. Compliance with the South Coast rules based on a worst case scenario therefore results in the purchase of offsets in excess of the expected annual emissions which will be produced by the project, since, as a peaking project, it will only be operated a portion

# AES HIGHGROVE PROJECT (06-AFC-2) DATA RESPONSES, SET 1A

of the year. If the project were only required to offset actual annual emissions, for instance, the offset liability would be much lower. Based on an annual capacity factor of approximately 15 percent, PM<sub>10</sub> emissions produced would be approximately 123 pounds per day. Under this scenario, the emission reduction credits purchased from the Priority Reserve alone would offset the Project's expected PM<sub>2.5</sub> emissions by more than more than 50 pounds per day (without taking into account any impacts from the surrender of the traditional ERCs purchased from the market by AES for this project).

5. Please investigate and report on the potential for local PM<sub>2.5</sub> particulate matter emission reductions and mitigation measures.

**Response:** As demonstrated in the AFC, the Highgrove Project does not result in significant local PM<sub>2.5</sub> impacts. Also as demonstrated in Data Response #4 above implementation of the Highgrove Project's emissions offset strategy results in more PM<sub>2.5</sub> emission reductions than expected PM<sub>2.5</sub> emissions, if all PM<sub>10</sub> emissions were PM<sub>2.5</sub>.

## BACKGROUND: NITROGEN OXIDES

The applicant proposes to rely on the District's nitrogen oxides (NO<sub>x</sub>) RECLAIM program to acquire emission reduction credits to mitigate the project NO<sub>x</sub> emission impacts.

## DATA REQUEST

6. Please provide a list of NO<sub>x</sub> RECLAIM trading credits (RTCs) that the applicant owns or has under option contract, and provide adequate documentation that these cover the NO<sub>x</sub> liability of the project.

**Response:** AES has proposed that part of the AES Highgrove project be to remove the existing plant located at 12700 Taylor St., (Riverside Canal Power Company, "RCPC"). This plant, formerly known as SCE's Highgrove Generating Station, has annual RECLAIM emission allocations. It is AES' intent to transfer ownership of the remaining allocations for this facility to the AES Highgrove project. AES is in the process of verifying the quantity of allocations currently on record with the District as well as the impact of the District-wide NO<sub>x</sub> RECLAIM "shave" in 2007 and will confirm the quantity of credits that will be available to the Highgrove project. Because these allocations will not be sufficient to fully mitigate the NO<sub>x</sub> liability of the project, AES will purchase the remaining allocations prior to construction in accordance with the SCAQMD rules.

## BACKGROUND: START-UP AND SHUT DOWN EMISSION ESTIMATES

The AFC indicates that the project consists of three General Electric (GE) LMS100 gas turbine generators equipped with water injection and selective catalytic reduction (SCR) systems to minimize NO<sub>x</sub> emissions. In addition, a carbon monoxide (CO) oxidation catalyst system would also be utilized to minimize the turbines' volatile organic compounds (VOC) and CO emissions.

# AES HIGHGROVE PROJECT (06-AFC-2) DATA RESPONSES, SET 1A

Appendix 8.1B provides tables summarizing the estimated emissions of the turbines and cooling towers. It is not clear how these estimated emissions were derived. For example, the GE-provided emissions estimates indicate that a LMS100 turbine emits 25 ppm NO<sub>x</sub> at 15 % oxygen, which is equivalent to 81 lbs/hr if the SCR is not in operation. The start-up duration for each turbine is approximately 35 minutes during which time the SCR is not expected to be fully operational; therefore, staff expects that the turbine start-up emissions will be higher than the 7 lbs/start-up identified (AFC Appendix 8.1B).

## DATA REQUEST

7. Please provide the assumptions and calculations used to derive the individual turbine start-up emissions for NO<sub>x</sub>, CO and VOC of 7, 15.4 and 2.1 lbs/event, respectively.

**Response:** The calculations in the AFC were based on estimated startup emissions provided by the gas turbine vendor, General Electric Energy (GE). A margin of 40% was added to this value to account for emissions generated before the SCR and COR catalysts reach full effectiveness.

The LMS100 unit is a new technology offering by GE and, as there are no units installed in California, there is currently no operating experience with SCRs. AES continues to work with GE and catalyst vendors to obtain updated information as better data predicting unit/catalyst emissions performance becomes available. At the time of AFC submittal, an exhaust temperature profile during startup was not available, leading to the need to make assumptions on catalyst temperature and catalyst effectiveness during a startup event.

AES recently obtained, from the vendor (September 2006), an exhaust temperature profile during startup which has allowed us to work with SCR/COR vendors to obtain better estimates of catalyst performance during a startup event. Based on this new data, AES has revised estimates for startup emissions that will be produced after the turbine reaches full load but before the catalysts reach full effectiveness. The current estimates for NO<sub>x</sub> and CO are shown in Table AQ7-1A. Tables AQ7-1B and AQ7-1C list the assumptions and calculated values for NO<sub>x</sub> and CO, respectively, used to derive the individual turbine start up emissions. As described in the tables, estimates of emissions produced from the time the turbine is started until it reaches full load are directly from gas turbine vendor estimates (These values are the same as those used in the AFC submittal). Based on discussions with catalyst vendors, AES has revised the emissions reduction expected to occur through the SCR/COR catalysts during the transient start up phase until the stack emissions reach BACT levels.

It is also important to note that the emissions produced during startup are not proportional to gas turbine emissions at full load. In other words, a 25 ppm NO<sub>x</sub> level (which corresponds to 81 lbs/hour at full load) is not a good proxy for predicting total NO<sub>x</sub> emissions produced during a startup event since fuel flow is not established until approximately minute 3 in the start cycle of 10 minutes

# AES HIGHGROVE PROJECT (06-AFC-2) DATA RESPONSES, SET 1A

duration and pounds of exhaust flow are less than 25% of full load exhaust flow until approximately minute 7 in the start cycle.

At this time, the projected VOC emissions during startup have not been modified from the values provided in the AFC. Since there is no additional VOC reduction equipment beyond maintaining good combustion control, VOC emissions during a startup are estimated to equal GE's predicted value of 1.5 lb per start to which we have added a operating margin of 40%.

TABLE AQ7-1A  
Revised Facility Startup NO<sub>x</sub> and CO Emissions Per Start Event

	NO <sub>x</sub>	CO
Startup (lb/event)	16.7	15.4
grams per event	7,579	7,000
Startup (lb/hr)	27.0	25.2
Grams per second	3.41	3.18

**Notes**

1. Based on approximately 80°F ambient condition.
2. The lb/hr values assumes the balance of the hour will be operated at full load with evaporative coolers in service.
3. NO<sub>x</sub> and CO emission rates reach BACT level in 37 and 10 minutes, respectively.

TABLE AQ7-1B  
Assumptions for NO<sub>x</sub> Emissions During Startup (per unit)

Startup Phase	NO <sub>x</sub> (Lbs)
Unit reaches full load (GE value)	5
Unit reaches full NO <sub>x</sub> compliance	8.5
Operational margin	3.2
Total	16.7

**Assumptions**

1. Ammonia flow to SCR starts after 6 minutes at full exhaust temperature.
2. Per GE's startup profile data dated 9/18/2006, the unit reaches full exhaust temperature in 4 minutes; therefore, ammonia injection starts at minute 10. This is coincident with the unit reaching maximum power and exhaust flow for the given ambient condition. Therefore, no NO<sub>x</sub> reduction occurs prior to the reaching full load.
3. Per GE, NO<sub>x</sub> generated during the unit startup (up to reaching full load) is 5 pounds.
4. Based on vendor estimates, it will take approximately 10 minutes for the SCR to reach 100 percent SCR capability after ammonia flow starts. A linear relationship for catalyst effectiveness is assumed during this period.
5. An operational margin is assumed to allow ammonia flow control to stabilize and maintain NO<sub>x</sub> at constant BACT level (approximately 17 minutes).

# AES HIGHGROVE PROJECT (06-AFC-2) DATA RESPONSES, SET 1A

TABLE AQ7-1C  
Assumptions for CO Emissions During Startup (per unit)

Startup Phase	CO (Lbs)
Unit reaches full load (GE value)	13
Unit reaches full compliance	0
Operational margin	2.4
Total	15.4

**Assumptions**

1. Per GE's startup profile data dated 9/18/2006, the unit reaches full exhaust temperature in 4 minutes; therefore, CO Catalyst reaches full effectiveness prior to unit reaching full load.
2. A ~20% operational margin is included to account for slower than expected CO catalyst efficiency start up profiles and possible deviation from GE's expected value

8. Please provide the assumptions and calculations used to derive the individual turbine shut down emissions for NO<sub>x</sub>, CO and VOC of 4.3, 18.2 and 1.6 lbs/event, respectively.

**Response:** The assumptions and margins used to derive individual turbine shut down values for NO<sub>x</sub>, CO and VOC are provided in Table AQ8-1.

TABLE AQ8-1  
Assumptions for NO<sub>x</sub>, CO and VOC Emissions During Shutdown (per unit)

	NO <sub>x</sub> (lbs)	CO (lbs)	VOC (lbs)
Unit Emissions (GE Value)	6	29	1.5
SCR/COR Emission Reduction	-4.9	-24.3	0
Operational Margin	3.2	13.5	0.1
Total	4.3	18.2	1.6

**Assumptions**

1. Per GE's startup profile data dated 9/18/2006, the unit maintains full exhaust temperature until fuel flow is terminated; therefore, the SCR and CO should be at full effectiveness until fuel is stopped.
2. Ammonia flow to SCR continues until fuel flow stops.
3. SCR and COR effectiveness are reduced during shutdown due to transient air flow conditions.
4. Operational margin is include to account for deviation from GE's expected values.

9. If the start-up and shut-down emissions rates and characteristics are revised, please provide a revised modeling analysis showing the facility impacts during start-ups and shut-downs.

**Response:** The Air Quality modeling analysis is being revised based on the updated startup and shutdown characteristics and is expected to be provided by the end of November. The shut-down emission rates and characteristics have not been revised.

**AES HIGHGROVE PROJECT  
(06-AFC-2)  
DATA RESPONSES, SET 1A**

**BACKGROUND: NATURAL GAS SULFUR CONTENT**

The AFC indicates that the facility will use natural gas with a maximum sulfur content of 0.25 grains per 100 standard cubic feet (gr/100scf). Staff has seen in previous siting cases that the delivered natural gas can contain as much as 1gr sulfur/100scf. If higher sulfur content natural gas fuel is used at the facility, SO<sub>x</sub> and PM emissions may be underestimated.

**DATA REQUEST**

10. Please provide assurance that the sulfur content of supplied natural gas will not be above 0.25 gr/100scf.

**Response:** The AES project will use pipeline-quality natural gas supplied by the Southern California Gas Company (SoCal Gas). The quality of natural gas is defined in SoCal Gas Rule No. 30-Transportation of Customer-Owned Gas<sup>1</sup>. Rule No. 30, Section I-Gas Quality limits total fuel sulfur to no more than 0.75 grains/100 scf. Based on historical fuel composition data, fuel sulfur content of natural gas delivered to the project area is below 0.25 grains per 100 scf. Data derived from SoCal Gas for January through December 2005 at Blythe entry points B1 and B2 indicates that the gas fuel sulfur content averages 0.068 grains per 100 scf or 1.143 ppmv. These averages indicate that, in all likelihood, the maximum gas sulfur content will be well below 0.25 grains per 100 scf, and that the annual average of the delivered gas will also be below the 0.25 grains per 100 scf (See Attachment AQ-10)

11. Please provide the steps the applicant would take to ensure that natural gas that has higher than 0.25 gr/100scf of sulfur will not be used at the facility.

**Response:** AES is committed to using clean burning natural gas, which has been shown to be extremely low in total sulfur content. As the natural gas is provided by a Public Utilities Commission regulated utility (SoCal Gas), AES will rely upon SoCal Gas to ensure that the natural gas supplied to the project is the highest quality, resulting in the lowest possible fuel sulfur content. AES will evaluate the need for a program of periodic onsite gas fuel sampling and analysis to determine compliance with the stated gaseous fuel sulfur value or 0.25 grains per 100 scf. Pursuant to the New Source Performance Standard (NSPS) Subpart KKKK (new turbines greater than or equal to 1 MW and constructed after February 18, 2005) section 60.4365, the Highgrove turbines would not need to monitor (sample and analyze) fuel for sulfur content because the project is supplied with natural gas under a valid transportation tariff (SoCal Gas Rule 30) that is below the sulfur dioxide limit of 0.06 lb SO<sub>2</sub> per million British thermal unit (MMBtu).

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<sup>1</sup> <http://www.socalgas.com/regulatory/tariffs/tm2/pdf/30.pdf>

## ATTACHMENT AQ-10

SOUTHERN CALIFORNIA GAS COMPANY

FOR INFORMATION PURPOSES ONLY, NOT FOR PUBLICATION

From 01/05 to 12/05 (grains S/100 cf)

Out of State Suppliers Location	H <sub>2</sub> S			RSH			Total Sulfur*		
	Min	Max	Avg	Min	Max	Avg	Min	Max	Avg
NN	0.002	0.088	0.013	0.001	0.085	0.007	0.048	0.173	0.100
B1	0.000	0.018	0.007	0.027	0.115	0.060	0.042	0.131	0.067
B2	0.000	0.018	0.005	0.030	0.130	0.064	0.046	0.145	0.069
SN	0.000	0.024	0.007	0.047	0.214	0.084	0.047	0.236	0.092
WR/KM	0.017	0.090	0.046	0.030	0.146	0.082	0.049	0.237	0.128
KJ	0.016	0.143	0.032	0.013	0.179	0.031	0.049	0.322	0.090
							0.047	0.207	0.091

From 01/05 to 12/05 (ppmv S)

Out of State Suppliers Location	H <sub>2</sub> S			RSH			Total Sulfur*		
	Min	Max	Avg	Min	Max	Avg	Min	Max	Avg
NN	0.03	1.49	0.22	0.02	1.44	0.13	0.81	2.92	1.69
B1	0.00	0.30	0.11	0.46	1.94	1.01	0.71	2.21	1.12
B2	0.00	0.30	0.08	0.50	2.19	1.08	0.77	2.44	1.16
SN	0.00	0.40	0.13	0.79	3.62	1.42	0.79	3.98	1.54
WR/KM	0.29	1.52	0.77	0.50	2.47	1.39	0.83	3.99	2.16
KJ	0.27	2.41	0.54	0.22	3.02	0.52	0.83	5.43	1.51

Assuming 16.9 ppm = 1 grains S/Ccf

\* Includes estimated supplemental odorant based on border guidelines of 50/50 t-butyl mercaptan/thiophane

\*\* SoCalGas Specifications allow up to 0.25 gr.H<sub>2</sub>S/100scf and 0.75 gr. S/100scf Total Sulfur

The enclosed is provided for information purposes only. The Gas Company has made reasonable efforts to ensure all information is correct and consistent with the applicable Tariffs. To the extent there is any conflict with the Tariffs, the Tariffs shall govern in all cases. In addition, neither The Gas Company's publication nor verbal representations thereof constitutes any statement, recommendation, endorsement, approval or guaranty (either express or implied) of any product or service. Moreover, The Gas Company shall not be responsible for errors or omissions in this publication, for claims or damages relating to the use thereof, even if it has been advised of the possibility of such damages.

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12. Please provide the method for ensuring continuous compliance with the sulfur content limits specified for the supplied natural gas fuel.

**Response:** AES cannot guarantee fuel quality when it has no control over the fuel supply (origin) or distribution and mixing network, etc. AES is committed to using clean burning natural gas which, based, on historical data and future expectations, will continue to be extremely low in total sulfur content, resulting in low emissions of SO<sub>2</sub>. In addition, the data noted above and presented in Attachment AQ-10 indicates that the overall average gas sulfur content is well below the 0.25 grains per 100 scf value quoted in the AFC, which means that the actual SO<sub>2</sub> emissions will most likely be less than those stated in the AFC on an annual basis. AES will rely upon SoCal Gas to ensure that the gas supplied to the plant (as well as to all the remaining gas customers) is the highest quality, i.e., having the lowest possible fuel sulfur contents. In addition, the facility will evaluate the need for a program of periodic onsite gas fuel sampling and analysis to determine compliance with the stated gaseous fuel sulfur value or 0.25 grains per 100 scf. Pursuant to NSPS Subpart KKKK (new turbines greater than or equal to 1 MW and constructed after February 18, 2005) section 60.4365, the AES Highgrove turbines would not need to monitor (sample and analyze) fuel for sulfur content since the current tariff and transportation sheet for the proposed natural gas (Rule 30 as attached) insures that the gas sulfur content will be well below the 300 ppmw NSPS Subpart KKKK limit.

**BACKGROUND: REVISED MODELING INFORMATION REQUEST**

The modeling results of the oxides of nitrogen (NO<sub>x</sub>) emissions assume that 100% of the NO<sub>x</sub> emissions are converted into NO<sub>2</sub> emission impacts for both the commissioning and normal operation (page 8.1-40) of the proposed project. The result from this overly conservative assumption is an analysis that does not accurately reflect the project NO<sub>x</sub> emission impacts. The reported impacts of the modeling analysis suggest that the project commissioning emissions of NO<sub>x</sub> will exceed the state one hour ambient air quality standard for NO<sub>2</sub>. The resulting impacts for normal operation are not as dramatic, but are also excessively high. The applicant proposes (page 8.1-40) to use the ozone limiting method (OLM) and ambient ratio method (ARM) to produce a less conservative, but more representative modeling analysis for both commissioning and normal operation.

**DATA REQUEST**

13. Please provide a refined NO<sub>x</sub> emission modeling analysis using the OLM and ARM to produce a more representative NO<sub>x</sub> emission impact for the proposed project during both commissioning and normal operation.

**Response:** Based on the results presented in AFC Table 8.1-26, operational NO<sub>2</sub> impacts are below the 1-hour NO<sub>2</sub> standard. Therefore, additional modeling of operational 1-hour NO<sub>2</sub> is not required. Additional modeling of the commissioning 1-hour NO<sub>2</sub> impacts were conducted as requested using the USEPA's Industrial Source Complex-Ozone Limiting Method (ISC-OLM) model, as outlined below.

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ISC-OLM calculates the nitrous oxide (NO<sub>x</sub>) to nitrogen dioxide (NO<sub>2</sub>) conversion based on the simultaneous NO<sub>x</sub> and ozone (O<sub>3</sub>) concentrations for each hour. The ISC-OLM model also calculates the in-stack and near-stack thermal conversion from NO<sub>x</sub> to NO<sub>2</sub>. As required for ISC-OLM, concurrent meteorological and O<sub>3</sub> concentration data were used. The 2003 hourly ozone data collected at the Riverside-Rubidoux monitoring station had the highest average 1-hour O<sub>3</sub> concentration for the 3-year period (2002 - 2004). Therefore, the 2003 hourly O<sub>3</sub> data were used along with the corresponding 2003 meteorological data collected at the Riverside Municipal Airport. Submitted with this data response are 5 compact diskettes containing the modeling input and output files.

ISC-OLM was implemented on a plume-by-plume basis (i.e., individual plume). The results of the commissioning NO<sub>2</sub> impact analysis is presented in revised Table 8.1-25R. The background 2003 NO<sub>2</sub> concentration was added to the maximum modeled NO<sub>2</sub> concentration. Based on this analysis, the controlled break-in commissioning phase with all three turbines operating simultaneously resulted in the highest predicted 1-hour NO<sub>2</sub> concentration of 460 µg/m<sup>3</sup>. This value is less than the 1-hour state standard of 470 µg/m<sup>3</sup>.

TABLE 8.1-25R  
Turbine Commissioning Impacts Analysis—Maximum Modeled NO<sub>2</sub> 1-Hour Impacts Compared to the Ambient Air Quality Standards  
*Simultaneous Turbine Emissions*

Pollutant	Averaging Time	Maximum Facility Impact (µg/m <sup>3</sup> )	Background (µg/m <sup>3</sup> ) <sup>1</sup>	Total Impact (µg/m <sup>3</sup> )	State Standard (µg/m <sup>3</sup> )	Federal Standard (µg/m <sup>3</sup> )
NO <sub>2</sub>	1-hour	291.2 <sup>2,3</sup>	169	460	470	-
CO <sup>4</sup>	1-hour	1,232.2 <sup>2</sup>	9,162	10,394.2	23,000	40,000
	8-hour	399.5 <sup>2</sup>	4,237	4,636.5	10,000	10,000

<sup>1</sup> The 2003 background concentration for NO<sub>2</sub> was used to correspond with the 2003 ozone and meteorological data. Background concentrations for CO were the highest concentrations monitored during 2002-2004.

<sup>2</sup> 1st highest modeled concentrations were used.

<sup>3</sup> NO<sub>2</sub> impacts assessed using ISC-OLM.

<sup>4</sup> CO impacts were not reanalyzed.

Using the OLM methodology, the resulting 1-hour NO<sub>2</sub> impacts were reduced from 622 µg/m<sup>3</sup> to 291.2 µg/m<sup>3</sup>, or 47 percent. Assuming the same level of reduction for the operational 1-hour NO<sub>2</sub> impacts, the resulting facility operational 1-hour NO<sub>2</sub> impacts would be 34 µg/m<sup>3</sup> and with ambient NO<sub>2</sub> concentrations added, the total operational 1-hour NO<sub>2</sub> impacts would be 222.6 µg/m<sup>3</sup>.

It should be noted that the above analysis was performed based on the original General Arrangement drawing and, therefore, is based on stack locations that have now been revised. As a result, AES will revise all of the air quality modeling originally presented in the AFC to reflect these equipment changes including revised Commissioning modeling. AES expects that the slight change in stack locations will

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not result in impacts significantly different than those presented in the AFC and below.

## **BACKGROUND: EMISSION LIMIT CLARIFICATION**

The applicant proposes to operate the project with a NO<sub>x</sub> limit of 3.5 ppmvd @ 15% O<sub>2</sub>. However, both the Sun Valley and Walnut Creek power projects propose to operate at a NO<sub>x</sub> emission limit of 2.5 ppmvd @ 15% O<sub>2</sub>. Since all three of these projects are proposing to install the same model combustion turbines from General Electric (GE LMS100s) and all three projects plan to operate these turbines in a similar manner (generally load following or peaking), staff needs to understand why the Highgrove Project is proposed to be 40% higher than the other two.

## **DATA REQUEST**

14. Please explain why the proposed NO<sub>x</sub> emission limit for the Highgrove Project is 40% higher than both the Walnut Creek and Sun Valley Power Projects.

**Response:** The NO<sub>x</sub> emission level for the Highgrove Project was chosen to meet current BACT requirements for simple cycle gas turbines in the SCAQMD (3.5 ppm) while the Walnut Creek and Sun Valley Power Projects proposed to operate at NO<sub>x</sub> emission limits 1 ppm below current BACT requirements (2.5 ppm). (The recently issued Walnut Creek PDOC has confirmed that the BACT requirement for the identical turbine technology to be 3.5 ppm for NO<sub>x</sub>.)

AES' decision to design to BACT levels rather than to a level lower than BACT was based on the following: (1) the LMS100 technology is new, (2) there is no operating experience for SCR catalyst technology for this unit which meets this BACT level or better, and (3) CO emissions levels predicted for this unit have been significantly higher than comparable operating units, such as the GE LM6000 unit. Since the production of CO emissions and NO<sub>x</sub> emissions in combustion processes is inversely proportional, AES felt there may be operational concerns in meeting ultra-low guaranteed levels for both emissions simultaneously. AES continues to work with both the gas turbine and catalyst vendors as more operational history for the LMS100 unit becomes available and will give further consideration to designing to emissions levels lower than BACT.

## **BACKGROUND: CONSTRUCTION ACTIVITY CLARIFICATION**

The applicant proposes to continue some construction activities 24-hours per day and 7 days per week (p. 2-15). This is an accelerated construction schedule and may cause or contribute to an exceedance of the short-term federal or state ambient air quality standards (AAQS). Staff is particularly concerned with the PM<sub>10</sub> and PM<sub>2.5</sub> 24-hour AAQS. The provided air dispersion modeling of the construction emissions, however, states that the construction modeling assumes an 8-hour day and 22 days per month level of activity (Appendix 8.1A-2, Table 8.1A-4a).

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**DATA REQUEST**

15. Please describe in greater detail the types of construction activities mentioned on page 2-15 that would continue for 24 hours per day and 7 days a week.

**Response:** The AFC described that during some construction periods and during the startup phase of the project, some construction activities may continue for 24 hours per day or 7 days per week. As stated in the AFC, the majority of construction will be scheduled between 7 a.m. and 7 p.m. Monday through Saturday. The types of construction activities that may occur outside of the normal construction hours and days are specific to erection activities, including welding, clean up, installation of piping, electrical conduits and circuits, and maintenance on construction equipment. These activities would not be expected to use larger pieces of construction equipment that would tend to emit higher levels of air pollutants. Additionally, significant earth moving activities that could generate large amounts of fugitive dust would not occur. Therefore, these activities would not result in significant air quality impacts.

16. Please provide an air dispersion modeling analysis for construction activities which accurately reflect the proposed 24/7 accelerated construction schedule.

**Response:** As described in Data Response #15, the construction activities that may occur 24 hours per day would not be expected to generate air emissions at levels comparable to the earthmoving phase of construction. Therefore, additional air dispersion modeling is not warranted.

**BACKGROUND: MODELING RESULTS FOR SENSITIVE RECEPTORS**

The applicant states that the power plant project is 1,000 feet from the nearest classroom in the nearby proposed Colton High School #3 site. However, the students at the proposed school would be considered sensitive receptors and must be treated accordingly in the air quality analysis. Additionally, within one mile of the proposed power plant site, there are a significant number of residential neighborhoods. Neighborhoods such as these typically contain nursing homes, daycare facilities and even small clinics or hospitals. The applicant has made no indication in the application of any such facilities. These facilities would also be considered sensitive receptors and must be treated accordingly in the air quality analysis. While these receptors are sensitive to all pollutants emitted, the ambient air quality is such that only the PM10/PM2.5 emissions from the proposed power plant project may cause a direct impact on the receptors.

**DATA REQUEST**

17. Please provide a complete list, with an attached map, identifying all parks and recreational areas (see figure 2.2-3), daycare facilities, schools (public and private), nursing homes/facilities and clinics or hospitals within 10 kilometers of

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the proposed power plant project site. Please include on the list the project's PM<sub>10</sub>/PM<sub>2.5</sub> air emissions impacts at each sensitive receptor listed.

**Response:** Information provided in the AFC both identified and analyzed the potential affects of the AES Highgrove Project on sensitive receptors, as well as assessing potential impacts to the proposed High School, as if it were present. Figures 8.6-1a and 8.6-1b, and Figure 2.2-3 included in the AFC, for example, show the locations of all existing sensitive receptors, including parks and recreational areas, daycare facilities, schools (public and private), nursing homes/facilities and clinics within 10 kilometers of the project site. Additionally, Appendix 8.6 of the AFC contains an offsite receptor report showing the location of each sensitive receptor, with a brief description of each.

In every environmental area addressed in the AFC, the Proposed High school was treated as if it were present. For example, in the Public Health Section 8.6.4.4.1, potential health impacts from emissions at the Proposed High School were calculated and presented. In the Air Quality Section, the applicability of District Rule 1401.1 relating to the proximity of stationary sources to the new and existing schools is discussed. Additionally, the Air Quality section refers to the Public Health section for a discussion demonstrating that the Project will comply with District Rule 1401, which sets stringent health standards for criteria and other pollutants.

Tables AQ17-1A through AQ17-1C present a listing of the previously identified sensitive receptors (presented in Figures 2.2-3, 8.6-1a, and 8.6-1b) within 10 kilometers of AES Highgrove and the project's 24-hour and annual PM<sub>10</sub> and PM<sub>2.5</sub> impacts at each sensitive receptor.

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TABLE AQ17-1A

Summary of Receptors and the Predicted PM<sub>10</sub> and PM<sub>2.5</sub> Impacts at Each Receptor

FID	EDR Receptor Name	Name	EDR Receptor Type	UTM (NAD 27)		Predicted PM <sub>10</sub> Impact (ug/m <sup>3</sup> )		Percent of State Standard		Predicted PM <sub>2.5</sub> Impact (ug/m <sup>3</sup> )		Percent of State/Federal Standard	
				Easting (m)	Northing (m)	24-Hour	Annual	24-Hour	Annual	24-Hour	Annual	24-Hour	Annual
0	A1	RUSD/Highgrove Headstart State	Daycare	469900	3763783	0.505	0.0343	1.01	0.17	0.505	0.0343	0.78	0.29
1	A2	Highgrove Elementary	Public	469900	3763783	0.505	0.0343	1.01	0.17	0.505	0.0343	0.78	0.29
2	B3	Immanuel Baptist School	Private	470178	3764115	0.5426	0.0767	1.09	0.38	0.542	0.0767	0.83	0.64
3	B4	Immanuel Baptist Preschool	Daycare	470178	3764115	0.5426	0.0767	1.09	0.38	0.542	0.0767	0.83	0.64
4	C5	Grand Terrace School	GNIS	470368	3765889	0.364	0.0131	0.73	0.07	0.364	0.0131	0.56	0.11
5	C6	Grand Terrace Elementary	Public	470368	3765889	0.364	0.0131	0.73	0.07	0.364	0.0131	0.56	0.11
6	D7	Terrace Hills School	GNIS	471197	3765332	0.6466	0.0353	1.29	0.18	0.646	0.0353	0.99	0.29
7	D8	Terrace Hills Middle	Public	471197	3765332	0.6466	0.0353	1.29	0.18	0.646	0.0353	0.99	0.29
8	D9	Azure Hills Elementary School	Private	471105	3765554	0.4925	0.0217	0.99	0.11	0.492	0.0217	0.76	0.18
9	11	Center for Employment Training-	Colleges	467679	3762349	0.4121	0.0228	0.82	0.11	0.412	0.0228	0.63	0.19
10	E12	Terrace View Elementary - Child	Daycare	471570	3766661	0.4454	0.0173	0.89	0.09	0.445	0.0173	0.69	0.14
11	E13	Terrace View School	GNIS	471570	3766661	0.4454	0.0173	0.89	0.09	0.445	0.0173	0.69	0.14
12	14	Four D Success Academy	Colleges	471203	3767327	0.4363	0.0118	0.87	0.06	0.436	0.0118	0.67	0.10
13	15	Terrace View Elementary	Public	471570	3766661	0.4454	0.0173	0.89	0.09	0.445	0.0173	0.69	0.14
14	16	California School of Court	Colleges	468229	3761128	1.3833	0.0415	2.77	0.21	1.383	0.0415	2.13	0.35
15	F18	United Truck Driving School	Colleges	468874	3760904	0.8193	0.0687	1.64	0.34	0.819	0.0687	1.26	0.57
16	F19	United Truck Driving School	Colleges	468874	3760904	0.8193	0.0687	1.64	0.34	0.819	0.0687	1.26	0.57
17	20	San Salvador School	GNIS	469452	3768220	0.4843	0.0159	0.97	0.08	0.484	0.0159	0.75	0.13
18	G21	Western Healthcare Center	Nursing	472403	3767324	0.2321	0.0071	0.46	0.04	0.232	0.0071	0.36	0.06
19	G22	Kinder Care Learning Center	Private	472495	3767324	0.251	0.0074	0.50	0.04	0.251	0.0074	0.39	0.06
20	23	Computer Education Institute-	Colleges	467951	3760907	1.1523	0.0414	2.30	0.21	1.152	0.0414	1.77	0.35
21	H24	City of Colton/Wilson Elementary	Daycare	470007	3768440	0.6012	0.0186	1.20	0.09	0.601	0.0186	0.92	0.16
22	H25	Wilson School	GNIS	470007	3768440	0.6012	0.0186	1.20	0.09	0.601	0.0186	0.92	0.16
23	I26	Fremont Elementary	Public	466476	3761688	0.3222	0.0153	0.64	0.08	0.322	0.0153	0.50	0.13
24	27	University Heights Middle	Public	468873	3760571	0.8166	0.0707	1.63	0.35	0.816	0.0707	1.26	0.59
25	I28	RUSD/Fremont Headstart Site	Daycare	466476	3761688	0.3222	0.0153	0.64	0.08	0.322	0.0153	0.50	0.13

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TABLE AQ17-1A

Summary of Receptors and the Predicted PM<sub>10</sub> and PM<sub>2.5</sub> Impacts at Each Receptor

FID	EDR Receptor Name	Name	EDR Receptor Type	UTM (NAD 27)		Predicted PM <sub>10</sub> Impact (ug/m <sup>3</sup> )		Percent of State Standard		Predicted PM <sub>2.5</sub> Impact (ug/m <sup>3</sup> )		Percent of State/Federal Standard	
				Easting (m)	Northing (m)	24-Hour	Annual	24-Hour	Annual	24-Hour	Annual	24-Hour	Annual
26	29	Temple Christian School	Private	469176	3768553	0.6444	0.0205	1.29	0.10	0.644	0.0205	0.99	0.17
27	I30	Fremont School	GNIS	466476	3761688	0.3222	0.0153	0.64	0.08	0.322	0.0153	0.50	0.13
28	J31	East Valley Community Day	Public	471390	3767992	0.5792	0.0156	1.16	0.08	0.579	0.0156	0.89	0.13
29	K32	Highland Elementary	Public	469796	3760347	1.6673	0.1186	3.33	0.59	1.667	0.1186	2.57	0.99
30	J33	Summit Career College	Colleges	471574	3767992	0.4986	0.0132	1.00	0.07	0.498	0.0132	0.77	0.11
31	K35	University Children's Center &	Daycare	469796	3760347	1.6673	0.1186	3.33	0.59	1.667	0.1186	2.57	0.99
32	37	North High School	GNIS	468132	3760019	1.1438	0.0406	2.29	0.20	1.143	0.0406	1.76	0.34
33	M38	Islamic Academy Of Riverside	Daycare	469055	3759684	0.6496	0.0704	1.30	0.35	0.649	0.0704	1.00	0.59
34	M39	Riverside Garden School	Private	469055	3759684	0.6496	0.0704	1.30	0.35	0.649	0.0704	1.00	0.59
35	40	Reche Canyon Rehab & Health	Nursing	473510	3767210	0.4111	0.0137	0.82	0.07	0.411	0.0137	0.63	0.11
36	41	Cooley Ranch Elementary	Public	471397	3770431	1.5463	0.0225	3.09	0.11	1.546	0.0225	2.38	0.19
37	42	Colton High	Public	469088	3769663	0.6304	0.0239	1.26	0.12	0.630	0.0239	0.97	0.20
38	N43	University of California-Riverside	Colleges	469236	3758574	0.9271	0.0894	1.85	0.45	0.927	0.0894	1.43	0.75
39	44	Slover Mountain High (Cont.)	Public	468165	3769777	0.6462	0.0192	1.29	0.10	0.646	0.0192	0.99	0.16
40	45	Somos Hermanas Unidas	Colleges	470380	3769880	0.7571	0.0177	1.51	0.09	0.757	0.0177	1.16	0.15
41	O46	Plymouth Tower	Nursing	465824	3760360	0.4152	0.017	0.83	0.09	0.415	0.017	0.64	0.14
42	P47	Apple Tree Learning Center	Daycare	471086	3759345	1.178	0.0761	2.36	0.38	1.178	0.0761	1.81	0.63
43	N48	University of California Riverside	GNIS	469236	3758574	0.9271	0.0894	1.85	0.45	0.927	0.0894	1.43	0.75
44	P49	Big Springs School	Private	471086	3759345	1.178	0.0761	2.36	0.38	1.178	0.0761	1.81	0.63
45	Q50	RUSD/Longfellow Headstart	Daycare	466838	3759580	0.8826	0.035	1.77	0.18	0.882	0.035	1.36	0.29
46	Q51	Longfellow Elementary	Public	466838	3759580	0.8826	0.035	1.77	0.18	0.882	0.035	1.36	0.29
47	Q52	Longfellow School	GNIS	466838	3759580	0.8826	0.035	1.77	0.18	0.882	0.035	1.36	0.29
48	53	Reche Canyon Elementary	Public	474984	3765986	0.5053	0.0382	1.01	0.19	0.505	0.0382	0.78	0.32
49	O54	Continuation School	GNIS	466008	3760138	0.3942	0.0191	0.79	0.10	0.394	0.0191	0.61	0.16
50	55	Bryant School	GNIS	464995	3760918	0.2618	0.0129	0.52	0.06	0.261	0.0129	0.40	0.11
51	R56	NAACP Head Start/State	Daycare	467206	3759246	1.018	0.0373	2.04	0.19	1.018	0.0373	1.57	0.31

**AES HIGHGROVE PROJECT  
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TABLE AQ17-1A

Summary of Receptors and the Predicted PM<sub>10</sub> and PM<sub>2.5</sub> Impacts at Each Receptor

FID	EDR Receptor Name	Name	EDR Receptor Type	UTM (NAD 27)		Predicted PM <sub>10</sub> Impact (ug/m <sup>3</sup> )		Percent of State Standard		Predicted PM <sub>2.5</sub> Impact (ug/m <sup>3</sup> )		Percent of State/Federal Standard	
				Easting (m)	Northing (m)	24-Hour	Annual	24-Hour	Annual	24-Hour	Annual	24-Hour	Annual
52	S58	Washington High (Alter.)	Public	471119	3769989	1.1368	0.0149	2.27	0.07	1.136	0.0149	1.75	0.12
53	59	Arrowhead Regional Medical	Medical	467428	3770001	0.6177	0.0158	1.24	0.08	0.617	0.0158	0.95	0.13
54	R60	University Heights Junior High	GNIS	467206	3759246	1.018	0.0373	2.04	0.19	1.018	0.0373	1.57	0.31
55	S61	Washington School	GNIS	471119	3769989	1.1368	0.0149	2.27	0.07	1.136	0.0149	1.75	0.12
56	T62	Grant School	GNIS	469552	3770659	0.5662	0.0223	1.13	0.11	0.566	0.0223	0.87	0.19
57	T63	Grant (Ulysses) Elementary	Public	469552	3770659	0.5662	0.0223	1.13	0.11	0.566	0.0223	0.87	0.19
58	64	Realty Institute	Colleges	473423	3769095	0.2751	0.0068	0.55	0.03	0.275	0.0068	0.42	0.06
59	U65	St. John's Lutheran Evangelical	Daycare	470383	3770656	0.6479	0.0216	1.30	0.11	0.647	0.0216	1.00	0.18
60	U66	Immaculate Conception School	GNIS	470383	3770656	0.6479	0.0216	1.30	0.11	0.647	0.0216	1.00	0.18
61	V67	Lincoln School	GNIS	470660	3770655	1.0112	0.0223	2.02	0.11	1.011	0.0223	1.56	0.19
62	V68	Lincoln (Abraham) Elementary	Public	470660	3770655	1.0112	0.0223	2.02	0.11	1.011	0.0223	1.56	0.19
63	69	Hyatt School	GNIS	471269	3758568	1.0988	0.073	2.20	0.37	1.098	0.073	1.69	0.61
64	W70	Chestmore Elementary	Public	463727	3767464	0.48	0.0252	0.96	0.13	0.48	0.0252	0.74	0.21
65	W71	CJUSD/Crestmore Site	Daycare	463727	3767464	0.48	0.0252	0.96	0.13	0.48	0.0252	0.74	0.21
66	W72	Crestmore School	GNIS	463727	3767464	0.48	0.0252	0.96	0.13	0.48	0.0252	0.74	0.21
67	X73	St. Frances de Sales Preschool	Daycare	465544	3759363	0.3624	0.0193	0.72	0.10	0.362	0.0193	0.56	0.16
68	X74	St Francis de Sales Elem School	Private	465544	3759363	0.3624	0.0193	0.72	0.10	0.362	0.0193	0.56	0.16
69	Y75	CJUSD/Alice Birney Elementary	Daycare	471305	3770653	1.0556	0.0142	2.11	0.07	1.055	0.0142	1.62	0.12
70	X76	Saint Francis School	GNIS	465544	3759363	0.3624	0.0193	0.72	0.10	0.362	0.0193	0.56	0.16
71	77	University of California	GNIS	468957	3758021	0.5521	0.0569	1.10	0.28	0.552	0.0569	0.85	0.47
72	Y78	Birney School	GNIS	471305	3770653	1.0556	0.0142	2.11	0.07	1.055	0.0142	1.62	0.12
73	79	Colton Middle	Public	469369	3770992	0.547	0.0206	1.09	0.10	0.547	0.0206	0.84	0.17
74	Z80	Lincoln (Abraham) Continuation	Public	466188	3758807	0.8486	0.0313	1.70	0.16	0.848	0.0313	1.31	0.26
75	Z81	Learning Center	GNIS	466188	3758585	0.7731	0.0316	1.55	0.16	0.773	0.0316	1.19	0.26
76	AA82	Rogers (Paul) Elementary	Public	468723	3771105	0.4838	0.0194	0.97	0.10	0.483	0.0194	0.74	0.16
77	AA83	City of Colton/Paul Rogers	Daycare	468723	3771105	0.4838	0.0194	0.97	0.10	0.483	0.0194	0.74	0.16

**AES HIGHGROVE PROJECT  
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FID	EDR Receptor Name	Name	EDR Receptor Type	UTM (NAD 27)		Predicted PM <sub>10</sub> Impact (ug/m <sup>3</sup> )		Percent of State Standard		Predicted PM <sub>2.5</sub> Impact (ug/m <sup>3</sup> )		Percent of State/Federal Standard	
				Easting (m)	Northing (m)	24-Hour	Annual	24-Hour	Annual	24-Hour	Annual	24-Hour	Annual
78	Y84	Birney (Alice) Elementary	Public	471305	3770653	1.0556	0.0142	2.11	0.07	1.055	0.0142	1.62	0.12
79	AB85	Riverside Faith Temple Church	Daycare	466649	3758472	1.0373	0.0343	2.07	0.17	1.037	0.0343	1.60	0.29
80	AB86	Eastside Christian Academy	Private	466649	3758472	1.0373	0.0343	2.07	0.17	1.037	0.0343	1.60	0.29
81	AC87	Emerson School	GNIS	467387	3758248	1.2861	0.0316	2.57	0.16	1.286	0.0316	1.98	0.26
82	AA88	Rogers School	GNIS	468723	3771105	0.4838	0.0194	0.97	0.10	0.483	0.0194	0.74	0.16
83	AC89	Emerson Elementary	Public	467387	3758248	1.2861	0.0316	2.57	0.16	1.286	0.0316	1.98	0.26
84	90	Internal Control	Colleges	473059	3770981	0.4825	0.0124	0.97	0.06	0.482	0.0124	0.74	0.10
85	AD91	Grant School	GNIS	464713	3759588	0.2999	0.0131	0.60	0.07	0.299	0.0131	0.46	0.11
86	Z92	Our Lady of Guadalupe Academy	GNIS	466188	3758585	0.7731	0.0316	1.55	0.16	0.773	0.0316	1.19	0.26
87	AD93	Riverside Community Hospital	Medical	464897	3759366	0.3678	0.0136	0.74	0.07	0.367	0.0136	0.57	0.11
88	AD94	Riverside Community Hospital	Nursing	464897	3759366	0.3678	0.0136	0.74	0.07	0.367	0.0136	0.57	0.11
89	AD95	RUSD/Grant Elementary School	Daycare	464713	3759588	0.2999	0.0131	0.60	0.07	0.299	0.0131	0.46	0.11
90	AD96	Grant Elementary	Public	464713	3759588	0.2999	0.0131	0.60	0.07	0.299	0.0131	0.46	0.11
91	AD97	Riverside Community hospital	AHA	464897	3759366	0.3678	0.0136	0.74	0.07	0.367	0.0136	0.57	0.11
92	98	Crestview Convalescent Hospital	Nursing	465861	3770339	0.5194	0.0111	1.04	0.06	0.519	0.0111	0.80	0.09
93	AD100	Calvary Presbyterian Church NS	Private	464804	3759255	0.3652	0.0134	0.73	0.07	0.365	0.0134	0.56	0.11
94	AD101	Calvary Presbyterian Church	Daycare	464804	3759255	0.3652	0.0134	0.73	0.07	0.365	0.0134	0.56	0.11
95	AE102	Loma Linda University	GNIS	475910	3767425	0.522	0.0176	1.04	0.09	0.522	0.0176	0.80	0.15
96	103	Garcia (Ernest) Elementary	Public	467894	3771441	0.6468	0.0167	1.29	0.08	0.646	0.0167	1.00	0.14
97	104	Loma Linda University Med Cntr.	AHA	475910	3767425	0.522	0.0176	1.04	0.09	0.522	0.0176	0.80	0.15
98	AF105	Beverly Manor Riverside	Nursing	463974	3759480	0.2527	0.0115	0.51	0.06	0.252	0.0115	0.39	0.10
99	AG106	Arbuckle School	GNIS	462690	3761813	0.3301	0.0119	0.66	0.06	0.330	0.0119	0.51	0.10
100	107	Morris (Georgia) Elementary	Public	464296	3771454	0.3159	0.0088	0.63	0.04	0.315	0.0088	0.49	0.07
101	AG108	Ina Arbuckle Elementary	Daycare	462690	3761813	0.3301	0.0119	0.66	0.06	0.330	0.0119	0.51	0.10
102	AG109	Ina Arbuckle Elementary	Public	462690	3761813	0.3301	0.0119	0.66	0.06	0.330	0.0119	0.51	0.10
103	110	Jehue (William G.) Middle	Public	467063	3771222	0.5042	0.0142	1.01	0.07	0.504	0.0142	0.78	0.12

**AES HIGHGROVE PROJECT  
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FID	EDR Receptor Name	Name	EDR Receptor Type	UTM (NAD 27)		Predicted PM <sub>10</sub> Impact (ug/m <sup>3</sup> )		Percent of State Standard		Predicted PM <sub>2.5</sub> Impact (ug/m <sup>3</sup> )		Percent of State/Federal Standard	
				Easting (m)	Northing (m)	24-Hour	Annual	24-Hour	Annual	24-Hour	Annual	24-Hour	Annual
104	AH111	Zimmerman (Walter) Elementary	Public	467606	3768004	0.8147	0.0161	1.63	0.08	0.814	0.0161	1.25	0.13
105	AH112	Zimmerman School	GNIS	467606	3768004	0.8147	0.0161	1.63	0.08	0.814	0.0161	1.25	0.13
106	AI113	McKinley School	GNIS	469556	3771768	0.4935	0.0197	0.99	0.10	0.493	0.0197	0.76	0.16
107	AE114	Loma Linda University Medical	Medical	475910	3767425	0.522	0.0176	1.04	0.09	0.522	0.0176	0.80	0.15
108	115	Sheriffs Academy	GNIS	470618	3757350	0.7918	0.0752	1.58	0.38	0.791	0.0752	1.22	0.63
109	AI116	McKinley (William) Elementary	Public	469556	3771768	0.4935	0.0197	0.99	0.10	0.493	0.0197	0.76	0.16
110	AF117	Community Care on Palm	Nursing	463696	3759259	0.2339	0.0108	0.47	0.05	0.233	0.0108	0.36	0.09
111	AJ118	Central Middle	Public	464434	3758924	0.3691	0.0132	0.74	0.07	0.369	0.0132	0.57	0.11
112	AJ119	Riverside Community College	Colleges	464526	3758923	0.3711	0.0132	0.74	0.07	0.371	0.0132	0.57	0.11
113	120	San Bernardino Valley College	GNIS	471216	3771652	1.1661	0.0192	2.33	0.10	1.166	0.0192	1.79	0.16
114	AK121	Bloomington Junior High School	GNIS	463642	3769238	0.4188	0.0146	0.84	0.07	0.418	0.0146	0.64	0.12
115	AL122	Eden Lutheran School	Daycare	464250	3759257	0.3007	0.0123	0.60	0.06	0.300	0.0123	0.46	0.10
116	AL123	Eden Lutheran Day School	Private	464250	3759257	0.3007	0.0123	0.60	0.06	0.300	0.0123	0.46	0.10
117	AK124	Colton JUSD Head Start	Daycare	463642	3769238	0.4188	0.0146	0.84	0.07	0.418	0.0146	0.64	0.12
118	AK125	Bloominton Middle	Public	463642	3769238	0.4188	0.0146	0.84	0.07	0.418	0.0146	0.64	0.12
119	AM126	Urbita School	GNIS	471862	3771539	1.3892	0.02	2.78	0.10	1.389	0.02	2.14	0.17
120	AM127	Urbita Elementary	Public	471862	3771539	1.3892	0.02	2.78	0.10	1.389	0.02	2.14	0.17
121	AJ128	Riverside Community Child	Daycare	464526	3758923	0.3711	0.0132	0.74	0.07	0.371	0.0132	0.57	0.11
122	AJ129	City College	GNIS	464710	3758701	0.3648	0.0136	0.73	0.07	0.364	0.0136	0.56	0.11
123	AN130	Grimes School	GNIS	464199	3770123	0.3714	0.0103	0.74	0.05	0.371	0.0103	0.57	0.09
124	AJ131	Central Junior High School	GNIS	464434	3758924	0.3691	0.0132	0.74	0.07	0.369	0.0132	0.57	0.11
125	AN132	Grimes (Ruth) Elementary	Public	464199	3770123	0.3714	0.0103	0.74	0.05	0.371	0.0103	0.57	0.09
126	AL133	First United Methodist Church	Daycare	464250	3759257	0.3007	0.0123	0.60	0.06	0.300	0.0123	0.46	0.10
127	AO134	Kinder-Care Learning Centers	Daycare	469600	3756910	0.9034	0.0753	1.81	0.38	0.903	0.0753	1.39	0.63
128	AO135	Kinder Care Learning Center	Private	469600	3756910	0.9034	0.0753	1.81	0.38	0.903	0.0753	1.39	0.63
129	136	La Petite Academy	Private	475270	3769533	0.2452	0.0085	0.49	0.04	0.245	0.0085	0.38	0.07

**AES HIGHGROVE PROJECT  
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FID	EDR Receptor Name	Name	EDR Receptor Type	UTM (NAD 27)		Predicted PM <sub>10</sub> Impact (ug/m <sup>3</sup> )		Percent of State Standard		Predicted PM <sub>2.5</sub> Impact (ug/m <sup>3</sup> )		Percent of State/Federal Standard	
				Easting (m)	Northing (m)	24-Hour	Annual	24-Hour	Annual	24-Hour	Annual	24-Hour	Annual
130	AP137	Union Academy	GNIS	475914	3768645	0.3303	0.0131	0.66	0.07	0.330	0.0131	0.51	0.11
131	138	Urbita School (Historical)	GNIS	471862	3771539	1.3892	0.02	2.78	0.10	1.389	0.02	2.14	0.17
132	AP139	Loma Linda Academy	Private	476005	3768423	0.3649	0.0145	0.73	0.07	0.364	0.0145	0.56	0.12
133	AQ140	Heritage Gardens Health Care	Nursing	476649	3767312	0.4405	0.0194	0.88	0.10	0.440	0.0194	0.68	0.16
134	AR141	Loma Linda Children's Center KI	Private	476373	3767867	0.4573	0.0162	0.91	0.08	0.457	0.0162	0.70	0.14
135	142	Rialto High	Public	467066	3772109	0.4252	0.0138	0.85	0.07	0.425	0.0138	0.65	0.12
136	AR143	Loma Linda Infant Center	Daycare	476373	3767867	0.4573	0.0162	0.91	0.08	0.457	0.0162	0.70	0.14
137	144	Simpson (Samuel W.) Elementary	Public	465033	3771229	0.4217	0.0098	0.84	0.05	0.421	0.0098	0.65	0.08
138	AQ145	Loma Linda Univ Community	AHA	476649	3767312	0.4405	0.0194	0.88	0.10	0.440	0.0194	0.68	0.16
139	AQ146	Jerry L Pettis Mem Vet Hosp	AHA	476649	3767312	0.4405	0.0194	0.88	0.10	0.440	0.0194	0.68	0.16
140	AS147	Milor Continuation High	Public	465495	3771449	0.5158	0.0105	1.03	0.05	0.515	0.0105	0.79	0.09
141	AS148	Zupanic (Charles) High (Alter.)	Public	465495	3771449	0.5158	0.0105	1.03	0.05	0.515	0.0105	0.79	0.09
142	AT150	Bloomington Christian Day School	Daycare	463738	3770236	0.333	0.0104	0.67	0.05	0.333	0.0104	0.51	0.09
143	AT151	Bloomington Christian School	Private	463738	3770236	0.333	0.0104	0.67	0.05	0.333	0.0104	0.51	0.09
144	AT152	Bright Beginnings Preschool Of	Daycare	463738	3770236	0.333	0.0104	0.67	0.05	0.333	0.0104	0.51	0.09
145	153	Mulberry Childcare	Private	464108	3770567	0.3852	0.01	0.77	0.05	0.385	0.01	0.59	0.08
146	154	Mission Junior High School	GNIS	461676	3762483	0.3287	0.0177	0.66	0.09	0.328	0.0177	0.51	0.15
147	AU155	Richardson Junior High School	GNIS	471587	3772316	1.0162	0.0169	2.03	0.08	1.016	0.0169	1.56	0.14
148	AU156	Richardson Prep Hi	Public	471587	3772316	1.0162	0.0169	2.03	0.08	1.016	0.0169	1.56	0.14
149	AV157	JUSD/West Elementary	Daycare	461674	3761817	0.3228	0.0136	0.65	0.07	0.322	0.0136	0.50	0.11
150	AV158	West Riverside Elementary	Public	461674	3761817	0.3228	0.0136	0.65	0.07	0.322	0.0136	0.50	0.11
151	AV159	West Riverside School	GNIS	461674	3761817	0.3228	0.0136	0.65	0.07	0.322	0.0136	0.50	0.11
152	AW160	Kelley School	GNIS	467810	3773769	0.5636	0.0147	1.13	0.07	0.563	0.0147	0.87	0.12
153	161	Metcalf School	GNIS	471403	3772427	1.0384	0.0171	2.08	0.09	1.038	0.0171	1.60	0.14
154	AW162	Kelley Elementary	Public	467810	3773769	0.5636	0.0147	1.13	0.07	0.563	0.0147	0.87	0.12
155	AX163	Alcott School	GNIS	466366	3756921	0.9119	0.0316	1.82	0.16	0.911	0.0316	1.40	0.26

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FID	EDR Receptor Name	Name	EDR Receptor Type	UTM (NAD 27)		Predicted PM <sub>10</sub> Impact (ug/m <sup>3</sup> )		Percent of State Standard		Predicted PM <sub>2.5</sub> Impact (ug/m <sup>3</sup> )		Percent of State/Federal Standard	
				Easting (m)	Northing (m)	24-Hour	Annual	24-Hour	Annual	24-Hour	Annual	24-Hour	Annual
156	AX164	Alcott Elementary	Public	466366	3756921	0.9119	0.0316	1.82	0.16	0.911	0.0316	1.40	0.26
157	AR165	Linda Valley Care Center	Nursing	476835	3767866	0.4592	0.0152	0.92	0.08	0.459	0.0152	0.71	0.13
159	AZ170	Boyd Elementary	Public	466237	3772333	0.6712	0.0111	1.34	0.06	0.671	0.0111	1.03	0.09
160	AZ171	Boyd School	GNIS	466237	3772333	0.6712	0.0111	1.34	0.06	0.671	0.0111	1.03	0.09
161	BA172	Riverside Temple Beth El Nursery	Daycare	465812	3756923	0.9274	0.0298	1.85	0.15	0.927	0.0298	1.43	0.25
162	BA173	Temple Beth El Child Dev Center	Private	465812	3756923	0.9274	0.0298	1.85	0.15	0.927	0.0298	1.43	0.25
163	BB174	Vista Pacific Convalescent	Nursing	461123	3762596	0.3933	0.0158	0.79	0.08	0.393	0.0158	0.61	0.13
164	BB175	Vista Pacific Center	Nursing	461123	3762596	0.3933	0.0158	0.79	0.08	0.393	0.0158	0.61	0.13
165	BC176	San Bernardino City School Dist.-	Daycare	471589	3772759	1.0126	0.0163	2.03	0.08	1.012	0.0163	1.56	0.14
166	177	Seneca Elementary	Public	472741	3756679	0.7693	0.0493	1.54	0.25	0.769	0.0493	1.18	0.41
167	BA178	Polytechnic High	Public	465811	3756701	0.9347	0.0294	1.87	0.15	0.934	0.0294	1.44	0.25
168	179	Harris (Ruth O.) Middle	Public	461421	3767695	0.5483	0.0213	1.10	0.11	0.548	0.0213	0.84	0.18
169	180	Bloomington High School	GNIS	461885	3768469	0.3659	0.0193	0.73	0.10	0.365	0.0193	0.56	0.16
170	BC181	Lytle Creek Elementary	Public	471589	3772759	1.0126	0.0163	2.03	0.08	1.012	0.0163	1.56	0.14
171	BC183	Lytle Creek School	GNIS	471589	3772759	1.0126	0.0163	2.03	0.08	1.012	0.0163	1.56	0.14
172	BA184	Polytechnic High School	GNIS	465996	3756590	0.9303	0.0301	1.86	0.15	0.930	0.0301	1.43	0.25
173	BD185	Magnolia School	GNIS	463690	3757818	0.3645	0.0123	0.73	0.06	0.364	0.0123	0.56	0.10
174	BE186	Carden School	GNIS	464797	3757259	0.7337	0.0232	1.47	0.12	0.733	0.0232	1.13	0.19
175	187	Steps Community Day	Public	461029	3762153	0.3222	0.0153	0.64	0.08	0.322	0.0153	0.50	0.13
176	BE188	Montessori Academy	Private	464612	3757260	0.6213	0.0206	1.24	0.10	0.621	0.0206	0.96	0.17
177	BF189	Burbank Elementary	Public	473524	3772199	0.5291	0.0112	1.06	0.06	0.529	0.0112	0.81	0.09
178	BD190	Anza Castle Preschool	Daycare	463690	3757818	0.3645	0.0123	0.73	0.06	0.364	0.0123	0.56	0.10
179	BD191	Magnolia Elementary School	Daycare	463690	3757818	0.3645	0.0123	0.73	0.06	0.364	0.0123	0.56	0.10
180	BE192	Montessori Academy	Daycare	464612	3757260	0.6213	0.0206	1.24	0.10	0.621	0.0206	0.96	0.17
181	BD193	Magnolia Elementary	Public	463690	3757818	0.3645	0.0123	0.73	0.06	0.364	0.0123	0.56	0.10
182	BD194	St Paul Lutheran School	Private	463782	3757707	0.3568	0.0124	0.71	0.06	0.356	0.0124	0.55	0.10

**AES HIGHGROVE PROJECT  
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DATA RESPONSES, SET 1A**

TABLE AQ17-1A

Summary of Receptors and the Predicted PM<sub>10</sub> and PM<sub>2.5</sub> Impacts at Each Receptor

FID	EDR Receptor Name	Name	EDR Receptor Type	UTM (NAD 27)		Predicted PM <sub>10</sub> Impact (ug/m <sup>3</sup> )		Percent of State Standard		Predicted PM <sub>2.5</sub> Impact (ug/m <sup>3</sup> )		Percent of State/Federal Standard	
				Easting (m)	Northing (m)	24-Hour	Annual	24-Hour	Annual	24-Hour	Annual	24-Hour	Annual
183	195	Mill School	GNIS	474814	3771530	0.2725	0.006	0.55	0.03	0.272	0.006	0.42	0.05
184	BF197	Burbank School	GNIS	473524	3772199	0.5291	0.0112	1.06	0.06	0.529	0.0112	0.81	0.09
185	BG198	Hidden Springs Elementary	Public	475244	3759666	0.4833	0.0448	0.97	0.22	0.483	0.0448	0.74	0.37
186	BD199	Knollwood Hospital	GNIS	463506	3757929	0.3513	0.0121	0.70	0.06	0.351	0.0121	0.54	0.10
187	BH200	Knollwood Psych & Chemical	Medical	463513	3759814	0.3022	0.0135	0.60	0.07	0.302	0.0135	0.46	0.11
188	BG201	Vista Heights (Middle)	Public	475980	3758444	0.3526	0.0305	0.71	0.15	0.352	0.0305	0.54	0.25
189	202	Curtis (Sam V.) Elementary	Public	465037	3772338	0.4622	0.0095	0.92	0.05	0.462	0.0095	0.71	0.08
190	203	California Southern Law School	Colleges	463781	3757485	0.3609	0.0125	0.72	0.06	0.360	0.0125	0.56	0.10
191	204	Pachappa School	GNIS	464334	3757150	0.4758	0.0175	0.95	0.09	0.475	0.0175	0.73	0.15
192	205	Lewis (Mary B.) Elementary	Public	461732	3770686	0.3085	0.0114	0.62	0.06	0.308	0.0114	0.47	0.10
193	BI206	Rio Vista High (Cont.)	Public	460389	3763818	0.4657	0.0183	0.93	0.09	0.465	0.0183	0.72	0.15
194	BI207	Nueva Vista Continuation High	Public	460389	3763818	0.4657	0.0183	0.93	0.09	0.465	0.0183	0.72	0.15
195	BJ208	Smith School	GNIS	463002	3770904	0.3007	0.0095	0.60	0.05	0.300	0.0095	0.46	0.08
196	BJ209	Smith (Gerald A.) Elementary	Public	463002	3770904	0.3007	0.0095	0.60	0.05	0.300	0.0095	0.46	0.08
197	BH210	First Christian Nursery School	Daycare	463413	3757708	0.3593	0.0119	0.72	0.06	0.359	0.0119	0.55	0.10
198	BH211	Community Care and Rehab Cntr.	Nursing	463413	3757708	0.3593	0.0119	0.72	0.06	0.359	0.0119	0.55	0.10
199	BK212	St. Johns Child Care Center	Daycare	460476	3762488	0.3897	0.0148	0.78	0.07	0.389	0.0148	0.60	0.12
200	BK213	Rustic Lane Elementary	Public	460476	3762488	0.3897	0.0148	0.78	0.07	0.389	0.0148	0.60	0.12
201	BL214	Casey Elementary	Public	467071	3773550	0.4197	0.012	0.84	0.06	0.419	0.012	0.65	0.10
202	BL215	Casey Elementary School-Room	Daycare	467071	3773550	0.4197	0.012	0.84	0.06	0.419	0.012	0.65	0.10
203	BK216	Rubidoux High School	GNIS	460566	3761933	0.3373	0.0152	0.67	0.08	0.337	0.0152	0.52	0.13
204	217	Victoria Elementary	Public	465347	3756038	0.81	0.026	1.62	0.13	0.81	0.026	1.25	0.22
205	BH219	Growing Place, Too	Daycare	463413	3757708	0.3593	0.0119	0.72	0.06	0.359	0.0119	0.55	0.10
206	BM220	JUSD/Pacific Avenue Elementary	Daycare	460748	3761267	0.3224	0.0116	0.64	0.06	0.322	0.0116	0.50	0.10
207	BN221	Rustic Lane School	GNIS	460476	3762488	0.3897	0.0148	0.78	0.07	0.389	0.0148	0.60	0.12
208	BH222	The Growing Place	Private	463228	3757709	0.325	0.0115	0.65	0.06	0.325	0.0115	0.50	0.10

**AES HIGHGROVE PROJECT  
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DATA RESPONSES, SET 1A**

TABLE AQ17-1A

Summary of Receptors and the Predicted PM<sub>10</sub> and PM<sub>2.5</sub> Impacts at Each Receptor

FID	EDR Receptor Name	Name	EDR Receptor Type	UTM (NAD 27)		Predicted PM <sub>10</sub> Impact (ug/m <sup>3</sup> )		Percent of State Standard		Predicted PM <sub>2.5</sub> Impact (ug/m <sup>3</sup> )		Percent of State/Federal Standard	
				Easting (m)	Northing (m)	24-Hour	Annual	24-Hour	Annual	24-Hour	Annual	24-Hour	Annual
209	BM223	Pacific Avenue Elementary	Public	460748	3761267	0.3224	0.0116	0.64	0.06	0.322	0.0116	0.50	0.10
210	BN224	JUSD/Rustic Lane Elementary	Daycare	460476	3762488	0.3897	0.0148	0.78	0.07	0.389	0.0148	0.60	0.12
211	BL225	Casey School	GNIS	467071	3773550	0.4197	0.012	0.84	0.06	0.419	0.012	0.65	0.10
212	BM226	Pacific Avenue School	GNIS	460748	3761267	0.3224	0.0116	0.64	0.06	0.322	0.0116	0.50	0.10
213	227	Rubidoux High	Public	460566	3761933	0.3373	0.0152	0.67	0.08	0.337	0.0152	0.52	0.13
214	BO228	YMCA of Riverside - Hope	Daycare	465347	3756038	0.81	0.026	1.62	0.13	0.81	0.026	1.25	0.22
215	BP230	Castle View Elementary	Public	468301	3755140	0.5775	0.0609	1.16	0.30	0.577	0.0609	0.89	0.51
216	BM232	Tree House Pre-School, the	Daycare	460748	3761267	0.3224	0.0116	0.64	0.06	0.322	0.0116	0.50	0.10
217	233	Security Officers Training	Colleges	473250	3773087	0.9596	0.0116	1.92	0.06	0.959	0.0116	1.48	0.10
218	234	Canyon Springs High	Public	475886	3757668	0.2809	0.026	0.56	0.13	0.280	0.026	0.43	0.22
219	BO235	Victoria School	GNIS	465347	3756038	0.81	0.026	1.62	0.13	0.81	0.026	1.25	0.22
220	BP236	Castle View School	GNIS	468301	3755140	0.5775	0.0609	1.16	0.30	0.577	0.0609	0.89	0.51
221	237	Valley Hypnosis Center	Colleges	463502	3757042	0.3498	0.0121	0.70	0.06	0.349	0.0121	0.54	0.10
222	BQ238	Lewis School	GNIS	462171	3770686	0.4263	0.0113	0.85	0.06	0.426	0.0113	0.66	0.09
223	BQ239	Casa Maria Convalescent	Nursing	462079	3770686	0.4034	0.0115	0.81	0.06	0.403	0.0115	0.62	0.10
224	240	Bryn Mawr Elementary	Public	478678	3766642	0.3442	0.0244	0.69	0.12	0.344	0.0244	0.53	0.20
225	241	Watts School	GNIS	465595	3773334	0.5686	0.0097	1.14	0.05	0.568	0.0097	0.87	0.08
226	242	Riverside Christian Day School	Private	463683	3756044	0.4547	0.0158	0.91	0.08	0.454	0.0158	0.70	0.13

**AES HIGHGROVE PROJECT  
(06-AFC-2)  
DATA RESPONSES, SET 1A**

TABLE AQ17-1B

Summary of Receptors and the Predicted PM<sub>10</sub> and PM<sub>2.5</sub> Impacts at Each Receptor

Name	UTM (NAD 27)		Predicted PM <sub>10</sub> Impact (µg/m <sup>3</sup> )		Percent of State Standard		Predicted PM <sub>2.5</sub> Impact (µg/m <sup>3</sup> )		Percent of State/Federal Standard	
	Easting (m)	Northing (m)	24-Hour	Annual	24-Hour	Annual	24-Hour	Annual	24-Hour	Annual
Reid Park	467028	3763822	0.2835	0.016	<b>0.57</b>	<b>0.08</b>	0.2835	0.016	0.44	0.13
AB Brown Sports Complex	467396	3763303	0.2118	0.013	<b>0.42</b>	<b>0.07</b>	0.2118	0.013	0.33	0.11
Fairmount Park	465807	3761389	0.2429	0.0131	<b>0.49</b>	<b>0.07</b>	0.2429	0.0131	0.37	0.11
Samuel Evans Sports Complex	464626	3759203	0.3534	0.0131	<b>0.71</b>	<b>0.07</b>	0.3534	0.0131	0.54	0.11
Highland Park	469688	3760652	1.7384	0.1301	<b>3.48</b>	<b>0.65</b>	1.7384	0.1301	2.67	1.08
Pico Park	469929	3764642	0.1846	0.0208	<b>0.37</b>	<b>0.10</b>	0.1846	0.0208	0.28	0.17
Terrace Hills Community Park	471505	3765259	0.7408	0.0517	<b>1.48</b>	<b>0.26</b>	0.7408	0.0517	1.14	0.43
Colony Park	473868	3768043	0.3295	0.0123	<b>0.66</b>	<b>0.06</b>	0.3295	0.0123	0.51	0.10
Veterans Park	470302	3768412	1.1488	0.0186	<b>2.30</b>	<b>0.09</b>	1.1488	0.0186	1.77	0.16
Boardwell Park- Stratton Recreation Center	467219	3758473	1.2763	0.034	<b>2.55</b>	<b>0.17</b>	1.2763	0.034	1.96	0.28
Memorial Park Pool	461162	3761428	0.3094	0.0113	<b>0.62</b>	<b>0.06</b>	0.3094	0.0113	0.48	0.09
Fiesta Village	472175	3767383	0.2279	0.0072	<b>0.46</b>	<b>0.04</b>	0.2279	0.0072	0.35	0.06
Villegas Community Center	463435	3756880	0.3371	0.0119	<b>0.67</b>	<b>0.06</b>	0.3371	0.0119	0.52	0.10
Box Springs Mountain Park	473294	3762625	1.2462	0.1618	<b>2.49</b>	<b>0.81</b>	1.2462	0.1618	1.92	1.35
Agua Mansa Cemetery	469120	3767970	0.4581	0.0157	<b>0.92</b>	<b>0.08</b>	0.4581	0.0157	0.70	0.13
Mt. Rubidoux Park	463795	3760243	0.4731	0.0305	<b>0.95</b>	<b>0.15</b>	0.4731	0.0305	0.73	0.25
White Park	465157	3760068	0.3266	0.0145	<b>0.65</b>	<b>0.07</b>	0.3266	0.0145	0.50	0.12
Newman Park	465047	3759410	0.3773	0.0144	<b>0.75</b>	<b>0.07</b>	0.3773	0.0144	0.58	0.12
Loring Park	464441	3760787	0.3213	0.0143	<b>0.64</b>	<b>0.07</b>	0.3213	0.0143	0.49	0.12
Carlson Park	463994	3760913	0.2975	0.015	<b>0.60</b>	<b>0.08</b>	0.2975	0.015	0.46	0.13
Tequesquito Arroyo Park	463612	3759280	0.2165	0.0107	<b>0.43</b>	<b>0.05</b>	0.2165	0.0107	0.33	0.09

**AES HIGHGROVE PROJECT  
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DATA RESPONSES, SET 1A**

TABLE AQ17-1B  
Summary of Receptors and the Predicted PM<sub>10</sub> and PM<sub>2.5</sub> Impacts at Each Receptor

Name	UTM (NAD 27)		Predicted PM <sub>10</sub> Impact (µg/m <sup>3</sup> )		Percent of State Standard		Predicted PM <sub>2.5</sub> Impact (µg/m <sup>3</sup> )		Percent of State/Federal Standard	
	Easting (m)	Northing (m)	24-Hour	Annual	24-Hour	Annual	24-Hour	Annual	24-Hour	Annual
Bobby Bonds Park and Sports Complex	467197	3759038	1.0463	0.0368	<b>2.09</b>	<b>0.18</b>	1.0463	0.0368	1.61	0.31
Dario Vasquez Park	466614	3758777	0.9823	0.034	<b>1.96</b>	<b>0.17</b>	0.9823	0.034	1.51	0.28
Lincoln Park	466061	3759062	0.8744	0.0289	<b>1.75</b>	<b>0.14</b>	0.8744	0.0289	1.35	0.24
Andulka Park	467800	3757545	0.6067	0.0373	<b>1.21</b>	<b>0.19</b>	0.6067	0.0373	0.93	0.31
Swanson Park	467246	3756264	0.8599	0.0475	<b>1.72</b>	<b>0.24</b>	0.8599	0.0475	1.32	0.40
Castleview Park	468314	3754789	0.5606	0.0588	<b>1.12</b>	<b>0.29</b>	0.5606	0.0588	0.86	0.49
Westbluff Park	476063	3758158	0.3336	0.0278	<b>0.67</b>	<b>0.14</b>	0.3336	0.0278	0.51	0.23
Hidden Springs Community Park	475142	3759897	0.4583	0.048	<b>0.92</b>	<b>0.24</b>	0.4583	0.048	0.71	0.40
Leonardo Baily Park	478909	3766858	0.3125	0.022	<b>0.63</b>	<b>0.11</b>	0.3125	0.022	0.48	0.18
Hulda Crooks Park	477526	3766287	0.4148	0.0296	<b>0.83</b>	<b>0.15</b>	0.4148	0.0296	0.64	0.25
Elmer Digno Park	475999	3768285	0.4183	0.015	<b>0.84</b>	<b>0.08</b>	0.4183	0.015	0.64	0.13
Sun Park	477504	3769020	0.3718	0.013	<b>0.74</b>	<b>0.07</b>	0.3718	0.013	0.57	0.11
Mill Community Park	474728	3771344	0.275	0.0095	<b>0.55</b>	<b>0.05</b>	0.275	0.0095	0.42	0.08
Lytle Creek Park	471558	3772567	1.03	0.0169	<b>2.06</b>	<b>0.08</b>	1.03	0.0169	1.58	0.14
Viaduct Park	471218	3773351	0.7616	0.0169	<b>1.52</b>	<b>0.08</b>	0.7616	0.0169	1.17	0.14
Municipal Baseball Park	472840	3772824	1.2301	0.017	<b>2.46</b>	<b>0.09</b>	1.2301	0.017	1.89	0.14
Meadowbrook Fields	473998	3773085	0.5074	0.0108	<b>1.01</b>	<b>0.05</b>	0.5074	0.0108	0.78	0.09
Nunez Park	470079	3773918	0.4138	0.0154	<b>0.83</b>	<b>0.08</b>	0.4138	0.0154	0.64	0.13
Nicholson Park	467830	3773548	0.5743	0.0148	<b>1.15</b>	<b>0.07</b>	0.5743	0.0148	0.88	0.12
Davis Park	468565	3771142	0.57	0.0192	<b>1.14</b>	<b>0.10</b>	0.57	0.0192	0.88	0.16
Margaret Todd Park	465257	3773356	0.5296	0.0095	<b>1.06</b>	<b>0.05</b>	0.5296	0.0095	0.81	0.08
Rialto City Park	465587	3773361	0.5666	0.0097	<b>1.13</b>	<b>0.05</b>	0.5666	0.0097	0.87	0.08

**AES HIGHGROVE PROJECT  
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DATA RESPONSES, SET 1A**

TABLE AQ17-1B  
Summary of Receptors and the Predicted PM<sub>10</sub> and PM<sub>2.5</sub> Impacts at Each Receptor

Name	UTM (NAD 27)		Predicted PM <sub>10</sub> Impact (µg/m <sup>3</sup> )		Percent of State Standard		Predicted PM <sub>2.5</sub> Impact (µg/m <sup>3</sup> )		Percent of State/Federal Standard	
	Easting (m)	Northing (m)	24-Hour	Annual	24-Hour	Annual	24-Hour	Annual	24-Hour	Annual
Anderson Park	464981	3771941	0.4595	0.0099	<b>0.92</b>	<b>0.05</b>	0.4595	0.0099	0.71	0.08
Rialto City Park	466120	3770743	0.5792	0.0117	<b>1.16</b>	<b>0.06</b>	0.5792	0.0117	0.89	0.10
George E Brown Jr. Park	467002	3770536	0.8132	0.0143	<b>1.63</b>	<b>0.07</b>	0.8132	0.0143	1.25	0.12
Ayala Park	462678	3769688	0.3722	0.0132	<b>0.74</b>	<b>0.07</b>	0.3722	0.0132	0.57	0.11
Kessler Park	462974	3767297	0.482	0.017	<b>0.96</b>	<b>0.09</b>	0.482	0.017	0.74	0.14
Avalon Park	463822	3763811	0.4267	0.023	<b>0.85</b>	<b>0.12</b>	0.4267	0.023	0.66	0.19
Municipal Park	470968	3769859	1.3289	0.023	<b>2.66</b>	<b>0.12</b>	1.3289	0.023	2.04	0.19
Central Park	470657	3769894	1.2812	0.0236	<b>2.56</b>	<b>0.12</b>	1.2812	0.0236	1.97	0.20
Fleming Park	470144	3769830	0.4296	0.0169	<b>0.86</b>	<b>0.08</b>	0.4296	0.0169	0.66	0.14
Rich Dauer Park	472830	3767995	0.2177	0.0068	<b>0.44</b>	<b>0.03</b>	0.2177	0.0068	0.33	0.06
Riverside Sports Center	469295	3760024	0.8821	0.0761	<b>1.76</b>	<b>0.38</b>	0.8821	0.0761	1.36	0.63
Mount Vernon Park	470823	3760224	1.4136	0.091	<b>2.83</b>	<b>0.46</b>	1.4136	0.091	2.17	0.76
U C Riverside Stadium	469595	3759600	1.3601	0.1053	<b>2.72</b>	<b>0.53</b>	1.3601	0.1053	2.09	0.88
E T Patterson Park	467593	3759663	1.304	0.0381	<b>2.61</b>	<b>0.19</b>	1.304	0.0381	2.01	0.32
North Park	466079	3759752	0.5923	0.0232	<b>1.18</b>	<b>0.12</b>	0.5923	0.0232	0.91	0.19

**AES HIGHGROVE PROJECT  
(06-AFC-2)  
DATA RESPONSES, SET 1A**

TABLE AQ17-1C

Summary of Receptors and the Predicted PM<sub>10</sub> and PM<sub>2.5</sub> Impacts at Each Receptor

EDR Receptor or Name	Name	EDR Receptor Type	UTM (NAD 27)		Predicted PM <sub>10</sub> Impact (µg/m <sup>3</sup> )		Percent of State Standard		Predicted PM <sub>2.5</sub> Impact (µg/m <sup>3</sup> )		Percent of State/Federal Standard	
			Easting (m)*	Northing (m)*	24-Hour*	Annual*	24-Hour	Annual	24-Hour	Annual	24-Hour	Annual
10	Azure Hills Children Center	Daycare	NA	NA	< 4.4	< 0.33	8.8	1.65	< 4.4	< 0.33	6.77	2.75
17	My Little School House Nursery	Daycare	NA	NA	< 4.4	< 0.33	8.8	1.65	< 4.4	< 0.33	6.77	2.75
L34	Gateway Nursery School	Daycare	NA	NA	< 4.4	< 0.33	8.8	1.65	< 4.4	< 0.33	6.77	2.75
L36	University of California, Riverside Children's Ctr.	Daycare	NA	NA	< 4.4	< 0.33	8.8	1.65	< 4.4	< 0.33	6.77	2.75
57	Presbyterian Nursery school	Daycare	NA	NA	< 4.4	< 0.33	8.8	1.65	< 4.4	< 0.33	6.77	2.75
99	ABC Wonderworld Preschool	Daycare	NA	NA	< 4.4	< 0.33	8.8	1.65	< 4.4	< 0.33	6.77	2.75
149	Rubidoux Child Care Center	Daycare	NA	NA	< 4.4	< 0.33	8.8	1.65	< 4.4	< 0.33	6.77	2.75
AY167	First Baptist Day Nursery	Daycare	NA	NA	< 4.4	< 0.33	8.8	1.65	< 4.4	< 0.33	6.77	2.75
AY168	Immanuel Lutheran Preschool	Daycare	NA	NA	< 4.4	< 0.33	8.8	1.65	< 4.4	< 0.33	6.77	2.75
169	The Growing Place	Daycare	NA	NA	< 4.4	< 0.33	8.8	1.65	< 4.4	< 0.33	6.77	2.75
182	Rialto Child Development Center	Daycare	NA	NA	< 4.4	< 0.33	8.8	1.65	< 4.4	< 0.33	6.77	2.75
196	Joyful Noise	Daycare	NA	NA	< 4.4	< 0.33	8.8	1.65	< 4.4	< 0.33	6.77	2.75
218	YMCA/Victoria School	Daycare	NA	NA	< 4.4	< 0.33	8.8	1.65	< 4.4	< 0.33	6.77	2.75
229	Peppercreek Preschool	Daycare	NA	NA	< 4.4	< 0.33	8.8	1.65	< 4.4	< 0.33	6.77	2.75
231	Growing Place, Too, the	Daycare	NA	NA	< 4.4	< 0.33	8.8	1.65	< 4.4	< 0.33	6.77	2.75

NA: Sites were listed in the EDR report but did not include an address or latitude/longitude. Assumed 24-hour and annual impacts are less than the maximum modeled impacts presented in Table 8.1-26 of the AFC application.

**AES HIGHGROVE PROJECT  
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18. Please provide maps showing isopleths of the project's PM10/PM2.5 air emission impacts for the maximum 24-hour and annual-average standards and all sensitive receptors listed in the above data request within 10 kilometers of the proposed power plant project site.

**Response:** Please refer to the information contained in Tables AQ17-1A through 1C.

**BACKGROUND: WASTEWATER TRUCKING EMISSIONS**

In Section 7.4.3 of the AFC, the applicant indicated that miscellaneous plant water drainage would be collected, put through an oil-water separator, mixed with the cooling tower blowdown and trucked approximately five (5) miles to the Santa Ana Regional Inceptor (SARI) pipeline for disposal. However, the applicant does not estimate the emissions from the wastewater collection, pumping and truck transportation. This trucking arrangement is in lieu of the more typical pipeline arrangement. Since there will be on-going emissions as a direct result of the construction and operation of the wastewater collection and disposal system, staff will evaluate these collection and truck emissions with the rest of the project emissions. The Soils and Water section requests a cost evaluation of constructing a pipeline connection to the SARI and analysis of any other alternative methods of disposal for the plant wastewater and cooling tower blowdown, such as a zero liquid discharge system (ZLD). Air Quality staff need to assess the potential air quality impacts associated with the truck-transport process for delivery of wastewater to the SARI.

**DATA REQUEST**

19. Please provide an emission comparison (NO<sub>x</sub>, SO<sub>x</sub>, CO, VOC, PM10 and PM2.5) of the proposed collection and trucking arrangement and the construction related emissions of a pipeline connection with the SARI and any other alternative methods of disposal for the plant water drainage and cooling tower blowdown (ZLD). Please include the following elements:
- a. For the proposed trucking arrangement:
    - i) Average-daily, average-monthly and annual-total number of trips and vehicle miles traveled.

**Response:** Table AQ19A-1 presents the maximum and average number of wastewater truck trips on an annual, monthly, and daily basis. The maximum number of truck trips is based on a project annual capacity factor of 33 percent and the expected truck trips are based on an annual capacity factor of 15 percent. The maximum monthly truck trips are based on an operational profile that would be expected during a period of peak electricity demand (the "on-peak" month of July).

# AES HIGHGROVE PROJECT (06-AFC-2) DATA RESPONSES, SET 1A

TABLE AQ19a-1  
Average and Maximum Truck Trips

	Annual Average	On peak Month
Annual Truck Trips	2,283	N/A
Monthly Truck Trips	190	212
Daily Truck Trips	6.3	6.8

Notes:

1. Annual Average values are based on maximum expected annual capacity factor of 30% and an average operating temperature of 80 F.
2. On-peak monthly values are based on a peak monthly capacity factor of 33% and an average operating temperature during this period of 90 F.
3. Since the plant is expected to operate during the on-peak months of the year, the annual average and on-peak values do not differ significantly.

- ii) Truck emissions based on EPA/CARB TIER 0, TIER 1 and TIER 2 diesel emission standards for appropriately sized truck engines as well as CNG truck engines.

**Response:** Heavy-duty on-road truck emission standards are based on the engine model year rather than a tier according to California Code of Regulations, Title 13, Section 1956.8. The truck emissions were calculated based on these emission standards. In addition, truck emissions were calculated using an EMFAC2002 emission factor. The EMFAC2002 emission factor is a South Coast fleet-average emission factor for the year 2007.

CNG truck engines are subject to the same emission standards as diesel truck engines according to California Code of Regulations, Title 13, Section 1956.8. Therefore, separate emissions for a CNG truck were not calculated. Particulate matter emissions from a truck operating on CNG would be expected to be less than a truck operating on diesel fuel.

Truck emissions were calculated under two scenarios, expected and worst-case. The expected scenario would be an average of 6.3 truck trips per day and the worst-case would be a maximum of 6.8 truck trips per day. For the emission calculations, the daily truck trips were rounded to a whole number, so for both scenarios, the number of daily truck trips would be 7 trips per day. In addition, the number of annual truck trips (2,283 trips per year, 22,830 vehicle miles traveled) would be the same for both scenarios. Tables AQ19a-2 through AQ19a-5 present the wastewater hauling truck related emissions for ROG, CO, NO<sub>x</sub>, and PM<sub>10</sub>. Emissions are not presented for SO<sub>x</sub> or PM<sub>2.5</sub> because the truck will operate using ultra-low sulfur diesel and emission standards have not been established for or PM<sub>2.5</sub>.

# AES HIGHGROVE PROJECT (06-AFC-2) DATA RESPONSES, SET 1A

TABLE AQ19a-2  
Daily Truck Emission Summary (Average and On-peak)

Basis for Emission Estimate	Emissions (lb/day)			
	ROG	CO	NOx	PM <sub>10</sub>
Model Year 1990 Emission Standard	0.380	5.741	2.222	0.222
Model Year 1991-1993 Emission Standard	0.380	5.741	1.852	0.093
Model Year 1994-2003 Emission Standard	0.380	5.741	1.852	0.037
Model Year 2004-2006 Emission Standard	0.146	5.741	0.741	0.037
EMFAC2002 Emission Factor	0.086	0.386	2.494	0.045

Emissions based on 7 trips per day for both the average and on-peak scenarios.

TABLE AQ19a-3  
Monthly Truck Emission Summary (Average Scenario)

Basis for Emission Estimate	Emissions (lb/month)			
	ROG	CO	NOx	PM <sub>10</sub>
Model Year 1990 Emission Standard	10.32	155.82	60.32	6.03
Model Year 1991-1993 Emission Standard	10.32	155.82	50.27	2.51
Model Year 1994-2003 Emission Standard	10.32	155.82	50.27	1.00
Model Year 2004-2006 Emission Standard	3.97	155.82	20.11	1.00
EMFAC2002 Emission Factor	2.33	10.49	67.71	1.22

Emissions based on 190 truck trips per month.

TABLE AQ19a-4  
Monthly Truck Emission Summary (On-peak Scenario)

Basis for Emission Estimate	Emissions (lb/month)			
	ROG	CO	NOx	PM <sub>10</sub>
Model Year 1990 Emission Standard	11.52	173.86	67.30	6.73
Model Year 1991-1993 Emission Standard	11.52	173.86	56.09	2.80
Model Year 1994-2003 Emission Standard	11.52	173.86	56.09	1.12
Model Year 2004-2006 Emission Standard	4.43	173.86	22.43	1.122
EMFAC2002 Emission Factor	2.60	11.70	75.55	1.37

Emissions based on 212 truck trips per month.

# AES HIGHGROVE PROJECT (06-AFC-2) DATA RESPONSES, SET 1A

TABLE AQ19a-5  
Annual Truck Emission Summary (Average)

Basis for Emission Estimate	Emissions (lb/yr)			
	ROG	CO	NOx	PM <sub>10</sub>
Model Year 1990 Emission Standard	124	1,872	725	73
Model Year 1991-1993 Emission Standard	124	1,872	604	30
Model Year 1994-2003 Emission Standard	124	1,872	604	12
Model Year 2004-2006 Emission Standard	48	1,872	242	12
EMFAC2002 Emission Factor	28	126	814	15

Emissions based on 2,283 truck trips per year for the average scenarios and a capacity factor of 30 percent.

- iii) Should auxiliary pumps be used separately from the truck engines for onloading and offloading of wastewater at the project site and at the SARI, please provide the type, size, service time per load, and emissions ratings for these engines.

**Response:** Truck unloading will be by gravity drain. Therefore, no auxiliary pumps are expected to be required for on- or off-loading of the wastewater.

- iv) Average-daily, average-monthly, and annual-total collection, pumping, and trucking-related emissions for NOx, SOx, CO, VOC, PM10 and PM2.5.

**Response:** Please refer to Tables AQ19a-2 through AQ19a-5.

- b. For the alternative pipeline connection with the SARI:

- i) The estimated route for the pipeline.

**Response:** AES has not proposed a pipeline route for wastewater disposal. For purposes of responding to this data request only, we estimated a route to connect to the SARI Line near the vicinity of the intersection of Agua Mansa and South Riverside in Colton and would be approximately 23,000 feet long.

- ii) The estimated timeline to complete the pipeline.

**Response:** AES has not proposed a pipeline route for wastewater disposal and therefore has performed no engineering feasibility study of such a pipeline. However, based on normal construction of a pipeline of a pipeline approximately 23,000 feet long, such a pipeline would take approximately 23 weeks to construct. This schedule assumes no significant issues occur during drilling underneath the Santa Ana River bed, Interstate 215 and other subsurface obstacles.

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- iii) The construction-related average-daily and total-monthly emissions assuming TIER 1 construction equipment firing CARB Ultra Low Sulfur Diesel Fuel and standard dust control measures.

**Response:** Table AQ19b-1 presents the maximum daily and monthly emissions associated with construction of a pipeline connection to the SARI. The duration of construction is expected to occur over 23 weeks. In order to be consistent with the construction emission calculations for the AES project site, the SCAQMD OFFROAD emission factors were used to calculate construction equipment emissions. The monthly construction equipment emissions conservatively assume all the construction equipment operates 8 hours per day for 22 days per month.

TABLE 19b-1  
Pipeline Connection Construction Emissions

	Emissions				
	CO	VOC	NOx	SOx	PM <sub>10</sub>
Maximum Daily Emissions (lb/day)	16.50	9.10	32.10	0.15	2.51
Maximum Monthly Emissions (lb/month)	363	200	706	3	55

1. Conservatively assumes that peak construction occurs 22 days/month during the four month construction period, except for paving which was assumed to occur for 1 month.

- c. For any other alternative (ZLD)
- i) The estimated construction emissions.

**Response:** AES has not proposed a ZLD system for the AES Highgrove Project. For estimating the construction emissions in response to this Data Request only, we made the following construction equipment estimates.

Table AQ19c-1 presents the maximum daily ZLD construction emissions.

TABLE AQ19c-1  
ZLD Construction Emissions

	Emissions (lb/day)				
	CO	NOx	VOC	SOx	PM <sub>10</sub>
Maximum Daily Emissions	9.10	20.29	2.30	0.11	1.49

1. Water trucks, dump trucks, transit mix trucks, fuel/lube trucks, pickup trucks, and stake bed trucks would be used during ZLD construction. The ZLD construction emission calculations assume that truck emissions were already included as part of the construction emissions for the power plant.  
2. The ZLD construction emission calculations assume that fugitive dust emissions were already included as part of the construction emissions for the power plant.

# AES HIGHGROVE PROJECT (06-AFC-2) DATA RESPONSES, SET 1A

ii) The estimated construction timeline.

**Response:** The estimated construction and commissioning time for a potential ZLD system is 40 weeks. This includes 26 weeks for construction and 14 weeks for commissioning.

iii) The estimated operational emissions.

**Response:** The operation of the ZLD system is not expected to emit any air pollutants beyond the truck trips associated with hauling the waste to a landfill. Based on discussions with other power plant operators in California, ZLD waste is being hauled to Class I landfills due to concerns on the part of Class III landfill operators regarding the future liability associated with receiving ZLD wastes. The closest Class III landfill is the Clean Harbor's Westmoreland facility, located in Westmoreland, CA. This facility is approximately 140 miles from the AES. Assuming disposal of one 40-cubic-yard container a week, Table AQ19c-2 presents the daily, monthly, and annual truck emissions.

TABLE AQ19c-2  
ZLD Operation Emissions from Hauling Waste

	Emissions				
	ROG	CO	NOx	PM <sub>10</sub>	SOx
Average Daily Emissions (lb/day)	0.34	1.55	9.98	0.18	0.013
Average Monthly Emissions (lb/month)	1.4	6.2	39.9	0.7	0.05
Average Annual Emissions (lb/yr)	18	80	519	9	0.7

1. The closest landfill that would accept ZLD waste is Clean Harbor's Westmoreland facility located approximately 140 miles from AES Highgrove. Emissions were calculated for a roundtrip distance of 280 miles.
2. Calculations assume disposal of one 40 yd<sup>3</sup> container a week, 4 weeks per month, and 52 weeks per year.
3. Emissions calculated using emission factors from the SCAQMD EMFAC2002 v 2.2 summary table (<http://www.aqmd.gov/ceqa/handbook/onroad/onroad.html>), for calendar year 2007.

iv) The estimated effect on power plant thermal efficiency.

**Response:** ZLD Impact on Plant Efficiency and Output - If the ZLD system were to operate while the project was online, project parasitic load would increase by approximately 10 percent (i.e., a reduction in plant output by approximately 1.5 MW and a reduction in plant efficiency by 1.6 percent). The estimated annual energy consumption for a ZLD system is 1,175,000 kWh, which would consume 10,460 MMBtu of natural gas energy.

# AES HIGHGROVE PROJECT (06-AFC-2) DATA RESPONSES, SET 1A

**Technical Area: Biological Resources**

**CEC Author:** N. Misa Ward

**BACKGROUND**

The Application for Certification for the AES Highgrove project includes maps of biological resources in the vicinity of project facilities. Due to the high level of development and limited native habitat opportunities in the project vicinity, native species of concern (e.g. migratory birds) could be more likely to reside in or temporarily use less suitable habitats such as disturbed vegetation or ornamental areas. Figure 8.2-3a indicates that the adjacent Cage Park property located south of the project site contains ornamental vegetation and a drainage feature. Due to the fencing of this property, presence of larger trees, and relative low human usage, the potential for sensitive wildlife that could be indirectly impacted by adjacent project activities exists.

**DATA REQUEST**

20. Please provide a list of wildlife species, including common and sensitive, that were either observed during surveys or have potential to inhabit the Cage Park property.

**Response:** A list of common and sensitive wildlife species that were observed during the surveys or have the potential to inhabit Cage Park property is provided in Table BR20-1.

TABLE BR20-1  
Common and Special-Status Wildlife Species Observed or Potentially Occurring in Cage Park

Common Name	Scientific Name	Status	Primary Habitat	Potential Occurrence in Project Area	Observed in the Project Area
<b>Birds</b>					
American crow	<i>Corvus brachyrhynchos</i>	MB	Found in all open habitats and has an extremely diverse diet.	High	Yes
American robin	<i>Turdus migratorius</i>	MB	Nests in any open woodland habitat. Commonly seen in open areas foraging for earthworms.	High	No
Bell's sage sparrow	<i>Amphispiza belli belli</i>	CSC, FSC	Dry chaparral and coastal sage scrub along the coastal lowlands, inland valleys, and in the lower foothills of local mountains.	Unlikely to breed or forage in Cage Park. Bell's sage sparrow usually nests in sagebrush or chaparral. Closest suitable habitat is approximately one-half mile west of the project site.	No

# AES HIGHGROVE PROJECT (06-AFC-2) DATA RESPONSES, SET 1A

TABLE BR20-1

Common and Special-Status Wildlife Species Observed or Potentially Occurring in Cage Park

Common Name	Scientific Name	Status	Primary Habitat	Potential Occurrence in Project Area	Observed in the Project Area
Brewers blackbird	<i>Euphagus cyanocephalus</i>	MB	Forages for seeds and insects in open areas. Common in parks, parking lots, and agricultural fields.	High	Yes
California horned lark	<i>Eremophila alpestris actia</i>	CSC, MB	A resident in California. Associated with a variety of open, low vegetation habitats.	Unlikely to breed or forage in Cage park. May forage in nearby open fields.	No
Cooper's hawk	<i>Accipiter cooperii</i>	CSC	Found in woods and the edges of woods, often hunts around houses and birdfeeders. Nests in tall trees especially pines.	Potential to nest in trees in Cage Park. May forage in Cage Park and surrounding residential areas.	No
Snowy egret	<i>Egretta thula</i>	MB	Nest and roost in mixed colonies in low trees. Forages for small fish in shallow water.	Does not nest in Cage Park. May attempt to forage in the Cage Park retention pond.	No
European starling	<i>Sturnus vulgaris</i>	Common	Nest in building crevices, tree cavities, and bird houses. Forages on the ground for insects, seeds, and fruit.	High	Yes
Great blue heron	<i>Ardea herodias</i>	MB	Nests in colonies in trees. Forages in open habitat primarily in wet areas. Feeds on fish and small mammals.	Does not nest in Cage Park. May forage in Cage Park retention pond and surrounding agricultural areas.	No
House sparrow	<i>Passer domesticus</i>	Common	Nests in any sheltered cavity and can be found in a wide variety of habitats.	High	No
House finch	<i>Carpodacus mexicanus</i>	Common	Nests on or near buildings and can be found in a wide variety of habitats.	High	No
Mourning dove	<i>Zenaida macroura</i>	MB	Common in residential and agricultural areas with mixed open and brushy cover.	High	Yes
Northern mockingbird	<i>Mimus polyglottos</i>	MB	Common in residential, agricultural, and brushy habitats.	High	No
Red-winged blackbirds	<i>Agelaius phoeniceus</i>	MB	Nests and roosts in wet marshy or brushy habitats.	Moderate potential to breed or nest in the cattails around the retention pond in Cage Park.	No
Greater roadrunner	<i>Geococcyx californianus</i>	MB	Found primarily in dry, open, brushy, grassy, or desert areas.	High	Yes

**AES HIGHGROVE PROJECT  
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TABLE BR20-1

Common and Special-Status Wildlife Species Observed or Potentially Occurring in Cage Park

Common Name	Scientific Name	Status	Primary Habitat	Potential Occurrence in Project Area	Observed in the Project Area
Swainson's hawk	<i>Buteo swainsoni</i>	CT, MB	Nests primarily in riparian trees adjacent to grassland, and agricultural areas with scattered trees. Primarily associated with the Central Valley during the breeding season, migrating to Central and South America in the fall/winter.	Low potential to breed or nest in Cage Park. Transient individuals may forage in the area.	No
Tricolored blackbird	<i>Agelaius tricolor</i>	CSC, MB	Breeds near fresh water, preferably in emergent wetland with tall, dense cattails or tules, but also in thickets of willow, blackberry, wild rose, and tall herbs. Forages in grassland and cropland habitats.	Moderate potential to breed or nest in the cattails around the retention pond in Cage Park.	No
Western meadowlark	<i>Sturnella neglecta</i>	MB	Common in arid grasslands and agricultural fields.	Moderate potential to nest and forage in Cage Park. Likely to forage in nearby agricultural fields.	No
Yellow warbler	<i>Dendroica petechia brewsteri</i>	CSC, MB	Occurs in lowland and foothill woodland habitats such as desert oases, riparian woodlands, oak woodlands, mixed deciduous-coniferous woodlands, suburban and urban gardens and parks, groves of exotic trees, farmyard windbreaks, and orchards.	Moderate potential to nest and forage in Cage Park.	No
<b>Mammals</b>					
Feral dogs	<i>Canis domesticus</i>	Common	Found in a wide variety of habitats near human occupation.	High	Yes
Opossum	<i>Didelphis virginiana</i>	Common	Found in a wide variety of habitats but prefer mesic areas.	Moderate potential to occur in Cage Park, may forage in pond and travel through culverts between habitats.	No
Raccoon	<i>Procyon lotor</i>	Common	Found in a wide variety of habitats but require a ready source of water. Prefer moist, wooded areas.	Moderate potential to occur in Cage Park, may forage in pond and travel through culverts between habitats.	No
Coyote	<i>Canis latrans</i>	Common	Found in a wide variety of habitats.	Moderate potential to forage in Cage Park.	No
California ground squirrel	<i>Spermophilus beecheyi</i>	Common	Found in a wide variety of habitats.	High	Yes

# AES HIGHGROVE PROJECT (06-AFC-2) DATA RESPONSES, SET 1A

TABLE BR20-1

Common and Special-Status Wildlife Species Observed or Potentially Occurring in Cage Park

Common Name	Scientific Name	Status	Primary Habitat	Potential Occurrence in Project Area	Observed in the Project Area
Notes:					
<u>Federal Status</u>					
FT	Federally listed as threatened.				
FSC	Federal Species of Special Concern. Proposed rules have not yet been issued because they have been precluded at present by other listing activity.				
MB	Migratory Bird Treaty Act. of 1918. Protects native birds, eggs, and their nests.				
<u>California Status</u>					
CT	State listed as threatened. Species that although not presently threatened in California with extinction are likely to become endangered in the foreseeable future.				
CSC	California Department of Fish and Game "Species of Special Concern." Species with declining populations in California.				
<u>Other Status.</u>					
Common No state or Federal status					

21. Please provide a list of characteristic plant species (e.g. ornamental trees and any native plants) on the Cage Park property that could be habitat for sensitive wildlife species.

**Response:** A list of characteristic plant species on Cage Park property that could provide habitat for sensitive wildlife species is provided in Table BR21-1.

TABLE BR21-1

Characteristic Plant Species Occurring in Cage Park that Could Provide Habitat for Sensitive Species

Common Name	Scientific Name	Comments
California fan palm	<i>Washingtonia filifera</i>	May provide nesting, roosting or perching sites for migratory bird species
California pepper tree	<i>Schinus molle</i>	May provide nesting, roosting or perching sites for migratory bird species
English ivy	<i>Hedera helix</i>	May provide foraging areas for small migratory bird species
Eucalyptus	<i>Eucalyptus</i> sp.	May provide nesting, roosting or perching sites for migratory bird species
Grape	<i>Vitis</i> sp.	May provide foraging areas for small migratory bird species
Narrow leaved cattail	<i>Typha angustifolia</i>	May provide nesting and breeding sites for tricolored and red-winged blackbirds. May provide foraging area for snowy egret and great blue heron.
Oleander	<i>Nerium oleander</i>	May provide foraging areas for small migratory bird species

# **AES HIGHGROVE PROJECT (06-AFC-2) DATA RESPONSES, SET 1A**

## **BACKGROUND**

Section 8.2.4.2.4 on page 8.2-19 states that wildlife impacts related to noise from power plant operations are unlikely due to the tendency for tolerance of low-level, background noise. However, noise and/or vibration levels associated with construction activities, such as pile-driving, demolition, or trenching, will exceed the background level. Burrowing owls, which are a California Species of Concern, are known to inhabit roadside berms and be vulnerable to noise and vibration. Other California species of concern, such as the California horned lark and tricolored blackbird, could nest near the generating station that has been proposed for demolition, and be adversely affected by noise and vibration. In addition, the southern portion of the natural gas pipeline route contains relatively undisturbed coastal sage scrub that could support the federally threatened coastal California gnatcatcher or other sensitive species. Although trenching will occur in the road, noise presents a potential impact because this habitat immediately flanks the road.

## **DATA REQUEST**

22. Please provide an analysis of the potential impacts to sensitive wildlife that could result from noise and vibration associated with the construction of the power plant and natural gas supply pipeline. As appropriate, provide species-specific measures to mitigate potential noise and vibration impacts.

### **Response:**

#### **Impacts from Construction Noise and Vibration**

Indirect impacts associated with project activities would include a temporary increase in noise due to demolition and construction activities. In some cases, breeding birds may temporarily or permanently leave their territories, which could lead to reduced reproductive success and increased mortality. Mortality of eggs, nestlings, or juveniles may occur if nests are established in areas adjacent to the project activities.

The AES site is currently zoned M2 (Industrial) and is adjacent to several industrial facilities as well two rail lines: the Burlington Northern Santa Fe Railroad (BNSF), which borders the site on the west, and Union Pacific Railroad (UPRR), directly east of the site. The BNSF Railroad is a major transportation artery for BNSF in the area. Approximately 55 BNSF freight trains and 30 UPRR freight trains can operate on this track over the course of a typical 24-hour day; although, actual train volumes can vary by day, week, or month (CJUSD, pg. 5-51). In addition to the noise generated by the moving trains, locomotive engineers are required to sound a warning signal – that federal regulations require to be at least 96 decibels (96 dBA) 100 feet in front of the train in its direction of travel – to alert motorists and pedestrians to the presence of an approaching train and to avoid accidents at the at-grade crossings, (CJUSD, pg. 5-50). Currently there are 85 daily train events, and projections indicate that 220 train events may occur daily by the year 2025 (CJUSD, pg 5-71). Therefore, the

# AES HIGHGROVE PROJECT (06-AFC-2) DATA RESPONSES, SET 1A

presence of the railroad represents a major feature of the existing noise environment in the area.

The project site is also located within 1,000 feet of Interstate 215 (I-215), a major 6-lane highway that extends through the cities of San Bernardino, Grand Terrace and Riverside. Due to the close proximity of the railway line and I-215, resident animals near the project site would become habituated to occasional increases in noise and vibration. Due to the linear nature of the gas line construction, project activities would generally move frequently, so noise would not continue for lengthy time periods at any one location.

Construction of the project is expected to be typical of other power plants in terms of schedule, equipment used, and other types of activities. The noise level will vary during the construction period, depending upon the construction phase.

Construction of power plants can generally be divided into five phases that use different types of construction equipment. The five phases are: (1) demolition, site preparation, and excavation; (2) concrete pouring; (3) steel erection; (4) mechanical; and (5) clean-up (Miller et al., 1978).

Both the USEPA Office of Noise Abatement and Control and the Empire State Electric Energy Research Company have studied noise from individual pieces of construction equipment as well as from construction sites of power plants and other types of facilities extensively (USEPA, 1971; Barnes et al., 1976). Since specific information on types, quantities, and operating schedules of construction equipment is not available at this point in project development, information from these documents for similarly sized industrial projects will be used. Use of this data, which is between 21 and 26 years old, is conservative since the evolution of construction equipment has been toward quieter designs to protect operators from exposure to high noise levels.

The loudest equipment types generally operating at a site during each phase of construction are presented in Table BR22-1. The composite average or equivalent site noise level, representing noise from all equipment, is also presented in the table for each phase.

TABLE BR22-1  
Construction Equipment and Composite Site Noise Levels

Construction Phase	Loudest Construction Equipment	Equipment Noise Level (dBA) at 50 feet	Composite Site Noise Level (dBA) at 50 feet
Demolition, Site Clearing, and Excavation	Dump truck	91	89
	Backhoe	85	
Concrete Pouring	Truck	91	78
	Concrete mixer	85	
Steel Erection	Derrick crane	88	87
	Jack hammer	88	

# AES HIGGROVE PROJECT (06-AFC-2) DATA RESPONSES, SET 1A

TABLE BR22-1  
Construction Equipment and Composite Site Noise Levels

Construction Phase	Loudest Construction Equipment	Equipment Noise Level (dBA) at 50 feet	Composite Site Noise Level (dBA) at 50 feet
Mechanical	Derrick crane	88	87
	Pneumatic tools	86	
Cleanup	Rock drill	98	89
	Truck	91	

Source: USEPA, 1971; Barnes et al., 1976.

Average or equivalent construction noise levels projected at various distances from the site are presented in Table BR22-2. These results are conservative since the only attenuating mechanism considered was divergence of the sound waves in open air. Shielding effects of intervening structures are not included in the calculations. The construction noise may be audible at the nearest residences but the noisiest construction activities will be confined to the daytime hours. Table BR22-3 presents noise levels from common construction equipment at various distances.

TABLE BR22-2  
Average Construction Noise Levels at Various Distances

Construction Phase	Sound Pressure Level (dBA)		
	375 feet	1,500 feet	3,000 feet
Demolition, Site Clearing, and Excavation	71	59	53
Concrete Pouring	60	48	42
Steel Erection	69	57	51
Mechanical	69	57	51
Clean-Up	71	59	53

TABLE BR22-3  
Noise Levels from Common Construction Equipment at Various Distances

Construction Equipment	Typical Sound Pressure Level (dBA)		
	50 feet	375 feet	1,500 feet
Pile drivers (20,000-32,000 ft-lbs./blow)	104	86	74
Dozer (250-700 hp)	88	70	58
Front end loader (6-15 cu. yds.)	88	70	58
Trucks (200-400 hp)	86	68	56
Grader (13 to 16 ft. blade)	85	67	55

# AES HIGHGROVE PROJECT (06-AFC-2) DATA RESPONSES, SET 1A

TABLE BR22-3  
Noise Levels from Common Construction Equipment at Various Distances

Construction Equipment	Typical Sound Pressure Level (dBA)		
	50 feet	375 feet	1,500 feet
Shovels (2-5 cu. yds.)	84	66	54
Portable generators (50-200 kW)	84	66	54
Derrick crane (11-20 tons)	83	65	53
Mobile crane (11-20 tons)	83	65	53
Concrete pumps (30-150 cu. yds.)	81	63	51
Tractor (3/4 to 2 cu. Yds.)	80	62	50
Unquieted paving breaker	80	62	50
Quieted paving breaker	73	55	43

Noise generated during the testing and commissioning phase of the project is not expected to be substantially different from that produced during normal full-load operation. Starts and abrupt stops are more frequent during this period, but on the whole they are usually short-lived.

Noise minimization measures for activities adjacent to habitat for sensitive species, such as western burrowing owls, California horned lark, tricolored blackbird, or coastal California gnatcatcher, are presented in Mitigation Measures 8-1 through 8-3, respectively (see below). Temporary construction noise is not expected to reduce nesting opportunities or wildlife population sizes below self-sustaining levels within or adjacent to the project area; therefore, these impacts are considered less than significant (Class II) with implementation of Mitigation Measures 8-1 through 8-3.

The following protection measures will be implemented during construction activities.

## **Mitigation Measure for Noise and Vibration Impacts to Western Burrowing Owls**

### **8-1: Protection for Western Burrowing Owls**

When conducting project activities during the western burrowing owl breeding season (February through August), within known or potential habitat (along railway and road berms), the following avoidance measures shall apply:

1. A qualified biologist shall survey for western burrowing owls within one week prior to initiating project activities in an area.
2. If western burrowing owls are present within 500 feet of project activities, but not nesting, a qualified biologist shall monitor the area at least once per week for the duration of the activity in that area.

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3. If an active western burrowing owls nest is located within 250 feet of project activities, a qualified biologist shall restrict the area from construction activities and monitor the nest daily until either project activities are no longer in the vicinity of the nest or the fledglings become independent of their nest. The biologist will notify CDFG of the nest location and obtain guidance if construction activities could result in abandonment of the nest site.
  - a) If the biological monitor determines that the project activities are disturbing or disrupting the nesting activities, the monitor, with guidance from CDFG, shall make feasible recommendations to reduce the noise and/or disturbance in the vicinity. This may include recommendations such as, but not limited to, turning off vehicle engines and other equipment whenever possible to reduce noise, installing a protective noise barrier between the nesting western burrowing owls and the project activities, and postponing activities in that area until the young have fledged.

**Mitigation Measures for Noise and Vibration Impacts to California Horned Lark**

**8-2: Protection for California Horned Lark and Tricolored Blackbird**

When conducting project activities during the California horned lark and tricolored blackbird breeding season (March through July), in known or potential habitat (open fallow and agricultural fields), the following avoidance measures shall apply:

1. A qualified biologist shall survey for California horned lark and tricolored blackbird nesting locations within one week prior to initiating project activities in the area.
2. If sensitive birds are present, but not nesting, a qualified biologist shall monitor the areas once per week in the vicinity of project activities, for the duration of the activity in that area.
3. If an active nest is located in the vicinity of project activities, a qualified biologist shall monitor the nest daily until either project activities are no longer in the vicinity of the nest or the fledglings become independent of their nest.
  - a) If the nest monitor determines that the project activities are disturbing or disrupting the nesting activities, the monitor shall make feasible recommendations to reduce the noise and/or disturbance in the vicinity. This may include recommendations such as, but not limited to, turning off vehicle engines and other equipment whenever possible to reduce noise, installing a protective noise barrier between the nest and the project activities, and working in other areas until the young have fledged.

# AES HIGHGROVE PROJECT (06-AFC-2) DATA RESPONSES, SET 1A

## Mitigation Measures for Noise and Vibration Impacts, Impacts to Coastal California Gnatcatcher

### 8-3 Protect Coastal California Gnatcatcher and its Habitat

When conducting project activities during the coastal California gnatcatcher breeding season (February through August), within habitat in which coastal California gnatcatchers are known to or have a high potential to occur (sage scrub), the following avoidance measures shall apply:

1. A qualified biologist shall conduct surveys for coastal California gnatcatcher following the USFWS protocol guidelines for establishing presence/absence prior to initiating project activities in the area (a section 10(a)(1)(A) permit shall be obtained prior to initiating any field surveys).
2. If coastal California gnatcatchers are present, but not nesting, a qualified biologist shall survey for nesting coastal California gnatcatchers approximately once per week in the vicinity of project activities, for the duration of the activity in that area.
3. If an active coastal California gnatcatcher nest is located in the vicinity of project activities, a biologist qualified for coastal California gnatcatcher nest monitoring shall monitor the nest daily until either project activities are no longer in the vicinity of the nest or the fledglings become independent of their nest.
  - a) If the coastal California gnatcatcher nest monitor determines that the project activities are disturbing or disrupting the nesting activities, the monitor shall make feasible recommendations to reduce the noise and/or disturbance in the vicinity. This may include recommendations such as, but not limited to, turning off vehicle engines and other equipment whenever possible to reduce noise, installing a protective noise barrier between the nesting coastal California gnatcatchers and the project activities, and working in other areas until the young have fledged.

### Additional References:

Barnes, J.D., L.N. Miller, and E.W. Wood. 1976. *Prediction of Noise from Power Plant Construction*. Bolt Beranek and Newman, Inc., Cambridge, Massachusetts. Prepared for Empire State Electric Energy Research Corporation, Schenectady, New York.

Colton Joint Unified School District (CJUSD). 2005. Environmental Impact Report, Grand Terrace Educational Facility, September.

Miller, L. N., E. W. Wood, R. M. Hoover, A. R. Thompson, and S. L. Thompson, and S. L. Paterson. 1978. *Electric Power Plant Environmental Noise Guide*, Vol. 1. Bolt, Beranek & Newman, Inc. Cambridge, MA. Prepared for the Edison Electric Institute, New York, NY.

# AES HIGHGROVE PROJECT (06-AFC-2) DATA RESPONSES, SET 1A

U.S. Environmental Protection Agency (USEPA). 1971. *Noise from Construction Equipment and Operations, US Building Equipment, and Home Appliances*. Prepared by Bolt, Beranek & Newman, Inc. for USEPA Office of Noise Abatement and Control, Washington, DC.

United States Fish and Wildlife Service (USFWS). 1997. *Coastal California Gnatcatcher (Polioptila californica californica) Presence/Absence Survey Guidelines*, February 28, 1997

## BACKGROUND

Table 8.2-5 on page 8.2-25 indicates that a number of staff members from biological resources agencies have been contacted regarding the project and potential biological issues of concern. Staff could not find any documentation that describes communication with the California Department of Fish and Game (CDFG), U.S. Fish and Wildlife Service (USFWS), or U.S. Army Corps of Engineers (USACE) regarding sensitive biological resources, such as sensitive species or waters of the U.S., which may occur in the project area.

## DATA REQUEST

23. Please provide any supporting documents (e.g. letters or records of conversation) that resulted from communication with CDFG, USFWS, and USACE regarding potential impacts to sensitive biological resources or waters of the U. S.

**Response:** Records of conversation and email correspondence are provided as Attachment BR-23.

## ATTACHMENT BR-23

# CH2MHILL TELEPHONE CONVERSATION RECORD

**Call To:** Sheila Aguinaldo CDFG  
**Phone No.:** 562-594-4916 **Date:** February 07, 2006  
**Call From:** Linda Anton **Time:** 11:50 AM  
**Message Taken By:** CH2M HILL  
**Subject:** AESE Highgrove SAA  
**Project No.:** 322752

On February 07, 2006, I spoke with Ms. Sheila Aguinaldo of the CDFG regarding the installation of the natural gas pipeline over the water crossings for the AES Highgrove project. Ms. Aguinaldo stated that a Streambed Alteration Agreement would be required for this action. She also provided the updated fee schedule.

**AES HIGHGROVE PROJECT  
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**Technical Area: Cultural Resources**

**CEC Author:** Dorothy Torres and Beverly Bastian

**Please provide any documents under confidential cover that may reveal the location of an archaeological site.**

**BACKGROUND**

On page 8.3-14 of the Application for Certification (AFC), there is a discussion of the record search conducted at the California Historical Resources Information System (CHRIS). It does not appear that other sources of information were contacted. According to CEQA Guidelines Section 15064.5 (a) (2), cultural resources included in a local register of historical resources must be treated as significant by public agencies unless a preponderance of evidence demonstrates that it is not significant. Properties within ½ mile of the proposed project site and within ¼ mile of the proposed gas line that have been listed by local entities according to ordinance need to be identified. In addition, local archaeological and historical societies at times are aware of cultural resources that have not been formally recognized by public entities.

**DATA REQUESTS**

24. Please provide copies of local listings of properties that have been designated as cultural or historic resources according to local ordinance.

**Response:** Included as part of Data Response #25.

25. Please include listings by the City of Grand Terrace, the City of Riverside, San Bernardino County, and Riverside County.

**Response:** Inquiries were made to the City of Grand Terrace, City of Riverside, County of San Bernardino, and County of Riverside to identify any local listings of cultural resources properties not previously identified as part of the CHRIS records searches. Results of these inquiries are documented in Attachment CR-25. Only the City of Riverside maintains a list of historic districts and landmarks within the City. Copies of these listings have been provided in an attachment.

26. Please also include a copy of the requirements used by the local jurisdictions to qualify buildings or structures for the listing.

**Response:** Requirements for the City of Riverside are found in Title 20 of the Municipal Code. Relevant sections are included as Attachment CR-26.

27. Please contact local historical and archaeological societies that might have knowledge of historical or archaeological resources in the area of the project and provide copies of the inquiry letters and any responses.

**Response:** Local municipalities and both the County of San Bernardino and County of Riverside were contacted. A summary table of attempts to contact any relevant local historical societies is provided as Attachment CR-27.

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**INSERT ATTACHMENT CR-25**

# ATTACHMENT CR-26

## City of Riverside

[http://www.riversideca.gov/municipal\\_code/Title\\_20/Default.htm](http://www.riversideca.gov/municipal_code/Title_20/Default.htm)

The City of Riverside Cultural Resources Ordinance (Title 20 of the Municipal Code) is the primary body of local laws relating to historic preservation. Title 20 establishes the authority for preservation, the composition and responsibilities of the Cultural Heritage Board, criteria for evaluating work affecting historic resources, and criteria for determining what is eligible for designation.

### **Section 20.20.010 Landmark designation criteria.**

A cultural resource may be designated by the City Council upon the recommendation of the Cultural Heritage Board as a landmark pursuant to this title if it:

- A. Exemplifies or reflects special elements of the City's cultural, social, economic, political, aesthetic, engineering, architectural or natural history; or
- B. Is identified with persons or events significant in local, state or national history; or
- C. Embodies distinctive characteristics of a style, type, period or method of construction, or is a valuable example of the use of indigenous materials or craftsmanship; or
- D. Represents the work of a notable builder, designer or architect; or
- E. Contributes to the significance of an historic area, being a geographically definable area possessing a concentration of historic or scenic properties or thematically related grouping of properties which contribute to each other and are unified aesthetically by plan or physical development; or
- F. Has a unique location or singular physical characteristics or is a view or vista representing an established and familiar visual feature of a neighborhood community or of the City; or
- G. Embodies elements of architectural design, detail, materials, or craftsmanship that represent a significant structural or architectural achievement or innovation; or
- H. Is similar to other distinctive properties, sites, areas, or objects based on an historic, cultural or architectural motif; or
- I. Reflects significant geographical patterns, including those associated with different eras of settlement and growth, particular transportation modes, or distinctive examples of park or community planning; or
- J. Is one of the few remaining examples in the City, region, State, or nation possessing distinguishing characteristics of an architectural or historical type or specimen. (Ord. 6263 § 1 (part), 1996)

## ATTACHMENT CR-27

### AES HIGHGROVE COURTESY PHONE CALLS

Local Cities/Counties/Historical Societies	Date & Time	Comments Summary
<b>County of Riverside</b> Jim Fagelson, Planner 951-955-9514	10/25/06 3:10 PM	Records regarding cultural resources within the County of Riverside are maintained at the Eastern Information Center and the County does not maintain separate listings of cultural resources.
<b>City of Grand Terrace</b> John Lampe, Planner 909-824-6621	10/25/06 3:00 PM	City of Grand Terrace does not maintain any local listings of historic properties.
<b>County of San Bernardino</b> George Kenline 909-387-4147	10/25/06 3:30 PM	Records regarding cultural resources within the County of San Bernardino are maintained at the San Bernardino County Museum and the County does not maintain separate listings of cultural resources.
<b>City of Riverside</b> Erin Gettis, City Historic Preservation Officer City of Riverside Planning Department 3900 Main Street Riverside, CA 92522 (951) 826-5463	10/25/06 4:00 PM	Tthe City of Riverside maintains lists of potential and current historic districts and "Neighborhood Conservation Districts" <a href="http://olmsted.riversideca.gov/historic/dist_lkp.aspx">http://olmsted.riversideca.gov/historic/dist_lkp.aspx</a> )  as well as a list of the City's historic landmarks <a href="http://www.riversideca.gov/planning/PDF/landmarks-WEB.pdf">http://www.riversideca.gov/planning/PDF/landmarks-WEB.pdf</a> on the City website.
<b>Riverside Municipal Museum</b> 909-826-5273	10/25/06 4:35 PM	Attempted call. Number no longer in service
<b>Moreno Valley Historical Society</b> Alice Bradley, President 951-242-1519	10/25/06 4:00 PM Left message.	No response

# AES HIGHGROVE PROJECT (06-AFC-2) DATA RESPONSES, SET 1A

## BACKGROUND

Guidance in federal law states that cultural resources over 50 years of age may be eligible for the National Register of Historic Places. The existing Generating Station (HGS) and Highgrove Substation, both built in the 1950s, are more than 45 years old, and both will be affected by the project. Guidance from the California Office of Historic Preservation (Instructions for Recording Historical Resources, March 1995) states that properties should be considered for eligibility to the California Register at 45 years of age because a project might take as long as 5 years to reach completion. The existing HGS would be demolished as a result of the project.

The proposed project would connect to the electrical grid using Highgrove Substation bays that are now used as connections for the existing plant. A new building would be constructed within the boundaries of the substation to house a control room for the repositioned controls now housed in the HGS. The changes that would occur may be considered impacts. Staff needs to determine whether the existing HGS and Highgrove Substation are eligible for the California Register and whether the HP project will impact the values that may qualify them for eligibility to the California Register.

After significance of a property is considered, it must then be assessed to determine whether it retains integrity. If it retains integrity and if values that make the cultural resources significant (eligible for the California Register) will be impacted, then the impact is significant and mitigation would be necessary. The eligibility evaluation of the existing HGS and Highgrove Substation must be completed by someone who meets the Secretary of Interior's Standards for architectural history (preferably with industrial structure experience).

## DATA REQUEST

28. Please provide a discussion of the significance of the resource(s) under CEQA Section 15064.5 (a), (3), (A), (B), (C), & (D) on the appropriate Department of Parks and Recreation (DPR) forms, including the evaluation form, and provide staff with a copy of the assessment and the specialist's conclusions regarding the significance of the two properties.

**Response:** This information is currently being gathered by JRP Historical Consultants and will be filed upon completion, which is expected to occur by mid-December.

## BACKGROUND

AFC Volume 2, Appendix 8.3A includes responses from Native Americans who may have heritage concerns in the project area. When the Native American Heritage Commission (NAHC) provides a list of Native Americans who wish to be contacted regarding construction disturbances on land where they have heritage concerns, the NAHC requests that the project make a follow up telephone call to Native Americans who have not responded.

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**DATA REQUESTS**

29. Please provide copies of any additional written responses received from Native Americans since the AFC was compiled. If responses have been received by telephone, please provide a summary of each conversation. If the location of archaeological sites may be revealed in the information, please provide the responses under confidential cover.

**Response:** One additional response has been received to-date from the Pala Band of Mission Indians. The letter communicates the group has a "low level of concern." A copy of the letter is provided as Attachment CR-29.

30. Please make at least one telephone call to Native American individuals or groups whose names were provided by the NAHC, if they have not responded to the project. Please provide a copy of any written responses and a summary of any telephone conversations.

**Response:** The summary table titled "Consultation Letters to Native American Contacts Provided by NAHC" was submitted as part of Appendix 8.3A. The table documents consultation with Native American individuals or groups recommended by the Native American Heritage Commission, including at least one follow-up phone call made to each contact.

**BACKGROUND**

Table 8.3-2 provides a list of previously recorded historical resources identified during the Archival Research search described in Section 8.3.3.5.2. During a site visit to the proposed project location, staff drove the proposed gas line route. It appears that none of the residences identified in Table 8.3-2 are within 50 feet of the gas line route or of the proposed HP site. From information compiled by the CHRIS it appears that during the 1980s, the Riverside Historical Commission recorded numerous historic residences in the vicinity of Iowa Avenue, but did not record commercial building. Commercial buildings that are more than 45 years old may be affected by vibrations from jack hammers or heavy equipment used to construct the gas pipeline. It does appear that there are two previously recorded residences that might (as determined from the CHRIS map) be within 50 feet of the gas pipeline route.

**DATA REQUEST**

31. Please have a qualified architectural historian who meets the Secretary of Interior Standards in Architectural History conduct a reconnaissance-level (windshield) survey of the natural gas pipeline route and provide a brief report characterizing the street-side built environment as industrial, commercial, or residential zones, including general descriptions of each zone. This request for a survey by a qualified architectural historian is consistent with staff's overall approach for



## ATTACHMENT CR-29

April 18, 2006

Clint Helton, Senior Scientist  
CH2M Hill  
3 Hutton Centre Drive, Suite 200  
Santa Ana, CA 92707

RE: AES Pacific Inc. – Proposed Highgrove Power Plant AFC

Dear Mr. Helton:

This letter is in response to your request for Native American consultation on the above-referenced project. We respond to these requests on behalf of Robert Smith, Chairman of the Pala Band of Mission Indians.

Because this project takes place outside the traditional areas of residence of the people of Pala, we have a low level of concern regarding possible areas of cultural sensitivity. However, this should not be construed as indicating that no cultural resources or traditional cultural properties are present in this location. Areas of significance may be identified by other concerned bands, or revealed in the course of project construction. The Pala Band of Mission Indians stands behind any assertions made by other bands that there are significant resources within the project area, should such assertions be made.

We appreciate being made aware of this project and having the opportunity to comment.

Sincerely,

Shasta C. Gaughen, MA  
Assistant Director

35008 Pala Temecula Road  
PMB 445  
Pala, CA 92059

760-742-1590 [phone]  
760-742-4543 [fax]

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identifying potential significant historic resources. Please identify and record on a DPR 523 form any commercial buildings that appear to be over 45 years of age located within 50 feet of the project site or the gas line route. Please provide copies of the completed DPR forms.

**Response:** This information is currently being gathered by JRP Historical Consultants and will be filed upon completion which is expected in mid-December.

32. Please determine whether CHRIS number 6936 at 1677 Elliot Street, and CHRIS number 6933 at 1197 Church Street still exist. If the buildings are still present in those locations, please determine whether the buildings are within 50 feet of the proposed gas line route. If they are within 50 feet, please discuss potential damage to each building from vibrations caused by jack hammers or heavy equipment that would be used to install the gas line and identify appropriate mitigation.

**Response:** This information is currently being gathered by JRP Historical Consultants and will be filed upon completion which is expected in mid-December.

**BACKGROUND**

The CHRIS has identified the proposed plant site as a location that is sensitive for archaeological resources. Staff needs information on the extent of potential ground disturbance.

**DATA REQUEST**

33. Please provide an estimate of the right-of-way for the gas line route, and for the potable water line.

**Response:** During construction of the 12-inch gas line, the route will generally be in the public right-of-way (i.e., along city streets). The construction area will typically be 10 to 25 feet wide, depending on circumstances. For construction of the 4-inch and 12-inch potable water line from Main Street north on Taylor Street to the plant site, the street may be closed so the construction area would be about 25 to 30 feet wide.

34. Please provide a discussion of the width and depth of disturbance associated with both the proposed gas line and the potable water line.

**Response:** The width and depth should be similar for both the gas line and the water line. The trench will be excavated between 24 and 30 inches wide except at pipe joints that require welding in the trench. They require a 48 inch trench. Intersections requiring deeper installation to clear substructures will require wider trenches up to 4 or 5 feet in width. For the gas pipe, the depth of the trench will be approximately 60 inches minimum to achieve 42-inch minimum cover. For the water line, the minimum depth will be 54 inches to achieve 36 inches minimum cover. Typically the trench is excavated 6 inches deeper than the minimum to allow for padding material if required. Substructure crossings may require deeper depths along the route and in intersections. Special crossings of railroad tracks, freeways and flood control

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channels require deeper depths. Typically installations with these types of crossings range between 7 and 30 feet.

35. If any additional geotechnical borings are completed for this project within the coming nine months, please have them examined by an archaeologist and provide the findings to the Energy Commission staff.

**Response:** The Applicant will have a qualified archaeologist examine boring logs from any geotechnical boring activity and will provide the findings to the Energy Commission staff.

# AES HIGHGROVE PROJECT (06-AFC-2) DATA RESPONSES, SET 1A

## Technical Area: Hazardous Materials Management

CEC Author: Geoffrey Lesh

### BACKGROUND

Due to change in ownership from Southern California Edison (SCE) to the AES Corporation, the AES Highgrove facility is required to submit an updated San Bernardino County CUPA Business Emergency/Contingency Plan (Business Plan). On June 23, 2006, Kristen Riegel of the San Bernardino Fire Department, Hazardous Materials Division, on behalf of the San Bernardino County Certified Unified Program Agency (CUPA), issued a Notice to Comply to AES. This requirement must be met, as continued updates and maintenance of the Business Plan submitted to the CUPA would be a required condition of certification for the proposed project.

### DATA REQUEST

36. Please provide a copy of the updated Business Plan that is submitted to the CUPA.

**Response:** The letter referenced above addressed requirements pertaining to both the existing power plant located at 12700 Taylor Street, Grand Terrace, CA (Riverside Canal Power Company, "RCPC") and the proposed new AES Highgrove peaking project. As part of the proposed new project RCPC would be removed and therefore the same facility address has been used for discussions pertaining to both facilities.

The letter indicated that, for the new project, a Business Plan and Risk Management Plan will be required prior to issuance of a building permit and/or handling of hazardous materials. In addition, the letter indicated that the Business Plan for the existing Riverside Canal Power Company should be updated. Finally, the letter indicated that if a change of ownership of the existing facility had occurred that notification of change of ownership is required within 30 days after change of ownership has occurred.

AES has contacted San Bernardino County to clarify that the existing plant has not undergone a change in ownership since the existing plant has operated as RCPC since 1998. In addition, AES scheduled a site inspection of the existing plant (RCPC) with the County hazardous materials division, in preparation for an update of the Business Plan for that facility. A site inspection for the existing underground storage tanks will be scheduled prior to submitting an updated Business Plan. AES will provide the Energy Commission a copy of the updated Plan as well as the Certificate of Compliance from San Bernardino County, demonstrating that the County has approved the updated Business Plan for RCPC.

A Business Plan for the proposed new AES Highgrove facility will be provided to the Energy Commission as part of the conditions of certification prior to storing hazardous materials onsite.

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37. Please provide a copy of the CUPA's response indicating that it is current and satisfies the CUPA's requirements.

**Response:** Please refer to Data Response #36.

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**Technical Area: Land Use**  
**CEC Author: David Flores**

**BACKGROUND**

The AFC states that the proposed project site would require a parcel split and a lot line adjustment to separate the tank farm property from the larger parcel owned by the Grand Terrace Redevelopment Agency. Energy Commission staff needs to know when the application would be filed with the City of Grand Terrace.

**DATA REQUEST**

38. Please provide AES Highgrove's proposed schedule and the status of the application before the City to create two separate legal parcels.

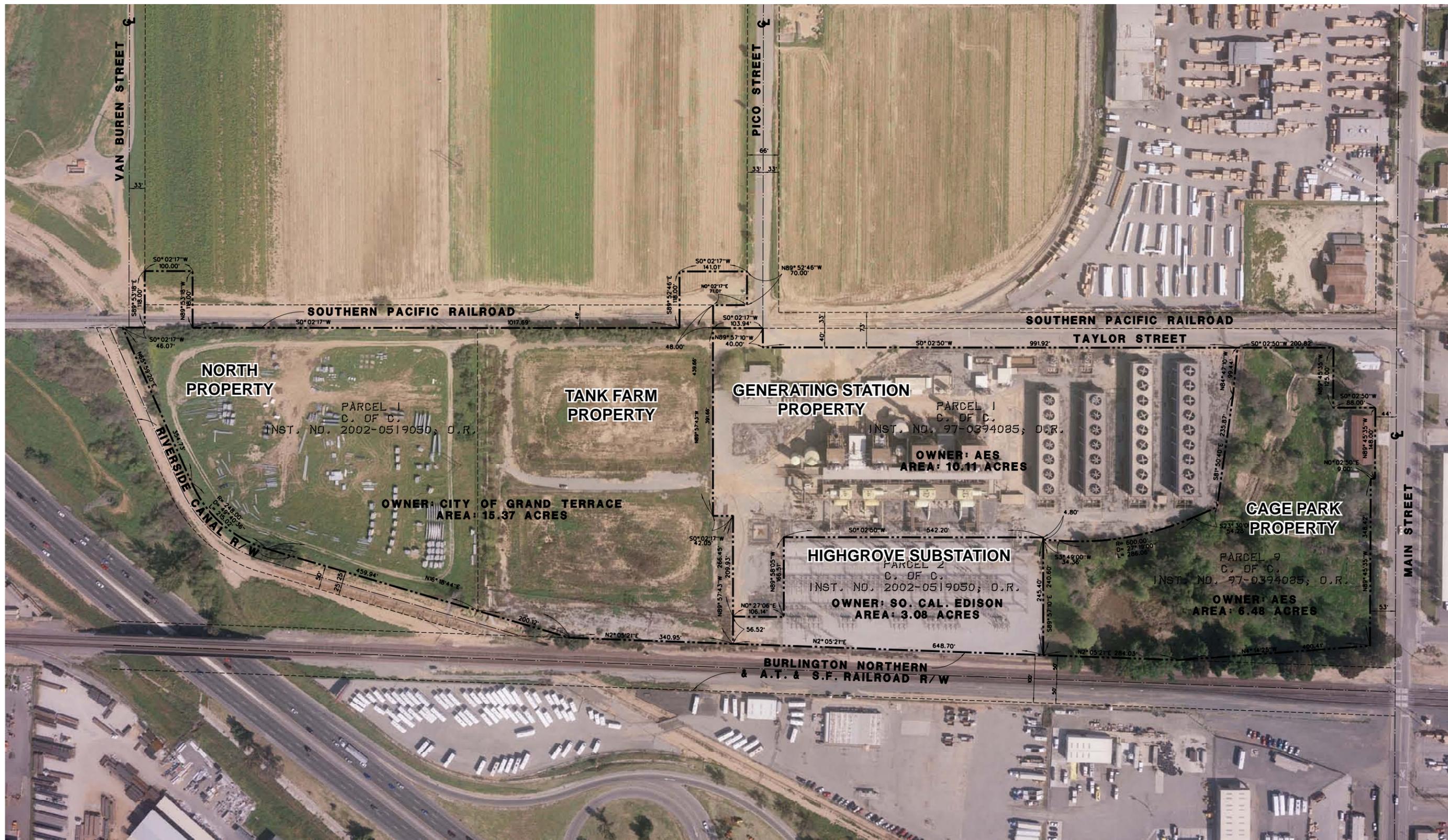
**Response:** AES currently owns the Generating Station property on which the existing power plant is located. The Grand Terrace Redevelopment Agency ("RDA") owns the Tank Farm Property, north of the existing plant and the parcel north ("North Parcel") of the Tank Farm Property. These properties (Tank Farm Property and North Parcel) are currently combined into one parcel. Refer to Figure LU38-1, which shows the existing parcel boundaries.

The land exchange agreement between AES the RDA is conditioned upon AES receiving a license for the proposed new project. Upon receipt of a license, AES will: (1) give notice of intent to complete the land exchange, (2) the RDA will then perform a parcel split to divide the Tank Farm parcel from the North Parcel, (3) AES will take title to the Tank Farm parcel, and (4) AES will perform a lot line adjustment. The lot line adjustment allows each party to have ownership of a parcel of similar size to the one they currently own and AES will retain title to the property on which the retention basins, which originally triggered RCRA-facility designation under SCE-ownership, are located. After AES demolishes the existing plant, the RDA will have the option to take title of the modified parcel or be compensated at market value for the former Tank Farm parcel.

These property applications will occur after a license is received from the CEC and prior to construction of the new facility can occur. It is estimated that these applications can be completed within 3 to 4 months of AES issuing a notice of intent to complete the land exchange.

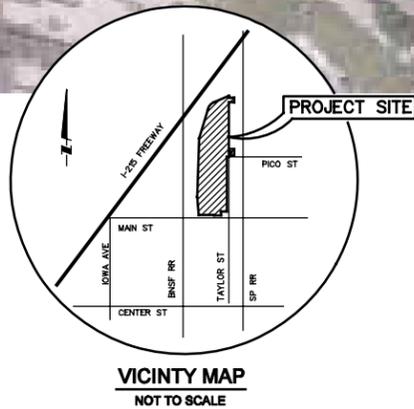
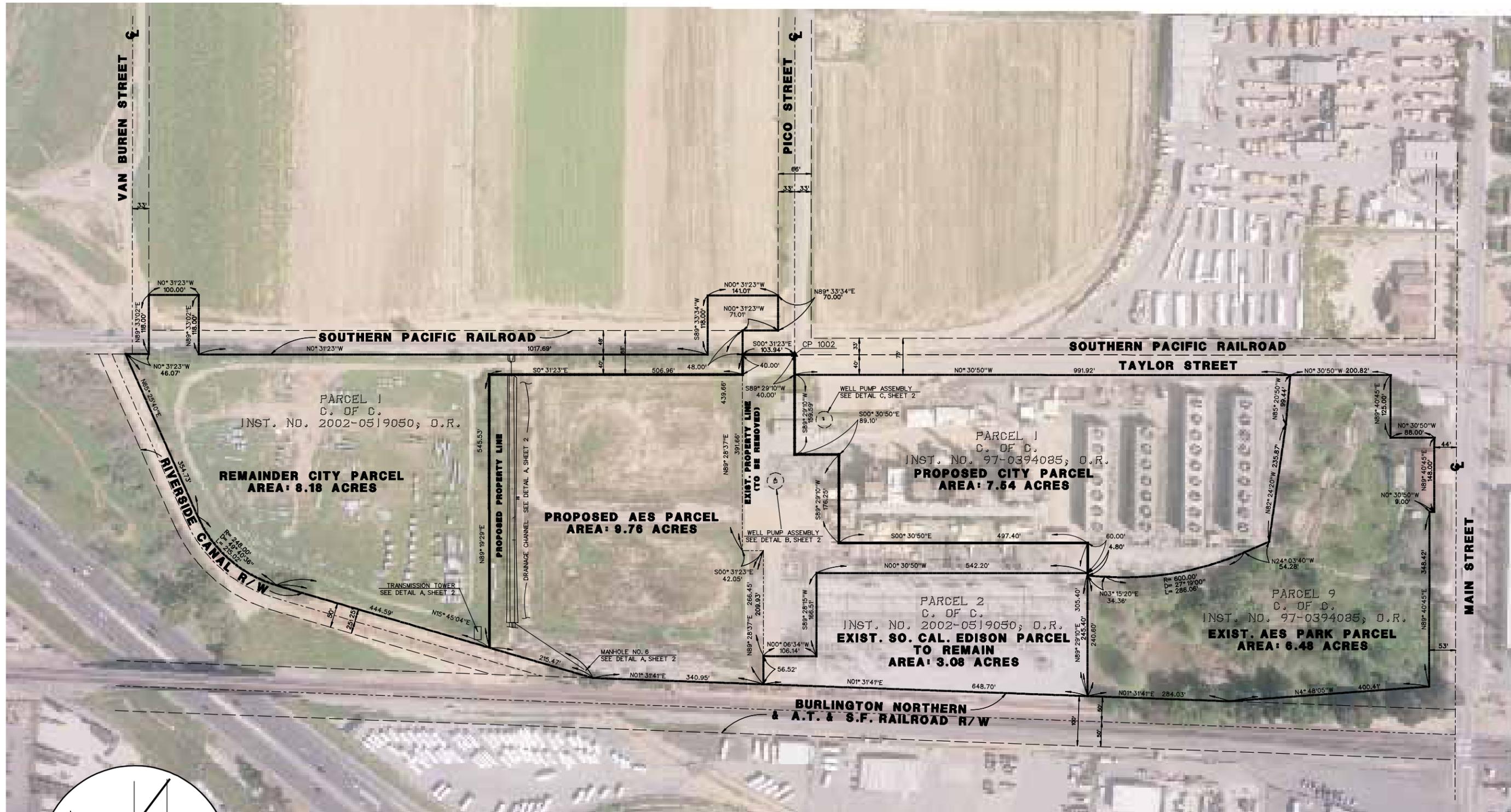
39. Please provide the legal description for the newly created parcel and revised parcel map.

**Response:** A survey of the proposed boundaries for the newly created parcel is attached as Figure LU39-1. A final survey and accompanying legal description will be prepared just prior to filing the application described above.



**FIGURE LU38-1**  
**BOUNDARIES OF TANK FARM**  
**PROPERTY AND NORTH PROPERTY**  
 AES HIGHGROVE  
 GRAND TERRACE, CALIFORNIA

SOURCE: PSOMAS



**FIGURE LU39-1**  
**SURVEYED BOUNDARIES OF**  
**NEW PARCEL**  
 AES HIGHGROVE  
 GRAND TERRACE, CALIFORNIA  
**CH2MHILL**

SOURCE: PSOMAS

# AES HIGHGROVE PROJECT (06-AFC-2) DATA RESPONSES, SET 1A

## BACKGROUND

A review of Figure 2.2-1 (General Arrangement Map) and the other portions of the project description in the application did not provide enough information to indicate how the proposed structures and project site would comply with local agency regulatory requirements. City of Grand Terrace Zoning Code provisions require that there be building setbacks, adequate street right of way, and street improvements as necessary. Since the diagram (i.e., Figure 2.2-1) does not provide the above referenced regulatory information, it is difficult to ensure compliance with City standards.

## DATA REQUEST

40. Revise Figure 2.2-1 General Arrangement Map in the application to provide the:

- a. location of all existing exterior lot lines with distances to existing and proposed structures;

**Response:** The revised general arrangement drawing (Figure 2-2.1R) shows the proposed property line with dimensions to the *nearest* proposed structures on the north and east sides. On the north side of the property, the gas compressor enclosure will be approximately 53 feet to the property line. On the east side of the property, the administration building will be approximately 99 feet to the property line. There are currently no existing buildings located on property north and east of the proposed project property; the existing structures on the Generating Station property (to the south) will be demolished as part of the proposed project. The property is bordered by the BNSF railroad and Riverside Canal on the west.

- b. location of the centerlines of Adventure Way, and Taylor Street with distances to existing exterior property lines; and

**Response:** The locations of the proposed Adventure Way and proposed Taylor Street extension are based on information in the City of Grand Terrace's Specific Plan for these properties. Figure 2-2.1R shows the centerline location of the proposed Adventure Way and the proposed Taylor Street extension. The distance from the proposed centerline of Adventure Way to the northern property line boundary is approximately 68 feet. The distance from the centerline of the proposed Taylor Street extension is approximately 6 feet to the proposed eastern property line boundary. When Taylor Street is extended and widened by the City, it is anticipated that a portion of the proposed project property will be dedicated to the City for public right-of-way once Taylor Street is extended.

- c. location of existing and proposed curbs and gutters with distances to exterior property lines.

**Response:** There are no existing frontage roads or curbs adjacent to the plant. The proposed cross sections for Taylor Street and Adventure Way include a 16-foot and 20-foot parkway section, respectively, between the gutter and the adjacent property.

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Figure LU40-1 shows the proposed road cross section. The Project proposed a landscaping plan in the AFC to minimize visual impacts from the plant. The landscaping would consist of redwoods to be located on the berm and redbuds that would be located in the parkway. The proposed landscaping is consistent with the City's Specific Plan landscaping guidelines for the property north of the proposed project.

## BACKGROUND

The City of Grand Terrace Sign Ordinance (Title 18) governs the size, location, and type of signs permitted on the project site. The AFC provides no indication of the signs proposed by the applicant. It is not possible to demonstrate compliance with the City Zoning ordinance from existing data submitted.

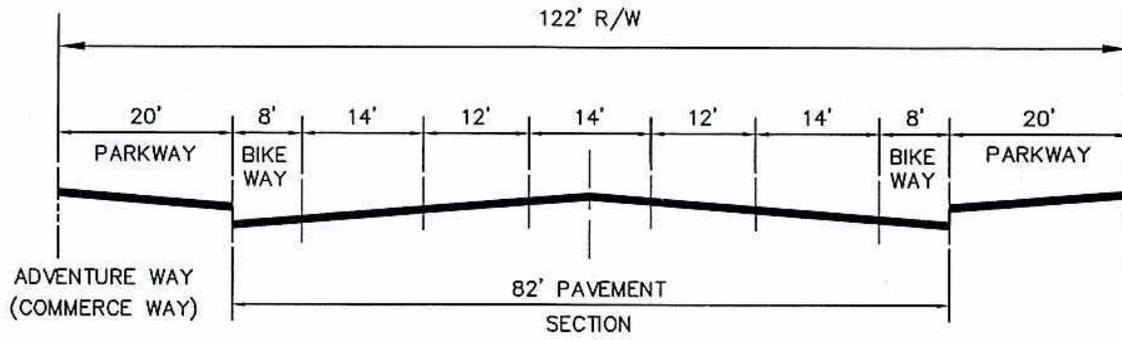
## DATA REQUEST

41. Provide details on the project's sign program that includes:
  - a. the location, size and number of all signs proposed;
  - b. the materials that would be used to construct the signs;
  - c. the lighting technique that would be used for the signs;
  - d. the height of all proposed signs;
  - e. the type of signs to be used (e.g., a monument sign or a building mounted sign);
  - f. if signs would be located on buildings, identify the distance from the surface of the sign to the surface of the structure to which it would be attached;
  - g. architectural renderings or a conceptual drawing of all signs proposed; and
  - h. the content of each proposed sign.

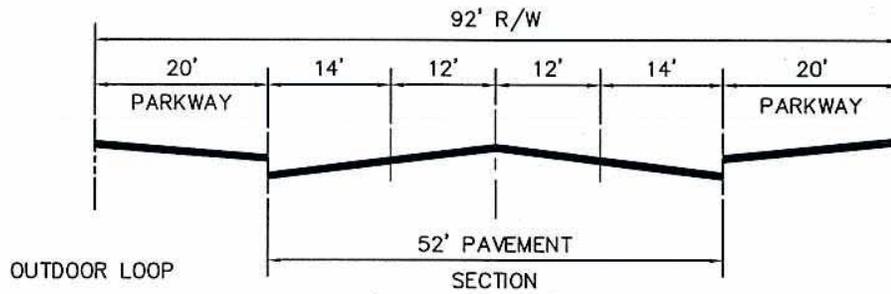
**Response:** AES has not yet designed the signs for the Highgrove Project, but commits to designing and construction the sign in accordance with all City requirements including the sign ordinance.

## BACKGROUND

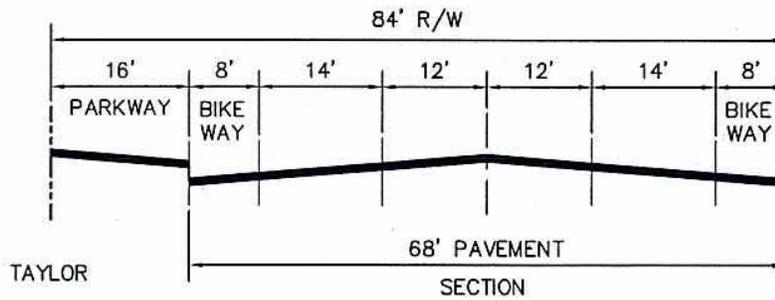
The City of Grand Terrace's Zoning Code restricts lot coverage in the M2-Industrial District that includes the project site. The site plan does not provide calculations of the site area and the aerial extent of proposed roofed structures. This data is required to evaluate project compliance with the lot coverage requirements for building in this zone.



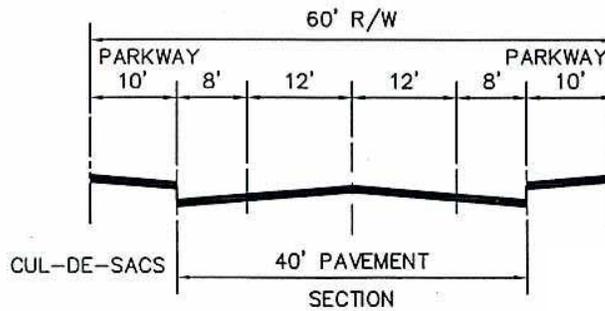
82' / 122' R/W



52' / 92' R/W



68' IMP / 84' R/W



40' IMP / 60' R/W

SOURCE: NOLTE, EXHIBIT 1-6

**FIGURE LU40-1**  
**STREET CROSS SECTIONS**  
 AES HIGHGROVE  
 GRAND TERRACE, CALIFORNIA

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**DATA REQUEST**

42. Provide calculations to show the project's consistency with the City of Grand Terrace's M2-Industrial District building lot coverage standards with respect to the project site (i.e., the entire extent of the ultimate legal parcel proposed for development) in square feet.

**Response:** The City of Grand Terrace Zoning Code Chapter 18.40 M2 Industrial District, Section 18.40.040 Site Development Standards indicates that allowable lot coverage for the M2 Industrial District is 100 (maximum percent less required parking, setbacks, and landscaping) (City of Grand Terrace Zoning Code, 2001). The applicant contacted the City of Grand Terrace to discuss this standard. The City indicated that the intent of the standard is that an applicant can cover the site with a building as much as is needed for a project as long as the City's parking, setbacks, and landscaping requirements are met. Therefore, less than 100 percent of a project site in the M2 Industrial District can be developed into a building or other primary use in order for land to be available for site parking, setbacks, and landscaping (W. Haydon pers. comm. with John Lampe, Associate Planner/ City of Grand Terrace, November 1, 2006). Therefore since no structures are located in the setbacks or landscaping areas, the project meets the zoning requirements.

**BACKGROUND**

The proposed natural gas line extension would proceed through several different jurisdictions. At least one of these jurisdictions may require a franchise agreement if the proposed pipeline is proprietary, but not if the gas pipeline is a part of a regulated utility. We need to know what agreements the applicant would need to obtain for each of the involved jurisdictions.

**DATA REQUEST**

43. Please indicate if the proposed natural gas pipeline extension would be proprietary or not. If franchise agreements are required, please provide the following:

- a. A schedule for securing the proper franchise agreements.

**Response:** The proposed natural gas extension from the metering station to the connection with SoCal Gas transmission pipeline (Line 2001) will be constructed and owned by the SoCal Gas Company. Therefore, no franchise agreements will be required.

- b. A copy of franchise agreements and/or acknowledgement letter detailing fees paid.

**Response:** Please refer to Data Response #43a.

# AES HIGHGROVE PROJECT (06-AFC-2) DATA RESPONSES, SET 1A

## Technical Area: Soil and Water Resources

Author: Michael Stephens

### BACKGROUND

Potable water demands for the Highgrove Project (HP) are estimated to average 4.0 gallons per minute (gpm), or approximately 2 acre-feet per year (afy). The Riverside Highland Water Company (RHWC), a private non-profit water service company, serves the City of Grand Terrace and owns groundwater wells near to the HP. RHWC's wells include a deep potable water well adjacent to the HP property at Main and Taylor Street, that is planned to be the potable water source for the HP. The sanitary and process water for the Highgrove Generating Station (HGS) was originally supplied from existing wells located on the property.

The HP site is not currently within the service territory of a water purveyor. RHWC has indicated that it will annex the site in order to provide potable water to serve the proposed HP. The applicant states that the annexation will occur before the HP will require water service, but the assumption that this annexation by RHWC will occur prior to the start of HP operations is insufficient for staff to conclude there will be a reliable potable water supply. Additionally, the AFC states that potable water from RHWC may be used as a backup water source during an emergency outage or maintenance for the two on-site plant process source wells. In order to adequately analyze the potable water use and supply reliability staff will need additional information.

### DATA REQUEST

44. Please provide a schedule with benchmarks for negotiations between the RHWC and AES Highgrove, LLC, for the water service territory annexation process including effective date of the annexation.

**Response:** Please refer to the attached letter (Attachment S&W-44) in which RHWC describes the annexation process for the potable water service and schedule with an anticipated completion date of 60 to 90 days.

45. Please provide a detailed will-serve letter from RHWC. The will-serve letter should reflect the scheduled date when water service will be supplied to the HP and the amount of water to be available.

**Response:** AES requested a will-serve letter from RHWC, with the understanding that service must be conditioned upon conclusion of the annexation process. RHWC has indicated that it cannot legally provide a will-serve letter until the annexation process is concluded. AES will provide a copy of a will-serve letter when it is received. There are two 12-inch water mains in the vicinity of the plant, one located on Main Street, and one which terminates on Pico Street, near Pico Park. Therefore, supply adequacy of potable water is not expected to be of concern.

## ATTACHMENT S&W-44



1450 E. Washington St. • Colton, CA 92324-4696 • (909) 825-4128 FAX (909) 825-1715

November 1, 2006

Julia Way  
Project Director  
AES Highgrove, LLC  
690 Studebaker Rd.  
Long Beach, CA 90803

Reference: Letter to the CEC Regarding RHWC Annexation

Dear Ms. Way:

Riverside Highland Water Company (RHWC) understands that a request has been made regarding the annexation process related to the proposed AES Highgrove, LLC (AESH) peaking project, which would be located at 12700 Taylor St., Grand Terrace, CA.

Riverside Highland Water Company is currently in the process of preparing an application for a change of service area boundary to submit to the Corporations Commission which is required by our rules and regulations and the State of California. In addition to the area of the proposed AES project, there are a few small areas that are currently outside of our service area, but inside the Grand Terrace City limits, as is the AES project property. We would like to correct this situation all at the same time and make the changes in the same application.

At this time our engineers are completing the legal description for the proposed area. We will then review the information and either return the information to the engineers for corrections or forward the information to our attorney to complete the application. At this time we do not think that we will need to submit an engineering investigation thus reducing the time required to prepare the application.

Once submitted, the Corporations Commission will review the application. At this time we do not anticipate any problems or delays from the Commission. Also, since this area is not in any other water districts area or sphere of influence, we do not expect to have any opposition to our request. Hopefully we will receive a response from the Commission within sixty to ninety days.

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46. Please identify a preferred backup potable water supply source sufficient for a worst-case disruption of the primary water supply during operations. Describe potential impacts on other users of the proposed backup source.

**Response:** AES Highgrove is no longer pursuing use of potable water as an emergency back-up water supply during onsite well maintenance.

**BACKGROUND**

The AFC states that the HP plant process needs will be served by two of the four wells that are on the property owned by the Riverside Canal Power Company (RCPC), the AES subsidiary that owns the majority of the project site. The AFC Figure 2.2-1 shows wells numbered 1, 2, 3, and 4 in close proximity to each other, with Well 1 approximately 20 feet inside the HP boundary line. Wells 2, 3, and 4 are identified as being outside the property line. At the site visit held September 19, 2006, wells number 3 and number 4, located southeast of the site proposed for the power plant itself, and adjacent to Taylor Street, were stated as having approximately 2000 gpm delivery capacity each. On a peak summer day, the instantaneous water consumption for process water needs is expected to be 854 gpm.

Consistent with State law and policy the Energy Commission will approve the use of fresh water for cooling purposes by power plants that it licenses only where alternative water supply sources and alternative cooling technologies are shown to be “environmentally undesirable” or “economically unsound.” Based on an expected operating capacity of 30 percent as stated in the AFC (operating 30 percent of the time on an annual basis), the Highgrove Project (HP) will use an average of 358 afy for all plant processes. Of the 358 afy water used, approximately 209 afy will be used for power plant cooling with the remaining amount used for water injection, turbine inlet air cooling, irrigation and other needs. AES is proposing the use of fresh water from two onsite wells for cooling and other plant processes. However, at least one impaired water source located near the HP is presented in the AFC. The possibility of using groundwater impaired with nitrates from the Spring Street Wells is not discussed with enough detail to determine its potential as a cooling water source, or its accessibility. In addition, although numerous sources of reclaimed water are identified, some within close proximity of the HP, they were all dismissed during the analysis. The Riverside Canal is adjacent to the HP and the Gage Canal is 0.5 miles from the HP. Both canals deliver non-potable irrigation water.

**DATA REQUEST**

47. Please clarify the location and ownership of the wells numbered 2, 3, and 4 identified in the AFC, Figure 2.2-1, and describe any waterlines, routes, or plans to relocate these wells for the purpose of serving the HP plant process needs.

**Response:** Existing well locations are shown on Figure 2.2-1R. The combined capacity of all four wells onsite is estimated to be at least 5,000 gpm. All wells are

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currently owned by the existing power plant, Riverside Canal Power Company (RCPC), a wholly-owned subsidiary of AES.

The proposed new project will require substantially less water than was required by the existing plant to support its process needs. Therefore, the terms of the land exchange agreement allow for AES to retain ownership of only two of the four existing onsite wells after the property exchange occurs. The agreement provides that AES will make the selection as to which of the two existing wells would serve the new project at the conclusion of the permitting and design process when plant water consumption needs will be finalized. The ability to maintain ownership of two wells will allow the proposed plant to have one well serve as back-up when maintenance is performed on the other. The land exchange agreement provides that easements will be granted if wells outside the project site boundaries (after the land exchange is completed) are selected for use. There is currently no plan to relocate any of the existing wells.

48. Please provide specific information that includes the contact name, organization, phone number, and the reason for dismissal of the source, for each potential reclaimed water source identified.

**Response:** AES performed a detailed analysis of all potential sources of reclaimed water within the region surrounding the Highgrove Project. Please refer to pages 9-9 through 9-13 of the AFC for a description of each facility considered and the reasons alternative sources of cooling water were eliminated from further consideration. Table S&W48-1 below provides the name of the source and contact information as requested.

The quality of the water supply for plant processes will affect the type of water treatment equipment required by the plant, the metallurgy chosen for various plant equipment, and the quantity and quality of wastewater disposal. At the time the AFC was submitted, AES did not have a complete water quality analysis to perform a thorough assessment of the Spring Street wells on plant equipment and processes. As a result, the AFC indicated that AES would continue to evaluate the Spring Street wells as a potential source of water for the project.

The water quality from this source is deemed impaired due to nitrate levels that exceed drinking water standards but can be used for irrigation purposes. Activities that contribute to elevated nitrate levels in groundwater include crop fertilization, septic systems and dairy farming activities, the first two of which were prevalent in the region at one time. Methods of nitrate reduction to make aquifers suitable for potable water supply include blending with higher water quality supplies, removing and using the water in nonpotable systems such as for irrigation, and water treatment equipment. Water treatment systems which remove nitrates include reverse osmosis and ion exchange systems, and are generally considered to be costly remediation options. In addition, these water treatment processes create a concentrated brine which requires disposal.

# AES HIGHGROVE PROJECT (06-AFC-2) DATA RESPONSES, SET 1A

AES' preliminary analysis of the impacts of using the Spring Street water in the proposed facility is as follows. First, because nitrate can be characterized as a salt, the level of TDS (total dissolved solids) in this water is high, and approximately twice that of the existing onsite wells. The higher TDS will reduce the cycles of concentration allowable to prevent scaling in the cooling towers from 6.5 to 4.0, thereby increasing the wastewater discharge volume from the plant. Thus, AES' proposal to truck wastewater to the SARI line would become cost-prohibitive, even for a peaking project. Second, a pipeline approximately 1.5 miles in length would need to be constructed to the site but can be constructed in the public right-of-way.

Based on discussions with the water purveyor, AES has been requested to keep certain information associated with this source confidential. AES is preparing a more detailed evaluation of the Spring Street wells as a potential water source for the project and will work with the water purveyor to determine more specifically which information should be kept confidential.

Additional information on regional nitrate issues is addressed in Data Response #52. Information on the potential use of water from the Riverside and Gage Canals is addressed in Data Response #49. Contact information for other water sources evaluated is provided below.

TABLE S&W48-1  
Water Source Contact Information

Water Source	Contact
RIX Facility—City of San Bernardino and City of Colton	Valerie Housel City of San Bernardino 909-384-5117
City of San Bernardino Water Reclamation Plant	Valerie Housel City of San Bernardino 909-384-5117
Colton Wastewater Treatment Plant	Gary Etheridge Consultant for the City of Colton City Manager 951-588-1714
Rialto Wastewater Treatment Plant	Peter Fox Superintendent of Water 909-421-7244
Riverside Regional Water Quality Control Plant	Bill Pounds Riverside Regional Water Quality Control Plant 951-351-6205
Inland Empire Utilities Agency	Ben Pak Inland Empire Utilities Agency 909-993-1719
Eastern Municipal Water District	Joe Mouawad Eastern Municipal Water District 951-928-3777

# AES HIGHGROVE PROJECT (06-AFC-2) DATA RESPONSES, SET 1A

TABLE S&W48-1  
Water Source Contact Information

Water Source	Contact
Western Municipal Water District	John Dahlke Western Municipal Water District 951-789-5000
Riverside Highland Water Company	Don Hough Riverside Highland Water Company 909-825-4128
United States Environmental Protection Agency's Stringfellow Superfund Site	Allen Wolfenden Department of Toxic Substances Control 916-255-6540
Muscoy and Newmark Plumes	Mark Norton Santa Ana Watershed Project Authority 951-354-4221

49. Please provide analyses of the Riverside and Gage Canals as potential water source(s).

**Response:** AES has requested information from the City of Riverside, owner and operator of Riverside Canal and a majority shareholder in the Gage Canal, to allow an assessment of these canals as potential water sources. The Riverside Canal once served as one of the water resources for the existing plant. Remains of a pump and intake structure can be seen at northwest corner of the Tank Farm property next to the Canal, although it has clearly not been used for many years.

Based on correspondence from the City of Riverside, use of Gage Canal water would not be preferable for project use since RPU (Riverside Public Utilities) intends to convert total Gage production to domestic water as described in the adopted 2005 Urban Water Management Plan (<http://www.riversideca.gov/utilities/water-umwp.asp>). Therefore, AES proposes that no further consideration be given to Gage Canal as a potential water source for the plant.

Numerous sources are utilized to supply Riverside Canal. These sources are considered acceptable for irrigation but not drinking water supply. According to RPU, many of the wells serving Riverside Canal are regarded as non-potable because they were not constructed to potable standards (i.e., they lack sanitary seals).

In addition to this information, RPU was very responsive to our request and provided a significant amount of information on water quality of the various sources. Since AES only received this information on November 2, AES has not had the opportunity to do a thorough review of the water quality information received and will continue to analyze this information to determine if Riverside Canal would serve as a suitable source of project water for the plant. Additional information will be submitted as it is obtained and with permission of RPU.

# AES HIGHGROVE PROJECT (06-AFC-2) DATA RESPONSES, SET 1A

## BACKGROUND

The Riverside groundwater basin which underlies the project region is over-drawn, and the application does not provide analyses on the HP's potential impact to the groundwater basin. Aquifer transmissivity, as well as the drawdown affect of water production on the nearby City of Riverside production well #1, has been estimated. It appears that the groundwater impact analysis was based on general groundwater data available for the HP area.

In addition, high nitrate contamination in the aquifer appears to be present in groundwater within the vicinity of the HP. Nitrate in groundwater appears to be a major concern in the area. Increased pumping of groundwater has the potential to mobilize nitrates, further degrading groundwater supplies. No analysis has been conducted to assess the effect of groundwater pumping related to HP water supply demands on nitrate levels.

## DATA REQUEST

50. Please provide aquifer testing data for the groundwater production wells proposed for HP use, as well as the effect that these wells will have on drawdown in nearby wells.

**Response:** At the time of preparation of the AFC, no specific aquifer testing data was available for the existing onsite production wells. Therefore regional groundwater information that was available was used to estimate values for purposes of performing a limited drawdown analysis. AES has recently engaged the services of the consultant who developed a Riverside Basin groundwater model in a past study and has requested permission for data from that model to be used in future analyses for the Highgrove Project. Once permission is received, AES will submit a revised drawdown analysis for Staff's consideration.

However, AES does not believe that specific aquifer testing would be required in order to conservatively estimate drawdown from the limited intermittent pumping necessary to support the new project considering the negligible effects reported by Riverside Highland Water Company from pumping rates used when the existing plant was in service.

AES will submit revised drawdown analyses based on any new information supplied in the Riverside Basin groundwater model when permission is received.

51. Please provide a water balance diagram that explains how the removal of groundwater for the HP will not result in a net groundwater deficit.

**Response:** AES is unable to find data to support the statement in the Background that the Riverside groundwater basin which underlies the project region is over-drawn. Groundwater extraction and groundwater flows in the San Bernardino, Riverside and Colton Groundwater Basins are closely monitored, according to the terms of Judgment No. 78426, entered in the Superior Court of the State of California

# AES HIGHGROVE PROJECT (06-AFC-2) DATA RESPONSES, SET 1A

on April 17, 1969. The Judgment “established the entitlements and obligations of the two major water districts overlying the San Bernardino, Riverside, and Colton groundwater basins namely San Bernardino Valley Municipal Water District (SBVMWD) and Western Municipal District of Riverside County (WMWD).”<sup>2</sup> The court appointed a Watermaster to administer and enforce the provisions of the Judgment. The provisions of the Judgment require that San Bernardino Valley provide groundwater replenishment if minimum water surface elevations are not maintained as set forth in the Judgment.

The proposed plant will be located in San Bernardino County over the Riverside Basin. Based on the San Bernardino County’s Watermaster’s report “extractions from the Colton Basin Area and that portion of the Riverside Basin area within San Bernardino County for use in San Bernardino Valley are not limited”<sup>3</sup> provided that minimum flows and water levels stipulated in the judgment are met. The lowest average fall water surface elevation for calendar year 2004 was 37.23 feet higher than the minimum required level of 822.04<sup>4</sup> The lowest average fall water surface elevation for calendar year 2005 was 897.10, 137.83 feet higher than the 2004 average of 859.27 and 75.06 feet higher than the 1963 average of 822.04.<sup>5</sup>

52. Please provide an analysis of groundwater pumping impacts on nitrate levels in the aquifer.

**Response:** Regional groundwater-level mapping for 1997 (Wildermuth, 2000) shows that groundwater flow is from northeast to southwest beneath the proposed AES plant. Therefore, pumping from the onsite wells would primarily capture groundwater (“capture zone”) coming from the northeast of the onsite well. Regional nitrate mapping for deep wells in 1997 (Wildermuth, 2000) shows that in the area near the onsite wells, groundwater nitrate concentrations were relatively uniform, ranging from 11 to 16 mg/L as nitrate (2.4 to 3.6 mg/L as N). [The regulatory standard maximum contaminant level (MCL) is 45 mg/L as nitrate, or 10 mg/L as N].

Preliminary capture-zone calculations suggest that for a pumping rate of about 500 gallons per minute (gpm), the capture zone for the onsite wells should be less than 500 feet wide. Thus it is anticipated that the capture zone will remain within the larger area where 1997 nitrate concentrations were in the range of 11 to 16 mg/L. Due to the relatively uniform nitrate levels in capture area, little or no impact on nitrate levels in the aquifer should result from pumping the onsite wells. However, there is also a shallow aquifer in the area, separated by an aquitard from the deeper screened zone of the onsite wells. SCE’s existing onsite groundwater monitoring wells are screened in the shallow aquifer and have higher nitrate concentrations than the onsite supply wells. Onsite pumping could cause shallow-aquifer groundwater

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<sup>2</sup> Annual Report of the Western-San Bernardino Watermaster for Calendar Year 2004 (dated Aug 1, 2005) pg 1.

<sup>3</sup> Ibid, pg. 27.

<sup>4</sup> Ibid, pg. 32.

<sup>5</sup> Annual Report of the Western-San Bernardino Watermaster for Calendar Year 2005, pg. 33.

# AES HIGHGROVE PROJECT (06-AFC-2) DATA RESPONSES, SET 1A

(currently 15 to 30 mg/L nitrate as nitrate) to migrate downward toward the pumping well. These effects should persist only while the onsite well is pumping, and should have no lasting impact on the distribution of nitrate. In addition, the shallow-aquifer groundwater beneath the proposed AES plant has nitrate concentrations below the MCL. The foregoing analysis is predicated on the assumption that the 1997 water-level and nitrate contours reported by Wildermuth (2000) are representative of current conditions.

(Reference: Wildermuth Environmental, Inc. 2000. TIN/TDS Study - Phase 2A of the Santa Ana Watershed. Final Technical Memorandum prepared for the TIN/TDS Task Force. July.)

## BACKGROUND

Wastewater from the cooling process will be stored in Baker tanks on a temporary basis prior to loading on trucks which will transport the water to the Santa Ana Regional Interceptor (SARI) line. Baker Tanks is a company that rents temporary liquid storage tanks of various sizes and configurations, depending on the volume and type of liquid(s) stored.

## DATA REQUEST

53. Please provide the number, volume, and type of storage tank(s) that will be used to store wastewater at HP, as well as any secondary containment that will be required.

**Response:** As indicated on the revised General Arrangement drawing (Figure 2.2-1R), three "Baker" type trailer tanks will be located onsite. The tanks are estimated to hold 17,850 gallons each for a total of 53,550 gallons. (An area has been reserved on the site layout for a field-erected wastewater tank, if this becomes a more economical storage alternative than Baker tank storage in the future.)

No secondary containment is anticipated at this time.

54. Please provide the length of time that the wastewater will be stored as well as the proposed location of the tank(s).

**Response:** The current wastewater storage volume will provide approximately 10.1 hours of storage at the average annual wastewater flow of 88 gpm, which is consistent with the values provided in Data Response #19a. If wastewater is trucked offsite as it is generated during plant operation the storage time available will be approximately 15.1 hours.

It is anticipated that the wastewater tanks will be emptied each night during peak season operation. During non-peak operating seasons, it is anticipated that the tanks will be emptied at least once a month. As indicated on the revised General Arrangement drawing (Figure 2.2-1R), the wastewater tanks will be located on the

# AES HIGHGROVE PROJECT (06-AFC-2) DATA RESPONSES, SET 1A

north east corner of the site inside the landscaping berm and adjacent to the demineralized water and raw water tanks.

55. If permits would be required for storage of the wastewater, please provide the specific permit required as well as the associated agency contact information.

**Response:** No permit is required for the storage of wastewater in Baker Tanks. The wastewater is not considered a hazardous material. Wastewater storage would most likely be addressed through best management practices in the Operational SWPPP (e.g., periodic inspections to ensure that the Baker Tanks are not leaking).

## BACKGROUND

The SARI line is a regional brine interceptor that was constructed to protect water quality in the Santa Ana River. The SARI line conveys industrial brine and low quality/high total dissolved solids (TDS) wastewater from the Inland Empire (includes large portions of interior San Bernardino and Riverside Counties) to the Orange County Sanitation District's (OCSD) Plant No. 2, where it is treated and discharged to the ocean. The SARI line is designed to convey up to 30 million gallons per day (mgd) to OCSD and currently conveys flows of 9.7 mgd northeast of the Orange County border. For the proposed HP, wastewater would be transported by truck to the nearest truck-transfer station for discharge to the SARI line, which is located at the San Bernardino Municipal Water Reclamation Plant. The proposed route is approximately 5.5 miles northeast of the HP. Ministerial permits for disposal at the Reclamation Plant of truck loads and payment of disposal fees would be coordinated through the City of San Bernardino Municipal Water Department, which operates that facility, and the Western Municipal Water District, which permits actual discharge to the SARI line.

The proposed amount of wastewater that will be hauled to the Reclamation Plant's truck-transfer station, and disposed of to the SARI, is 42 afy or 13,685,742 gallons per year. This is a substantial amount of water to store, load, transport and dispose of at an off-site facility. At maximum anticipated plant discharge, over 148,000 gallons of wastewater could be generated in a 24 hour period. Based on an 8,000 gallon capacity per tanker transport, and not accounting for on-site storage, approximately 11 to 19 truck transport trips may be required on a daily basis. Given the relatively short distance from the HP to the SARI Line/Reclamation Plant truck-transfer station, and pipeline boring technologies that are available, it does not appear that an adequate cost analysis was conducted to evaluate the relative merit(s) of this and other alternative wastewater disposal methods. These methods include Zero Liquid Discharge (ZLD), piping to the truck-transfer station for discharge to the SARI line, and disposal in the wastewater sanitary sewer. There is no mention in the AFC describing disposal of wastewater from the previously operating Highgrove Generating Station.

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**DATA REQUEST**

56. Please provide will-serve letters from the City of San Bernardino Municipal Water Department, and the Western Municipal Water District stating their ability to accept this wastewater from the HP.

**Response:** Included as Attachment S&W-56 is a will-serve letter from the City of San Bernardino Municipal Water Department, stating the ability to accept the wastewater from the proposed project.

The will-serve letter is based upon the expected estimated average daily discharge volume of 48,000 gallons per day during an onpeak month, rather than the 148,000 gallons per day cited in the Background. The value of 148,000 gallons per day is based on the volume of water generated at a peak temperature of 97 degrees and assumes the temperature would remain at that level for a 24-hour period and that the plant would also operate continuously during that 24-hour period. First, temperature data obtained for the Norton Air Force Base in nearby San Bernardino, for instance, reports that the average temperature for July between the hours of 8:00 am to 4 pm is 90 F; the average 24-hour temperature for July is 78 F. Second, it is anticipated that the plant would rarely operate for a 24-hour period except in emergency conditions since electricity demand is often correlated to peak temperatures. Generally, plants used for peaking service are only kept operating at night if they are expensive to start up or have lengthy startup periods, which, with the 10-minute start time of the LMS100, is not the case for the technology being proposed for this project.

As described further in Data Response #19, the annual number of trucks required to haul wastewater during the month of July (based upon an average temperature during operation of 90 F and a capacity factor of 33% for the month) is 6.8 trucks per day, assuming the plant operated every day during the month. Onsite storage will allow the facility the ability to optimize truck traffic on days during which the plant operates longer than an 8-hour period. If the plant is operated less than expected, wastewater volumes will decrease accordingly. Please refer to Data Response #60 for additional information on agency jurisdiction for discharges to the SARI line.

**CITY OF SAN BERNARDINO  
MUNICIPAL WATER DEPARTMENT**

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*"Trusted, Quality Service since 1905"*

October 31, 2006

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Julie Way  
Project Director  
AES Highgrove, LLC  
690 Studebaker Rd.  
Long Beach, CA 90803

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**Re: Will Serve Letter for SARI Indirect Industrial User Discharge Permit**

Dear Ms. Way:

The City of San Bernardino Municipal Water Department (SBMWD) Environmental Control Section is pleased to provide this Will Serve Letter regarding the ability to accept brine waste into the SARI System from the proposed AES Highgrove, LLC (AESH) project, which is to be operated at 12700 Taylor St., Grand Terrace, California. The project will consist of three natural gas-fired gas turbines used for peaking service, water treatment facilities, and cooling towers for gas turbine intercooling.

Based on previous discussions with AES personnel, it is our understanding that the:

- Industrial wastewater will consist primarily of cooling tower blowdown and brine from reverse osmosis water treatment,
- Industrial wastewater generated by the plant will be trucked to the SARI Truck Disposal Station located at 399 Chandler Place, San Bernardino, California,
- Wastewater discharge volumes generated by the plant will be intermittent and vary on a seasonal basis; volumes are likely to be the highest during the summer months when electricity demand is highest,
- During peak summer months, maximum wastewater volumes to be discharged to the SARI line are expected to average approximately 46,000 gallons per day.

The SARI Truck Disposal Station has the capacity to handle the proposed discharge from the new facility, expected to come online in 2008, assuming all necessary permits received are approved. In order to accept wastewater from this facility, the project would have to meet the following requirements:

- Discharge limitations as specified in the SAWPA Ordinance No. 4,
- Permit approval contingent on Orange County Sanitation District (OCSD) review and acceptance.

300 North "D" Street, San Bernardino, California 92418 P.O. Box 710, 92402 Phone: (909) 384-5141

FACSIMILE NUMBERS: Administration: (909) 384-5215 Engineering: (909) 384-5532 Customer Service: (909) 384-7211  
Corporate Yards: (909) 384-5260 Water Reclamation Plant: (909) 384-5258

**AES HIGHGROVE PROJECT  
(06-AFC-2)  
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57. Please provide details on the methods for disposal of wastewater from the previous facility, the Highgrove Generating Station, that occupied the proposed site.

**Response:** The former Highgrove Generating Station, as it was known when owned and operated by Southern California Edison, was permitted to discharge nonhazardous wastewater and stormwater under an NPDES permit from three discharge locations, as outlined in the table below:

TABLE S&W51-1  
Permitted Discharge Locations

Discharge Serial No.	Discharge Point	Waste Source	Volume (MGD)
001	A pond which overflowed into Santa Ana River, Reach 4	cooling tower basin drains	0.269
		rainfall runoff	0.114
		boiler blowdown	0.013
002	Lake Cadena which overflowed into the Santa Ana River, Reach 4	miscellaneous in-plant floor drains	0.016
		rainfall runoff	0.011
		cooling tower blowdown 2	0.313
003	Riverside Canal	cooling tower blowdown	0.313

Notes:

1. From NPDES Permit, Order No. 94-95
2. Used when Riverside Canal was closed for maintenance.

Effluent discharges to the Riverside Canal and Santa Ana River were required to meet Total Dissolved Solids (TDS) limits of 840 mg/L and 490 mg/L, respectively, as well as other requirements. If plant discharges exceeded these TDS limits, the plant was required to participate in a Wastewater Offset Program and provide water from an alternate source (wells) in order to maintain groundwater subbasin objectives for TDS.

58. Please provide an analysis of the wastewater disposal alternatives including pipeline to the SARI line, ZLD.

**Response:** Several options were considered for wastewater disposal for the Highgrove Project. The alternatives included a dedicated connection to the SARI line and zero-liquid discharge (ZLD) system in addition to the proposal to truck wastewater discharge to the SARI line. The AES project is proposed to be a peaking plant with an expected annual capacity factor of 15 percent (maximum expected annual capacity factor of 30 percent). Therefore, the project will produce a very small volume of wastewater compared to baseload projects. In addition, the amount of wastewater generated will vary year-to-year with variation in electricity demand.

## **AES HIGHGROVE PROJECT (06-AFC-2) DATA RESPONSES, SET 1A**

Capital intensive systems such as permanent pipelines and ZLD systems are, therefore, considered to be cost prohibitive for peaking projects. With an intermittent operating profile, expected to vary from year-to-year, it can be more economical over the life of the project to structure certain costs as variable operating costs, i.e., those that are only incurred when the plant operates.

A dedicated connector line to the SARI line would be approximately 4.3 miles in length, and would also need to cross under the Santa Ana River, Interstate 215, and La Cadena Creek. Construction of these lengthy and expensive crossings would require 3 separate directional drills with a total of 2,200 linear feet, adding significant expense to the capital cost of the project. The costs of such a line are expected to be approximately \$4.3 million, in addition to any permitting, right-of-way, and SARI line connection fees that are expected to add several million dollars to this total. In addition to avoiding pipeline construction costs, the proposed trucking option also avoids potential environmental impacts from directional drilling and pipeline installation under the Santa Ana River and La Cadena Creek.

A ZLD system is equal to or more expensive than a dedicated connector to the SARI line. A ZLD system is estimated to cost \$4 to \$6 million dollars. Use of a ZLD system for use with a peaking facility is considered to be problematic since ZLD systems are difficult to start up and shut down and are only effective when in thermal balance. Therefore, a ZLD system for this facility would expect to be operated in a batch process, storing wastewater onsite until the system is operated. Consequently, the operational profile of a ZLD system is incompatible with a peaking project, which operates intermittently and whose primary benefit comes from the ability to start quickly and shut down when no longer needed. In addition, the site does not have sufficient area to locate a ZLD system. If a ZLD system were used, additional land would have to be acquired and would add to the total cost of the system.

59. Please discuss the effect on wastewater disposal alternatives if hybrid-cooling were used to reduce the quantity of wastewater generated.

**Response:** A dry-wet (hybrid) cooling tower was considered as a potential option for this project. The benefit of the dry cooling section of the hybrid tower, which conserves water use, is most prevalent at lower dry bulb temperatures. Operation of the tower in the "wet" mode would be required to achieve desired cooling (and maintain plant output and efficiency) during summertime temperatures. Therefore, a reduction in water consumption and therefore, plant wastewater flow, would only be expected to occur if the plant were operated more than 50% of the year (when cooler temperatures allow the tower to be operated in the "dry" mode.) Under this scenario, anticipated water consumption may be reduced by 11 to 18 percent. The minimal water consumption and discharge savings does not justify the additional expense of the hybrid towers.

# AES HIGHGROVE PROJECT (06-AFC-2) DATA RESPONSES, SET 1A

## BACKGROUND

Table 8.14-10 lists the Western Municipal Water District as the permitting agency in charge of disposal of wastewater for the facility. Based on the plant's location, HP must obtain from the City of San Bernardino Municipal Water Department an Indirect Industrial User Permit, and submit a laboratory analysis of a sample from the proposed discharge and a liquid waste-hauler permit application to discharge waste at the truck disposal station.

## DATA REQUEST

60. Please provide a complete list of permitting agencies for transportation and disposal of wastewater associated with the plant process water. Include a discussion of each agency's responsibilities, and their typical permitting schedules.

**Response:** The San Bernardino Municipal Water Department, Environmental Control Section operates the SARI line for the San Bernardino Valley Municipal Water District (a member of SAWPA), which has jurisdiction for the SARI line in San Bernardino County. The San Bernardino Municipal Water Department is responsible for regulating wastewater discharges into the SARI system. They require two permits for indirect discharges to the SARI line: a SARI Truck Disposal Station Indirect Industrial User Permit and a SARI Truck Disposal Station Liquid Wastehauler Permit. Permit applications must be submitted 60 days prior to the date upon which any discharge would begin.<sup>6</sup> The contact information for these two permit applications is as follows:

City of San Bernardino  
Municipal Water Department, Environmental Control Section  
300 N. D Street, 5th Floor  
San Bernardino, CA 92418

(The reference to Western Municipal Water District in the AFC is in error.)

## BACKGROUND

Sanitary wastewater would be discharged to the City of Colton sewer system (operated by the City of Grand Terrace) by interconnecting to an existing pipeline. The sanitary wastewater flow would average about 2.0 gpm, or 2,880 gpd on a 24-hour basis.

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<sup>6</sup> The permit application timing is being confirmed.

**AES HIGHGROVE PROJECT  
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DATA RESPONSES, SET 1A**

**DATA REQUEST**

61. Please provide a will-serve letter from the City of Grand Terrace and/or the City of Colton that shows that they are willing to accept the domestic wastewater for disposal to their system, and any limitations placed upon the HP in this regard.

**Response:** Included as Attachment S&W-61 is a will-serve letter from the City of Grand Terrace, stating the ability to accept the wastewater from the proposed project. Please note that the existing plant is currently connected to the sewer and the proposed project will use the existing connection if technically feasible.

**BACKGROUND**

The HP will be required to complete a Storm Water Pollution Prevention Plan to comply with the SWRCB General Construction Stormwater NPDES Permit. The Energy Commission also requires a Drainage Erosion and Sediment Control Plan (DESCP) subject to the approval of the Energy Commission's Compliance Project Manager. The DESCP will contain information required in a SWPPP while also incorporating local stormwater standards and ordinances. Some soils at the site may contain toxic contaminants.

**DATA REQUEST**

62. Please provide a DESCP outlining site management activities to be implemented during site mobilization, excavation, and construction.

**Response:** The DESCP/SWPPP was provided as Appendix 8.14A. Section 1.1, Objectives, of the DESCP/SWPPP has been updated to explicitly explain the purpose of the document to serve as both the DESCP and the SWPPP. The revised DESCP/SWPPP is provided as Appendix 8.14AR1. Five hard copies are being provided to the CEC staff. Electronic copies will be provided to others upon request.

63. Please include in your analyses how potential toxic contaminants in stormwater will be managed to insure they are properly controlled and disposed.

**Response:** Section 3.3.3, Potential Contaminated Soil, of the DESCP/SWPPP addresses the potential to encounter contaminated soil and describes control and disposal measures.



ATTACHMENT S&W-61

October 24, 2006

Julie Way  
Project Director  
AES Highgrove, LLC  
690 Studebaker Rd.  
Long Beach, CA 90803

Reference: Will Serve Letter: Sanitary Sewer

Dear Ms. Way:

The City of Grand Terrace is pleased to provide this Will Serve Letter regarding the ability to accept sanitary waste into the City's sewer system from the proposed AES Highgrove, LLC (AESH) peaking project, which would be located at 12700 Taylor St., Grand Terrace, California.

It is our understanding that sanitary wastewater flow will be designed to average about 2.0 gpm (equivalent to 2,880 gallons per day [gpd] on a 24-hour basis) and that the plant would connect to an existing sewer system in the centerline of Taylor Street. It is likely that flow would be seasonal, with maximums coinciding with the summer months when electricity demand is highest.

The City of Grand Terrace operates under a Joint Powers Agreement with the City of Colton Wastewater Treatment Plant (CWTP). The sanitary waste system and CWTP plant have the capability to handle the proposed discharge from the new facility, expected to come online in 2008, assuming all necessary permits are received.

We look forward to working with AESH on the proposed project. If you have any further questions or require additional information, please feel free to contact me at (909)430-2226.

Respectfully yours,

Mr. Steve Berry  
Assistant City Manager  
City of Grand Terrace

**AES HIGHGROVE PROJECT  
(06-AFC-2)  
DATA RESPONSES, SET 1A**

APPENDIX 8.14AR1

Drainage, Erosion, and Sediment Control/Stormwater Pollution Prevention Plan

Due to the size of this attachment, five hard copies are being provided to the CEC staff. Electronic copies will be provided to others upon request.

**AES HIGHGROVE PROJECT  
(06-AFC-2)  
DATA RESPONSES, SET 1A**

**BACKGROUND**

Development of the site would change the general slope, and drainage would be conveyed to an onsite detention basin. The detention basin will be configured and sized to retain onsite drainage for a 10-year, 48-hour storm; this will be confirmed during the detailed, final design stage of the HP. No analysis is presented to assess if onsite retention is a viable means of stormwater management for this site, or whether the alternative of offsite stormwater flow is appropriate.

**DATA REQUEST**

64. Please conduct an analysis of proposed onsite retention parameters including dimensions of the proposed detention basin, percolation rate, rainfall intensity and duration for the design.

**Response:** Based on recent discussions with San Bernardino County and Grand Terrace, AES has revised the design parameters for the onsite retention basin. The revised basin is shown on Figure 2.2-1R. A supplemental filing will be provided that outlines the dimension for the basin and associated assumptions, as requested in Data Requests #64 through #67.

65. Please provide an analysis of the potential impacts on drainage as it relates to 20 year, 50 year, and 100 year storms.

**Response:** Please refer to Data Response #64.

**BACKGROUND**

Stormwater at the HP flows towards a detention basin located at the southern end. Figure 8.14-4 presents a site drawing of the proposed facility drainage. From the drawing, it is uncertain how stormwater from off-site will be prevented from flowing into the facility. In addition, the stormwater holding capacity of the proposed basin may be inadequate to hold a major storm event. In the event that stormwater flowing into the detention basin exceeds the holding capacity of the basin, a mechanism for offsite overflow relief could mitigate potential onsite flooding.

**DATA REQUEST**

66. Please provide an updated figure depicting how offsite runoff is prevented from entering the site.

**Response:** Please refer to Data Response #64.

67. If it is anticipated that offsite runoff will enter the site, please provide revised analyses that includes offsite runoff.

**Response:** Please refer to Data Response #64.

**AES HIGHGROVE PROJECT  
(06-AFC-2)  
DATA RESPONSES, SET 1A**

**Technical Area: Socioeconomics**  
**CEC Author:** Joseph Diamond, PhD

**BACKGROUND**

The time value of money should be reflected for all economic estimates. Staff needs to know the year that corresponds to the dollar estimates.

**DATA REQUEST**

68. Please indicate the year for all economic estimates (e.g., economic impact analysis using The Impact Analysis For Planning (IMPLAN) input-output model).

**Response:** The analysis uses 2005 dollars.

# AES HIGHGROVE PROJECT (06-AFC-2) DATA RESPONSES, SET 1A

## Technical Area: Visual Resources

Author: Mark Hamblin

### BACKGROUND

The AFC indicates that construction of a new high school (located to the southeast across Taylor Street from the project site) was scheduled to commence during the Summer of 2006. Current information from the California Department of Education indicates that construction is expected to start in January of 2007. Development of the school will add a visually-sensitive and intensive land use in proximity to the project site. During the Application for Certification pre-filing phase, Commission staff assisted in the selection of key observation points (KOPs), but at the time, development of the high school was speculative. During the pre-filing activity staff and the applicant considered a KOP at the potential Taylor Street entrance to the parking area for the future high school.

### DATA REQUEST

69. Please provide a representative KOP visual simulation from the proposed school site looking towards the HP to illustrate the potential visual impact from the proposed school entrance.

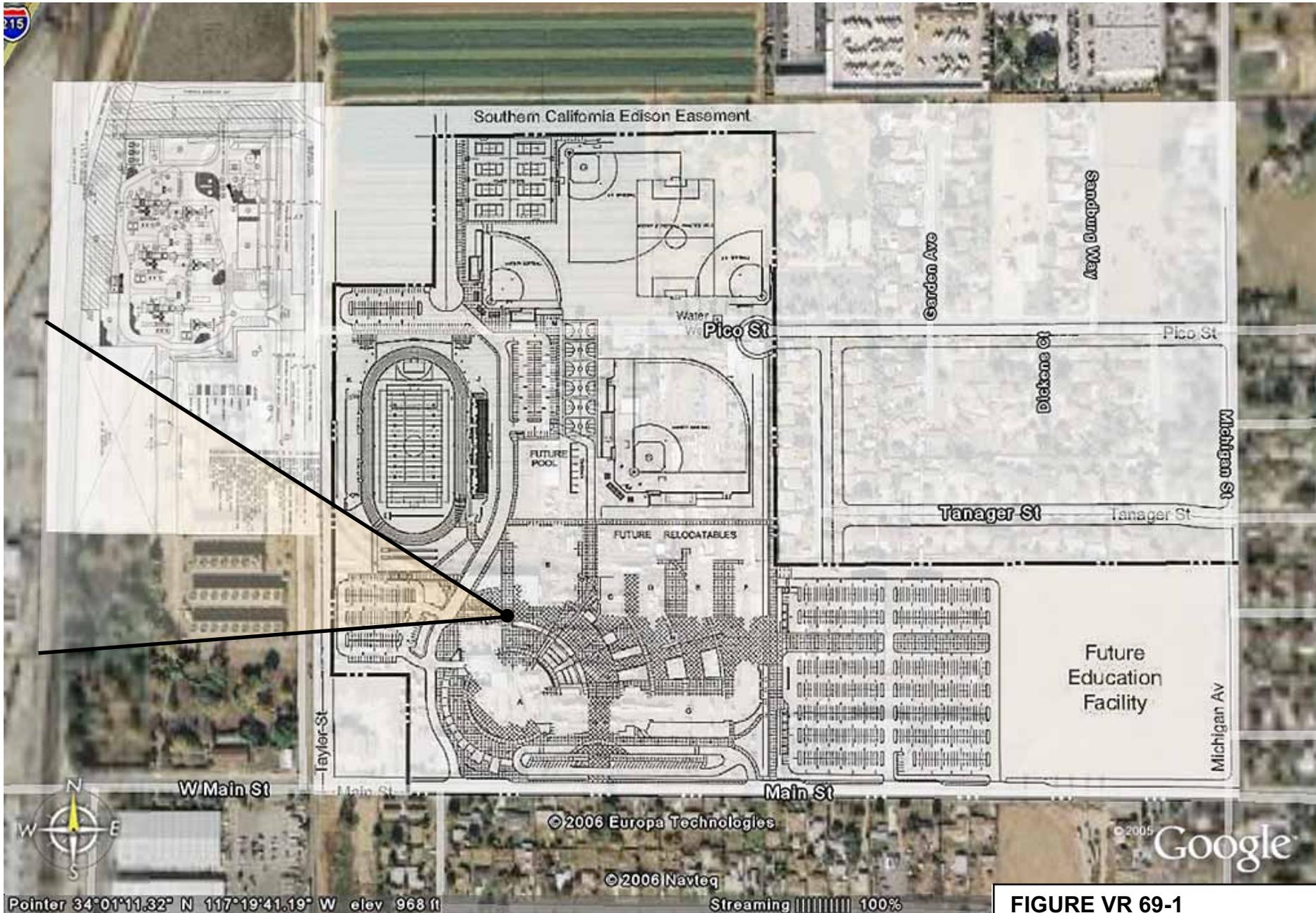
**Response:** From the school site plan, it appears that the main entrance to the school is between Buildings A and G. At that point the entire power plant would be blocked by school buildings. During most of the day, students will be within the school complex (i.e., the open area between Buildings A through G). As shown in Figure VR69-1, most views of the plant from that location will be blocked by the school buildings and sports stadium.

70. Please provide full-page color photographic reproductions of the existing site and a simulation of the proposed project in the existing setting, including the proposed berm and tree sizes at five years after planting.

**Response:** Figure VR70-1, provides a panoramic visual simulation from the location of the proposed stadium (see Figure VR70-2, for photo location and direction).. This simulation does not include the school structures but presents, by fading out the image, a comparison between the existing plant and the proposed Highgrove project<sup>7</sup>. As shown in the figure, the proposed Highgrove has substantially less bulk and is screened from most views. In addition, to provide further screening of the project from southern views, the block wall will be wrapped around on the southern end of the plant as shown in Figure 2.2-1R.

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<sup>7</sup> The simulation does not use the new general arrangement.



Pointer 34°01'11.32" N 117°19'41.19" W elev 968 ft

Overlay on Google aerial provided by CH2M HILL

**FIGURE VR 69-1**  
**SITE LINES FROM PROPOSED**  
**HIGH SCHOOL**  
 AES HIGHGROVE  
 GRAND TERRACE, CALIFORNIA  
**CH2MHILL**

**Before**

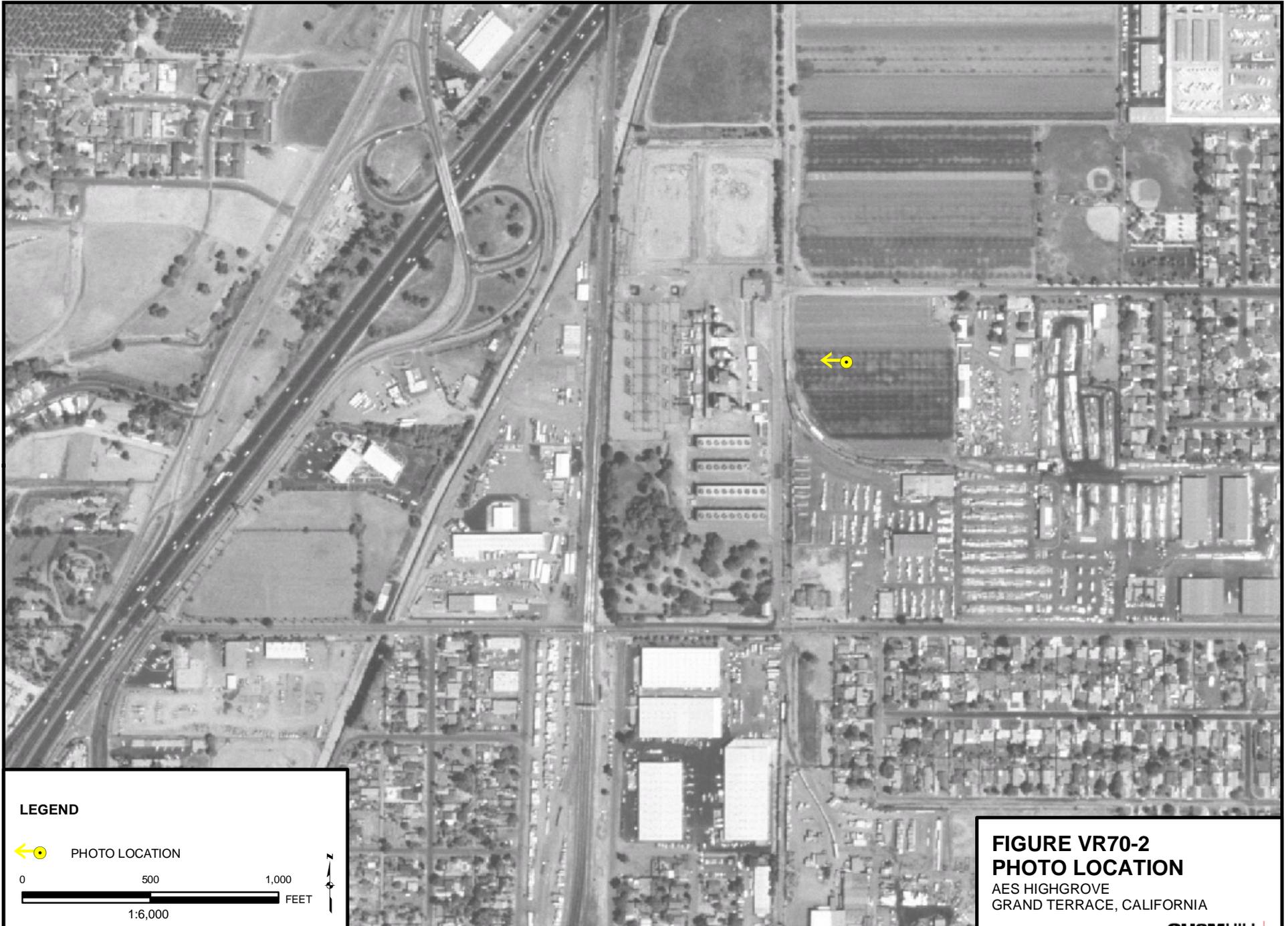


**After**



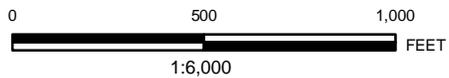
SCE Substation Profile

**FIGURE VR70-1**  
**SIMULATION OF OLD AND NEW PLANTS**  
AES HIGHGROVE  
GRAND TERRACE, CALIFORNIA



**LEGEND**

←● PHOTO LOCATION



**FIGURE VR70-2**  
**PHOTO LOCATION**  
AES HIGHGROVE  
GRAND TERRACE, CALIFORNIA

# AES HIGHGROVE PROJECT (06-AFC-2) DATA RESPONSES, SET 1A

## BACKGROUND

The AFC's analysis of the Pico Park KOP does not describe the number of people that use this recreational area during its operational hours.

## DATA REQUEST

71. Please provide information about the approximate number of people, and various types of recreational users that frequent the Pico Park recreational area annually.

**Response:** Pico Park is currently used for Little League from February through July, Winter Ball from November through February, basketball from November through March, and for a Halloween Haunt that is held on October 31<sup>st</sup> of each year. Use numbers for these recreational activities are provided below:

- Little League: approximately 300 in attendance on weekends during the day.
- Winter Ball: less than 100 in attendance on weekends during the day.
- Basketball: 50 to 100 in attendance on weekdays during the evening.
- Halloween Haunt: approximately 1,200 in attendance on October 31<sup>st</sup> in the evening (W. Haydon pers. comm. with Steve Berry, Assistant City Manager/City of Grand Terrace, November 1, 2006).

Other facilities at Pico Park include picnic tables, public restrooms, a toddler playground, and parking for 90 vehicles (Draft Grand Terrace Educational Facility EIR, 2005.) Annual recreation use numbers for these activities were not available from the City of Grand Terrace.

72. Please provide estimates of the potential number of people and types of recreation users that may use the proposed sports facilities to be developed between the existing park and the project site.

**Response:** According to the September 2005 Draft Grand Terrace Educational Facility EIR that was prepared for the proposed school to be located near the project site, evening sports or recreational events would occur at the proposed school site, including activities at the proposed football/track stadium, baseball and sports fields, basketball and tennis courts, an amphitheater, and swimming pool.

The proposed athletic stadium would be used by the high school to accommodate interscholastic athletic competitions (including football games, soccer games, and track meets), team practices, band practices, and other various co-academic functions. The stadium would not be used to accommodate non-school events, such as community functions. Other facilities would be available for public use during non-school hours.

High school football season extends from August through December. Band practice would occur during August. Soccer would occur from November to March. Track season would occur from March through May. Other school uses may include classroom activities, rallies, assemblies, and graduations. Stadium use is not expected to exceed

**AES HIGHGROVE PROJECT  
(06-AFC-2)  
DATA RESPONSES, SET 1A**

60 evenings per calendar year. The stadium would provide bleacher seating for 4,500 people (Draft Grand Terrace Educational Facility EIR, 2005). No recreation use projections or recreation capacity data for these proposed facilities were provided in the Draft EIR, or are available from the City of Grand Terrace regarding estimates of projected recreation use (W. Haydon pers. comm. with Steve Berry, Assistant City Manager/City of Grand Terrace, November 1, 2006).

**AES HIGHGROVE PROJECT  
(06-AFC-2)  
DATA RESPONSES, SET 1A**

**Technical Area: Visible Plume Modeling**

**Author:** Joe Loyer

**BACKGROUND**

Staff intends to conduct a plume modeling analysis using the Combustion Stack Visible Plume (CSVP) model and the Seasonal Annual Cooling Tower Impact (SACTI) model for the project, as is done for all projects with cooling towers. Staff will provide the applicant with a copy of the CSVP model training manual upon request.

**DATA REQUEST**

73. Please provide the following meteorological data files:

- a. Five years of meteorological data files in either the National Climate Data Center (NCDC) CD144 (surface data), NCDC-TD3280 (hourly surface observations with precipitation), or Hourly United States Weather Observations (HUSWO) format. The files should be the most recent years available. The files must include location, present weather, cloud cover, and visibility data. Please include a complete description of the source of this data (i.e. specific location, anemometer height, etc), and a discussion of why the data is representative of the area. Please also provide an electronic copy of the raw meteorological data file for each year.

**Response:** Attached are 5 compact diskettes, each containing 5 years of NCDC CD144 meteorological data files from the Riverside Municipal Airport. The most current 5 years available were for 2001 to 2005. Also included on the compact diskettes are the same 5 years of data formatted for use in the ISCST3 air dispersion model. The Riverside Municipal Airport is approximately 8 miles from the project site, with no significant terrain features in between.

- b. Please provide meteorological data files for the same five years requested in part a., above, in Industrial Source Complex (ISCST3) modeling format from the above data source. These files must include stability class data.

**Response:** See Data Response #73a.

**AES HIGHGROVE PROJECT  
(06-AFC-2)  
DATA RESPONSES, SET 1A**

74. Please provide the values for heat rejection (MW/hr), exhaust temperature, and exhaust mass flow rate that affect cooling tower vapor plume formation for a range of ambient conditions that represent reasonable worst-case operating scenarios. At a minimum, please fill in all blanks in the table below. Please also update/correct the table, if necessary.

<b>Parameter</b>	<b>Cooling Tower Exhausts</b>		
Number of Cells	3 towers - 2 cells each		
Cell Height*	6.55 meters		
Cell Diameter*	4.88 meters		
Tower Housing Length (2 cells)*	16.84 meters		
Tower Housing Width (2 cells)*	12.65 meters		
Ambient Temperature	34 °F	72 °F	110 °F
Ambient Relative Humidity	80 %	65 %	50 %
Heat Rejection (MW/hr)			
Exhaust Temperature (°F)			
Exhaust Mass Flow Rate (lb/hr)			

\*Stack dimensions from AFC.

**Response:** Table VPM74-1 presents the requested information.

TABLE VPM74-1 Cooling Tower Exhaust Characteristics			
<b>Parameter</b>	<b>Cooling Tower Exhausts</b>		
Number of Cells	3 towers - 2 cells each		
Cell Height* (Top of Fan Stack)	22.3 ft (6.1 meters)		
Cell Diameter* (@ top of Fan Stack)	13.5 ft (4.1 meters)		
Tower Housing Length (2 cells)*	22.4 ft (6.8 meters)		
Tower Housing Width (2 cells)*	28.1 ft (8.6 meters)		
Ambient Temperature	30 °F	80 °F	110 °F
Ambient Relative Humidity	30%	60%	15%
Heat Rejection (MMBtu/hr)	79.2	98.2	99.8
Exhaust Temperature (°F)	76.8	102.8	104.3
Exhaust Mass Flow Rate (lb/hr)	1,233,857	1,209,560	1,202,652

\*Stack dimensions from AFC.

**AES HIGHGROVE PROJECT  
(06-AFC-2)  
DATA RESPONSES, SET 1A**

**BACKGROUND**

Staff intends to model the visible plumes from the cooling tower using hourly estimated exhaust conditions based on the hourly ambient conditions of the meteorological file. Staff will assume saturated cooling tower exhaust at the exhaust temperature determined through interpolation for the hourly ambient conditions. Therefore, additional combinations of temperature and relative humidity, if provided by the applicant, will more accurately represent the cooling tower exhaust conditions.

**DATA REQUEST**

75. Please indicate if the cooling tower has any plume mitigation features that would reduce the exhaust moisture content below the saturated level.

**Response:** The proposed packaged cooling tower does not have plume-abatement devices such as finned-tube coils as is available in field erected towers. However, there are operational methods that could have an impact on the volume and density of the plume. For those ambient conditions that the fogging curve indicates a plume condition, the plume intensity will increase as the exit air temperature increases. Therefore, it would be desirable to reduce the exit temperature as much as possible. This can be accomplished by maximizing the mass flow rate of the air so that the temperature increase per unit volume is reduced. This is contrary to what most people typically try to do in the winter time since there is a desire to slow the fans down to save power. At full speed the plume density would decrease but there would be a higher overall volume of plume (although, this high volume, low density plume will have a higher velocity and would dissipate quicker due to better mixing effects).

76. Please provide the cooling tower make and model number, and any vendor documentation available for the specific model.

**Response:** The proposed cooling towers are Marley NC Class model NC8312K-02. Attachment VPM 76 presents available vendor data.

77. Please provide a fogging frequency curve from the cooling tower vendor, if available.

**Response:** See Attachment VPM-77.

78. Please indicate how many cooling tower cells will be turned on under different potential partial load conditions. Please also note if ambient conditions, such as cold temperatures, dictate when cells may be turned off.

**Response:** It is anticipated that both cells and fans will be operated at all times during operation to minimize the density of any plume that may form unless required to prevent freezing.

79. Please confirm that the cooling tower fan motors will not have a variable speed/flow controller.

**Response:** The proposed tower does not have variable speed fans.

**AES HIGHGROVE PROJECT  
(06-AFC-2)  
DATA RESPONSES, SET 1A**

**INSERT ATTACHMENT VPM-76**

Fogging Frequency Curve for AES / Highgrove Project

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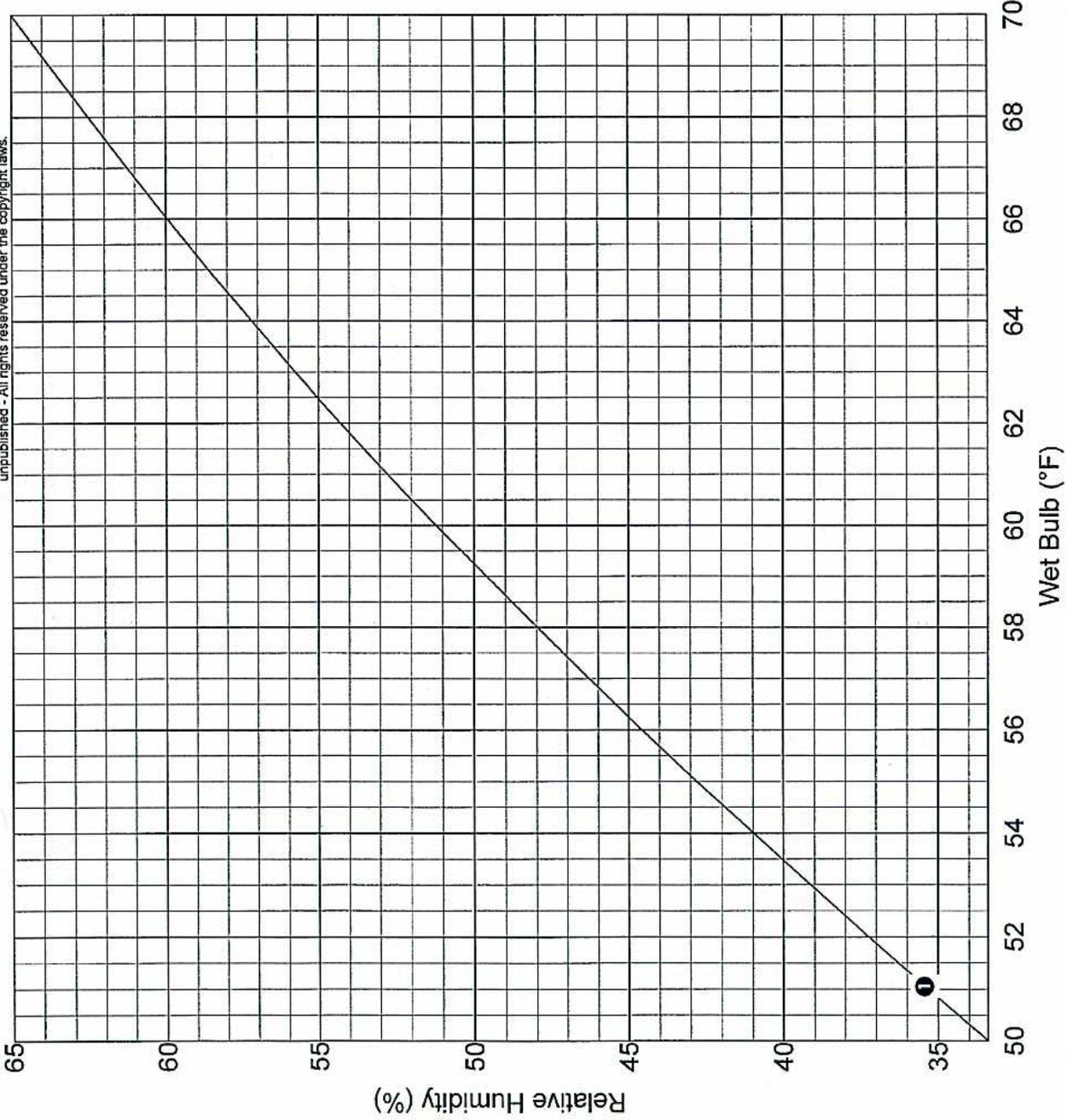
SPX Cooling Technologies  
TRACS Version 11.02.04

Model NC8312K-02  
Number of Cells 2  
Motor Output 75HP  
Motor RPM 1800  
Fan 144-6-36N/45U  
Fan RPM 323  
(Full Speed)

Design Conditions:  
Flow Rate 7000GPM  
Hot Water 118.00°F  
Cold Water 90.00°F  
Wet-Bulb 70.00°F

Curve Conditions:  
Fan Pitch Constant  
Dry Dampers Closed  
Flow Rate 7000GPM  
( 100% Design Flow )

Tangency 100.0%



FOGGING FREQUENCY CURVE: The curve shown to the left is referred to as a 'Fogging Frequency Curve'. The Fogging Frequency Curve separates entering cooling tower conditions that produce fog at the discharge (Top-Left region of chart) from those that do not produce fog (Bottom-Right region of chart)

1 X 28 °F Range  
Design Point

# AES HIGHGROVE PROJECT (06-AFC-2) DATA RESPONSES, SET 1A

## Technical Area: Waste Management

Author: Ellie Townsend-Hough

### BACKGROUND

The California Environmental Protection Agency, Department of Toxic Substances Control (DTSC) is working with the Southern California Edison Company (SCE) on the investigation and remediation of the toxic contaminants that may remain in the soil of the detention basins at the former SCE Highgrove Generating Station. Energy Commission staff discussed the HP and the site's remediation status with Jose Kou, P.E., Chief, Southern California Permitting and Corrective Action Branch of the Department of Toxic Substances Control (DTSC). Currently SCE is working under a Stipulation Order to remediate the site. DTSC has been approached by the AES Company to oversee the corrective action at the parcels of the facility where the existing power plant is located and the location of the future power plant. DTSC has started drafting a corrective action consent agreement that will be negotiated with AES for the oversight activities on the HP site.

Also, a Closure Demonstration Report certifying clean closure of several hazardous waste management areas at the former Highgrove Generating Station is being prepared by SCE, for submittal to DTSC.

### DATA REQUEST

WM-1 Please provide a proposed schedule for the completion of the DTSC Corrective Action.

**Response:** SCE has recently completed its investigation of the retention basins and submitted a draft closure report to DTSC for review. Subject to DTSC approval, it is anticipated that once the draft report is approved, no further remedial action at the site of the retention basins will be required. In addition, we further understand that DTSC's final approval of the closure report will come after public noticing in accordance with federal and state law. AES will request a more detailed schedule from SCE and DTSC as their review of the draft closure report progresses, but at this time anticipates approval of the final closure report for the detention basins will occur in early February 2007.

80. Please specify if demolition of the entire existing Highgrove Generating facility can take place while a Corrective Action is still in progress.

**Response:** The only current remedial activities at the site involve the retention basins and have been conducted by SCE. In order to facilitate the construction of the Highgrove Project and to demolish the existing generating station equipment, AES intends to enter into agreements with DTSC to expedite, and in some cases, perform the remedial activities that would be the responsibility of SCE. Since the site is under RCRA jurisdiction, DTSC must follow federal law. Federal law prohibits allowing DTSC and AES to enter into a Voluntary Cleanup Agreement, which is a normal

## **AES HIGHGROVE PROJECT (06-AFC-2) DATA RESPONSES, SET 1A**

activity under state law. Federal law requires a potentially responsible party to treat the "site" as all property that was owned by SCE when operating the existing Generating Station. At this site, this includes property that is now no longer owned by SCE but is contiguous to the existing Generating Station and Tank Farm Property and includes; the Tank Farm Property, currently owned by the City of Grand Terrace Redevelopment Agency, parcels East of Taylor Street (currently proposed as the site for the new high school), Cage Park Property (owned by Riverside Canal Power Company) and a parcel north of the Tank Farm Property ("North Parcel", owned by the City of Grand Terrace Redevelopment Agency). SCE retains ultimate responsibility to investigate and perform remedial activities for all of these properties in order to obtain RCRA Closure.

RCRA Closure is not a prerequisite for construction or operation of the Highgrove Project. Rather, AES intends to perform the necessary investigation and remediation, if necessary, to ensure that the construction of the proposed Highgrove Project will not prevent or interfere with RCRA Closure. For that reason, AES is entering into agreements with DTSC to oversee any investigation and/or remediation within the footprint of the Project site proposed for the new facility and in any areas discovered after demolition of the Generating Station Equipment.

The RCRA investigation and closure process must follow several prescribed steps. First, a RCRA Facility Assessment (RFA) must be completed followed by a Current Conditions Report (CCR). These reports document the history of the site and provide a historical perspective of what chemicals and processes were handled and performed on site so that areas of potential concern can be identified. Based on the information contained in the RFA and CCR, a RCRA Facility Investigation Workplan (RFI Workplan) is prepared which outlines where field investigation near and around areas that may have been impacted by releases of chemicals and determines what laboratory testing protocol should be performed on soil and/or groundwater samples.

Since the Voluntary Cleanup Agreement is not available for a RCRA site, AES is finalizing a Consent Agreement with DTSC to facilitate review of an RFA, CCR and RFI Workplan. At this time AES and DTSC have agreed to all of the terms of such an agreement and execution of the agreement is anticipated within the next few days. AES has prepared a draft of a combined RFA/CCR/RFI Workplan and has submitted it to the DTSC for preliminary comments and guidance on where field sampling and what laboratory testing protocol should be employed. This document compiles all of the historical activities including past investigations and categorizes the entire site where releases of chemicals may have occurred. AES hopes to finalize this document shortly after receiving DTSC input and will be meeting with DTSC to discuss the document the week of November 6, 2006.

After the implementation of the Workplan, AES intends to enter into another Consent Agreement outlining the specific areas that need remediation prior to constructing the Highgrove Project. AES intends to focus its efforts within the area of the Project footprint with the intention of identifying and remediating any

**AES HIGHGROVE PROJECT  
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contamination prior to constructing any foundation or other permanent improvement over the contaminated area. The purpose is to work cooperatively with SCE and DTSC so that the construction of any permanent facility will not prevent further remediation of the site to achieve future RCRA Closure. After demolition of the Generating Station Equipment, further investigation will be conducted in accordance with the approved RFI Workplan to identify any areas under the existing equipment that may require remediation activities. Since demolition cannot occur until after the CEC issuing a license, AES cannot implement the RFI Workplan or required remedial activities on the Generating Station Property at this time. However, AES must perform the investigation and any cleanup required in order to satisfy its obligation to the City of Grand Terrace to deliver the Generating Station Property remediated to commercial/industrial standards.

It is possible that demolition of the generating station equipment, field investigation and remedial activities on various locations of the Project Site or Generating Station Property, and construction within the Project Site may occur at the same time without hindering eventual RCRA Closure. In fact, AES believes the Highgrove Project is a positive catalyst toward achieving RCRA Closure. This is also consistent with the construction of the proposed high school which is also taking place on property that would eventually need to obtain RCRA Closure.

81. Please provide a schedule indicating when (a) the Closure Demonstration Report will be complete, (b) the expected date of DTSC's determination of the closure certification, and (c) completion of the project site's remediation activity.

**Response:** Please see Response to Data Request WM-1 and 80 above.

**BACKGROUND**

Staff needs additional information to assess potential impacts from soil excavation during construction of the proposed HP. Several documents are listed in the AFC Waste section but are not provided (Phase II Environmental Site Assessment (ESA) June 1997 and March 1998). There are a number of statements indicating that no further clean-up is required on various areas of the plant site (west basin and east basin), but there is no documentation from DTSC to confirm those findings.

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DATA RESPONSES, SET 1A**

**DATA REQUESTS**

82. Please provide copies of the Highgrove Generating Station Phase II ESA (June 1997) and Phase II ESA for the Highgrove Generating Station detention basins (March 1998).

**Response:** Five hard copies of the following Phase IIs are being provided to the CEC Staff as Attachment WM-82 A, B, and C. Electronic copies will be provided to others upon request.

- Phase II Environmental Site Assessment, Retention Basins, Riverside Canal Power Company, Grand Terrace, California, March 1999; prepared for Thermo Ecotek Corporation by Golder Associates, Inc. (Attachment WM-82A)
- Phase II Environmental Site Assessment Highgrove Generating Station, March 1998; prepared by Golder Associates, Inc. for Thermo Ecotek Corporation. (Attachment WM-82B)
- Highgrove Generating Station Phase II Environmental Site Assessment, June 6, 1997; Prepared by Geraghty & Miller, Inc. for SCE. (Attachment WM-82C)

It should be noted that after receiving this data request, Terracon on behalf of AES, has completed a Draft of the RFA/CCR/RFI Workplan as described in response to Data Request 80 above. The report contains a summary of the information contained in the Phase II ESA's described (in addition to other information). The report will also be submitted to Staff once DTSC's comments have been incorporated.

83. Please provide a letter from DTSC stating that no further investigations are required for the floor drain detention basin (west basin) and boiler wastewater pond (east basin).

**Response:** Please see Data Response WM-1 above.

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ATTACHMENT WM-82A

Phase II Environmental Site Assessment, Retention Basins

Due to the size of this attachment, five hard copies are being provided to the CEC staff. Electronic copies will be provided to others upon request.

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ATTACHMENT WM-82B

Phase II Environmental Site Assessment Highgrove Generating Station

Due to the size of this attachment, five hard copies are being provided to the CEC staff. Electronic copies will be provided to others upon request.

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ATTACHMENT WM-82C

Highgrove Generating Station Phase II Environmental Site Assessment

Due to the size of this attachment, five hard copies are being provided to the CEC staff. Electronic copies will be provided to others upon request.

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**BACKGROUND**

Section 8.13.3.1 of the AFC states that there are high concentration levels of arsenic in the area of the existing facility's pipelines and the tank farm property. The AFC indicates that the significance of the arsenic concentration reported may need further evaluation for comparing the levels to background concentrations in local soils.

**DATA REQUESTS**

84. Please describe and provide any documentation regarding the discussions, investigations and/or remediation activities the applicant has entered into, or agreed to, with DTSC concerning the high levels of arsenic found at various areas of the generating station.

**Response:** As described above, SCE, owner of the former Highgrove Generating Station, is currently engaged in discussions with DTSC regarding onsite investigations and remediation activities. AES has also submitted a draft RFA/CCR report to DTSC for their review, as further described in #80 above, but will not begin investigations and/or remediations until DTSC concurs with the information in the report and has agreed upon the RFI Workplan.

Based on verbal discussions with SCE, the current draft report SCE has submitted to DTSC for their approval indicates that former tests performed for arsenic produced unrealistically high levels due to the testing method used and the potential for other metals to interfere with the test results. It is our understanding from SCE that the recent tests taken to establish background arsenic levels and arsenic levels around the retention basins conclude that arsenic levels are not elevated. If however, DTSC believes arsenic is a constituent of concern, it would be reflected in the sampling methods proposed in its comments on AES' RFI Workplan.

85. If cleanup of areas with high concentration of arsenic is required, please discuss how long the required remediation would take and address whether the remediation would be completed prior to the start of HP construction.

**Response:** Please see Data Response #84.