



**Revised**  
**Sutter Medical Center**  
**Sacramento, Trinity Cathedral Project**  
Final Environmental Impact Report  
SCH # 2003102002

**Air Quality, Transportation and Circulation**

Prepared for  
City of Sacramento



Prepared by  
EIP Associates, a Division of PBS&J

November 2006





Revised Final EIR  
for the  
Sutter Medical Center, Sacramento (SMCS) Project  
and the Trinity Cathedral Project  
(SCH# 2003102002)

Prepared for:

City of Sacramento

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## **TABLE OF CONTENTS**

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# TABLE OF CONTENTS

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<u>Chapter</u>	<u>Page</u>
1. INTRODUCTION .....	1-1
2. CHANGES TO THE REVISED DRAFT EIR .....	2-1
3. LIST OF AGENCIES AND PERSONS COMMENTING.....	3-1
4. COMMENT LETTERS AND RESPONSES .....	4-1
LETTER 1: Sacramento Air Quality Management District, Jeane Borkenhagen, Strategic Planning Division.....	4-1
LETTER 2: Law Offices of Donald B. Mooney, Donald B. Mooney and John L. Marshall .....	4-8
LETTER 3: Department of Water Resources, Mike Mirmazaheri, Chief Floodway Protection Section .....	4-38
LETTER 4: Governor’s Office of Planning and Research State Clearinghouse and Planning Unit, Terry Roberts, Director, State Clearinghouse .....	4-39

## APPENDICES

- A. Writ of Mandate (signed)
- B. Distribution List
- C. Brief of Amicus Curiae in Support of Respondents and Real Parties in Interest
- D. Letter from the SMAQMD to the Elk Grove School District Regarding Off-Site Construction Fees



## **1.0 INTRODUCTION**

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# 1.0 INTRODUCTION

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## PURPOSE OF THIS DOCUMENT

This Revised Final Environmental Impact Report (RFEIR) contains public comments received on the Revised Draft Environmental Impact Report (Revised Draft EIR) for the Sutter Medical Center, Sacramento (SMCS) Project received by the City of Sacramento during the public comment period held from September 21, 2006 through November 6, 2006. This RFEIR includes written responses to each comment received on the Revised Draft EIR. The responses correct, clarify, and amplify text in the Revised Draft EIR, as appropriate. Also included are text changes made at the initiative of City staff. None of the changes made alter the conclusions of the Revised Draft EIR. This document has been prepared in accordance with the California Environmental Quality Act (CEQA).

## BACKGROUND

On July 19, 2005, the City of Sacramento ("City") released a Draft Environmental Impact Report ("EIR") for the SMCS Project, which commenced a 45-day public review period. On October 21, 2005, the City released a Final EIR, which included responses to comments on the Draft EIR. On November 10, 2005, the Planning Commission approved the Project and on December 6, 2005, the City Council certified the EIR and approved the SMCS Project.

The Service Employees International Union (SEIU) filed a petition for writ of mandate challenging the adequacy of the EIR under CEQA.<sup>1</sup> The lawsuit challenged the City actions taken on December 6, 2005 to approve the Project. Specifically, the lawsuit challenged Resolution Nos. 2005-882, 2005-883, 2005-886, 2005-887 and 2005-888 and Ordinance No. 2005-094.

On September 1, 2006, the Court issued a ruling and filed the Court's judgment (a copy of the Court's judgment is included in Appendix A of the Revised Draft EIR). The Superior Court's ruling and judgment generally uphold the adequacy of the EIR. The Court granted the petition for writ of mandate, however, on the grounds that the administrative record filed with the Court did not contain sufficient evidence supporting the EIR's analyses and conclusions regarding traffic-trip generation, parking, and construction-related NO<sub>x</sub> emissions. Specifically, the Court ruled as follows:

[T]he Court finds that the record does not contain sufficient underlying documentation of the analysis set forth in the [EIR] with respect to trip generation, parking and construction-related NO<sub>x</sub> emissions that may be associated with the proposed Sutter Medical Center Project ("Project"). Underlying documentation regarding trip generation, parking and construction-related NO<sub>x</sub> emissions were not present in the materials made available to the public during the review and comment stage or in the administrative record originally lodged with the Court. The petition for writ of mandate is granted on the grounds that [the City] committed a prejudicial abuse of discretion in approving the [P]roject and certifying the EIR. (Judgment, pp. 2-3, 4.)

Based on this determination, the judgment and writ direct the City to void its certification of the EIR and approval of the resolutions and ordinance for only the SMCS project components.<sup>2</sup> The purpose of the Revised Draft EIR was to include the underlying documentation of the analysis set forth in the

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1 *Services Employees International Union ("SEIU"), et al. v. City of Sacramento et. al.* (2006) (Case No. 06 CS 00026) ("SEIU v. City of Sacramento").

2 As noted above, voiding these resolutions and this ordinance does not affect the entitlements approved in December 2005 for the Sutter Housing and Trinity Cathedral projects. In addition, the Court's judgment and writ authorize certain, specific construction activities at the SMCS project to continue. The specific construction activities authorized to continue, notwithstanding the directive to void these resolutions and this ordinance, are identified in the Court's judgment and writ.

EIR with respect to trip generation, parking and construction-related NO<sub>x</sub> emissions. The Revised Draft EIR is therefore intended to address the problems identified in the Court's ruling and judgment.

The information contained in the Revised Draft EIR supplements the analysis and technical information contained in the October 2005 Final EIR. Consistent with the Court's ruling, the Revised Draft EIR includes only these portions of the EIR that were found by the Court to be deficient. Portions of the following chapters of the 2005 Final EIR were revised in that document: Section 6.2 (Air Quality) and Section 6.7 (Transportation and Circulation). The remainder of the 2005 EIR either was not challenged in litigation, and is therefore presumed adequate, or was determined by the Court to be adequate.

On November 14, 2006, the City Council took formal action to void the resolutions and ordinance, as directed by the Superior Court's Writ of Mandate.

## **TYPE OF DOCUMENT**

This Revised Draft EIR is an informational document intended to disclose to the City of Sacramento and the public the additional supplemental information regarding traffic trip generation, parking, and construction-related air quality (NO<sub>x</sub>) impacts of the SMCS project, as analyzed in the previously certified SMCS Final EIR (October 2005) (SCH No. 2003102002). Preparation of the Final Revised Draft EIR focuses on the responses to comments received from the public and any public agencies in response to the Revised Draft EIR. The Revised Draft EIR contains only the information necessary to comply with the Superior Court's Writ of Mandate. Although Section 15088.5(f)(2) of the CEQA Guidelines, authorizes the City to request that comments be limited only to the additional information provided in the Revised Draft EIR, the City nevertheless considered and responded to all comments received on the Revised Draft EIR.

The Lead Agency (City of Sacramento) must certify that the EIR adequately discloses the environmental effects of the project and has been completed in conformance with CEQA, and that the decision-making bodies independently reviewed and considered the information contained in the Revised Draft EIR prior to taking action on the project. The Final EIR, including the Revised Draft EIR and this RFEIR, must also be considered by the Responsible Agencies, which are public agencies that have discretionary approval authority over the project in addition to the Lead Agency.

This document contains the list of commentors, the comment letters, and responses to the significant environmental points raised in the comments. The Revised Draft EIR is hereby incorporated by reference.

## **ORGANIZATION OF THIS DOCUMENT**

For this RFEIR, comments and responses are grouped by comment letter. Since the subject matter of one topic may overlap between letters, the reader must occasionally refer to more than one letter and response to review all of the information on a given subject. Cross references are provided to assist the reader. Responses to these comments are included in this document to provide additional information for use by the decision-makers.

The comments and responses that make up the RFEIR, in conjunction with the Draft, as amended by the text changes, constitute the "Revised EIR" that will be considered for certification by the City of Sacramento.

The Revised Final EIR is organized as follows:

**Chapter 1 - Introduction:** This chapter includes a summary of the Project description and the process and requirements of a Final EIR.

**Chapter 2 - Changes to the Draft EIR:** This chapter lists the text changes to the Revised Draft EIR.

**Chapter 3 - List of Agencies and Persons Commenting:** This chapter contains a list of all of the agencies or persons who submitted comments on the Revised Draft EIR during the public review period, ordered by agency, organization and date.

**Chapter 4 – Comment Letters and Responses:** This chapter contains the comment letters received on the Revised Draft EIR and the corresponding response to each comment. Each letter and each comment within a letter has been given a number. Responses are provided after the letter in the order in which the comments were assigned. Where appropriate, responses are cross-referenced between letters.

**Appendices:** This section contains the appendices that support information contained in the Final EIR.



## **2.0 CHANGES TO THE REVISED DRAFT EIR**



## 2.0 CHANGES TO THE REVISED DRAFT EIR

### INTRODUCTION

This chapter presents minor corrections and revisions made to the Revised Draft EIR initiated by the public, staff, and/or consultants based on their on-going review. New text is indicated in underline and text to be deleted is reflected by a ~~strike through~~. Text changes are presented in the page order in which they appear in the Revised Draft EIR.

### Revised Section 6.2 Air Quality

The second sentence under “**Mitigation Measures**” on page 6.2-7R is revised to read:

The SMAQMD requires that Mitigation Measure 6.2-3 (a-c) below be implemented for all construction projects that identify a significant impact.

The third sentence under “**Mitigation Measures**” on page 6.2-7R is revised to read:

Mitigation Measure 6.2-3 (a) requires a reduction of 20% in NO<sub>x</sub> emissions. In addition, Mitigation Measure 6.2-3 (d-g) would further decrease the emissions of NO<sub>x</sub> from construction activities by an additional, but unquantifiable, degree. The use of such alternative fueled equipment may not be feasible in light of engine problems that may be caused by such alternative fuel. Taking into account the required 20% reduction, mostly from using alternative fueled equipment, which could reduce NO<sub>x</sub> emissions by another 14%. Implementation of both of these measures could result in a 34% reduction in NO<sub>x</sub> emissions during construction, at most. With this 34% reduction peak NO<sub>x</sub> emissions during construction would total approximately 193-234.4 pounds per day.

The text on page 6.2-7R under Mitigation Measure 6.2-3 is revised to include:

6.2-3 (i) *During the peak construction period, the amount of construction equipment in use on the project site at any one time shall be limited to the following pieces, or equipment that would produce equivalent emissions:*

- *four concrete pumps;*
- *tract/tower crane;*
- *seven small hydraulic cranes;*
- *thirteen welding machines;*
- *four boom lifts;*
- *six forklifts.*

The text on page 6.2-7R under Mitigation Measure 6.2-3 is revised to include:

6.2-3(j) *The project applicant shall require that the construction contractor retain a construction site manager. The construction site manager shall verify that all truck idling is limited to two minutes for delivery trucks, dump trucks and other construction equipment. The construction site manager shall also verify that engines are properly maintained.*

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## **Revised Section 6.7 Transportation and Circulation**

The footnote in Table 6.7-13R on page 6.7R-2 is revised to read:

1. Based on trip generation and parking occupancy surveys conducted at Sutter Memorial Hospital, by DKS Associates on March 17, 2005 ~~ATD on June 8, 9, 10, 2004.~~

To clarify the discussion in the RDEIR, the last two sentences of the last paragraph on page 6.7R-4 are revised to read:

The additional trips are considered internal link trips and do not represent a net increase in the total number of vehicle trips accessing the project site from external locations. These trips are in addition to have already been accounted for in the 838 external vehicle trips during the a.m. peak hour, and 909 external vehicle trips during the p.m. peak hour.

### **3.0 LIST OF AGENCIES AND PERSONS COMMENTING**

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### **3.0 LIST OF AGENCIES AND PERSONS COMMENTING**

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1. Sacramento Metropolitan Air Quality Management District, Jeane Borkenhagen, Strategic Planning Division, November 3, 2006
2. Law Offices of Donald B. Mooney, Donald B. Mooney and John L. Marshall, November 6, 2006
3. State Department of Water Resources, Mike Mimazaheri, Chief Floodway Protection Section, October 3, 2006
4. Governor's Office of Planning and Research State Clearinghouse and Planning Unit, Terry Roberts, Director, State Clearinghouse



## **4.0 COMMENT LETTERS AND RESPONSES**

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November 3, 2006

Ms. L.E. Buford  
City of Sacramento  
Development Services  
2101 Arena Blvd, Suite 200  
Sacramento CA 95834

**RE: Revised Sutter Medical Center Sacramento, Trinity Cathedral Project, Draft EIR:  
Air Quality, Transportation and Circulation SCH # 2003102002  
SAC200400061 F**

Dear Ms. Buford:

Thank you for sending the Revised Draft EIR (RDEIR) for the Sutter Medical Center Sacramento, Trinity Cathedral Project (SMCSTC) to the Sacramento Metropolitan Air Quality Management District (SMAQMD or "District") for review. Staff comments follow.

We offer the following as background. In July 2005, the District received Volume I of the DEIR for the Sutter Medical Center, Sacramento (SMCS) Project and the Trinity Cathedral Project. We did not receive a Volume II. Staff requested URBEMIS runs and were sent an undated packet entitled "Appendix F Air Quality Model Outputs." As the outputs from those runs do not match up with summary statements in the DEIR, we don't know whether we were sent the final Appendix F. We recently sent a copy of that packet to Mr. Geoffrey Hornek, EIP air quality analyst for the RDEIR. Staff's 9/2/2005 comment letter acknowledged the DEIR identified a significant impact for construction related NO<sub>x</sub> and suggested refinements to the URBEMIS modeling and mitigation measure. In general, the District was satisfied with the determination that construction impacts were significant and the utilization of the District's "standard construction mitigation."

The RDEIR includes new information about the construction-related activities of the Sutter Medical Center Sacramento (SMCS) project which was not included in the original July, 2005 DEIR. Specifically, the RDEIR provides a list of equipment expected to be used during construction activities as well as a project construction schedule which shows the overlaps in activities. This specific information can be used in the air quality analysis in order to determine a more accurate prediction of construction related air quality impacts. The RDEIR also includes new URBEMIS emission modeling runs for the Women's and Children's Center, the Sutter Medical Facility Building, the future Medical Office Building and the Residential units based on the new list of equipment. The approach that was used in the RDEIR was to identify the "worst case scenario" for construction emissions for the multi-faceted project. The document stated that several months in early Spring 2007 would have the most significant impact out of the 36+ month construction schedule. This is essentially the same approach used in the DEIR. District comments center on the new URBEMIS runs as well as the new language provided about the mitigation measures for construction-related air quality impacts.

1-1

## I URBEMIS computer models

Table two (2) of the RDEIR (pg 6.2-6R) lists the amount of NOx which is estimated to be produced from four components of the SMCS (Sutter Medical Foundation Building- SMF, Women And Children's Center -WCC, Medical Office Building- MOB, Residential) during the "Early Spring of 2007," which is identified as the "worst case scenario for NOx emissions." These numbers were taken from the RDEIR's accompanying URBEMIS runs and would amount to 292.99 lbs/day NOx. This figure is somewhat less than the 323.86 lbs/day NOx previously identified in the July 2005 Draft Environmental Impact Report (DEIR). The District's Threshold of Significance for construction-related NOx is 65 lbs/day. Thus, these new modeling runs support the conclusion previously arrived at in the Draft Environmental Report (DEIR, July 2005) that construction-related impacts for that project would be a short-term significant impact (pg 6.2-6R).

1-2

However, the District has some concerns about the RDEIR's URBEMIS model runs. These concerns are discussed in detail below and summarized in Table 1.

Appendix F to the original DEIR, entitled "Air Quality Model Outputs," contained construction and operational URBEMIS runs for seven different sub-projects of the Sutter Medical Center Sacramento, Trinity Cathedral Project. The RDEIR, on the other hand, only presents four sub-projects. The following table displays the analyses in Appendix F and makes clearer the differences in what was analyzed. The **bold** text illustrates points of difference.

**Table 1**

	URBEMIS runs in Appendix F DEIR	Sq ft in Appendix F DEIR	URBEMIS run in RDEIR	Sq ft. in RDEIR URBEMIS run
Women's Child Center (hospital)	Construction & operation	398,400	Construction & operation	398,400
SMF Build	Construction & operation	209,700	Construction & operation	209,700
Future MOB	Operational only	<b>35,000</b>	Construction & operation	<b>209,700</b>
Residential units	Construction & operation	<b>32 units</b>	Construction & operation	<b>398,400 sq ft no units?</b>
Trinity Cathedral	<b>Construction only</b>	<b>44,300 sq ft</b>	<b>no</b>	<b>none</b>
Theater	<b>Operational only</b>	<b>865 seats, 70,000 sq ft.</b>	<b>no</b>	<b>none</b>
Retail/Parking	<b>Operational only</b>	<b>9,000</b>	<b>no</b>	<b>none</b>

1-3

The RDEIR makes the new statement that "the Children's Theater would be developed by an entity other than SMCS, and would be subject to additional environmental review during the processing of development entitlements." It is understandable, then, that the air quality analysis for the short term impacts of the Theater would not be included in this document. The Cathedral, too, was analyzed separately in the original DEIR and would not be included in the RDEIR.

1-4

The first concern is that there are discrepancies in the land use inputs which relate to the project descriptions between the URBEMIS runs provided in the RDEIR and those we received in Appendix F of the DEIR and the characteristics of the project. The RDEIR indicates that the 32 residential units are comprised of 398,400 sq ft of building material. It's our understanding that the 32 single family residences are stand-alone residences. Also, the future MOB is listed as being exactly the same size as the SMF Building (209,700 sq ft) when it was our understanding that the MOB will be 35,000 sq ft. We believe the URBEMIS runs are confusing to most readers in their present form.

1-5

The second concern is that there are discrepancies in the amount of equipment anticipated for construction of the various buildings. For example, according to the RDEIR's URBEMIS model, the 398,400 sq ft Women's Child Center hospital will require the use of only 2 cranes, 1 "other" piece of equipment and 2 rough terrain forklifts. On the other hand, construction of the smaller, 209,700 sq foot SMF medical Office Building will require more equipment: the use of 1 grader, 1 off highway truck, 1 rubber tired dozer, 1 drill rig, 10 saws, 2 cranes, 1 "other" equipment, 2 rough terrain forklifts, and 3 skid steer loaders. There is no apparent basis for assuming one large building will require substantially fewer pieces of construction equipment than a smaller building in the same locale. We believe these two buildings would call for similar amounts of equipment and believe there's an underestimation of equipment and, ultimately, emissions.

1-6

The District recommends the URBEMIS computer analyses be re-run to reflect the correct land uses for each building and to reflect all of the phases of construction, including demolition, grading, building construction and asphalt activities for each building. We also recommend that the complete equipment list for each building be used in the appropriate computer run. Once the several computer analyses are finished, then they can be arrayed chronologically in order to determine their overlaps. This recalculation of the emissions may not change the determination that the project is significant for construction-related impacts, but it will, at least, more accurately state the impact and provide URBEMIS outputs which are easier to understand.

1-7

## II On-site construction mitigation

In order to mitigate the significant construction-related air quality impact, the RDEIR restates the previously required mitigation measure 6.2-3 (a-c) which requires the proponent to submit to the District an inventory of construction equipment and to seek SMAQMD endorsement for an on-site construction mitigation plan. The RDEIR's statement that "The SMAQMD requires that Mitigation Measure 6.2-3 (a-c) below be implemented for all construction projects" (pg 6.2-7R) is incorrect because the measure is only applied when a project is shown to be significant. However, it is appropriate that this mitigation measure be required of this particular project because the short-term air quality emissions are, indeed, significant. The mitigation measure allows the proponent to work with the District to find technological solutions which will help assure that construction related NOx will be 20% less than it otherwise would have been. Typically, it may involve the substitution of cleaner, newer, less emissive equipment for equipment that might have been planned to be used.

1-8

The RDEIR also restates the DEIR's mitigation measure 6.2-3(d-h) and says that the measures "could reduce NOx emissions by another 14%." (p. 6.2-7R). The 14 percent emission reduction figure appears to be based on the California Air Resources Board (CARB) emission reduction verification value of 14 percent for a specific alternative diesel fuel called PuriNox<sup>1</sup>. PuriNox,

1-9

<sup>1</sup> The CARB verification letter, dated January 31, 2001 from Dean Simeroth, is included in the RDEIR as an attachment to the September 20, 2006 letter from Geoffrey Hornek of EIP, which follows page 6.2-8R

however, is no longer manufactured because it caused too many problems with the engines which utilized it. At a minimum, the new statements in the RDEIR about this product should be removed in the Final Revised Environmental Report. In particular, the following language should be deleted: “mostly from using alternative fueled equipment, which could reduce NOx emissions by another 14%. Implementation of both of these measures could result in a 34% reduction in NOx emissions during construction, at most. With this 34% reduction peak NOx emission during construction would total approximately 193 pounds per day.” (pg 6.2-7R)

1-9  
(cont.)

Beside the fact that PuriNox is no longer available, the RDEIR is, in essence, double counting emission reduction credit from on-site technology. It is not appropriate to claim the additional on-site emission reduction of 14 percent, because mitigation measure 6.2-3(a-c) already includes the maximum emission reduction percentage (20%) for all feasible on-site mitigation.

1-10

The intent of mitigation measure 6.2-3(a-c) is to require all feasible on-site mitigation without requiring specific technologies. This is important because most emission reduction technologies have technical application limitations, and therefore the feasibility of specific technologies depends on the exact equipment used during construction. The exact equipment (model year, horsepower, manufacturer) to be used is generally not known at the time of the environmental document. Instead, mitigation measure 6.2-3(a-c) is a performance based measure that allows the construction contractor to identify the emission reduction technologies necessary for mitigation compliance just prior to construction when exact equipment is known.

1-11

In summary, District staff recommends that the air quality analysis of the Sutter Medical Center Sacramento project should be redone in order to more accurately reflect the land uses of each building and the entire equipment set for each building's construction. Furthermore, we recommend that a phasing construction schedule be provided, showing equipment to be used per phase along with estimated emissions for each phase in order to clearly identify the extent of potential significance for each construction phase. In that way, Table 2 can be either verified or updated.

1-12

If you have any questions, feel free to contact me at (916) 874-4885 or [jborkenhagen@airquality.org](mailto:jborkenhagen@airquality.org).

Sincerely,



Jeane Borkenhagen  
Strategic Planning Division

Cc: Larry Robinson SMAQMD  
Sutter Health

**COMMENT LETTER 1: Sacramento Metropolitan Air Quality Management District, Jeane Borkenhagen, Strategic Planning Division**

**Response to Comment 1-1:**

The comment identifies the new information presented in the Revised Draft EIR regarding construction-related air pollutant emissions, specifically NO<sub>x</sub> from construction equipment, and recognizes the Revised Draft EIR's focus on obtaining more accurate emission estimates for these sources. The comment also notes that this information differs from the information that was presented in the SMCS Draft EIR (July 2005).

The air quality impact analysis included in the Draft EIR (July 2005) provided estimates of all the major air pollutants (i.e., ROG, NO<sub>x</sub>, and PM<sub>10</sub>) for all project phases (i.e., demolition, grading, construction, and operation). The construction equipment impact analysis addressed in both documents (Impact 6.2-3 in the Draft EIR and Impact 6.2-3R in the Revised Draft EIR) focused solely on NO<sub>x</sub> emissions for which the SMAQMD has established a significance threshold (85 lbs/day).

The air quality analysis included in the Revised Draft EIR was prepared in order to respond to the Court's ruling in litigation challenging the adequacy of the EIR. The history surrounding this issue is summarized in Chapter 1 of the Revised Draft EIR. Chapter 1 includes a description of the scope of the Revised Draft EIR. This description includes a discussion of modeling performed to estimate NO<sub>x</sub> emissions during construction. (See Revised Draft EIR, page 1-3.) The modeling was performed using the URBEMIS model, which is the standard tool for estimating air pollutant emissions from development projects.

At the time the original Draft EIR (July 2005) was prepared, URBEMIS modeling had been performed in order to estimate construction-related NO<sub>x</sub> emissions. Estimated "peak" emissions calculated by the URBEMIS model were reported in the Draft EIR as totaling approximately 324 pounds per day. The court ruled the record did not contain sufficient information showing how the EIR arrived at this estimate of emissions. By that time, however, the output tables from the URBEMIS model that contained the original construction equipment NO<sub>x</sub> emission estimates presented in the Draft EIR could not be located. For this reason, URBEMIS modeling was performed anew in 2006 and presented in the Revised Draft EIR. This time, the URBEMIS model estimated that construction-related NO<sub>x</sub> emissions would total approximately 293 pounds per day.

As the commenter notes, the approach was the same in both instances: a construction schedule and a list of equipment was used to calculate peak NO<sub>x</sub> emissions. The effort was aimed at recreating the URBEMIS modeling output, because the original output could not be located. The Revised Draft EIR includes a memorandum prepared by Geoffrey Hornek describing in detail this effort. As Mr. Hornek explains, estimated emissions differ between the two model runs because, for the modeling performed in 2006, Mr. Hornek obtained a more detailed list of equipment from Sutter's contractors. This enabled Mr. Hornek to provide a more precise estimate of construction-related NO<sub>x</sub> emissions.

The re-modeling effort focused solely on construction equipment NO<sub>x</sub> emissions to address the Court's concern; the other pollutants and phases of project development were not identified in the Court's ruling and were not re-modeled. The URBEMIS model was re-run with the best available current information regarding the equipment that would be used to construct the SMCS project. The same construction schedule was used in both the Draft EIR and Revised Draft EIR analyses, and both were directed toward producing equipment NO<sub>x</sub> emission estimates for the "worst case scenario". The new URBEMIS output results, which show all the equipment use and scheduling input data, are included in the Revised Draft EIR.

**Response to Comment 1-2:**

The comment states that the Revised Draft EIR focuses on peak NO<sub>x</sub> emissions during construction (i.e., that four of the SMCS buildings would be under construction at the same time, Spring 2007) and notes that the Revised Draft EIR re-modeling effort, using more precise equipment information, yielded a slightly lower amount of NO<sub>x</sub>, 292.99 lbs/day, compared to what was reported in the Draft EIR, 323.86 lbs/day. This comment is correct.

The comment states the SMAQMD significance threshold for NO<sub>x</sub> emissions associated with construction activity is 65 lbs/day. This comment is incorrect. The 65 pound/day threshold applies to operational emissions. The threshold for construction-related NO<sub>x</sub> emissions is 85 pounds per day. (See SMAQMD CEQA Guide, p. 2-10, Table 2.1).

The comment notes that the SMCS construction equipment NO<sub>x</sub> emissions would be significant either as calculated in the Draft EIR or in the Revised Draft EIR. This comment is correct.

**Response to Comment 1-3:**

Table 1 presented in the comment shows the differences in building sizes (stated in square feet) for the proposed SMCS buildings. The building size data set forth in this table is derived from two sources: the URBEMIS output sheets included in Appendix F to the Draft EIR, and the Revised Draft EIR URBEMIS output sheets. The comment correctly notes that different building square footages were reported in the Draft EIR and Revised Draft EIR for two of the buildings (i.e., the “Future MOB” and the “Residential units”). The square footage information contained in Appendix F is correct. However, the information pertaining to building square footage in the Revised Draft EIR URBEMIS output sheets is incorrect. URBEMIS model results for construction-related NO<sub>x</sub> emissions are not affected by building sizes. Rather, model results are affected exclusively by the number and types of construction equipment that would be operating at the site on the “peak” day. Thus, even if building sizes are changed and the URBEMIS model is re-run, construction-related NO<sub>x</sub> emissions would remain the same.

Table 1 also shows three other project components that were included in the Draft EIR (i.e., “Trinity Cathedral,” “Theater” and “Retail/Parking”), but were not analyzed in the Revised Draft EIR because their construction phases did not coincide with the time of peak NO<sub>x</sub> emissions that would occur in Spring 2007. As discussed in the Revised Draft EIR, the only air quality issue that was identified by the Court concerns NO<sub>x</sub> associated with project construction.<sup>1</sup> As indicated on page 6.2-2R of the Revised Draft EIR, the “worst case” (or peak) for NO<sub>x</sub> emissions from project construction would occur in Spring 2007 when there would be an overlap in construction activity on four of the SMCS project buildings (WCC, SMF Building, MOB, and residences). Therefore, only these four project components are included in the URBEMIS outputs contained in the Revised Draft EIR. To address any confusion, a copy of the URBEMIS model runs for project construction only are included at the end of this response.<sup>2</sup>

The comment also notes that Appendix F included output for Trinity Cathedral. Please see Response to Comment 1-4.

- 
- 1 The Court determined that the information from the URBEMIS outputs associated with project demolition, grading and operation were adequate and did not need to be re-modeled
  - 2 The attached URBEMIS model outputs do not include any information pertaining to project demolition, grading, or operation. All of this information is included in Appendix F of the Draft EIR.

The comment notes that Appendix F included output for operational emissions from the Theater and Retail/Parking uses. The URBEMIS modeling in the Revised Draft EIR focuses on construction-related NO<sub>x</sub> emissions. Operational emissions would not overlap with construction emissions.

#### **Response to Comment 1-4:**

The air quality analysis included in the Revised Draft EIR focused solely on addressing concerns regarding NO<sub>x</sub> emissions associated with construction of the SMCS project components. The lawsuit filed by SEIU contested the adequacy of the EIR as it relates to the SMCS project. The lawsuit did not challenge the entitlements approved for the Trinity Cathedral project. To date, no entitlements have been requested for the Children's Theatre. For these reasons, the Trinity Cathedral entitlements and the Children's Theatre are not at issue in the litigation filed by SEIU and were therefore not addressed in the Revised Draft EIR.

#### **Response to Comment 1-5:**

Please see Response to Comment 1-3. The URBEMIS modeling set forth in the Revised Draft EIR was designed exclusively to estimate NO<sub>x</sub> emissions associated with construction equipment (shown in **red italics** in Table 1, below). These estimates were prepared based on updated, accurate input data. The other reported emission estimates for other project phases/sources (summarized and shown in black in Table 1, below) do not represent the estimates reported in the Draft EIR, nor were they an attempt to arrive at a better estimate for SMCS emissions from other phases of the project (i.e., operation). These reported outputs were inadvertently included on the URBEMIS output sheets that were appended to the end of the Air Quality section in the Revised Draft EIR. The only information in the Revised Draft EIR URBEMIS appendices that are relevant to the SMCS project are the construction phase NO<sub>x</sub> emissions. In essence, the numbers shown in the Revised Draft EIR URBEMIS model outputs for the other phases of the SMCS project are meaningless.

URBEMIS has an option whereby a user can specify which of the emissions associated with each of the project phases should be printed out. Had only the "construction" phase been specified for the Revised Draft EIR URBEMIS output, only the construction equipment emissions would have been displayed, making a much less confusing output for a reader to navigate. These simplified, construction-only URBEMIS outputs are attached to the end of this response. The same numbers for the construction emissions appear in the simplified output as in the full output attached to the Revised Draft EIR and summarized in Table 1 below.

#### **Response to Comment 1-6:**

The comment expresses concern about discrepancies in the amount of equipment reported to be used for construction of the WCC and SMF buildings. According to the commenter, the equipment schedule for a given building does not appear to correlate to the size of the building.

The construction equipment list set forth in the Revised Draft EIR is considered accurate for purposes of estimating peak NO<sub>x</sub> emissions. Table 2 in Section 6.2R presents a schedule of equipment obtained from Turner Construction. The equipment list focuses on equipment expected to be in use in Spring 2007, when "peak" NO<sub>x</sub> emissions are expected to occur. The table "assigns" equipment to each of the four buildings that would be under construction at that time. In fact, equipment would not be strictly assigned to a particular building; some equipment would be used jointly for more than one building. The list in Table 2 segregated the equipment data that Turner Construction specified for joint use associated with construction of the four buildings. This original construction list from Turner Construction included the following pieces of equipment:

<b>Table 1</b>			
<b>Summary of Air Pollutant Emissions included in the Revised DEIR (Recalculation)</b>			
<b>Emissions from Demolition of Existing Buildings (lbs/day)</b>			
<b>Building</b>	<b>ROG</b>	<b>NO<sub>x</sub></b>	<b>PM10</b>
Combined SMCS	0.00	0.00	0.00
<b>Emissions from Grading of Construction Sites (lbs/day)</b>			
<b>Building</b>	<b>ROG</b>	<b>NO<sub>x</sub></b>	<b>PM10</b>
SMF Building	9.09	62.87	2.75
<b>Emissions Generated by Construction Equipment (lbs/day)</b>			
<b>Building</b>	<b>ROG</b>	<b>NO<sub>x</sub></b>	<b>PM10</b>
Women's and Children's Center	<b>9.27</b>	<b>45.89</b>	<b>1.85</b>
SMF Building	<b>21.41</b>	<b>143.93</b>	<b>5.75</b>
Future Medical Office Building	<b>11.07</b>	<b>68.82</b>	<b>2.78</b>
Residential	<b>7.04</b>	<b>34.35</b>	<b>1.40</b>
Combined SMCS	<b>48.79</b>	<b>292.99</b>	<b>11.78</b>
<b>Operational Emissions of the SMCS (lbs/day)</b>			
<b>Building</b>	<b>ROG</b>	<b>NO<sub>x</sub></b>	<b>PM10</b>
Women's and Children's Center	123.76	155.44	115.62
SMF Building	64.41	80.84	60.13
Future Medical Office Building	64.41	80.84	60.13
Residential	123.76	155.44	115.62
Combined SMCS	----	----	----

- a concrete pump (for use during foundation and floor pouring);
- a tract/tower crane (to erect the steel framing);
- two small hydraulic cranes;
- eight to twelve welding machines;
- three boom lifts (used as elevators to move workers up to the higher floors); and
- two forklifts.

Turner Construction further specified that this same equipment would be used for each building but at different times, and that the construction schedule would determine whether or not their use would overlap. So the following decisions were made regarding equipment assignment to each building:

For the SMF Building, the construction schedule shows a mid-construction phase with steel work probable:

- a concrete pump;
- a tract/tower crane;
- two small hydraulic cranes;
- ten welding machines;
- three boom lifts; and
- two forklifts.

For the WCC Building, the construction schedule shows a start-construction phase with foundation work probable:

- a concrete pump (for foundation pouring);
- two small hydraulic cranes; and
- two forklifts.

In addition, as shown in Table 2 on page 6.2-6R of the Revised Draft EIR, construction of the Medical Office Building and the residences anticipated to also commence construction in Spring 2007 would also use the following equipment:

- three small hydraulic cranes;
- two concrete pumps;
- one boom lift;
- three welding machines; and
- two forklifts.

This approach focuses on the amount of construction equipment that would be in use during the “peak” construction period.

Therefore, less equipment is in operation during the foundation work of the WCC building versus the erection of the building frame for the SMF Building. This is the equipment use assumed in the Revised Draft EIR URBEMIS run and it still represents the best available estimate of equipment to be used during the construction of the two buildings.

As discussed previously, the peak NO<sub>x</sub> emissions are anticipated to occur in Spring 2007 when construction of the SMF Building, WCC building, medical office building, and residences are underway. Even if the actual peak construction emissions are slightly higher (or possibly lower) than anticipated, it would still not change the ultimate significance finding. As stated in the Draft EIR, any NO<sub>x</sub> emissions from construction equipment that exceed the threshold of 85 lbs/day would result in a significant impact. To ensure construction emissions do not exceed the anticipated peak NO<sub>x</sub> emissions (approximately 292 lbs/day) the following mitigation measure is included:

The text on page 6.2-7R under Mitigation Measure 6.2-3 is revised to include:

6.2-3 (i) *During the peak construction period, the amount of construction equipment in use on the project site at any one time shall be limited to the following pieces, or equipment that would produce equivalent emissions:*

- *four concrete pumps;*
- *tract/tower crane;*
- *seven small hydraulic cranes;*
- *thirteen welding machines;*
- *four boom lifts;*
- *six forklifts.*

#### **Response to Comment 1-7:**

As discussed above in Response to Comment 1-3, the residual URBEMIS input data for demolition, grading, and operational phases (including the land use size data for each building) does not affect the model's estimates of building construction phase NO<sub>x</sub> emissions that were the subject of the re-analysis. As stated in the Revised Draft EIR, the only air quality issue that was identified by the

Court and, accordingly, was addressed in the Revised Draft EIR, concerns the project's construction equipment NO<sub>x</sub> emissions. The remainder of the air quality analysis included in Section 6.2 (Air Quality) of the October 2005 Final EIR for other pollutants and other project phases, therefore, is adequate and complete. It is acknowledged, however, that this can be confusing to a reader, so the "construction-only" URBEMIS output is attached and Table 1, above, is provided to make it clearer which numbers generated by URBEMIS are important to the Revised Draft EIR re-analysis.

As a general matter, any future demolition, grading, and asphalt operations would not overlap with peak construction-related NO<sub>x</sub> emissions. As of November 2006, demolition and grading activities at the site have been completed with the exception of the anticipated demolition of the Old Tavern parking garage and the central plant building. Both of these structures would be demolished and the sites graded after the Community Parking Structure is completed and operational and the new central plant is functioning, well after the peak NO<sub>x</sub> construction period.

#### **Response to Comment 1-8:**

As the comment notes, the mitigation cited is applied only when a significant impact is identified. In this case, a significant impact was identified; therefore, mitigation is required. However, in order to address the comment's concern that this mitigation measure only applies to projects that result in a significant impact, the second sentence under "**Mitigation Measures**" on page 6.2-7R is revised to read:

The SMAQMD requires that Mitigation Measure 6.2-3 (a-c) below be implemented for all construction projects that identify a significant impact.

#### **Response to Comment 1-9:**

To address the concern raised in the comment that PuriNO<sub>x</sub> is no longer manufactured because it created too many problems with construction equipment engines, the third sentence under "**Mitigation Measures**" on page 6.2-7R is revised to read:

Mitigation Measure 6.2-3 (a) requires a reduction of 20% in NO<sub>x</sub> emissions. In addition, Mitigation Measure 6.2-3 (d-g) would further decrease the emissions of NO<sub>x</sub> from construction activities by an additional, but unquantifiable, degree. The use of such alternative fueled equipment may not be feasible in light of engine problems that may be caused by such alternative fuel. Taking into account the required 20% reduction, mostly from using alternative fueled equipment, which could reduce NO<sub>x</sub> emissions by another 14%. Implementation of both of these measures could result in a 34% reduction in NO<sub>x</sub> emissions during construction, at most. With this 34% reduction peak NO<sub>x</sub> emissions during construction would total approximately 493-234.4 pounds per day.

#### **Response to Comment 1-10:**

The commenter is correct in pointing out the potential for double counting credit for NO<sub>x</sub> emission reduction if the measures that commit the project to achieving a 20% cleaner construction equipment fleet and to achieving an additional reduction through the use of cleaner alternative fuels are taken to be additive. The Revised Draft EIR acknowledges that the achievement of the reduction in NO<sub>x</sub> emissions from the 20% cleaner construction equipment fleet and the use of alternative fuels would be the maximum possible reduction and that even with such a reduction the project's construction equipment NO<sub>x</sub> emissions would still be significant. As noted above in Response to Comment 1-9 this language has been removed.

**Response to Comment 1-11:**

Comment noted. Mitigation Measure 6.2-3 reflects the requirement to achieve a 20% reduction in construction-related NO<sub>x</sub> emissions. Measures (d) to (h) may result in further reductions in emissions, over and above the 20% requirement. The comment is correct that it may not be possible to quantify such reductions, and further reductions may not be feasible.

**Response to Comment 1-12:**

As stated above in Response to Comment 1-7, the residual URBEMIS input data for demolition, grading, and operational phases (including the land use size data for each building) does not affect the URBEMIS model's estimates of building construction phase NO<sub>x</sub> emissions that were the subject of the re-analysis. The only air quality issue that was identified by the Court and, accordingly, was addressed in the Revised Draft EIR, concerns the project's construction equipment NO<sub>x</sub> emissions. The remainder of the air quality analysis included in Section 6.2 (Air Quality) of the October 2005 Final EIR for other pollutants and other project phases, therefore, is adequate and complete. The "construction-only" URBEMIS output is attached at the end of this response and Table 1, above, is provided to make it clearer which numbers generated by URBEMIS are important to the Revised Draft EIR re-analysis.



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November 6, 2006

## VIA EMAIL & HAND DELIVERY

City of Sacramento  
 Development Services Department  
 Attn: Lezley Burford, AICP  
 2101 Arena Blvd., Suite 200  
 Sacramento, CA 95834

Re: Revised Sutter Medical Center, Sacramento and Trinity Cathedral Project  
 Draft Environmental Impact Report

Dear Mr. Burford:

The following comments are provided to the City of Sacramento ("City") on behalf of the Service Employees International Union, United Healthcare Workers – West ("SEIU-UHW") regarding the Revised Sutter Medical Center, Sacramento ("SMCS") and Trinity Cathedral Project Draft Environmental Impact Report ("Revised DEIR"). SEIU-UHW's comments on the Revised DEIR consist of this cover letter, the attached reports from retained experts and, as discussed below, the comments provided by SEIU-UHW on the July 2005 Draft EIR and October 2005 Final EIR for the SMCS/Trinity Project.

### I. Scope of the Revised DEIR

The City improperly restricts the scope of the Revised DEIR in two ways. First, in an effort to restrict public comment, the Revised DEIR republishes only 8 pages from the Air Quality Chapter and 7 pages from Transportation and Circulation Chapter of the nearly 1,000 page July 2005 Draft EIR. The Writ of Mandate, issued by the Court in the *SEIU-UHW v. City of Sacramento* litigation that controls the City's actions, requires more. The controlling Writ of Mandate – which the City excluded from its compilation of court documents in Appendix A to the Revised DEIR – requires that the City decertify the October 2005 Final EIR and recirculate "a new EIR" (Writ of Mandate, at 2 (attached hereto as Exhibit A)), rather than 15 out of 1,000 pages. The utility of such a recirculation can be easily demonstrated with reference to noise impacts associated with the SMCS heliport. In the 2005 Draft EIR, the City failed to disclose to the public and decision makers the extent and reach of significant noise impacts from helicopter overflights. The City can now disclose to the public who will be suffering from noise in excess of 70 dB standard (i.e., the 70 dB contour). The City should withdraw its so-called Revised DEIR and recirculate "a new EIR" as that term plainly means: a complete

draft EIR that the City intends to recertify in order to replace the decertified October 2005 Final EIR.

2-1  
(cont.)

Since the City apparently intends to maintain the remaining portion of the 2005 Final EIR as certified, SEIU-UHW hereby incorporates by reference all comments it has previously submitted to the City on the 2005 Draft and Final EIRs, including its September 9, 2005 comment letter (Draft EIR) and attachments, its November 21, 2005 comment letter (Final EIR) and attachments, and its comments to the City of Sacramento Planning Commission and City Council.

2-2

Second, the City's approach to the Revised DEIR is not to faithfully disclose the environmental impacts associated with SMCS. Instead, the City admits that the purpose of the Revised DEIR is a post hoc attempt to justify the conclusions reached in the July 2005 Draft EIR. (See e.g., Revised DEIR, at 1-2 ("The purpose of this Revised Draft EIR is to set forth the underlying documentation of the analysis set forth in the [July 2005 Draft] EIR . . .").) This focus on rationalization instead of actual analysis is best illustrated in the City's approach to the NOx issue. In a memorandum from Geoffrey Hornek (EIP) to Lezley Burford (City), dated September 20, 2006 (at p. 1) and included in the unpaginated Revised DEIR, the City admits that it could not support the construction NOx numbers used in the July 2005 Draft EIR and asserts that the data (called the "2003-2004 file") was "purged."

2-3

Instead of actually assessing the generation of NOx emissions, the City uses the Revised DEIR to "re-run the project's numbers . . . to recreate the 2003-2004 file." As noted in the comments from Dr. Petra Pless (attached hereto as Exhibit B), the City's focus on recreating a number as close as possible to the NOx figures disclosed in the July 2005 Draft EIR, results in a substantial underestimation of the actual NOx emissions from the construction equipment list supplied by the SMCS general contractor. (See Pless Report, at 2-5.) Thus, the City has not undertaken an effort to actually assess the environmental impacts of the SMCS in the Revised DEIR; it is using the Revised DEIR as another vehicle to submit argument as to why its original environmental documentation was not in error. We urge the City to aggressively examine the impacts of the SMCS and disclose those impacts to the public. To comply with the Writ of Mandate issued by the Court and its obligations under CEQA, the scope of the Revised DEIR must be comprehensive.

2-4

## II. Timing of Release of Revised DEIR to Minimize Public Comment

SEIU-UHW is very concerned that the City's timing of the release of the Revised DEIR is intended to minimize public awareness and participation. The City released the Revised DEIR prior to decertifying the 2005 Final EIR and the expiration of the applicable appeal period in the *SEIU-UHW v. City of Sacramento* litigation. By releasing the Revised DEIR prior to decertifying the 2005 Final EIR, it is unclear to the public what document actually controls. Please also provide the distribution list of the Revised

2-5

DEIR and copies of all associated notices of availability. Moreover, the City announces in the Revised DEIR that it will ignore all comment on the Revised DEIR if it decides to appeal the Court's granting of the SEIU-UHW's Petitioner for Writ of Mandate. (Revised DEIR, at 1-2, footnote 4.) Such statements appear calculated to dampen any public motivation to comment. In its rush to recirculate a revised document prior to either decertifying the 2005 Final EIR or appealing the Court's action, the City leaves the public with little incentive to participate in this theoretical CEQA process.

2-5  
(con't.)

In this vein, we note that SEIU-UHW has recently appealed the Court's September 1, 2006 Judgment. The effect of this appeal stays the mandatory injunctive portions of the Court's Writ of Mandate but leaves intact the prohibitory injunctive provisions. (See e.g. *Hayworth v. City of Oakland* (982) 129 Cal.App.3d 723, 727-728.) Thus, the City's obligation to proceed with this CEQA process ceased as of October 30, 2006. (The City and Sutter are still enjoined pending resolution of the appeal, however, from proceeding with any activities to implement the SMCS project aside from the three elements specified in the Writ of Mandate.) Given the uncertainty associated with the this CEQA process, we urge the City to withdraw its Revised DEIR and await the determination of the Court of Appeal.

2-6

### III. Substantive Comments on the Revised DEIR's Air Quality and Traffic/Circulation Contentions

As mentioned above, SEIU-UHW retained two experts to undertake an assessment of the Revised DEIR. In attached Exhibits B and C, respectively, Dr. Pless and Daniel T. Smith, Jr., a Registered Professional Engineer, critique the RDEIR. Their reports establish that despite the opportunity provided to it by Court, the City has failed again to take the data before it and produce common sense, repeatable, and rational results. Moreover, the City consistently underestimates impacts and fails to explore and adopt reasonable and feasible mitigation measures.

For example, in the Air Quality section, the City's consultant fails to take the equipment list provided by general contractor of the SMCS and input that information into the URBEMIS model. If the consultant had used this list, the URBEMIS modeling would have disclosed NOx emission numbers far in excess of that disclosed in the 2005 Draft EIR. Instead, the consultant uses a list from an unknown source that fails to correspond to the contractor list but produces NOx figures that are close to the prior NOx numbers. (See, Pless Report, at 2-5.) Likewise, the City refuses to consider much less adopt a host of reasonable and feasible mitigation measures for the SMCS project (e.g., off-site mitigation programs) despite the fact that the City requires such measures in other EIRs. (Pless Report, at 6-11.) Finally, the City should also disclose to the public and decision makers the emissions and associated health effects of PM2.5 from the construction and operation of the SMCS project, an impact it has refused to date to analyze. (Pless Report, at 11-17.)

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2-8

2-9

In the traffic and circulation section, the City again substantially underestimates effects on parking demand and trip generation from SMCS operations. (See Smith Report, at 2-11.) Not only will correction of the trip generation numbers rectify the City's errors in its traffic analysis it will also provide a more accurate operational NOx emission impact (as the significant NOx source is auto emissions from trip generation).

2-10

Perhaps even more disturbing is that the City has failed to present any assessment of the very real disputes regarding its traffic and parking assessments and to present the public with that disagreement and its rational resolution per Section 15151 of the CEQA Guidelines. The City had before it the comments of Mr. Smith on the July 2005 Draft EIR, data and conclusion from the City's traffic consultants regarding the Kaiser Roseville traffic counts, data, conclusions and critiques from the City's other traffic consultant (Nelson/Nygaard), and data from prior studies of Sutter Memorial hospital, including data collected by another consultant, the Hoyt Company, which indicated a 15% higher usage of Sutter's parking facilities than was measured in the DKS survey and which noted that the demand at Sutter Memorial often exceeded the available 960 spaces, and data used by the City in its Central City Parking Master Plan process. And yet the City in the Revised DEIR never describes these data and opinions, much less summarize them, and indicate why – in light of the contrary information – it chose to minimize traffic impacts as it did.

2-11

IV. Conclusion

As detailed in these comments (and SEIU-UHW's prior comments on the Draft and Final EIRs), the City's Revised DEIR fails to meet the standards for impact analysis, public disclosure and mitigation. Should the City desire to proceed with this process, it must fix the noted deficiencies and recirculate a new draft EIR for public comment.

2-12

Very truly yours,

  
Donald B. Mooney  
John L. Marshall  
Attorneys

Attachments

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SUPERIOR COURT OF THE STATE OF CALIFORNIA  
IN AND FOR THE COUNTY OF SACRAMENTO

SERVICE EMPLOYEES INTERNATIONAL )  
UNION, et al. )  
 )  
Petitioners, )  
Vs. )  
 )  
CITY OF SACRAMENTO, et al. )  
 )  
Respondents. )  
SUTTER HEALTH, INC., et al. )  
Real Parties in Interest )

Case No.: 06CS00026  
  
WRIT OF MANDATE

1 TO: Respondents CITY OF SACRAMENTO and SACRAMENTO CITY COUNCIL  
2 (collectively, "Respondents");

3 Judgment having being entered in this proceeding ordering that a peremptory writ of  
4 mandate issue from this Court,

5 YOU ARE HEREBY COMMANDED to comply with the following:

- 6 1. Within a time not to exceed 60 days from service of the writ of mandate,  
7 Respondents shall void it's certification of the EIR and approval of Resolution No.  
8 2005-882, Resolution No. 2005-883, Resolution No. 2005-884, Resolution No.  
9 2005-886, Resolution No. 2005-887, Resolution No. 2005-888 and Ordinance No.  
10 2005-094, and all other actions taken by Respondents to approve or effectuate the  
11 Sutter Medical Center, Sacramento Project (hereinafter, collectively "Sutter  
12 Approvals") excluding, however, any and all separate approvals granted by  
13 Respondents and relating to the Trinity Cathedral Project and Sutter Midtown  
14 Housing Project which were not challenged by Petitioners.
- 15 2. Respondents shall not reapprove the Sutter Approvals unless and until Respondents  
16 have first prepared, recirculated and certified a new EIR in accordance with CEQA  
17 standards and procedures and this Court's Final Ruling, including provisions for  
18 public comment and findings regarding the underlying documentation of trip  
19 generation, parking and construction-related NOx emissions.
- 20 3. Pursuant to the discretion afforded by CEQA to fashion relief (See Pub. Resources  
21 Code, § 21168.9; *Laurel Heights Improvement Ass'n v. Regents of University of*  
22 *California* (1988) 47 Cal.3d 376, 423-25), the Court finds that, except as set forth  
23 in paragraph 5 below, proceeding further with the Sutter Project or any portion  
24

1           thereof could prejudice Respondents' consideration or implementation of  
2           mitigation measures to the Sutter Approvals. Therefore, except as set forth in  
3           paragraph 5 below, until this Court determines that Respondents have taken the  
4           actions specified herein to bring their approval of the Sutter Approvals into  
5           compliance with CEQA, the Court mandates that Respondents, Real Parties in  
6           Interest, and their agents suspend all project approvals and activities that are based  
7           upon the Sutter Approvals and that could result in any change or alteration to the  
8           physical environment.

9   4.       The Court additionally finds that equitable considerations indicate that  
10       completely suspending the Sutter Project is not appropriate in light of the social and  
11       economic harms that would result to the general public and Real Parties in Interest.

12   5.       The Court additionally finds that Respondents may allow Real Parties in  
13       Interest to proceed with the following three distinct components of construction of  
14       the Project pursuant to the Sutter Approvals:

15   a.       Excavation of the new Energy Center, including the area below grade for medical  
16       office space and ninety (90) parking spaces, and excavation for the related tunnel  
17       under 28<sup>th</sup> and L Streets;

18   b.       Construction of the Community Parking Structure and associated uses; and

19   c.       Completion of reconstructing streets after laying down utility trenches  
20       (collectively the "construction activities").

21   6.       The construction activities listed in paragraph 5 are severable from the remainder of  
22       the Sutter Approvals because (i) each serves a separate independent and immediate  
23       public need for safety and infrastructure improvements such that the benefits to the  
24

1 general public and Real Parties in Interest outweigh any ongoing adverse effect on  
2 the environment; and (ii) severance of the construction activities will not in any  
3 way prejudice complete and full compliance with CEQA, including consideration  
4 or implementation of additional mitigation measures.

5 7. Respondents shall file an initial return to the peremptory writ of mandate within 31  
6 days of completion of the activities mandated by paragraph 1 of this writ.

7 Respondents shall file a supplemental return to the writ of mandate after they have  
8 certified an environmental review document for the Sutter Approvals in compliance  
9 with CEQA and the CEQA Guidelines, or after Respondents have determined not  
10 to reapprove the Sutter Approvals. This Court shall retain jurisdiction over  
11 Respondents' proceedings by way of the returns to the peremptory writ of mandate  
12 until this Court has determined that Respondents have complied with CEQA or that  
13 Respondents have determined not to reapprove the Sutter Approvals.

14 8. Under Public Resources Code section 21168.9, subdivision (c), this Court  
15 does not direct Respondents to exercise their lawful discretion in any particular  
16 way.

17  
18  
19  
20 Date: SEP 15 2006

D. RIOS SR.

Clerk of the Superior Court

# **Comments**

**on**

## **Revised Draft Environmental Impact Report Sutter Medical Center and Trinity Cathedral Sacramento, California**

Prepared for

Law Offices of Donald Mooney  
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Prepared by

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November 5, 2006



## Table of Contents

<b>I.</b>	<b>NOx Emissions Estimates Unsupported and Underestimated .....</b>	<b>2</b>
I.A	URBEMIS Model Inputs Do Not Correspond to Contractor’s Construction Equipment List .....	2
I.B	The Equipment List Does Not Include All Emission Sources .....	4
I.C	The Revised DEIR’s URBEMIS Modeling Underestimates Emissions.....	4
<b>II.</b>	<b>The Revised DEIR’s Mitigation Measures Are Inadequate and Additional Construction NOx Mitigation Is Feasible .....</b>	<b>6</b>
II.A	Mitigation Measure 6.2-3(e) Is Not Enforceable .....	6
II.B	Mitigation Measure 6.2-3(a) Is Not Stringent Enough.....	7
II.C	The City Requires Additional Mitigation Measures for Other Projects .....	7
II.D	SMAQMD Off-site Construction and Operational Mitigation Fees .....	8
II.E	Feasible Add-On Technologies that Would Reduce NOx Emissions .....	9
II.E.1	Exhaust Gas Recirculation .....	10
II.E.2	Selective Catalytic Reduction.....	10
II.E.3	Lean NOx Catalysts.....	11
II.E.4	Feasible Construction Management Measures.....	11
<b>III.</b>	<b>The Revised DEIR Fails to Address PM2.5 Emissions from Project Construction and Operation .....</b>	<b>11</b>
III.A	Background .....	12
III.B	Ambient Air Quality Standards .....	13
III.C	PM2.5 Emissions Estimates and Dispersion Modeling.....	14

## List of Tables

Table 1:	Ambient air quality standards for PM2.5 .....	14
Table 2:	Calculation of PM2.5 fraction of project construction emissions.....	15

### *Attached Tables*

Table A-1:	Comparison of construction equipment list provided by Turner Construction and Revised DEIR assumptions and input into URBEMIS
Table A-2:	Photographs of construction equipment scheduled to be on site

## **List of Exhibits**

- Exhibit 1: Letter from Turner Construction, August 16, 2000 with attached equipment list
- Exhibit 2: Revised DEIR Table summarizing equipment used for URBEMIS modeling runs
- Exhibit 3: URBEMIS model run for 7 cranes and 2 boom trucks based on URBEMIS default values for engine ratings
- Exhibit 4: URBEMIS model run for 7 cranes and 2 boom trucks based on average engine rating of construction equipment scheduled to be on site
- Exhibit 5: Excerpts from EPIC Tower Draft EIR
- Exhibit 6: Excerpts from Metropolitan Project Draft EIR
- Exhibit 7: SMAQMD Construction Air Quality Mitigation Plan Protocol
- Exhibit 8: Sacramento Metropolitan Air Quality Management District, Mitigation Fees
- Exhibit 9: Excerpts from Fulton Avenue Development Project Draft EIR
- Exhibit 10: Excerpts from 500 Capitol Mall Draft EIR
- Exhibit 11: Excerpts from Greenbriar Development Project Draft EIR
- Exhibit 12: Manufacturers of Emission Controls Association, Retrofitting Emission Controls on Diesel-Powered Vehicles
- Exhibit 13: Manufacturers of Emission Controls Association, Case Studies of Construction Equipment, Diesel Retrofit Projects
- Exhibit 14: CARB highest daily PM<sub>2.5</sub> measurements at Sacramento T-Street
- Exhibit 15: CEIDARS particulate matter speciation profiles
- Exhibit 16: Kern County Planning Department, Guidelines for Preparing an Air Quality Assessment for Use in Environmental Impact Reports
- Exhibit 17: South Coast Air Quality Management District, Final—Methodology to Calculate Particulate Matter (PM) 2.5 and PM 2.5 Significance Thresholds

## COMMENTS

The City of Sacramento (“City”) as the lead agency under the California Environmental Quality Act (“CEQA”) has published a Revised Draft Environmental Impact Report<sup>1</sup> (“Revised DEIR”) for the Sutter Medical Center, Sacramento, Project (“SMCS Project” or “Project”) and the Trinity Cathedral Project. This Revised DEIR presents additional information regarding construction-related air quality (NO<sub>x</sub>) impacts of the Project as analyzed in the previously certified SMCS Final Environmental Impact Report<sup>2</sup> (“Final EIR”). This additional information was provided to respond to the ruling and judgment issued by the Superior Court on August 4 and September 1, 2006 in *SEIU v. City of Sacramento*. (Revised Draft EIR, pp. 1-2.) The Revised DEIR presents a revised air quality section for Project construction and finds significant and unavoidable impacts for emissions of nitrogen oxides (“NO<sub>x</sub>”) from construction equipment. The Revised DEIR claims that additional mitigation measures beyond those listed in the Revised DEIR that would substantially reduce these significant NO<sub>x</sub> emissions are not available. (Revised DEIR, pp. 6.2-4R to 6.2-87R.)

There are several problems with the Revised DEIR’s presentation of construction air quality impacts and with its conclusions. First, the emissions estimates presented in the revised air quality impact assessment are not supported by the provided documentation and are riddled with errors. (*See* Comment I.) Second, the Revised DEIR’s claim that no additional mitigation measures exist to reduce these significant NO<sub>x</sub> emissions flies in the face of ubiquitous evidence to the contrary. (*See* Comment II.) Numerous additional mitigation measures exist that could considerably reduce the Project’s NO<sub>x</sub> and other criteria pollutant emissions. These measures are routinely required as CEQA mitigation and are common practice at many other construction sites throughout the country. (*See* Comment II.E.) In fact, as discussed in Comment II.C, the City itself frequently requires NO<sub>x</sub> mitigation measures beyond those required for the Project. It is perplexing why the City insists that no such additional mitigation measures exist for this project. NO<sub>x</sub> emissions from Project construction would further aggravate the already severe ozone<sup>3</sup> problem in the Sacramento area.<sup>4</sup> Third, and finally, the Revised DEIR, as the

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<sup>1</sup> City of Sacramento, Revised Environmental Impact Report (EIR) for the Sutter Medical Center, Sacramento (SMCS) Project and the Trinity Cathedral Project, September 2006, SCH #2003102002.

<sup>2</sup> City of Sacramento, Final Environmental Impact Report for the Sutter Medical Center, Sacramento (SMCS) Project and the Trinity Cathedral Project, October 2005.

<sup>3</sup> Ozone is a secondary pollutant, *i.e.* it is not emitted directly into the air but is formed by a photochemical reaction in the atmosphere. Ozone precursors, which include reactive organic gases (“ROG”) and NO<sub>x</sub>, react in the presence of sunlight to form ozone. Ozone is a respiratory irritant and

Draft and Final EIRs before, fails to address impacts on air quality from emissions of PM2.5.

↑ 2-15  
(con't.)

I previously commented on the inadequacy of the air quality impact assessment presented in the Draft EIR<sup>5</sup> for this Project, including construction NOx emissions and PM2.5 emissions from both construction and operation. (Pless Comments 06/2005<sup>6</sup>.) The following comments discuss I) the inadequacy of the presented emissions estimates, II) feasible additional mitigation measures, and III) methodology to evaluate impacts on air quality from PM2.5 emissions.

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## **I. NOx Emissions Estimates Unsupported and Underestimated**

The Revised DEIR assumes, as a worst-case scenario, the simultaneous construction of four project components, (1) the Sutter Medical Foundation (“SMF”) building; (2) the Women’s and Children’s Center (“WCC”); (3) the Future Medical Office Building (“Future MOB”); and (4) 32 residential units during early spring through mid summer of 2007. Construction equipment combustion exhaust emissions were modeled using URBEMIS 2002 version 7.5, an emissions model developed by the California Air Resources Board (“CARB”) as a tool for estimating air pollutant emissions from land use development projects. (Revised DEIR, pp. 6.2-4R to 6.2-87R.) As discussed in the following comments the emissions estimates based on the URBEMIS model runs are not supported by the provided information and contain a number of errors.

### **I.A URBEMIS Model Inputs Do Not Correspond to Contractor’s Construction Equipment List**

The Revised DEIR states that emissions estimates were based on information provided by Turner construction, the general contractor for the Project. (Revised DEIR, p. 6.2-2R.) This information includes a construction schedule and a list of the type and number of construction equipment expected to be on site (“Turner

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an oxidant that increases susceptibility to respiratory infections and can cause substantial damage to vegetation and other materials.

<sup>4</sup> The lower Sacramento Valley air basin has been declared a serious non-attainment area for purposes of the 8-hour national ambient air quality standard (“NAAQS”) and 1-hour and 8-hour California ambient air quality standards (“CAAQS”).

<sup>5</sup> City of Sacramento, Draft Environmental Impact Report for the Sutter Medical Center, Sacramento (SMCS) Project and the Trinity Cathedral Project, July 2005.

<sup>6</sup> Petra Pless, D.Env., Comments on Air Quality and Noise, Draft Environmental Impact Report, Sutter Medical Center and Trinity Cathedral Project, Sacramento, California, September 6, 2005.

equipment list”), which were provided at the end of the Revised DEIR’s air quality section. (Turner Construction 08/2006<sup>7</sup>, attached as Exhibit 1.) Comparison of the Turner equipment list and the Draft EIR’s input for the URBEMIS model runs shows major discrepancies, which are entirely unexplained in the Revised DEIR’s presentation. I have summarized the Turner equipment list and the Revised DEIR’s input for the URBEMIS modeling runs (attached as Exhibit 2) in attached Table A-1. For visualization purposes, I have attached photographs of the actual construction equipment scheduled to be on-site for construction of the four Project components. (See attached Table A-2.) These photographs illustrate the large number of heavy-duty equipment scheduled to be on site. Representative photographs were chosen to illustrate Table A-1.

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(cont.)

The type of equipment specified as input for the URBEMIS model runs is substantially different than that specified in the Turner equipment list. Comparison with the Revised DEIR’s equipment list (*see* attached Table A-1) shows that the Revised DEIR assumed considerably less heavy-duty equipment on-site, instead using smaller equipment to model the emissions from Project construction. For example, the Turner equipment list indicates the use of 5 heavy-duty excavators (list numbers 5, 6, 9, 18, and 27) on site; the Revised DEIR’s modeling does not include a single excavator. The Turner equipment list indicates the use of 9 heavy-duty backhoes; the Revised DEIR assumes the use of only 4, considerably smaller boom lifts/skid steer loaders. The Revised DEIR assumes a total of 13 welding machines for construction of the MOB and the SMF buildings; the Turner equipment list does not specify any welding machines or other such small equipment. (Because welding machines do not appear in the URBEMIS model’s internal equipment list, the Revised DEIR inputs these welding machines as “concrete saws” into the URBEMIS modeling.)

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Further, the total number of equipment used on site is also inconsistent. The Turner equipment list shows a total of at least 41 pieces of construction equipment<sup>8</sup> on site (*see* Exhibit 1); the URBEMIS model runs were based on a total of only 35 pieces of construction equipment, 19 for construction of the SMF, 5 for the WCC, 8 for the Future MOB, and 3 for the residential units. (Exhibit 2, *see* also Revised DEIR, Table 2, p. 6.2-6R.) The Revised DEIR’s assumptions omit off-road dump trucks as well as on-road concrete delivery trucks.

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<sup>7</sup> Turner Construction Company, Letter to Christine Kronenberg, AICP, Re: Estimated Construction Equipment List, SMCS Site, August 16, 2006.

<sup>8</sup> The Turner list specifies “concrete delivery trucks” without indicating how many of these trucks would be required. The total of 41 pieces of equipment includes only 1 concrete delivery truck.

It appears that the Revised DEIR assumed a different phase of construction activities than that scheduled for early spring 2007. The Revised DEIR contains no explanation whatsoever for its choices and the substantial discrepancy with the Turner equipment list upon which it allegedly relies.

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### **I.B The Equipment List Does Not Include All Emission Sources**

The equipment list provided by the general contractor, Turner Construction, does not include all equipment that will be on site for the following reasons.

First, the Turner equipment list specifies “concrete delivery trucks” without indicating how many of these trucks would be required. The total of 41 pieces of equipment mentioned above includes only 1 concrete delivery truck. Considering the size of the Project, concrete pouring will require a large number of concrete delivery trucks, certainly more than one to delivery concrete to the 2 concrete boom trucks scheduled to be on site. These trucks will add a substantial amount of emissions to the already significant Project emissions.

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Second, the letter accompanying the Turner equipment list specifies that the list only contains equipment scheduled for the Future MOB, the WCC, and the renovations of the SMF building but not the residential units. (*See Exhibit 1, cover page.*)

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Third, the equipment list only includes off-road equipment with engine ratings higher than 50 horsepower (“Hp”). (*See Exhibit 1, page 2 “mitigation measure”.*) Project construction will additionally require numerous deliveries of construction materials as well as the use of smaller equipment with engine ratings less than 50 hp.

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Finally, the equipment list does not appear to include water trucks. Watering of the project site is required by Mitigation Measure 6.2-2(a).

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### **I.C The Revised DEIR’s URBEMIS Modeling Underestimates Emissions**

Although the Turner equipment list provides the engine rating for most of the construction equipment scheduled to be on site, the Revised DEIR fails to use these Project-specific engine ratings and instead relies on URBEMIS default values. The URBEMIS model takes into account engine-rating of equipment and increases emission estimates with increased engine rating. With the exception of the dump trucks, the average engine rating of the construction equipment scheduled to be used on site is higher than the URBEMIS default values. (*See attached Table A-1.*) For example, the average engine rating for the cranes specified on the Turner

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equipment list is 239 hp<sup>9</sup>. The URBEMIS default value is only 190 hp. The average engine rating for concrete boom trucks is 398 hp; the URBEMIS default value for “other equipment,” which was assumed by the Revised DEIR for concrete pumps is only 190 hp. Consequently, the Revised DEIR considerably underestimates emissions from Project equipment.

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(cont.)

To illustrate the significance of using Project-specific engine ratings, I have modeled emissions from 7 cranes and 2 boom trucks based on a) the Revised DEIR’s assumptions of URBEMIS default values for engine ratings and b) based on the average engine rating of the actual construction equipment scheduled to be on site. The results are attached as Exhibits 3 and 4. The use of URBEMIS default values results in NOx emissions of 92.5 lb/day; the use of actual engine ratings results in 142.9 lb/day of NOx emissions, a more than 50% increase<sup>10</sup> for only those 9 pieces of construction equipment. Emissions for all other criteria pollutants increase correspondingly.

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Further, the Revised DEIR uses a different set of equipment than that specified in the Turner equipment list. Most of the equipment specified on the Turner equipment list has a considerably higher engine rating than that used in the Revised DEIR’s URBEMIS modeling runs. (See attached Table A-1.) The average engine rating for the equipment specified by Turner is 171 hp; the average engine rating for the equipment in the Revised DEIR’s URBEMIS modeling runs is considerably lower at 120 hp. Thus, the Revised DEIR’s emissions estimates are considerably underestimated.

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As demonstrated, the Revised DEIR considerably underestimates emissions because it does not account for all equipment on site as discussed in Comments I.B and I.C and because it relies on URBEMIS default values for engine rating and a different set of equipment than that specified by the general contractor. If modeled correctly, the already significant and allegedly not further mitigable NOx emissions would be considerably higher. Consequently, the contribution of Project construction to the region’s ozone problem and the associated public health impacts would be greater than disclosed by the Revised DEIR. Emissions of other criteria pollutants such as PM10 and PM2.5 and reactive organic gases (“ROG”), also ozone precursors, would also be considerably higher. This illustrates the necessity for additional mitigation beyond that required in the Revised DEIR.

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<sup>9</sup> Average Hp calculated for crane Nos. 7, 10, 39, 40, and 41. No information available for crane No. 35.

<sup>10</sup> 142.9 / 92.5 = 1.54

## II. The Revised DEIR's Mitigation Measures Are Inadequate and Additional Construction NOx Mitigation Is Feasible

The Revised DEIR finds that mitigated construction emissions would still exceed the quantitative threshold of significance of 85 lb/day of NOx established by the Sacramento Metropolitan Air Quality District ("SMAQMD" or "District"). The Revised DEIR states that "NOx reduction from heavy-duty equipment is limited by available technology" and claims that "[m]itigation in addition to that listed [in the Revised DEIR's mitigation section], and that would substantially reduce NOx emissions beyond this level, is not available at this time." The Revised DEIR consequently concludes that construction-related NOx emissions would remain a significant and unavoidable impact on air quality after mitigation. (Revised DEIR, pp. 6.2-8R.) The Revised DEIR's claim that no additional mitigation exists is incorrect and contradicted by the evidence, as discussed in the following comments.

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### II.A Mitigation Measure 6.2-3(e) Is Not Enforceable

One of the mitigation measures the Revised DEIR relies on to calculate mitigated emissions from Project construction, *i.e.*, Mitigation Measure 6.2-3(e), the use of alternative-fueled and/or catalyst-equipped diesel construction equipment, is unenforceable as a practical matter. This mitigation measure specifies the use of alternative fuels or catalyst-equipped diesel construction equipment only "if required" yet contains no explicit requirement to actually use alternative fuels or catalysts. (Revised DEIR, p. 6.2-8R.) The Revised DEIR fails to explain which circumstances would require the use of aqueous fuels or catalysts. Obviously, both measures are feasible, yet, they are not explicitly required due to the ambiguous wording of the mitigation measure. Absent any specific conditions, these measures will, in all likelihood, not be implemented. In fact, the equipment list provided by Turner construction shows that all subcontractors plan on using diesel rather than alternative fuels. Consequently, emissions will not be mitigated to the extent feasible.

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The Revised DEIR acknowledges the feasibility of PuriNOx, an aqueous diesel fuel, and contains a letter from CARB verifying that the use of this fuel can achieve a 14% reduction in NOx emissions and a 63% reduction in PM10 emissions compared to CARB diesel. The CARB also determined that ROG emissions are at least 25% lower than any applicable diesel emission standard. (CARB 01/01<sup>11</sup>.) PuriNOx<sup>TM</sup> fuel is available from fuel distributors Ramos Oil in Sacramento and

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<sup>11</sup> Letter from Dean C. Simeroth, Chief, Criteria Pollutants Branch, to Thomas J. Sheahan, Lubrizol, Verification of Lubrizol Corporation's PuriNOx Fuel, January 31, 2001.

R.V. Jensen in Fresno and is competitively priced at a surcharge over regular diesel of about 10 cents per gallon.<sup>12</sup> Thus, the use of PuriNOx should be specifically and unequivocally required for all diesel-powered construction equipment on site to reduce the significant NOx emissions found by the Revised DEIR.

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(con't.)

Such explicit language can be found in another recent project, the EPIC Residential Tower, also in Sacramento:

*“Aqueous diesel fuel shall be used to fuel all applicable diesel equipment during construction of the proposed project. For every piece of diesel equipment for which aqueous diesel fuel is not used, the contractor shall provide the SMAQMD with an explanation of why the use of aqueous diesel fuel is not appropriate.”* (EPIC Tower Draft EIR<sup>13</sup>, Mitigation Measure 5.2-1(f), p. 5.2-18; *emphasis added*; attached as Exhibit 5.)

## **II.B Mitigation Measure 6.2-3(a) Is Not Stringent Enough**

The only enforceable mitigation measure contained in the Revised DEIR resulting in NOx emission reductions is Mitigation Measure 6.2-3(a), which specifies that the contractor’s project-specific fleet of heavy-duty (>50 hp) off-road vehicles achieve a 20% reduction of NOx emissions compared to the most recent CARB fleet average at the time of construction. (Revised DEIR, pp. 6.2-7 and 6.2-8R.) This requirement can simply be achieved by using newer equipment. Therefore, there is no reason why this requirement could not be made more stringent and require a reduction of, for example, 50%, or more, requiring the contractor to use a higher percentage of newer equipment in his fleet. Further, as discussed in Comment II.E, add-on controls could further reduce emissions even from newer equipment.

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## **II.C The City Requires Additional Mitigation Measures for Other Projects**

The City claims that no other mitigation measures beyond those required in the Draft EIR exist that would further reduce the level of NOx emissions during Project construction. Yet, for other recent Projects, the City has specifically required such additional mitigation measures. These mitigation measures are equally feasible for this Project.

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<sup>12</sup> Personal communication, Petra Pless with Bill Hagstrand, Lubrizol (440-347-6592), June 21, 2004.

<sup>13</sup> City of Sacramento, EPIC Residential Tower, Draft Environmental Impact Report, July 2006.

For example, for the Metropolitan Project, a mixed-use residential tower development, the City required the following to reduce project construction NOx and ROG emissions:

“The project representative shall implement additional aggressive mitigation measures in consultation with the SMAMQD, using existing technology on construction fleet such as aqueous fuel and cooled exhaust gas recirculation systems to reduce emissions below SMAQMD thresholds, or shall pay a \$179,673 off-site mitigation fee prior to the issuance of grading permits.” (Metropolitan Project Draft EIR<sup>14</sup>, Mitigation Measure 5.1-1(d), p. 5.1-18; attached as Exhibit 6.)

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Clearly, the City is aware of the feasibility of cooled exhaust gas recirculation (“EGR”) as a mitigation measure, yet has failed to acknowledge its feasibility and require this technology for this Project. Comment II.E.1 provides additional information on the feasibility of EGR and its NOx emission reduction efficiency.

## **II.D SMAQMD Off-site Construction and Operational Mitigation Fees**

The Revised DEIR cites to and incorporates an outdated version of the SMAQMD’s recommended standard mitigation measures contained in the Districts CEQA Guide for Assessing and Mitigating Air Quality Impacts (“GAMAQI”) to justify its limited choice of mitigation measures but fails to mention that the District recommends payment of an off-site mitigation fee if NOx emissions from construction still exceed the District’s threshold of significance after implementation of these standard mitigation measures:

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“If the projected construction related emissions for a project are not reduced to the District’s threshold of significance (85 lbs/day) by the application of the standard construction mitigation, then an off-site construction mitigation fee should be applied. This fee is used by the District to purchase off-site emissions reductions. This is done primarily through the District’s Heavy Duty Incentive Program through which select owners of heavy duty equipment in Sacramento County can repower or retrofit their old engines with cleaner engines or technologies.” (SMAQMD 06<sup>15</sup>, attached as Exhibit 7.)

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<sup>14</sup> City of Sacramento, The Metropolitan Project, Sacramento, California, Draft Environmental Impact Report, July 11, 2006.

<sup>15</sup> Sacramento Metropolitan Air Quality Management District, Construction Air Quality Mitigation Plan Protocol, June 26, 2006; <http://airquality.org/ceqa/index.shtml>, accessed October 31, 2006.

The off-site mitigation fee for construction emissions is determined by multiplying the pounds of mitigated daily NOx emissions over the threshold of significance of 85 pounds per day by the number of days of construction, the current District mitigation fee, and a conversion factor for converting pounds to tons. The current mitigation fee rate is \$14,300 per ton of NOx emissions. The SMAQMD provides a construction mitigation fee calculator to determine the fee for construction projects when off-site mitigation is needed. (See Exhibit 8<sup>16</sup>.) Similarly, the SMAQMD recommends an off-site mitigation fee if operational NOx emissions exceed the District's threshold of significance of 65 lb/day. (SMAQMD 06/2006<sup>17</sup>.) The City should utilize the SMAQMD offsite mitigation fee program to further mitigate the significant emissions of NOx produced by the operation of the SMCS.

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(cont.)

The City is well aware of the SMAQMD program as it has required the payment of off-site mitigation fees for a number of recent projects, for example, for the EPIC Tower (Mitigation Measure 5.2-1(e)); the Metropolitan Project (Mitigation Measure 5.2-1(d)); the Fulton Avenue Development Project<sup>18</sup> (Mitigation Measure MM 3.1-1R); for the 500 Capitol Mall Project<sup>19</sup> (Mitigation Measure 5.2-1(e)); and the Greenbriar Development Project<sup>20</sup> (Mitigation Measure MM 6.2-1(c)). (See Exhibits 5, 6, 9, 10, and 11.)

## II.E Feasible Add-On Technologies that Would Reduce NOx Emissions

A number of additional feasible construction management and add-on control technologies exist to reduce the significant NOx emission levels beyond what is required by the Revised DEIR. These include the above-mentioned EGR systems, selective catalytic reduction ("SCR"), and lean NOx catalysts ("LNC"). All these technologies have been successfully retrofitted on off-road vehicles and offer

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<sup>16</sup> Sacramento Metropolitan Air Quality Management District, Mitigation Fees; <http://www.airquality.org/ceqa/index.shtml#MitFees>, accessed October 31, 2006.

<sup>17</sup> Sacramento Metropolitan Air Quality Management District, Operational Air Quality Mitigation Protocol, June 6, 2006; <http://www.airquality.org/ceqa/OperationalMitigationProtocol.pdf>, accessed November 5, 2006.

<sup>18</sup> City of Sacramento, Fulton Avenue Development Project, Draft Environmental Impact Report, SCH No. 2005122130, October 5, 2006; attached as Exhibit 9.

<sup>19</sup> City of Sacramento, 500 Capitol Mall, Draft Environmental Impact Report, SCH No. 2005112038; October 2006; attached as Exhibit 10.

<sup>20</sup> City of Sacramento and Sacramento Local Agency Formation Commission, Greenbriar Development Project, Draft Environmental Impact Report, SCH No. 2005062144; attached as Exhibit 11.

opportunities to greatly reduce NO<sub>x</sub> and other emissions. In addition, many projects have demonstrated the feasibility of installing verified on-road technologies on construction equipment or other off-road equipment similar to that used for Project construction. These technologies have been required as CEQA mitigation measures for other projects and should be required by the City for this Project. The California Air Resources Board (“CARB”) and the SMAQMD provide an incentive program for retrofitting heavy-duty construction equipment.<sup>21</sup>

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(cont.)

As discussed in Comment II.B, the City’s requirement of reducing NO<sub>x</sub> emissions by 20% compared to the most recent CARB fleet average can simply be achieved by using newer equipment. The below discussed technologies and construction management measures can be used in addition to the use of newer equipment.

### **II.E.1 Exhaust Gas Recirculation**

Exhaust gas recirculation reduces NO<sub>x</sub> by reducing the temperature at which fuel burns in the combustion chamber. Engines employing EGR recycle a portion of engine exhaust back to the engine air intake. The oxygen-depleted exhaust gas is mixed into the fresh air that enters the combustion chamber, which dilutes the oxygen content of the air in the combustion chamber. This reduction in oxygen reduces the engine burn temperature, and hence reduces NO<sub>x</sub> emissions.<sup>22</sup> In some cases, EGR can be used in conjunction with diesel particulate filters (“DPFs”). (MECA 04/2006<sup>23</sup>, p. 7; attached as Exhibit 12.)

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Engine retrofits with low pressure EGR in conjunction with a DPF can achieve NO<sub>x</sub> reductions of over 40% and PM reductions of more than 90% and have been successfully demonstrated on off-road equipment. (MECA 04/2006, p. 14.)

### **II.E.2 Selective Catalytic Reduction**

Selective catalytic reduction, using urea as a reducing agent, can reduce NO<sub>x</sub> emissions from 75% to 90% while simultaneously reducing VOC emissions by up to 80% and PM emissions by 20% to 30%. SCR systems can be used in conjunction with

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<sup>21</sup> Sacramento Metropolitan Air Quality Management District, Heavy-Duty Vehicle Incentive Program; <http://airquality.org/mobile/hdnox.shtml>, accessed November 3, 2006.

<sup>22</sup> Diesel Technology Forum, Retrofit; <http://www.dieselforum.org/retrofit-tool-kit-homepage/what-is-retrofit/retrofit/>, accessed November 3, 2006.

<sup>23</sup> Manufacturers of Emission Controls Association, Retrofitting Emission Controls on Diesel-Powered Vehicles, April 2006; [http://meca.org/galleries/default-file/MECA Diesel Retrofit White Paper 0406 \(revised\).pdf](http://meca.org/galleries/default-file/MECA_Diesel_Retrofit_White_Paper_0406_revised.pdf), accessed November 3, 2006.

DPFs and DOCs and have been successfully demonstrated on off-road vehicles. (MECA 04/2006, pp. 2-3; MECA 03/2006<sup>24</sup>, p. 17, attached as Exhibit 13.)

For example, the City of Houston Diesel Field Demonstration Project has demonstrated an 84% reduction of NOx emissions by using a DPF/SCR combination on a 1992 MY Cummins Gradall G3WD (5.9L 190 hp). As a result of this field demonstration program, the City of Houston retrofitted 33 rubber tire excavators and a dump truck with SCR systems. (MECA 03/2006, p. 12.)

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(con't.)

### II.E.3 Lean NOx Catalysts

Lean NOx catalyst technology can achieve a 10% to 40% reduction in NOx emissions. LNC technology does not require any core engine modifications and can be used to retrofit older engines. This retrofit technology can be combined with DPFs or diesel oxidation catalysts ("DOCs") to provide both NOx and PM10 reductions. An LNC added to an exhaust system using a DPF can reduce NOx emissions from 10% to 25%. (MECA 03/2006, p. 14.)

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Lean NOx catalyst technology has been demonstrated and commercialized for a variety of off-road retrofit applications, including heavy-duty earthmoving equipment. (MECA 03/2006, p. 19.)

### II.E.4 Feasible Construction Management Measures

Construction management measures that are feasible and are routinely required elsewhere include limiting engine idling to two minutes for delivery trucks, dump trucks, and other construction equipment; and the employment of a construction site manager who verifies that engines are properly maintained and maintains a log.

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## III. The Revised DEIR Fails to Address PM2.5 Emissions from Project Construction and Operation

The Revised DEIR does not address potential adverse impacts on ambient air quality and public health from direct emissions of so-called fine particulate matter or PM2.5, *i.e.* particulate matter 2.5 micrometers<sup>25</sup> ("µm" or "micron") or smaller in diameter, for either construction or operation.

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<sup>24</sup> Manufacturers of Emission Controls Association, Case Studies of Construction Equipment, Diesel Retrofit Projects, March 2006; [http://www.meca.org/galleries/default-file/Construction Case Studies 0306.pdf](http://www.meca.org/galleries/default-file/Construction_Case_Studies_0306.pdf), accessed November 3, 2006.

<sup>25</sup> A particle with a diameter of a 2.5 µm is about 1/30 the diameter of an average human hair.

### III.A Background

Particulate matter is the term used for a mixture of solid particles and liquid droplets found in the air. PM10 refers to particulate matter 10  $\mu\text{m}$  or smaller in size. PM2.5, with a diameter of 2.5  $\mu\text{m}$ , is a subset of PM10, its fraction of PM10 depending on the source of the emissions.

Sources of direct PM2.5 emissions include fuel combustion from automobiles, power plants, wood burning, industrial processes, and diesel powered vehicles such as buses, trucks, and construction equipment. A small fraction of fugitive dust particulate matter is also PM2.5. PM2.5 is also formed in the atmosphere when gases such as sulfur dioxide, nitrogen oxides, and volatile organic compounds (all of which are also products of fuel combustion) are transformed in the air by chemical reactions to form so-called indirect particulate matter. Fine particles are of concern because they are risk to both human health and the environment.

The size of the particle mainly determines where in the respiratory tract the particle will come to rest when inhaled. Larger particles are generally filtered in the nose and throat, but particulate matter smaller than about 10  $\mu\text{m}$ , or respirable particulate matter, can settle in the bronchi and lungs and cause health problems. (The 10 micrometer size does not represent a strict boundary between respirable and non-respirable particles, but has been agreed upon for monitoring of airborne particulate matter by most regulatory agencies.) Particles smaller than 2.5 micrometers, PM2.5, tend to penetrate into the gas-exchange regions of the lung, and very small particles, smaller than 0.1  $\mu\text{m}$ , may pass through the lungs and affect other organs. Particles emitted from diesel engines, commonly referred to as diesel particulate matter ("DPM"), are typically in the size range of 0.1  $\mu\text{m}$ . In addition, these particles also carry carcinogenic components adsorbed on their surface.

The effects of inhaling particulate matter have been widely studied in humans and animals. Research documents that the inhalation of particulate matter, particularly the smallest particles, causes a variety of health effects, including premature mortality, aggravation of respiratory (*e.g.*, cough, shortness of breath, wheezing, bronchitis, asthma attacks) and cardiovascular disease, declines in lung function, changes to lung tissues and structure, altered respiratory defense mechanisms, and cancer, among others. (U.S. EPA 04/1996; 61 FR 65638.) There is also evidence that particles smaller than 0.1  $\mu\text{m}$ , such as DPM, can pass through cell membranes and may migrate into the brain. It has been suggested that particulate matter can cause brain damage similar to that found in Alzheimer patients.

The large number of deaths and other health problems associated with particulate pollution was first demonstrated in the early 1970s. Particulate matter

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pollution is estimated to cause 20,000 to 50,000 deaths per year in the United States. Particulate matter is a non-threshold pollutant, which means that there is some possibility of an adverse health impact at any concentration. Research suggests that even short-term exposure at elevated concentrations could significantly contribute to heart disease.

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(cont.)

### III.B Ambient Air Quality Standards

The U.S. EPA and the State of California have established air quality standards designed to protect public health and the environment from the hazards associated with inhalation of particulate matter. In 1997 the U.S. EPA promulgated lower national ambient air quality standards for PM10 and set new standards for PM2.5. (62 FR 38652.) The annual average ambient air quality standard for PM2.5 was set at 15 micrograms per cubic meter ( $\mu\text{g}/\text{m}^3$ ) and the 24-hour average ambient air quality standard for PM2.5 was set at  $65 \mu\text{g}/\text{m}^3$ . In 2002, California adopted an annual PM2.5 standard of  $12 \mu\text{g}/\text{m}^3$ . (CARB/OEHHA 6/20/2002<sup>26</sup>). Voting on the proposed 24-hour-average PM2.5 standard of  $25 \mu\text{g}/\text{m}^3$  has been deferred by the CARB. (CARB/OEHHA 3/12/2002.<sup>27</sup>) More recently, the U.S. EPA based on new scientific information tightened the federal 24-hour PM2.5 ambient air quality standard from the current level of  $65 \mu\text{g}/\text{m}^3$  to  $35 \mu\text{g}/\text{m}^3$ . This standard will become effective on December 17, 2006. (U.S. EPA 09/2006<sup>28</sup>; 40 CFR 50, 10/17/2006<sup>29</sup>.) The U.S. EPA's decision reflects the review of thousands of peer-reviewed scientific studies about the effects of particle pollution on public health and welfare. The federal and state ambient air quality standards are summarized in inset Table 1.

2-42

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<sup>26</sup> California Air Resources Board and Office of Environmental Health Hazard Assessment, Review of the California Ambient Air Quality Standards for Particulate Matter and Sulfates, Public Review Draft, November 30, 2001, adopted June 20, 2002; <http://www.arb.ca.gov/research/aaqs/stds/bdsum620/bdsum620.htm>, accessed November 4, 2006.

<sup>27</sup> California Air Resources Board and Office of Environmental Health Hazard Assessment, Draft Proposal to Establish a 24-hour Standard for PM2.5, Public Review Draft, March 12, 2002.

<sup>28</sup> U.S. Environmental Protection Agency, Office of Air Quality Standards and Planning, September 2006 Revisions to the National Ambient Air Quality Standards for Particle Pollution, September 2006; [http://www.epa.gov/oar/particlepollution/pdfs/20060929\\_presentation.pdf](http://www.epa.gov/oar/particlepollution/pdfs/20060929_presentation.pdf), accessed October 2, 2006.

<sup>29</sup> U.S. Environmental Protection Agency, National Ambient Air Quality Standards for Particulate Matter, Final Rule, Federal Register, 40 CFR Part 50, Vol. 71, No. 200, pp. 61144-61233, October 17, 2006.

**Table I:  
Ambient air quality standards for PM2.5**

<b>Standards</b>	<b>24-Hour (<math>\mu\text{g}/\text{m}^3</math>)</b>	<b>Annual (<math>\mu\text{g}/\text{m}^3</math>)</b>
Federal	65/35 <sup>a</sup>	15
State	25 <sup>b</sup>	12

- a Lower standard will become effective December 17, 2006;  
<http://www.epa.gov/oar/particlepollution/standards.html>  
b Proposed (CARB/OEHHA 3/12/2002)

Currently, 61% of California's population live in areas that exceed the federal PM2.5 air standard, while 89% live in areas that exceed California's PM2.5 air standard. (California Air Resources Board 2004).

Monitoring data from the T-Street monitoring station in Sacramento, the nearest monitoring station to the Project site, show that the state annual ambient air quality standard for PM2.5 was exceeded in 2005. The state annual average concentration of PM2.5 in ambient air was determined at 12.5  $\mu\text{g}/\text{m}^3$  and the state 3-year annual average was determined at 13  $\mu\text{g}/\text{m}^3$ , exceeding the state annual ambient air quality standard of 12  $\mu\text{g}/\text{m}^3$ . (See Exhibit 14.) These data also show that the new Federal 24-hour PM2.5 standard of 35  $\mu\text{g}/\text{m}^3$  was frequently and considerably exceeded at this monitoring site. Emissions from Project construction and operation would contribute to these existing violations of the state and Federal ambient air quality standards.

### **III.C PM2.5 Emissions Estimates and Dispersion Modeling**

Direct emissions of PM2.5 during construction are generated by the internal combustion of fuels in construction equipment engines. A small fraction of wind-blown dust is also PM2.5. The URBEMIS model output for construction contains an estimate of PM10 exhaust emissions, labeled "PM exhaust," as well as an estimate of fugitive dust particulate matter emissions. For the operational phase, URBEMIS model results provide estimates for PM10 emissions from vehicle operations and area sources.

To determine the PM2.5 fractions of these PM10 emission results, PM10 emissions can be multiplied by the applicable PM2.5 fraction for each emission source or operation. The California Air Resources Board ("CARB") has developed a database for particulate matter speciation profiles for a variety of emission sources, the California Emission Inventory Data and Reporting System ("CEIDARS"). (Attached as Exhibit 15.) These speciation profiles can be used to determine the PM2.5 fraction of PM10 for different emission sources. For example, the PM2.5 fraction of total suspended particulate matter from construction fugitive dust

2-42  
(con't.)

2-43

emissions is about 10%. The PM10 fraction of total suspended particulate matter from construction fugitive dust emissions is about 49%. Thus, the PM2.5 fraction of PM10 fugitive dust emissions is about 21%<sup>30</sup>. These 21% are applied to the URBEMIS model outputs. For example, if construction activities result in emissions of 100 lb/day of fugitive dust PM10 emissions, 21% of these PM10 emissions, or 21 lb/day, are PM2.5. Diesel exhaust particulate matter is 100% PM10 and 92% PM2.5. Inset Table 1 shows PM2.5 emissions from Project construction based on the URBEMIS model output files provided in the Revised DEIR and the CEIDARS speciation profiles.

**Table 2:  
Calculation of PM2.5 fraction of project construction emissions  
(lb/day)**

Project Component	URBEMIS PM10 Emissions		PM2.5 Emissions	
	Exhaust	Fugitive Dust	Exhaust <sup>a</sup>	Fugitive Dust <sup>b</sup>
WCC	1.70	0.15	1.56	0.03
SMF	6.16	0.08	5.67	0.02
Future MOB	2.97	0.08	2.73	0.02
Residential	1.25	0.15	1.15	0.03
<b>Total</b>	<b>12.08</b>	<b>0.46</b>	<b>11.11</b>	<b>0.09</b>

a Calculated as 92% PM10 exhaust based on CEIDARS speciation profile for diesel combustion

b Calculated as 21% PM10 fugitive dust based on CEIDARS speciation profile for construction fugitive dust sources

Total PM2.5 emissions calculated from the Revised DEIR's URBEMIS model runs as described above would be 11.2 lb/day during the construction phase of the Project. (It should be noted that Table 2 is provided for illustration purposes only and should not be construed to be actual PM2.5 emissions from Project construction because the URBEMIS model runs for Project construction contain a number of erroneous assumptions as outlined in Comment I and are, thus, considerably underestimated.) Operational area source emissions and operational vehicle emissions can be calculated accordingly.

To evaluate the significance of these calculated PM2.5 mass emissions, they must be evaluated against a standard. Under CEQA, a project is considered significant if it contributes substantially to an existing or projected violation of the above-discussed ambient air quality standards. (See Comment III.B.) To evaluate the significance of PM2.5 emissions from either construction or operation, these PM2.5 mass emissions (in lb/day) must be modeled with a dispersion model to determine resulting PM2.5 concentrations in ambient air (in µg/m<sup>3</sup>.)

<sup>30</sup> 0.10 / 0.49 = 0.21

The most commonly used dispersion model to model particulate matter concentrations in ambient air is ISCST3, the Industrial Source Complex Short Term model, version 3, developed by the U.S. EPA. This dispersion model allows to model ambient air quality concentrations resulting from particulate matter and other primary pollutant emissions at increasing distance from the source, taking into account existing background concentrations. ISCST3 models any size fraction of suspended particulate matter including PM10 and PM2.5. It has been the standard model for modeling particulate matter concentration in ambient air, including PM10 and PM2.5, for many years. It is also the recommended model for modeling PM10 and PM2.5 concentrations for CEQA purposes. *See, for example, the CEQA guidance published by Kern County's Planning Department and the SCAQMD guidance for modeling PM2.5 for CEQA purposes. (Kern County 01/2006<sup>31</sup>, No. 6, p. 2, attached as Exhibit 16; SCAQMD 10/2006<sup>32</sup>, pp. 4 and 6, attached as Exhibit 17.) See also the SMAQMD's website providing local meteorological data for ISCST3 modeling provided for air quality assessments for CEQA purposes. (SMAQMD 2006<sup>33</sup>.)* On November 9, 2005, the U.S. EPA published final rulemaking in the Federal Register designating AERMOD as the preferred dispersion model for regulatory applications. AERMOD can be used for PM2.5 ambient air quality concentration modeling in the same way as ISCST3.

2-43  
(con't.)

All this information regarding calculation of PM2.5 mass emissions and ambient air quality modeling was readily available to the City. As discussed above, the annual average PM2.5 concentrations in the vicinity of the Project area exceeded the state annual ambient air quality standard in 2005 and PM2.5 concentrations frequently exceed the new federal 24-hour PM2.5 ambient air quality standard, which will become effective in December 2006. Because of the already severely compromised air quality in the general area of the Sutter Medical Center, the City should have conducted ambient air quality modeling to evaluate and disclose to the public the contribution of Project construction and operation to ambient concentrations of PM2.5. Considering the location of the Project, which is

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<sup>31</sup> Kern County Planning Department, Guidelines for Preparing an Air Quality Assessment for Use in Environmental Impact Reports, January 13, 2006; <http://www.co.kern.ca.us/planning/pdfs/AirQualityAssessmentPreparationGuidelines.pdf>, accessed November 3, 2006.

<sup>32</sup> South Coast Air Quality Management District, Final – Methodology to Calculate Particulate Matter (PM) 2.5 and PM 2.5 Significance Thresholds, October 2006; [http://www.aqmd.gov/CEQA/handbook/PM2\\_5/PM2\\_5.html](http://www.aqmd.gov/CEQA/handbook/PM2_5/PM2_5.html), accessed November 3, 2006.

<sup>33</sup> Sacramento Metropolitan Air Quality Management District, CEQA and Land Use Mitigation, CEQA Guide to Air Quality Assessment, Local Meteorological Data Files; <http://www.airquality.org/ceqa/index.shtml>, accessed November 5, 2006.

surrounded by sensitive receptors, and the fact that the hospital will treat patients with already compromised health, the City should have made every effort to disclose the potential adverse impact on air quality and impose all feasible mitigation for the construction and operational phase of the Project to minimize the Project's adverse impacts on air quality.

↑  
2-43  
(cont.)



**Table A-1: Comparison of construction equipment list provided by Turner Construction and Revised EIR assumptions and input into URBEMIS**

Turner Construction Equipment List			Revised EIR		URBEMIS Input	
Running No.	# Description	avg Hp	# Description in Table 2	URBEMIS Input	# Description in Urbemis	Hp
1,2,3,13,14,33,34,36,37,38	10 Forklift	102	6 Forklift	Forklift	6 Rough terrain forklifts	94
5,6,9,18,27	5 Excavator	134			Excavators	180
4,8	2 Wheel loader	148			Rubber tired loaders	165
7,10,11,35,39,40,41	7 Crane*	239	8 Tract crane/small crane	Crane	8 Cranes	190
12,19,20,21,22,23,24,25,26	9 Backhoe**	97			Tractors/loaders/backhoes	79
15,16,17,28,29	5 6 cubic yard dump truck	264			Off-highway trucks	417
30	1 Concrete delivery trucks***	360				
31,32	2 Concrete boom truck	398	4 Concrete pump	Other	4 Other	190
			13 Welding machine	Concrete saw	13 Concrete/industrial saws	84
			4 Boom lift	Skid steer loader	4 Skid steer loaders	62
<b>41 Total</b>			<b>35 Total</b>		<b>35</b>	
		<b>171</b>			<b>120</b>	

\* average Hp calculated from Nos. 7,10,39,40,41

\*\* average Hp calculated from Nos. 19,20,21,22,23,24,25,26

\*\*\* Turner equipment list specifies "concrete delivery trucks" but does not provide the number of trucks

**Turner Construction Equipment List**

10 Forklifts



5 Excavators



**Revised EIR**

6 Forklifts



**URBEMIS Input**

6 Forklifts



**Turner Construction Equipment List**

2 Wheel loaders



7 Cranes



9 Backhoes



**Revised EIR**

8 Tract cranes/small cranes



**URBEMIS Input**



**Turner Construction Equipment List**

5 6-cubic yard dump trucks



1+ Concrete delivery trucks



2 Concrete boom trucks



**Revised EIR**

4 concrete pumps



**URBEMIS Input**

Turner Construction Equipment List

Revised EIR

13 Welding machines



4 Boom lifts



URBEMIS Input

13 Concrete/industrial saws



4 Skid steer loaders



**Table A-2: Photographs of construction equipment scheduled to be on site  
(based on equipment list provided by Turner Construction)**

	<b>Turner Equipment Description</b>	<b>Actual or Representative Photo</b>
1.	Forklift variable reach 6,000 lb	See No. 36
2.	Forklift variable reach 6,000 lbs	See No. 36
3.	Forklift variable reach 10,000 lbs	See No. 37
4.	Caterpillar 966G wheel loader	 <p align="center">Caterpillar 966G</p>
5.	Kobelco 330 excavator	 <p align="center">Kobelco 330</p>
6.	Caterpillar 325D excavator	

<p>7.</p>	<p>Kobelco 325 excavator (list cites “excavator” instead of crawler crane)</p>	<p style="text-align: center;">Caterpillar 325D</p>  <p style="text-align: center;">Kobelco 325</p>
<p>8.</p>	<p>John Deere 444J loader</p>	 <p style="text-align: center;">John Deere 444J</p>
<p>9.</p>	<p>Hitachi EX300LC drill rig</p>	 <p style="text-align: center;">Hitachi EX400LC excavator with Lodril attachment</p>

10.	Grove HL 150C crawler crane	 <p>Grove HL 150C</p>
11.	Crane	See Nos. 10 & 41
12.	Backhoe	See Nos. 19 & 21
13.	Gradall 7,000 lbs	See No. 36
14.	Gradall 10,000 lbs	See No. 37
15.	Peterbilt 385 10 yard dump truck	 <p>1998 Peterbilt 385</p>
16.	Peterbilt 385 10 yard dump truck	See No. 15
17.	Peterbilt 385 10 yard dump truck	See No. 15
18.	Yanmar 100 excavator	 <p>Yanmar SV100</p>

19.	Case 580l backhoe	 <p>Case 580l</p>
20.	Case 580l backhoe	See No. 19
21.	Case 580m backhoe	 <p>Case 580m</p>
22.	Case 580l backhoe	See No. 19
23.	Case 580m backhoe	See No. 21
24.	Case 580m backhoe	See No. 21
25.	Case 580m backhoe	See No. 21
26.	Case 580m backhoe	See No. 21
27.	Yanmar 50 excavator	 <p>Yanmar B50V</p>

28.	GMC 6-yard dump truck	 <p>1999 Ford 6-yard dump truck See No. 28</p>
29.	GMC 6-yard dump truck	See No. 28
30.	Concrete delivery trucks	
31.	Concrete boom truck, 42 m pump	 <p>Putzmeister 42X</p>
32.	Concrete boom truck, 32 m pump	 <p>Putzmeister 32Z</p>
33.	Gradall 7,000 lbs	See No. 36
34.	Gradall 10,000 lbs	See No. 37

35.	Crane	See Nos. 10 & 41
36.	Gradall G642P 6,600 lbs, 42' lift 2006	 <p>Gradall G642-P</p>
37.	Gradall 534D9-45 9000 lbs, 45' lift 2006	 <p>Gradall 534D9-45</p>
38.	Gradall G1055A 10,000 lbs, 55' lift 2006	See No. 36
39.	Terex TC3470 crane	See No. 41
40.	Terex TC3874 crane	See No. 41
41.	Terex TC4792 crane	 <p>Terex TC4792 crane truck-mounted</p>

Exhibit I:

Letter from Turner Construction, August 16, 2000 with attached equipment list



# Turner Healthcare

Turner Construction Company  
2710 Capitol Avenue  
Sacramento, CA 95816  
Tel-916-329-4505  
Fax- 916-329-4504

August 16, 2006

Christine Kronenberg, AICP  
Senior Environmental Project Manager  
EIP Associates, Division of PBS&J  
1200 2<sup>nd</sup> Street  
Sacramento, CA 95814

Re: Sutter Medical Center  
Sacramento, CA

Subject: Estimated Construction Equipment List, SMCS Site

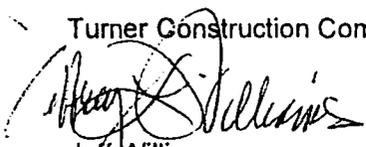
Christine:

We have contacted all subcontractors currently scheduled to be working on the SMCS sites; specifically for the Medical Office Building, the Womens and Childrens Hospital and the renovations of Sutter General Hospital.. Based on information received to date, the attached equipment list is provided for your use.

If you have any questions, please contact me.

Sincerely,

Turner Construction Company



Jeff Williams  
Project Executive

CC: File  
Tom O'Leary via email  
Pam Brink via email





## SMCS Project - EIR Mitigation Plan 6.2-3: Off-Road Vehicle/Equipment Inventory

Daily Survey     
  Weekly Survey     
  Monthly Summary Survey     
  X

(Check One)

Mitigation Measure: .50 Hp+ off-road vehicles to be used on project shall average 20% Nox reduction and 45% particulate reduction as compared to CARB requirements for same make, year, model of equipment. Provide written inventory of all equipment greater than 50 Hp and 40 hrs of use. Horsepower rating, engine production year, and projected hours of use or fuel throughput. Inventory shall be updated MONTHLY and SMAQMD shall be notified of Required: any new equipment. 4

### Turner Construction

Survey By: Applicable Subs Shown below

30 Days

No.	Equipment Description	Engine Manufacturer / Notes	Mfr. Date	Serial No.	Hp Rating	Fuel Type	Projected Hours of Use per day	Fuel Burn per Hr	Engine Total Hrs	Factory Exhaust	Sub	Date on Site	Date Off Site	Total Monthly Hours
1	Forklift - Variable Reach 6,000#		2005		80	Diesel					Acco			45
2	Forklift - Variable Reach 8,000#		2005		100	Diesel					Acco			45
3	Forklift - Variable Reach 10,000#		2005		115	Diesel					Acco			45
4	Cat 986 G Wheel Loader	Caterpillar ACERT	2003		180	Diesel					Blue Iron			
5	Kobelco 330 Excavator	Mitsubishi 6D16-TLAZA	2003		247	Diesel					Blue Iron			
6	Cat 325D Excavator	Cat C7 ACERT	2005		204	Diesel					Blue Iron			
7	Kobelco 325 Excavator	Mitsubishi 6D34-TE1	2001		143	Diesel					Blue Iron			
8	Loader - John Deere 444J, ID #415	John Deere	2008	DW544JZ58717	115	Diesel					Viking Drifters			40
9	Unit Exp. Hitchh C EX300LC Locn. ID#50	Hitchh	1994		217	Diesel					Viking Drifters			
10	Grove HL 150 C Crawler Crane	Caterpillar	1997		325	Diesel					Herndak Steel			178
11	Crane					Diesel					Booth			
12	Backhoe					Diesel					Booth			
13	Grapple 7,000#	(Typ data used for estimate)	2006		80	Diesel					Booth			
14	Grapple 10,000#	(Typ data used for estimate)	2006		128	Diesel					Booth			
15	Peterbilt 385/10 Yard Dump		1997		300	Diesel					Schetter			
16	Peterbilt 385/10 Yard Dump		1997		300	Diesel					Schetter			
17	Peterbilt 385/10 Yard Dump		1999		300	Diesel					Schetter			
18	Yanmar 100 Excavator		2005		73.5	Diesel					Schetter			
19	Case 580V Backhoe		2000		85	Diesel					Schetter			
20	Case 580V Backhoe		2000		85	Diesel					Schetter			
21	Case 580V Backhoe		2001		98	Diesel					Schetter			
22	Case 560V Backhoe		2001		95	Diesel					Schetter			
23	Case 560V Backhoe		2002		98	Diesel					Schetter			
24	Case 560V Backhoe		2003		98	Diesel					Schetter			
25	Case 560V Backhoe		2004		98	Diesel					Schetter			
26	Case 560V Backhoe		2004		98	Diesel					Schetter			
27	Yanmar 50 Excavator		2004		34.5	Diesel					Schetter			
28	Gmc/6 yard dump		1981		210	Diesel					Schetter			
29	Gmc/6 yard dump		1981		210	Diesel					Schetter			
30	Concrete Delivery Trucks	Typical varies by vendor	2000+		360	Diesel					Vendor			
31	Conc. Boom Truck - 42meter pump	Schwabe/Putzmeister (89-2007 in fleet)	2006		425	Diesel					Conco			
32	Conc. Boom Truck - 32meter pump	Schwabe/Putzmeister (89-2007 in fleet)	2006		370	Diesel					Conco			
33	Gravel 7,000#	(Typ data used for estimate)	2006		80	Diesel					Conco			
34	Grapple 10,000#	(Typ data used for estimate)	2006		125	Diesel					Conco			
35	Crane					Diesel					AGA			
36	Gravel 68-42P - 8,600# (42' lift, 11')		2006		80	Diesel					United Rentals			
37	Gravel 53409-45 - 8,000# (45' lift, 11')		2006		110	Diesel					United Rentals			
38	Gravel 61056A - 10,000# (55' lift, 11')		2000		125	Diesel					United Rentals			
39	Crane - Terex 17 ton - TC3470	Caterpillar 3126 engine	2000		210	Diesel					United Rentals			
40	Crane - Terex 19 ton - TC3874	(Est. hp - info from United)	2000		243	Diesel					United Rentals			
41	Crane - Terex 23.5 ton - TC4182	(Est. hp - info from United)	2005		274	Diesel					United Rentals			



Exhibit 2:

Revised DEIR Table summarizing equipment used for URBEMIS modeling runs



**Sutter Medical Center - NOX Construction During Building  
Construction - Early Spring 2007**

Building	Equipment Number	Equipment Specified by Client	Equipment Number	Equipment Specified by URBEMIS	NOX (lbs/day)
SMF	1	Concrete Pump	1	Other	143.93
	1	Tract crane	1	Drill Rig	
	2	Small crane	2	Crane	
	10	Welding machines	10	Concrete saw	
	3	Boom lift	3	Skid steer loader	
	2	Forklift	2	Forklift	
WCC	1	Concrete Pump	1	Other	45.89
	2	Small crane	2	Crane	
	2	Forklift	2	Forklift	
MOB	2	Small crane	2	Crane	68.82
	1	Concrete Pump	1	Other	
	1	Boom lift	1	Skid steer loader	
	3	Welding machines	3	Concrete saw	
	1	Forklift	1	Forklift	
Residential	1	Concrete Pump	1	Other	34.35
	1	Small crane	1	Crane	
	1	Forklift	1	Forklift	
<b>Total</b>					<b>292.99</b>



Exhibit 3:

URBEMIS model run for 7 cranes and 2 boom trucks  
based on URBEMIS default values for engine ratings



URBEMIS 2002 For Windows 8.7.0

File Name: C:\Program Files\URBEMIS 2002 Version 8.7\Projects2k2\Default.urb  
 Project Name: cranes & concrete boom trucks  
 Project Location: Lower Sacramento Valley Air Basin  
 On-Road Motor Vehicle Emissions Based on EMFAC2002 version 2.2

DETAIL REPORT  
 (Pounds/Day - Summer)

Construction Start Month and Year: January, 2007  
 Construction Duration: 12  
 Total Land Use Area to be Developed: 0 acres  
 Maximum Acreage Disturbed Per Day: 0 acres  
 Single Family Units: 0 Multi-Family Units: 0  
 Retail/Office/Institutional/Industrial Square Footage: 0

CONSTRUCTION EMISSION ESTIMATES UNMITIGATED (lbs/day)

Source	ROG	NOx	CO	SO2	PM10 TOTAL	PM10 EXHAUST	PM10 DUST
*** 2007***							
Phase 1 - Demolition Emissions							
Fugitive Dust	-	-	-	-	0.00	-	0.00
Off-Road Diesel	0.00	0.00	0.00	-	0.00	0.00	0.00
On-Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker Trips	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Maximum lbs/day	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Phase 2 - Site Grading Emissions							
Fugitive Dust	-	-	-	-	0.00	-	0.00
Off-Road Diesel	0.00	0.00	0.00	-	0.00	0.00	0.00
On-Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker Trips	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Maximum lbs/day	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Phase 3 - Building Construction							
Bldg Const Off-Road Diesel	14.23	92.54	116.38	-	3.53	3.53	0.00
Bldg Const Worker Trips	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Arch Coatings Off-Gas	0.00	-	-	-	-	-	-
Arch Coatings Worker Trips	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Asphalt Off-Gas	0.00	-	-	-	-	-	-
Asphalt Off-Road Diesel	0.00	0.00	0.00	-	0.00	0.00	0.00
Asphalt On-Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Asphalt Worker Trips	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Maximum lbs/day	14.23	92.54	116.38	0.00	3.53	3.53	0.00
Max lbs/day all phases	14.23	92.54	116.38	0.00	3.53	3.53	0.00

Phase 2 - Site Grading Assumptions: Phase Turned OFF

Phase 3 - Building Construction Assumptions

Start Month/Year for Phase 3: Jan '07  
 Phase 3 Duration: 12 months  
 Start Month/Year for SubPhase Building: Jan '07  
 SubPhase Building Duration: 12 months  
 Off-Road Equipment

No.	Type	Horsepower	Load Factor	Hours/Day
7	Cranes	190	0.430	8.0
2	Other Equipment	190	0.620	8.0

SubPhase Architectural Coatings Turned OFF  
 SubPhase Asphalt Turned OFF



Exhibit 4:

URBEMIS model run for 7 cranes and 2 boom trucks  
based on average engine rating of construction equipment scheduled to be on site



URBEMIS 2002 For Windows 8.7.0

File Name: C:\Program Files\URBEMIS 2002 Version 8.7\Projects2k2\Turner equipment list.urb  
 Project Name: cranes & concrete boom trucks  
 Project Location: Lower Sacramento Valley Air Basin  
 On-Road Motor Vehicle Emissions Based on EMFAC2002 version 2.2

DETAIL REPORT  
 (Pounds/Day - Summer)

Construction Start Month and Year: January, 2007  
 Construction Duration: 12  
 Total Land Use Area to be Developed: 0 acres  
 Maximum Acreage Disturbed Per Day: 0 acres  
 Single Family Units: 0 Multi-Family Units: 0  
 Retail/Office/Institutional/Industrial Square Footage: 0

CONSTRUCTION EMISSION ESTIMATES UNMITIGATED (lbs/day)

Source	ROG	NOx	CO	SO2	PM10 TOTAL	PM10 EXHAUST	PM10 DUST
*** 2007***							
Phase 1 - Demolition Emissions							
Fugitive Dust	-	-	-	-	0.00	-	0.00
Off-Road Diesel	0.00	0.00	0.00	-	0.00	0.00	0.00
On-Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker Trips	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Maximum lbs/day	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Phase 2 - Site Grading Emissions							
Fugitive Dust	-	-	-	-	0.00	-	0.00
Off-Road Diesel	0.00	0.00	0.00	-	0.00	0.00	0.00
On-Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker Trips	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Maximum lbs/day	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Phase 3 - Building Construction							
Bldg Const Off-Road Diesel	21.37	142.92	172.10	-	5.62	5.62	0.00
Bldg Const Worker Trips	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Arch Coatings Off-Gas	0.00	-	-	-	-	-	-
Arch Coatings Worker Trips	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Asphalt Off-Gas	0.00	-	-	-	-	-	-
Asphalt Off-Road Diesel	0.00	0.00	0.00	-	0.00	0.00	0.00
Asphalt On-Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Asphalt Worker Trips	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Maximum lbs/day	21.37	142.92	172.10	0.00	5.62	5.62	0.00
Max lbs/day all phases	21.37	142.92	172.10	0.00	5.62	5.62	0.00

Phase 2 - Site Grading Assumptions: Phase Turned OFF

Phase 3 - Building Construction Assumptions

Start Month/Year for Phase 3: Jan '07  
 Phase 3 Duration: 12 months  
 Start Month/Year for SubPhase Building: Jan '07  
 SubPhase Building Duration: 12 months  
 Off-Road Equipment

No.	Type	Horsepower	Load Factor	Hours/Day
7	Cranes	239	0.430	8.0
2	Other Equipment	398	0.620	8.0

SubPhase Architectural Coatings Turned OFF  
 SubPhase Asphalt Turned OFF



Exhibit 5:  
Excerpts from EPIC Tower Draft EIR



Following SMAQMD's recommended methodology and assumptions, construction emissions were modeled for the proposed project with the results illustrated in Table 5.2-6. Modeling indicated that NO<sub>x</sub> emissions during construction could reach a maximum of 293.14 pounds per day. This would be above the 85 pounds-per-day threshold of significance for construction NO<sub>x</sub>, and would be a *significant impact*.

TABLE 5.2-6						
CONSTRUCTION AND OPERATIONAL IMPACTS OF PROPOSED PROJECT						
PEAK POUNDS PER DAY						
	ROG	NO <sub>x</sub>	CO	SO <sub>2</sub>	PM <sub>10</sub> Total	
					Exhaust	Dust
<b>Construction Phase - Demolition</b>						
Fugitive Dust	-	-	-	-	-	-
Off-Road Diesel	-	-	-	-	-	-
On-Road Diesel	-	-	-	-	-	-
Worker Trips	-	-	-	-	-	-
Total Demolition	-	-	-	-	-	-
<i>Exceeds SMAQMD Threshold</i>	-	No	-	-	-	-
<b>Construction Phase - Site Grading</b>						
Fugitive Dust	-	-	-	-	-	10.00
Off-Road Diesel	11.05	68.67	92.29	-	2.44	-
On-Road Diesel	-	-	-	-	-	-
Worker Trips	0.06	0.16	1.54	-	-	0.01
Total Site Grading	11.11	68.83	93.83	-	-	12.45
<i>Exceeds SMAQMD Threshold</i>	-	No	-	-	-	-
<b>Construction Phase - Building Construction</b>						
Building Construction Off-Road Diesel	39.70	292.57	301.07	-	12.68	-
Building Construction Worker Trips	0.93	0.56	11.91	-	0.01	0.14
Architectural Coatings Off-Gas	-	-	-	-	-	-
Architectural Coatings Worker Trips	-	-	-	-	-	-
Total Building Construction	40.64	293.14	312.98	-	-	12.83
Total Building Construction (Mitigated)	-	234.51	-	-	-	12.83
<i>Exceeds SMAQMD Threshold</i>	-	Yes	-	-	-	-
<b>Operational Phase</b>						
Mobile Emissions	34.46	54.84	418.75	.23	-	39.35
Area Source Emissions	24.29	5.15	2.41	0.01	-	0.16
Total Operational Emissions	58.75	59.99	421.16	0.24	-	39.51
<i>Exceeds SMAQMD Threshold</i>	No	No	-	-	-	-
Source: EIP Associates, a division of PBS&J, 2006.						

## Mitigation Measures

Implementation of the following measures would result in a minimum 20 percent reduction of NO<sub>x</sub> construction emissions and a minimum 45 percent reduction in particulate emissions. While the proposed project's impact would be substantially reduced through implementation of these measures, the impact during construction would remain *significant*. In order to reduce the impact to a less-than-significant level, the SMAQMD requires implementation of a NO<sub>x</sub> off-site mitigation fee of \$14,300 per ton. Compliance with all measures would reduce the impact a *less-than-significant impact*.

5.2-1 *The following measures shall be incorporated into construction bid documents as recommended by the SMAQMD:*

- a) *The project applicant shall provide a plan for approval by SMAQMD demonstrating that the heavy-duty (>50 horsepower) off-road vehicles to be used in the construction project, including owned, leased and subcontractor vehicles, shall achieve a project wide fleet-average 20 percent NO<sub>x</sub> reduction and 45 percent particulate reduction compared to the most recent CARB fleet average at time of construction.*
- b) *The following measure shall be incorporated into the construction bid documents as recommended by the SMAQMD: At least one piece of diesel equipment used on the site during the demolition, earthmoving and clearing stages of construction shall be fitted with a level 3 California Air Resources Board verified diesel emission control system. The construction contractor shall provide documents to the SMAQMD and the City of Sacramento to verify this measure has been completed prior to the issuance of a demolition or grading permit.*
- c) *The project applicant and/or contractor shall submit to SMAQMD a comprehensive inventory of all off-road construction equipment, equal to or greater than 50 horsepower, that shall be used an aggregate of 40 or more hours during any portion of the construction project. The inventory shall include the horsepower rating, engine production year, and projected hours of use or fuel throughput for each piece of equipment. The inventory shall be updated and submitted monthly throughout the duration of the project, except that an inventory shall not be required for any 30-day period in which no construction activity occurs. At least 48 hours prior to the use of subject heavy-duty off-road equipment, the project applicant and/or contractor shall provide SMAQMD with the anticipated construction timeline, including start date and name and phone number of the project manager and on-site foreman.*
- d) *The project applicant and/or contractor shall ensure that emissions from all off-road diesel powered equipment used on the project site do not exceed 40 percent opacity for more than three minutes in any one hour. Any equipment found to exceed 40 percent opacity (or Ringelmann 2.0) shall be repaired immediately and SMAQMD shall be notified within 48 hours of identification of non-compliant equipment. A visual survey of all in-operation equipment shall be made at least weekly, and a monthly summary of the visual survey results shall be submitted throughout the duration of the project, except that the monthly summary shall not be required for any 30-day period in which no construction activity occurs. The monthly summary shall include the quantity and type of vehicles surveyed as well as the dates of each survey.*
- e) *Prior to issuance of a grading permit, the project applicant shall provide the City with proof of payment of the NO<sub>x</sub> off-site mitigation fee. If it can be verifiably demonstrated to the SMAQMD that the submitted equipment list as referenced in 5.2-1 (c) shall produce NO<sub>x</sub> emissions different from those detailed in **Table 5.2-7**, the SMAQMD shall re-calculate the off-site mitigation fee to reflect such information.*
- f) *Aqueous diesel fuel shall be used to fuel all applicable diesel equipment during construction of the proposed project. For every piece of diesel equipment for which aqueous diesel fuel is not used, the contractor shall provide the SMAQMD with an explanation of why the use of aqueous diesel fuel is not appropriate.*

Exhibit 6:  
Excerpts from Metropolitan Project Draft EIR



Mitigation measures exist that can reduce emissions of construction NO<sub>x</sub>. SMAQMD requires standard mitigation measures to result in a minimum 20 percent NO<sub>x</sub> reduction. Additional aggressive measures are available to further reduce impacts if the required mitigations would not put the emissions below the threshold; in lieu of additional measures, SMAQMD would require an off-site mitigation fee based on pounds of NO<sub>x</sub> remaining above the threshold.

As of June 1, 2006, the SMAQMD is using an updated mitigation fee rate of \$14,300 per ton of emissions. The mitigation fee is based on the Carl Moyer Program cost effectiveness cap; in January 2006, the Carl Moyer Program Guidelines were amended, accounting for this increase in mitigation fee rate. Assuming the construction mitigation measures outlined below achieve a 20 percent NO<sub>x</sub> reduction, the fee required for this project is calculated to be \$179,673. The mitigation fee calculations are shown in Appendix C.

#### Mitigation

5.1-1 *The following measures shall be incorporated into construction practices and approved by SMAQMD prior to the start of demolition and construction:*

- (a) *The project shall provide a plan for approval by SMAQMD demonstrating that the heavy-duty (>50 horsepower) off-road vehicles to be used in the construction project, including owned, leased, and subcontractor vehicles, will achieve a project wide fleet average of 20 percent NO<sub>x</sub> reduction and 45 percent particulate reduction compared to the most recent CARB fleet average at the time of construction.*
- (b) *The project representative shall submit to SMAQMD a comprehensive inventory of all off-road construction equipment, equal to or greater than 50 horsepower, that will be used an aggregate of 40 or more hours during any portion of the construction project. The inventory shall include the horsepower rating, engine production year, and projected hours of use or fuel throughput for each piece of equipment. The inventory shall be updated and submitted monthly throughout the duration of the project, except that an inventory shall not be required for any 30-day period in which no construction activity occurs. At least 48 hours prior to the use of subject heavy-duty off-road equipment, the project representative shall provide SMAQMD with the anticipated construction timeline, including start date and name and phone number of the project manager and on-site foreman.*
- (c) *The project shall ensure that emissions from all off-road diesel powered equipment used on the project site do not exceed 40 percent opacity for more than three minutes in any one hour. Any equipment found to exceed 40 percent opacity (or Ringelmann 2.0) shall be repaired immediately and SMAQMD shall be notified within 48 hours of identification of non-compliant equipment. A visual survey of all in-operation equipment shall be made at least weekly, and a monthly summary of the visual survey results shall be submitted throughout the duration of the project, except that the monthly summary shall not be required for any 30-day period in which no construction activity occurs. The monthly summary shall include the quantity and type of vehicles surveyed as well as the dates of each survey. The AQMD and/or other officials may conduct periodic site inspections to determine compliance. Nothing in this section shall supersede other AQMD or state rules or regulations.*

- (d) *The project representative shall implement additional aggressive mitigation measures in consultation with SMAQMD, using existing technology on the construction fleet such as aqueous diesel fuel and cooled exhaust gas recirculation systems to reduce emissions below SMAQMD thresholds, or shall pay a \$179,673 off-site mitigation fee prior to the issuance of grading permits.*

### Significance after Mitigation

Less than significant

#### **Impact 5.1-2: Short-term construction increases in PM<sub>10</sub> emissions**

Construction will include demolition of the existing structures, grading, and site preparation for new construction. PM<sub>10</sub> emissions in the form of fugitive dust would vary from day to day, depending on the level and type of construction activity (demolition and grading), silt content of the soil, prevailing weather, and result from construction equipment and motor vehicles. While grading emissions are below SMAQMD criteria, demolition emissions have the potential to cause or contribute to violations of the PM<sub>10</sub> ambient air quality standards, in particular, the more stringent CAAQS. This would be a **significant** impact.

One of the largest sources of construction-related PM<sub>10</sub> emissions would be associated with the demolition of the existing structures. Demolition activities are required to conform to the rules and guidelines outlined in SMAQMD Rule 403 (Fugitive Dust) concerning fugitive dust associated with construction activities, including demolition. Rule 403 requires the application of water or chemicals for the control of fugitive dust associated with demolition, clearing of land, construction of roadways, and any other construction operation that may potentially generate dust—including the stockpiling of dust-producing materials.

Demolition activity is also subject to SMAQMD Rule 902 (Asbestos). This rule is intended to limit asbestos emissions from demolition or renovation of structures and the associated disturbance of asbestos-containing waste material generated or handled during these activities. The rule addresses the EPA National Emission Standards for Hazardous Air Pollutants (NESHAP) and provides additional requirements to cover non-NESHAP areas. The rule requires SMAQMD to be notified before demolition or renovation activity occurs. This notification includes a description of structures and methods utilized to determine the presence of asbestos or lack thereof. All asbestos-containing material found on the site must be removed prior to demolition or renovation activity in accordance with the requirements of Rule 902. Project compliance with Rule 902 would ensure that asbestos-containing materials would be disposed of appropriately. Compliance with the requirements of this measure would avoid a significant construction-related air quality impact of demolition by preventing the release of asbestos emissions. Although PM<sub>10</sub> emissions associated with demolition can be quite large, these emissions will be reduced by compliance with Rules 403 and 902, and will take place over a relatively short period of time.

The region is currently in non-attainment for PM<sub>10</sub>, with regular and frequent violations of the State 24-hour standard occurring over the past five years. The State 24-hour PM<sub>10</sub> standard is sometimes exceeded in the vicinity of construction-sites during construction. Air pollution-sensitive land uses and activities adjacent to construction-sites may also be exposed more frequently to ambient dust concentrations that exceed the ambient standards. In order to reduce construction-phase dust emissions, standard dust abatement measures are routinely required by the City as a part of the development permit process. Such measures typically

Exhibit 7:  
SMAQMD Construction Air Quality Mitigation Plan Protocol





# CEQA and Land Use Mitigation

Home    Info/News    Incentives    Programs    Permits    Plans/Rules    Boards    About Us

## Page Contents

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- [Why is Mitigation Required?](#)
- [CEQA Guide to Air Quality Assessment](#)
- [CEQA Thresholds of Significance](#)
- [Frequently Asked Questions - URBEMIS and Training](#)
- [Construction Emissions Mitigation](#)
- [Operational Emissions Mitigation](#)
- [Mitigation Fees](#)
- [Sensitive Land Uses Adjacent To Major Roadways](#)

## Why is Mitigation Required?

---

Sacramento is classified as a serious ozone non-attainment area for the federal 8-hour ozone standard and is also nonattainment for the State's particulate matter standards (PM<sub>10</sub> and PM<sub>2.5</sub>). See the [attainment status page](#) for additional information.

Reactive organic gases (ROG) and nitrogen oxides (NO<sub>x</sub>) are ozone precursors and are emitted from motor vehicles, including off-road equipment. Mitigation efforts to reduce emissions from construction projects and the build-out of land development projects are essential in order for the Sacramento region to attain the ozone and particulate matter standards.

Visit [www.sparetheair.com](http://www.sparetheair.com) for more detailed information on health effects and general air quality information.

## CEQA Guide to Air Quality Assessment

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Determine if a project will have significant air quality impacts by consulting the [CEQA Guide to Air Quality Assessment](#) (PDF 1.1 Mb). The CEQA guide provides the following tools:

- Methodologies for the review of air quality impacts from development projects
- Screening approaches and methods for calculating emissions
- Mitigation measures
- [Local meteorological data files](#) (ASC file 428 Kb) for the BEEST/ISCT3 model referenced

Early identification of air quality impacts and mitigation measures will allow design changes that benefit air quality at the lowest possible cost.

The Land Use and Transportation [staff list](#) directs you to the appropriate person for assistance.

## CEQA Thresholds of Significance

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The AQMD Board adopted the following three types of significance thresholds on March 28, 2002. [Public Notice regarding the effective date of revised significance threshold](#). (PDF)

### Mass Emission Threshold

Project Type	Ozone Precursor Emissions (pounds per day)	
	ROG	NOx
Short-term Effects (Construction)	None	85
Long-term Effects (Operation)	65	65

### Emission Concentration Threshold

In addition to the Mass Emission Threshold, the California Ambient Air Quality Standards (CAAQS) are applied as significance criteria to all phases of a project.

### Substantial Contribution Threshold

If a project emits pollutants at a level equal to or greater than 5% of the CAAQS, it is considered to contribute substantially to an existing or projected CAAQS violation.

## Frequently Asked Questions - URBEMIS and Training

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The [CEQA FAQ \(revised May 2006\)](#) (PDF 186 Kb) provides answers to frequently asked questions about CEQA and air quality analysis.

URBEMIS is the most common model used to calculate project emissions. Visit [www.URBEMIS.com](http://www.URBEMIS.com) for more information or to download the model.

If you are interested in an air quality mitigation program and URBEMIS model training session, contact J.J. Hurley at [jhurley@airquality.org](mailto:jhurley@airquality.org) or (916) 874-2694.

## Construction Emissions Mitigation

---

Projects that exceed the short-term construction threshold of 85 pounds per day of NOx must mitigate the air quality impact. [Standard Construction Mitigation Language](#) is recommended for these projects. When the standard mitigation does not reduce the impact to below the threshold a [mitigation fee](#) is recommended.

In addition to the URBEMIS model, the [Roadway Construction Emissions Model](#) (revised version 5.2, 2006, in Excel - 2 Mb) is available to assess the emissions of linear construction projects. Questions should be addressed to Peter Christensen ([pchristensen@airquality.org](mailto:pchristensen@airquality.org) or (916) 874-4886).

The following tools and procedure assist in determining if the heavy-duty off-road mobile equipment fleet meets the standard mitigation:

- Use the Model [Equipment List](#) (XLS 18 Kb) to gather fleet information.
- Use the [Construction Mitigation Calculator](#) (Dec 2005) (XLS 967 Kb) to determine if the fleet meets the emission reductions.
- Submit the equipment list and calculator run to Karen Huss ([khuss@airquality.org](mailto:khuss@airquality.org) or (916) 874-4881) or Charlene McGhee ([cmcghee@airquality.org](mailto:cmcghee@airquality.org) or (916) 874-4883).
- Obtain an endorsement letter from AQMD staff prior to starting construction.

**Jurisdictions** may consult the [construction mitigation protocol fact sheet](#) (PDF 19 Kb) and **contractors and developers** may consult the [tips fact sheet](#) (PDF 112 Kb) on the construction mitigation requirements and process.

## Operational Emissions Mitigation

---

Projects that exceed the long-term operation threshold of 65 pounds per day of NO<sub>x</sub> or ROG must mitigate the air quality impact using all feasible mitigation. The AQMD recommends the project proponent develop an Air Quality Mitigation Plan describing how the project will reduce emissions by 15% (standard goal). A list of [feasible measures](#) (PDF 25 Kb) is available. Air Quality Mitigation Plans must be endorsed by AQMD staff. The AQMD is currently updating its [Guidance for Land Use Emission Reductions](#) which includes an updated list of feasible measures. Questions on the update should be directed to J.J. Hurley ([jjhurley@airquality.org](mailto:jjhurley@airquality.org) or 916.874.2694).

**Jurisdictions** may consult the [operational mitigation protocol fact sheet](#) (PDF 12 Kb) and **developers** may consult the [tips fact sheet](#) (PDF 112 Kb) on the air quality mitigation plan requirements and process.

## Mitigation Fees

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The current mitigation fee rate is \$14,300 per ton of emissions. The [mitigation fee calculator](#) (XLS 28 Kb) (revised September 2006) should be used to determine the fee for construction projects when off-site mitigation is needed.

Emission reduction projects funded with mitigation fees are described in these [fact sheets](#) (PDF 674 Kb).

## Protocol For Evaluating The Location Of Sensitive Land Uses Adjacent To Major Roadways

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The [public notice for the proposed Protocol](#) includes the downloadable Protocol document and its appendix, which provide guidance on how to assess potential cancer risk of sensitive receptors exposed to diesel particulate matter from major roadways.

The notice also includes a downloadable map showing highways with 100,000 AADT in Sacramento County. Additionally there are two roadways with ADT greater than 100,000 not shown on the map: Watt Avenue between US50 and Fair Oaks Boulevard and Sunrise Boulevard between Folsom Boulevard and Fair Oaks Boulevard.

Questions should be addressed to Rachel Dubose ([rdubose@airquality.org](mailto:rdubose@airquality.org) or (916) 874-4876).



[top of page](#)

| [News](#) | [Notices & Agendas](#) | [Board of Directors](#) | [About the District](#) | [Hearing Board](#) | [Heavy-duty Vehicles](#)  
| [Air Links](#) | [Air Data](#) | [Compliance](#) | [Permits](#) | [Rules](#) | [Employment](#) | [RFPs](#) | [Contact Us](#) | [Search](#) | [Site Map](#) | [Policies & Disclaimers](#) | [Home](#) |

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Thursday, 02-Nov-2006 19:06:03 EST



Exhibit 8:

Sacramento Metropolitan Air Quality Management District, Mitigation Fees



# CONSTRUCTION MITIGATION CALCULATOR

for Comparison of Construction Project Emissions with State Average

Version 4.13  
created by TIAX LLC for SMAQMD, 2005Nov4

Project Name, Contact Person, Phone Number:

[ABC Company, Joe Smith (916) 000-0000]

## Section 1 Instructions:

>>Enter the Project Duration Information

<b>Project Duration in Days:</b>	50
----------------------------------	----

## Section 2 Instructions:

>>Enter the baseline equipment information into the appropriate fields in Section 2

>>When finished entering data, click on "Record Data" below. Repeat Section 2 for as many pieces of equipment as there are in the fleet

## Section 2: Baseline equipment (pre-modification)

<b>Equipment Category:</b>	Construction
<b>Equipment Type:</b>	Tractors/Loaders/Backhoes
<b>Current Calendar Year:</b>	2005
<b>Engine Model Year:</b>	1995
<b>Number of Years Since the Last Engine Rebuild:</b> <small>(leave blank if no rebuild ever performed)</small>	
<b>Equipment Horsepower:</b>	300
<b>Estimated Hours of Operation during Project:</b>	120
<b>Enter the Current Hour Meter Reading:</b> <small>(leave blank if unknown)</small>	
<b>Number of Equipment with these Characteristics:</b>	10
<b>Fuel Used:*</b>	Diesel

\*"LowNOxDiesel" refers to Voluntary LowNOx Engines only

Previously Entered Data	
(10 most recent entries shown)	
Equipment Type, MY, HP, Qty.	
1	
2	
3	
4	
5	
6	
7	
8	
9	
10	

Once you have entered the equipment data for each piece into Section 2, click on "Record Data"	<b>Record Data</b>
--	--------------------



Exhibit 9:  
Excerpts from Fulton Avenue Development Project Draft EIR



**Table 3.1-4  
Emissions Estimates Versus Significance Thresholds for  
Remediation Phase I**

Pollutant	Daily Emission Comparison		
	Daily Threshold (pounds)	Estimated Maximum Daily Emissions (pounds)	Daily Threshold Exceeded?
CO	None	22.48	NA
NO <sub>x</sub>	85	95.54	Yes
PM <sub>10</sub>	None	25.25	NA-
SO <sub>2</sub>	None	0.16	NA
ROG	None	5.31	NA

NA- Not applicable since no threshold exists.

**Table 3.1-5  
Emissions Estimates Versus Significance Thresholds for  
Remediation Phase II**

Pollutant	Daily Emission Comparison		
	Daily Threshold (pounds)	Estimated Maximum Daily Emissions (pounds)	Daily Threshold Exceeded?
CO	None	38.59	NA
NO <sub>x</sub>	85	74.27	No
PM <sub>10</sub>	None	52.19	NA
SO <sub>2</sub>	None	0.09	NA
ROG	None	6.10	NA

NA- Not applicable since no threshold exists.

It should be noted that the SMAQMD *Guide to Air Quality Assessment in Sacramento County* states (p. 3-2) that if a project's NO<sub>x</sub> mass emissions from heavy-duty mobile sources is determined not potentially significant using the recommended methodologies (such as URBEMIS) for estimating emissions, then the Lead Agency may assume that exhaust emissions of other pollutants from operation of equipment and worker commute vehicles are also not significant. Therefore, because NO<sub>x</sub> emissions (74.27 lbs/day) generated by Phase II of the remediation would not exceed thresholds, the emissions would also not exceed City or SMAQMD thresholds for CO, PM<sub>10</sub>, ROG, and SO<sub>2</sub>. However, the short term construction-related activities associated with Phase I of the remediation are estimated to generate 95.54 lbs/day of NO<sub>x</sub>, which is 10.54 lbs/day over the threshold. Therefore, the remediation would result in a **potentially significant** impact.

SMAQMD has provided specific mitigation for projects with construction emissions that exceed the threshold of significance for NO<sub>x</sub>. This mitigation includes demonstration of a project wide fleet-average 20 percent NO<sub>x</sub> reduction and 45 percent particulate reduction, monitoring of off-road vehicle exhaust opacity, as well as submission of an off-road construction equipment inventory. However, this mitigation applies only to off-road construction equipment. The majority of NO<sub>x</sub> emissions resulting from the remediation would be generated by on-road diesel trucks. This is due to the large

number of trucks (10) required to off-haul the clay pigeons, as well as the travel distance (118 miles per truck—round trip) to convey the pigeons to the disposal site in Manteca. Therefore, this mitigation specified by SMAQMD for reduction of NOx emissions would not apply to the proposed remediation.

However, SMAQMD has developed a mitigation program that assists in providing cleaner emissions technology within the region. A fee could be paid to this program to offset the emissions over the significance threshold generated from the proposed remediation. The fee is calculated based on the amount of the mitigated construction emissions produced by the remediation less the District Threshold, multiplied by the number of days of construction multiplied by the standard District fee of \$14,300/ton of NOx. Through compliance with this mitigation fee (see MM 3.1-1R), it is anticipated that the short-term impacts from NOx can be mitigated to a less-than-significant level.

Therefore, a mitigation fee of \$3,542 is required to reduce impacts resulting from the proposed remediation to a **less than significant** level. The mitigation fee is calculated as follows:

1. 95.54 lbs/day – 85.00 lbs/day threshold = 10.54 lbs/day over threshold
2. 10.54 lbs/day x 47 days of clay pigeon removal = 495.38 lbs
3. 495.38 lbs ÷ 2,000 lbs/ton = 0.2477 tons
4. 0.2477 tons x \$14,300/ton = **\$3,542**

#### Mitigation Measures

**MM 3.1-1R** Prior to ground disturbance the City shall make payment to the SMAQMD the off-site air quality mitigation fee of \$3,542.

#### Development Impacts and Mitigation Measures

**3.1-1D** Development could generate short term, construction-related emissions that would exceed City and SMAQMD thresholds.

Table 3.1-6 provides a summary of results for the construction-related impacts of the proposed project development as compared to the SMAQMD's significance thresholds.

Exhibit 10:  
Excerpts from 500 Capitol Mall Draft EIR



concentrations are estimated to result in a cancer risk of between 750 and 1,500 per million. Operation of the proposed project would contribute to ambient TAC levels; however, while receptors would be exposed to significant ambient TAC levels, the project itself would not qualify as a significant stationary source of TAC.

### **Standards of Significance**

For the purposes of this EIR, impacts to air quality would be considered significant if the proposed project would:

- Cause a predicted violation of the CO ambient air quality standards (8-hour or 1-hour state standards) due to an increase in project traffic on the local street network on either a project-specific or cumulative level;
- Create emissions of an ozone precursor exceeding the following SMAQMD recommended thresholds of significance:

<b>SMAQMD THRESHOLDS</b>		
<b>Pollutant</b>	<b>Construction</b>	<b>Operation</b>
ROG	None	65 lbs/day
NO <sub>x</sub>	85 lbs/day	65 lbs/day
Source: SMAQMD, 2006.		

- Expose sensitive receptors to pollutant concentrations in excess of the California Ambient Air Quality Standards (CAAQS).

### **Project-Specific Impacts and Mitigation Measures**

#### **5.2-1 Construction of the proposed project would generate emissions of ozone precursors. This is a *significant impact*.**

Since ozone has significant adverse health effects, it is important to consider ozone precursors ROG and NO<sub>x</sub> when addressing project development impacts. The SMAQMD has not developed a threshold of significance for ROG associated with construction activities because the main source of ROG during construction, architectural coatings, can be effectively regulated by SMAQMD Rule 442, Architectural Coatings. Although some measures address NO<sub>x</sub> emissions from heavy-duty diesel construction equipment, the SMAQMD has found it necessary to develop a construction threshold for NO<sub>x</sub> of 85 pounds per day.

Following SMAQMD's recommended methodology and assumptions, construction emissions were modeled for the proposed project with the results illustrated in Table 5.2-6. Modeling indicated that NO<sub>x</sub> emissions during construction could reach a maximum of 239.07 pounds per day. This would be above the 85 pounds-per-day threshold of significance for construction NO<sub>x</sub>, and would be a *significant impact*.

#### **Mitigation Measures**

Implementation of the following measures would result in a minimum 20 percent reduction of NO<sub>x</sub> construction emissions and a minimum 45 percent reduction in particulate emissions. While the proposed project's impact would be substantially reduced through implementation of these measures, the impact during construction would remain *significant*. In order to reduce the impact to a less-than-significant level, the SMAQMD requires implementation of a one-time NO<sub>x</sub> off-site

TABLE 5.2-6						
CONSTRUCTION AND OPERATIONAL PEAK POUNDS PER DAY						
	ROG	NO <sub>x</sub>	CO	SO <sub>2</sub>	PM <sub>10</sub> Total	
					Exhaust	Dust
<b>Construction Phase - Demolition</b>						
Fugitive Dust	-	-	-	-	-	55.19
Off-Road Diesel	5.04	31.45	42.42	-	1.20	-
On-Road Diesel	10.40	207.47	38.37	3.02	4.45	0.77
Worker Trips	0.06	0.15	1.38	-	-	-
Total Demolition	15.50	239.07	82.17	3.02	61.61	
Exceeds SMAQMD Threshold?	-	YES	-			
<b>Construction Phase - Site Preparation</b>						
Fugitive Dust	-	-	-	-	-	33.90
Off-Road Diesel	14.18	90.82	116.92	-	3.39	-
On-Road Diesel	-	-	-	-	-	-
Worker Trips	0.25	0.49	5.25	-	-	0.02
Total Site Grading	14.43	91.31	122.17	-	37.31	
Exceeds SMAQMD Threshold?	-	YES	-			
<b>Construction Phase - Building Construction</b>						
Building Construction Off-Road Diesel	7.75	52.75	61.97	-	2.15	-
Building Construction Worker Trips	4.97	5.97	107.91	0.06	0.17	0.29
Total Building Construction	12.72	58.72	169.88	0.06	2.61	
Exceeds SMAQMD Threshold?	-	No	-			
<b>Operational Phase</b>						
Mobile Emissions	49.69	80.14	605.87	.33	57.74	
Area Source Emissions	7.18	3.38	2.84	0.00	0.01	
Total Operational Emissions	56.87	83.52	608.71	0.33	57.75	
Exceeds SMAQMD Threshold?	No	YES	-			
Source: EIP Associates, a division of PBS&J, 2006.						

mitigation fee of \$14,300 per ton. Compliance with these measures would reduce the impact to a **less-than-significant level**.

5.2-1 *The following measures shall be incorporated into construction bid documents as recommended by the SMAQMD:*

- a) *The project applicant shall provide a plan for approval by SMAQMD demonstrating that the heavy-duty (>50 horsepower) off-road vehicles to be used in the construction project, including owned, leased, and subcontractor vehicles, shall achieve a project wide fleet-average 20 percent NO<sub>x</sub> reduction and 45 percent particulate reduction compared to the most recent CARB fleet average at time of construction.*
- b) *The following measure shall be incorporated into construction bid documents: At least one piece of diesel equipment used on the site during the demolition, earthmoving and clearing stages of construction shall be fitted with a level 3 California Air Resources Board verified diesel emission control system.*
- c) *The project applicant and/or contractor shall submit to SMAQMD a comprehensive inventory of all off-road construction equipment, equal to or greater than 50 horsepower, that shall be used an aggregate of 40 or more hours during any portion of the construction project. The inventory shall include the horsepower rating, engine production year, and projected hours of use or fuel throughput for each piece of equipment. The inventory shall be updated and submitted monthly throughout the*

Exhibit 11:  
Excerpts from Greenbriar Development Project Draft EIR



In summary, modeled emissions of NO<sub>x</sub>, during all phases of construction, would exceed the SMAQMD's significance threshold of 85 lb/day and, because of the project's size, short-term construction-generated PM<sub>10</sub> emissions would result in or substantially contribute to emissions concentrations that exceed the CAAQS. In addition, because Sacramento County is currently designated as a nonattainment area for ozone and PM<sub>10</sub>, construction-generated emissions could further contribute to pollutant concentrations that exceed the CAAQS. As a result, this impact would be *significant*.

#### Mitigation Measure 6.2-1: (City of Sacramento and LAFCo)

In accordance with the recommendations of the SMAQMD, the project applicant shall implement the following measures to reduce temporary construction emissions.

- a. The project applicant shall implement the following measures to reduce NO<sub>x</sub> and visible emissions from heavy-duty diesel equipment.
  - i. Before issuance of a grading permit, the project applicant shall provide a plan for approval by the lead agency, in consultation with SMAQMD, demonstrating that the heavy-duty (>50 horsepower), off-road vehicles to be used in the construction project, including owned, leased, and subcontractor vehicles, will achieve a project-wide fleet-average 20% NO<sub>x</sub> reduction and 45% particulate reduction compared to the most recent ARB fleet average at the time of construction. Acceptable options for reducing emissions include the use of late-model engines, low-emission diesel products, alternative fuels, particulate matter traps, engine retrofit technology, after-treatment products, and/or such other options as become available.
  - ii. Before issuance of a grading permit, the project applicant shall submit to the lead agency and SMAQMD a comprehensive inventory of all off-road construction equipment, equal to or greater than 50 hp, that will be used an aggregate of 40 or more hours during any portion of project construction. The inventory shall be updated and submitted monthly throughout the duration of the project, except that an inventory shall not be required for any 30-day period in which no construction operations occur. At least 48 hours before heavy-duty off-road equipment is used, the project applicant shall provide the SMAQMD with the anticipated construction timeline including start date, and the name and phone number of the project manager and on-site foreman.
  - iii. Before issuance of a grading permit, the project applicant shall ensure that emissions from off-road, diesel-powered equipment used on the project site do not exceed 40% opacity for more than 3 minutes in any 1 hour. Any equipment found to exceed 40% opacity (for white smoke) or Ringlemann 2.0 (for black smoke) shall be repaired immediately, and the SMAQMD shall be notified of non-compliant equipment within 48 hours of identification. A visual survey of all in-operation equipment shall be made at least weekly by the construction contractor, and the contractor shall submit a monthly summary of visual survey results throughout the duration of the construction project, except that the monthly summary shall not be required for any 30-day period in which no construction operations occur. The monthly summary shall include the quantity and type of vehicles surveyed, as well as the dates of each survey. The SMAQMD and/or other officials may conduct periodic site inspections to determine compliance.
- b. As recommended by the SMAQMD, the project applicant shall reduce fugitive dust emissions by implementing the measures listed below during construction.
  - i. All disturbed areas, including storage piles that are not being actively used for construction purposes, shall be effectively stabilized of dust emissions using water, a chemical stabilizer or suppressant, or vegetative ground cover. Soil shall be kept moist at all times.
  - ii. All on-site unpaved roads and off-site unpaved access roads shall be effectively stabilized of dust emissions using water or a chemical stabilizer or suppressant.

- iii. When materials are transported off-site (e.g., trees, plantings), all material shall be covered, effectively wetted to limit visible dust emissions, or maintained with at least 2 feet of freeboard space from the top of the container.
  - iv. All operations shall limit or expeditiously remove the accumulation of project-generated mud or dirt from adjacent public streets at least once every 24 hours when operations are occurring.
  - v. After materials are added to or removed from the surfaces of outdoor storage piles, the storage piles shall be effectively stabilized of fugitive dust emissions using sufficient water or a chemical stabilizer or suppressant.
  - vi. On-site vehicle speeds on unpaved roads shall be limited to 15 mph.
  - vii. Wheel washers shall be installed for all trucks and equipment exiting unpaved areas, or wheels shall be washed to remove accumulated dirt before such vehicles leave the site.
  - viii. Sandbags or straw waddles shall be installed to prevent silt runoff to public roadways from adjacent project areas with a slope greater than 1 %.
  - ix. Excavation and grading activities shall be suspended when winds exceed 20 mph.
  - x. The extent of areas simultaneously subject to excavation and grading shall be limited, wherever possible, to the minimum area feasible.
  - xi. Emulsified diesel, diesel catalysts, or SMAQMD-approved equal, shall be used on applicable heavy-duty construction equipment that can be operated effectively and safely with the alternative fuel type.
- c. The applicant shall pay \$1,525,537 into SMAQMD's off-site construction mitigation fund to further mitigate construction-generated emissions of NO<sub>x</sub> that exceed SMAQMD's daily emission threshold of 85 lb/day. The calculation of daily NO<sub>x</sub> emissions is based on the current cost of \$14,300 to reduce a ton of NO<sub>x</sub>. The determination of the final mitigation fee shall be conducted in coordination with SMAQMD. The fee shall be paid to the SMAQMD prior to any ground disturbance in total or on an acre bases (\$5,959.13/acre) as development occurs and permits are sought. (See Appendix D for calculation worksheet.)
- d. In addition to the measures identified above, construction operations are required to comply with all applicable SMAQMD rules and regulations.

### Significance After Mitigation

Implementation of the measures under part a above would result in a 20% reduction in NO<sub>x</sub> emissions and a 45% reduction in visible emissions from heavy-duty diesel equipment according to SMAQMD. Implementation of the measures under part (b) would reduce fugitive dust emissions by up to 75%, according to estimates provided by SMAQMD. Daily construction emissions would still exceed the SMAQMD's significance threshold (Table 6.2-3) despite implementation of all feasible mitigation measures, and thus would potentially result in or substantially contribute to pollutant concentrations that exceed the CAAQS. As a result, this would be considered a **significant and unavoidable** impact.

**IMPACT  
6.2-2**

*Generation of Long-Term Operational (Regional) Emissions ROG, NO<sub>x</sub>, and PM<sub>10</sub>. Long-term operation of the proposed project would result in emissions of ozone-precursor pollutants that would exceed SMAQMD's threshold. Furthermore, the project's operational emissions would potentially conflict with or obstruct implementation of applicable air quality plans. As a result, this impact would be considered **significant**.*

Regional area- and mobile-source emissions of ROG, NO<sub>x</sub>, and PM<sub>10</sub> associated with implementation of the proposed project were estimated using URBEMIS 2002 Version 8.7.0 computer program, which is designed to model emissions for land use development projects.

Exhibit 12:  
Manufacturers of Emission Controls Association,  
Retrofitting Emission Controls on Diesel-Powered Vehicles



# **Case Studies of Construction Equipment Diesel Retrofit Projects**

*March 2006*



**Manufacturers of Emission Controls Association**

1730 M Street, NW \* Suite 206 \* Washington, DC 20036

[www.meca.org](http://www.meca.org)

[www.dieselretrofit.org](http://www.dieselretrofit.org)



## TABLE OF CONTENTS

<b>1.0 Introduction.....</b>	<b>1</b>
<b>2.0 Completed or Current Projects.....</b>	<b>2</b>
2.1 The Central Artery/Tunnel (CA/T) Project, Boston MA.....	2
2.2 I-95 New Haven Harbor Crossing Corridor Improvement Program, NewHaven, CT .....	3
2.3 Dan Ryan Expressway Road Construction Project.....	3
2.4 New York City Local Law No. 77 .....	4
2.5 WTC Diesel Emissions Reduction Project .....	4
2.6 LAX Master Plan Program: Community Benefits Agreement .....	7
2.7 The Impact of Retrofit Exhaust Control Technologies on Emissions from Heavy-Duty Diesel Construction Equipment .....	8
2.8 Demonstration Projects for Diesel Particulate Filter Technologies on Existing Off- Road Heavy-Duty Construction Equipment .....	9
2.9 Reliability of DPF-Systems: Experience with 6000 Applications of the Swiss Retrofit Fleet.....	11
2.10 City of Houston Diesel Field Demonstration Project .....	11
2.11 Port of Seattle, Sea-Tac International Airport Project .....	13
<b>3.0 Funded Projects .....</b>	<b>13</b>
3.1 2005 National Clean Diesel Campaign Demonstration Grant Construction Projects	13
3.2 West Coast Diesel Emissions Reduction Collaborative Construction Projects.....	14
<b>4.0 Summary.....</b>	<b>16</b>



## 1.0 Introduction

Diesel engines provide important fuel economy and durability advantages for large heavy-duty trucks, buses, and nonroad equipment. Although they are often the power plant of choice for heavy-duty applications, they have the disadvantage of emitting significant amounts of particulate matter (PM) and oxides of nitrogen (NO<sub>x</sub>), and lesser amounts of hydrocarbon (HC), carbon monoxide (CO) and toxic air pollutants.

Due to the lag in emission control regulations until 1996, diesel engines used in construction equipment are typically more polluting than those used for normal highway applications. It is estimated that 47 percent of mobile source diesel PM emissions nationwide comes from nonroad diesels and 25 percent of mobile source NO<sub>x</sub> comes from nonroad diesels. The reduction of diesel emissions from construction equipment has the potential to significantly improve air quality for those who live or work in or adjacent to construction sites. With the approval of the U.S. EPA Clean Air Nonroad Diesel Rule (see [www.epa.gov/nonroad-diesel/2004fr.htm](http://www.epa.gov/nonroad-diesel/2004fr.htm)) that is scheduled for implementation in 2008-2015 timeframe, diesel emissions reduction from nonroad engines will occur through the use of advanced diesel engine technology, ultra-low sulfur diesel fuel (15 ppm S max.), and advanced diesel exhaust emission control technology such as diesel particulate filters (DPFs) for reducing PM emissions, and selective catalytic reduction (SCR) systems and NO<sub>x</sub> adsorber catalysts for reducing NO<sub>x</sub> emissions. These EPA Tier 4 emission standards for nonroad engines will apply to diesel engines used in most kinds of construction, agricultural, and industrial equipment. Technologies for complying with the Tier 4 nonroad diesel regulations will flow from the experience gained in complying with EPA's 2007-2010 heavy-duty highway diesel program (see [www.epa.gov/OMSWWW/diesel.htm](http://www.epa.gov/OMSWWW/diesel.htm)). However, due to the long operating lives of these diesel engines, it will take decades for older, "dirtier" nonroad diesel engines to be replaced with the mandated, newer "cleaner" engines. Given the health and environmental concerns associated with diesel engines and because the nonroad engines make up a significant percentage of diesel pollution emitted, there is an increasing interest in retrofitting the older nonroad diesel engines.

The case studies discussed in this paper focuses on those projects that have been completed, are in progress, or have received funding for retrofitting diesel-powered construction equipment with emission control technology. Many of the projects highlight the feasibility of installing verified onroad technologies on construction equipment and relate some of the lessons learned that may assist others in planning new construction equipment retrofit projects. The limited range of experience with retrofits on construction equipment summarized in this report also serves to point out the need for expanding the range of verified retrofit technology options for nonroad diesel applications in general, and construction equipment in particular. This paper focuses on technology-based strategies and, where available, provides information on the specific type of technology installed on the type of construction equipment and the emission reduction that was achieved. For more detailed descriptions of available emission control technologies that can be retrofit on existing onroad and nonroad diesel engines, please see MECA's white paper, *Retrofitting Emission Controls On Diesel-Powered Vehicles* (see [www.meca.org](http://www.meca.org) or the MECA diesel retrofit web site: [www.dieselretrofit.org](http://www.dieselretrofit.org)).

## **2.0 Completed or Current Projects**

### **2.1 The Central Artery/Tunnel (CA/T) Project, Boston, MA**

The Central Artery/Tunnel (CA/T) Project, also known as the "Big Dig", is a major highway construction project designed to reduce traffic congestion and improve mobility in central Boston. The project requires the use of heavy-duty construction equipment in a concentrated area. Under a Clean Air Construction Initiative Program, 25 percent of long-term nonroad diesel equipment used in constructing the CA/T Project has been retrofitted with advanced pollution control devices, with more than 200 pieces of equipment retrofitted.

The construction equipments were retrofitted with diesel oxidation catalysts (DOCs) over diesel particulate filters (DPFs) because of the reduction in hydrocarbon (HC) associated with diesel odors and carbon monoxide (CO) and PM<sub>10</sub> provided by DOC, the ease of installation and maintenance, and the cost of a DOC compared to DPF that allowed more pieces of equipment to be retrofitted with the available funds. In addition to retrofitting with emission control devices, the project included assigning staging zones for waiting trucks and limiting idling to not more than five minutes. The construction equipment was also refueled with ultra-low sulfur diesel (ULSD) and emulsified diesel fuels.

Equipment retrofitted with DOCs includes:

- Nichi, Caterpillar, SIC, Terex, and JLG lifts
- Mantis cranes
- John Deere and Caterpillar dozers
- Cradel excavators

The model years of the equipment ranged from 1994 to 2000, with most of the equipment being 1999 or 2000 model year. According to the contractors, the equipment retrofitted with DOCs has not experienced any adverse operational problems, such as loss of power or additional fuel consumption. During the pilot program, the Environment Canada used a portable emission-testing device and several DOCs will be removed and sent to Environment Canada for emission testing in subsequent evaluations.

To date, preliminary estimates from 2000-2004 of area-wide emission reductions from the retrofitted equipment indicate a reduction of approximately:

- 36 tons/year of CO,
- 12 tons/year of HC, and
- 3 tons/year of PM

More information on this project can be found at:

[www.massturnpike.com/bigdig/background/airpollution.html](http://www.massturnpike.com/bigdig/background/airpollution.html).

## **2.2 I-95 New Haven Harbor Crossing Corridor Improvement Program, New Haven, CT**

As part of the Connecticut's Clean Air Construction Initiative, the I-95 New Haven Harbor Crossing Corridor Improvement Program, also known as the Q-Bridge Project, has successfully installed DOCs on approximately 70 pieces of construction equipment. The construction contractors have also volunteered to use low sulfur diesel (500 ppm sulfur) on all of their nonroad equipments. The Initiative was established to protect workers and residents from harmful construction emissions along a populated corridor. The contractors are required to implement the following:

- Install emissions control devices on nonroad diesel-powered construction equipment with engine horsepower ratings of 60 hp and above, that are on the project or assigned to the contract for more than 30 days;
- Truck staging zones will be established for diesel-powered vehicles to wait to load or unload;
- Idling is limited to three minutes for delivery and dump trucks and other diesel-powered equipment, with some exception;
- All work must be conducted to ensure that no harmful effects are caused to adjacent sensitive areas;
- Diesel-powered engines must be located away from fresh air intakes, air conditioners, and windows.

The construction began in 2003 and is scheduled to be completed in 2013. All contractors and sub-contractors are required to participate in the Connecticut Clean Air Construction Initiative by the ConnDOT. As bid by each contractor, the costs of purchasing DOCs and/or using clean fuels were included in the overall contract cost. Thus far, all the contractors have decided to install DOCs instead of using clean fuels, such as emulsified diesel fuel. More information on this project can be found at:

[www.i95newhaven.com/poverview/environ\\_init.asp](http://www.i95newhaven.com/poverview/environ_init.asp).

## **2.3 Dan Ryan Expressway Road Construction Project**

The Illinois Department of Transportation (IDOT) implemented a pollution reduction initiative on the reconstruction project of the Dan Ryan Expressway that runs through the middle of the south side of Chicago. Through this project, all heavy construction equipment on the Dan Ryan project will be either retrofitted with emissions control device or will use ULSD fuel (15 ppm sulfur). IDOT has also implemented idling limits and dust controls to reduce air emissions from construction activities. An estimated 290 pieces of construction equipment in use on the Dan Ryan project will have emissions control device or will use ULSD. Funded in part through a grant of \$60,000 from U.S. EPA, these emissions control strategies are a contract requirement for equipment operating on the Dan Ryan project. The focus of this project is on reduced idling, with contractors required to establish truck staging areas while waiting to load or unload, and the idle time is limited to no more than 5 minutes. The Illinois Tollway Authority has also adopted IDOT's Initiative and is requiring the use of either ULSD fuel or retrofitting heavy construction equipment on the reconstruction and widening projects along several highways. The project is

estimated for completion in August 2007. More information on this project can be found at: [www.danryanexpressway.com](http://www.danryanexpressway.com).

## **2.4 New York City Local Law No. 77**

New York City Local Law No. 77 was signed into law on December 22, 2003 and requires the phase-in use of ULSD and best available technology (BAT) for emission control in all diesel-powered nonroad vehicles used in city construction projects. It applies to all diesel nonroad vehicles with an engine rated at 50 hp or greater that is owned by, operated by or on behalf of, or leased by a city agency. From December 19, 2005 on, any solicitation for a public works contract less than \$2 million must specify that the contractors use Best Available Technology (BAT), but this schedule has been delayed. The Commissioner of the New York City Department of Environmental Protection will update the list of approved technology at least every six months, and includes those technologies verified by EPA or ARB. The requirements of Local Law No. 77 are enforced with penalties for those contractors that violate the provisions of the law, such as civil fine between \$1,000 and 10,000 plus twice the amount of money saved by the contractor failing to comply with the requirements. More information on Local Law No. 77 can be found at: [www.nycouncil.info/pdf\\_files/bills/law03077.pdf](http://www.nycouncil.info/pdf_files/bills/law03077.pdf).

## **2.5 WTC Diesel Emissions Reduction Project**

The 7 WTC Diesel Emissions Reduction Project is a national model for demonstrating clean construction by using ULSD and retrofit nonroad, heavy-duty diesel construction equipment with DOCs or DPFs. The WTC Diesel Emissions Reduction Project is the first public/private initiative in New York construction market focused on reducing emissions from heavy-duty diesel construction equipment that was initiated by Clean Air Communities (CAC). The project plan calls for immediate use of ULSD fuel for selected equipment on-site and the phase-in of retrofit technologies on equipment owned by participating contractors or sub-contractors working at the 7 WTC site. CAC provides technical support and funding to construction contractors working at 7 WTC to implement ULSD fuel and to retrofit selected equipment. Funding has also been provided to construction corporations and transit fleets operating in the vicinity of 7 WTC in partnership with the Battery Park City Authority. The CAC project will retrofit 8 pieces of construction equipment at the WTC site and 10 pieces of equipment will use the ULSD fuel. More information on this project can be found at: [www.cleanaircommunities.org/projects/wtc.html](http://www.cleanaircommunities.org/projects/wtc.html).

In order to investigate diesel emission reduction from nonroad construction equipment at the World Trade Center, the Port of Authority of New York and New Jersey initiated a project designed to investigate the use of emission reduction strategies for several pieces of equipment with focus on PM reduction. The construction equipment selected for the project included two Caterpillar 966G wheel loaders and one Caterpillar 2,000 kW generator. First of the emission reduction strategy was to switch the fuel to ultra low sulfur diesel (ULSD) fuel and then the wheel loaders were retrofitted with DPFs. DPFs installed for the project utilized passive regeneration technology. Caterpillar, Inc. installed the DPF into the wheel loader exhaust system with a complete retrofit replacement kit that is a direct replacement for the original muffler. Because it was determined that the generator was unsuitable candidate for a DPF due to the lack

of sufficient exhaust temperature, no emissions test was conducted on the generator. To quantify the emission reduction achieved with the ULSD and DPF, portable emission monitoring systems (PEMS) were installed on the wheel loaders. Two independent portable systems were installed simultaneously because no one system can provide the emission measurement metrics requested by the Port Authority: 1) the Clean Air Technologies International Montana system, and 2) the Environment Canada DOES2 system. Emission testing on the wheel loaders was performed to determine reduction efficiency performance of deploying ULSD and a DPF with ULSD against onroad diesel fuel. Emission testing was performed over a two-week period. The two loaders, TG-22 and TG-25 were exercised through a complete testing sequence one at a time. The following testing sequence was used:

- DPF and ULSD;
- OEM muffler and ULSD; and
- OEM muffler and on-road diesel fuel

The tests were run for each configuration until a minimum of three acceptable test runs were established. The test results are as follows:

*PM Emissions Result*

Significant PM emission reductions were documented as a result of implementing ULSD and installing DPFs. Both of the portable emissions monitoring systems found PM emission reduction in the 15 to 20 percent range when just ULSD was used and greater than 90 percent reduction when ULSD was combined with a DPF.

**Table 1. PM Emission Test Results**

Fuel	Retrofit Technology	Environment Canada PEMS		CATI PEMS	
		g/gal	% reduction	g/gal	% reduction
On-road diesel	None	3.964	---	1.551	---
ULSD	None	3.464	12.6	1.289	16.9
ULSD	DPF	0.100	97.5	0.011	99.3

*CO Emissions Result*

Significant CO emission reductions were observed during this program when the DPF was employed.

**Table 2. CO Emission Test Results**

Fuel	Retrofit Technology	Environment Canada PEMS		CATI PEMS	
		g/gal	% reduction	g/gal	% reduction
On-road diesel	None	25.64	---	25.23	---
ULSD	None	22.98	10.4	24.84	1.5
ULSD	DPF	3.43	86.6	2.15	91.5

*HC Emissions Result*

Results from switching from onroad diesel to ULSD alone indicate a net increase in HC emissions. However, a 97 percent reduction is achieved by switching to ULSD and using the DPF.

**Table 3. HC Emission Test Results**

Fuel	Retrofit Technology	Environment Canada PEMS	
		g/gal	% reduction
On-road diesel	None	1.26	---
ULSD	None	1.93	-52.7
ULSD	DPF	0.03	97.4

Note: Because the CATI Montana system is not equipped with a heated sample line, the HC total mass and real-time data is considered anecdotal and is not presented.

*NOx Emissions Result*

The program as developed by the Port Authority did not target NOx reductions, and the emission test results indicate approximately 16 percent reduction as a result of switching fuels and between about 20 to 30 percent by using the DPF. Applications of DPFs is not expected to impact NOx emissions and the results reported here may be related to engine backpressure effects associated with operations utilizing a DPF.

**Table 4. NOx Emission Test Result**

Fuel	Retrofit Technology	Environment Canada PEMS		CATI PEMS	
		g/gal	% reduction	g/gal	% reduction
On-road diesel	None	100.0	---	123.0	---
ULSD	None	84.5	15.6	103.7	15.7
ULSD	DPF	80.4	19.7	87.93	28.5

*CO<sub>2</sub> Emissions Result*

The test results show that there was little difference in CO<sub>2</sub> results between fuel/retrofit technology configurations. The reductions shown are partially attributable to the differences in hydrogen and carbon content of the two fuels.

**Table 5. CO<sub>2</sub> Emission Test Result**

Fuel	Retrofit Technology	Environment Canada PEMS		CATI PEMS	
		g/gal	% reduction	g/gal	% reduction
On-road diesel	None	10,275	---	11,808	---
ULSD	None	9,714	5.5	11,298	4.3
ULSD	DPF	9,749	5.1	11,340	4.0

More information on this project is available at:  
[www.mjbradley.com/documents/PANYNJ\\_WTC\\_Final\\_Report-09Aug04.pdf](http://www.mjbradley.com/documents/PANYNJ_WTC_Final_Report-09Aug04.pdf).

## **2.6 LAX Master Plan Program: Community Benefits Agreement**

As part of the LAX Master Plan Program, the Community Benefits Agreement provides a range of community benefits and impact mitigations that will be implemented by the Los Angeles World Airports (LAWA). Included in this Agreement is the requirement to retrofit all diesel construction equipment with best available emissions control devices to firstly reduce diesel PM and then NO<sub>x</sub> secondly. This requirement for retrofit applies to all diesel-powered nonroad equipment, onroad equipment, and stationary diesel engines. The emission control devices must be verified or certified by EPA or ARB for onroad or nonroad vehicles. Additionally, as part of a Demonstration Project, LAWA may allow diesel construction equipment used at a LAX Master Plan Program construction site to be retrofitted with a new emission control device that have not yet been certified or verified by ARB or EPA for use for onroad or nonroad vehicles or engines. LAWA, in consultation with the Coalition Representative and LAWA contractors, must develop processes to determine if a Demonstration Project using a new emission control device is needed, and how the project will be implemented. All emission control device installed on the diesel engines must achieve emission reduction no less than the reduction that could be achieved by an ARB Level 2 device (50-85% PM reduction efficiency). The emission reduction device may not increase the emission of any pollutant above the level that is standard for that engine. In order to determine the best available emission control devices for new technology that may become available in the future, the new emission control devices must meet a cost-effectiveness threshold of \$13,600 per ton of NO<sub>x</sub> reduced. For PM<sub>2.5</sub> and PM<sub>10</sub> reduction, any diesel particulate filter, diesel oxidation catalyst, or other technology on EPA or ARB verified list are considered to be cost-effective.

In addition to diesel construction equipment retrofit requirement, all construction equipment used for LAX Master Plan Program must use ultra-low sulfur diesel (ULSD) fuel, provided that there is an adequate supply in the Southern California area. If adequate supply of ULSD is not available, other fuels that do not emit greater emissions of fine PM or NO<sub>x</sub> than would using ULS, could be used.

Designation of the best available emission control devices will be reassessed annually and LAWA must establish processes to revise these designations and include them into construction bid documents before bidding of new construction phases of the LAX Master Plan Program. LAWA must also ensure that the requirements for installing diesel emission control devices and the use of ULSD are followed by all Airport Contractors, Airport Lessees, and Airport Licensees. Violation of these requirements is subject to a fine of \$1,000 per day per violation. Compliance with these requirements will be monitored by an independent third party monitor. Diesel equipment manufactured before 1990 must be retrofitted with DOCs verified by ARB for use on nonroad diesel engines by December 31, 2005. If no verified DOC exists for the particular diesel equipment on or before June 30, 2003, the installation schedule is delayed until ARB can make the appropriate findings to support verification. If ARB verified DPFs are shown to be available and technically feasible, safe, reliable and cost effective for the pre-1990 diesel equipment, it must be retrofitted with the DPF by December 31, 2010. For diesel equipment that is manufactured in or after 1990, verified DPFs or verified DOCs must be installed within 36 months of ARB verification of the technology.

More information on the Community Benefits Agreement is available at:  
[www.laane.org/lax/index.html](http://www.laane.org/lax/index.html).

## **2.7 The Impact of Retrofit Exhaust Control Technologies on Emissions from Heavy-Duty Diesel Construction Equipment** (SAE paper no. 1999-01-0110)

The testing program was conducted to study the in-use emissions and duty cycles from five heavy-duty construction vehicles and examine the emission reduction potential of retrofit control technologies on construction equipment, such as DOCs, passive DPF, and active DPF technologies. For this study, the following emissions reduction devices were installed:

- Backhoe was equipped with an active uncatalyzed particulate filter that was designed to operate a full shift and then at the end of the shift, regenerate using in-line electrical burners powered by 220 V shore power. The substrate was a 100 cells/inch<sup>2</sup> cell wall flow filter.
- Volvo front end loader was retrofitted with an oxidation catalyst with substrates in parallel 19 cm diameter and 13 cm length. The catalyst contained 300 cells/inch<sup>2</sup> and had a total volume of 7 liters. The catalyst washcoat contained a proprietary zeolite and the precious metal catalyst is platinum based. The unit was a direct replacement of the stock muffler.
- Caterpillar front end loader was retrofitted with a catalyzed particulate filter 100 cells/inch<sup>2</sup>. The washcoat is a proprietary precious metal coating.
- Dump truck was retrofitted with an oxidation catalyst that is 3 cm in diameter. The catalyst contains 300 cells/inch<sup>2</sup> with a proprietary precious metal washcoat. The catalyst was a direct replacement of the stock muffler.
- Bulldozer was retrofitted with an oxidation catalyst specifically designed for this application. It contains 200 cells/inch<sup>2</sup> and has a proprietary precious metal coating.

After conducting the tests on each of the five construction equipments along with baseline emissions tests, it was concluded that:

- Dumptruck, equipped with DOC, showed PM reduction of 17%; however, the conversion of the gaseous emissions was low;
- Backhoe, equipped with active DPF, showed PM reduction of 81%;
- Bulldozer DOC system showed PM reduction of 24%, CO emissions were also significantly reduced while HCs were not reduced;
- Caterpillar wheeled loader, equipped with catalyzed DPF, showed a combination of 97% PM reduction and excellent gaseous control; and
- Volvo wheeled loader, equipped with DOC, showed PM reduction of 52% (during the tests a leak developed in the mass flow controller and made it difficult, if not impossible to determine the absolute emission rates).

This test program confirmed that retrofitting exhaust emission control technologies to nonroad construction equipment is feasible and that real in-use emission reductions can be achieved. Based on the results of this study, retrofitting 200,000 diesel construction equipment

with DOCs in the Northeast would reduce PM emissions up to 4,000 tons/year, CO up to 45,000 tons/year, and HCs up to 7,000 tons/year. Retrofitting 200,000 construction equipments with DPFs would reduce PM emissions up to 15,000 tons/year, CO up to 109,000 tons/year, and HCs up to 17,000 tons/year.

## **2.8 Demonstration Projects for Diesel Particulate Filter Technologies on Existing Off-Road Heavy-Duty Construction Equipment**

The South Coast Air Quality Management District (SCAQMD) and California ARB jointly initiated a project to evaluate the durability and effectiveness of passive DPF technology installed on existing nonroad diesel construction equipment. The focus of the project was the installation of 21 PM filters onto 15 diesel engines that are used on 12 heavy-duty construction vehicles. The demonstration study comprised of engineering and retrofitting the construction equipment and monitoring their operation for a period of one year. The effectiveness and durability of the filters and their installation hardware were measured and laboratory dynamometer emission testing under various steady-state and transient conditions was also conducted. The Los Angeles County Sanitation District (LACSD) provided six vehicles (scrapers and dozers) that were fueled with ULSD fuel and two scrapers and two dozers were also operated as control vehicles to provide baseline information for fuel economy, oil consumption, and reliability performance against the vehicles retrofitted with the DPFs. C.W. Poss Construction, Inc. (Poss) also provided six vehicles (scrapers and dozers) as the study vehicles but did not operate any control vehicles. Two different manufacturers provided the DPFs for the construction equipment.

Vehicles and DPFs used:

- LACSD vehicles: 1996 vintage 657 E scrapers, and 2000 vintage D9 dozers
- Poss vehicles: Caterpillar 651 B scrapers and Caterpillar 824/825/834 series dozers manufactured between 1971 and 1983
- DPFs from supplier A: 20"x15" filters for all applications, except for one 15"x15" used on an 825C dozer with a Caterpillar 3406 engine
- DPFs from supplier B: 20"x15" filters on most applications

The final equipment selections are as follows:

- A total of 12 vehicles were retrofitted in the study: 6 with DPFs from supplier A and 6 with DPFs from supplier B; with 6 of the test vehicles located at LACSD and 6 at Poss
- A total of 15 engines were retrofitted: 8 with DPFs from supplier A and 7 with DPFs from supplier B; with 9 located at LACSD and 6 at Poss
- A total of 21 filters were involved in the program: 12 from supplier A and 9 from supplier B; with 12 located at LACSD and 9 located at Poss

After operating these construction equipments with DPFs for a period of one year, filters from suppliers A and B were tested at the West Virginia University (WVU) Engines and Emissions Research Laboratory. Dynamometer tests on a Caterpillar engine using both transient

and 8-mode steady-state duty cycles were conducted. The test showed that DPFs from both suppliers were highly effective in reducing PM emission on the dynamometer tests. Both pre- and post-demonstration testing by WVU on the filter from supplier B showed more than 98 percent PM emissions reduction. Pre-demonstration test of the filter from supplier A showed greater than 98 percent PM emissions reduction, while the post-demonstration testing showed approximately 91 percent PM emission reduction. None of the filters from suppliers A and B affected the levels of total NOx significantly, while the traps greatly reduced the levels of HC and CO emissions (about 79 and 65 percent for the filter from supplier A, respectively, and 93 and 97 percent for the filter from supplier B, respectively).

**Table 6. Post-Demonstration Dynamometer Emissions Test Results**

<b>Emission Type</b>	<b>Fuel Type</b>	<b>8-mode Weighted Average (g/bhp-hr)</b>	<b>Transient Cycle (g/bhp-hr)</b>	<b>% Reduction vs. ECD1 Baseline (Transient Test)</b>
PM	ECD1 Baseline	0.17	0.33	0%
	EDC1-Supplier B	0.01	0.00	>99%
	EDC1-Supplier A	0.01	0.03	90.9%
NOx	ECD1 Baseline	6.52	6.40	0%
	EDC1-Supplier B	6.14	6.05	5.5%
	EDC1-Supplier A	5.96	5.96	6.9%
HC	ECD1 Baseline	0.12	0.30	0%
	EDC1-Supplier B	0	0	>99%
	EDC1-Supplier A	0	0	>99%
CO	ECD1 Baseline	1.31	2.10	0%
	EDC1-Supplier B	0.24	0.16	92.4%
	EDC1-Supplier A	0.03	0.21	90.0%

In evaluating the durability and reliability of the filters, filters from supplier B at LACSD initially performed well, but backpressure began to rise on all units equipped with the larger filters within 400 to 500 hours of operation. Inspection of the filter showed that the ceramic trap elements had “shifted” out of the canister on all of the larger units. These systems were replaced or re-canned. Since then, new filters with new banding design have accumulated approximately 1,000 hours of operation and the original filters that were re-canned using new banding design have accumulated approximately 2,500 hours. The filters from supplier B performed well on 1996 vintage and newer diesel engines, but were deemed incompatible with the 1970s vintage Poss diesel engines. The filters from supplier A showed excellent durability and reliability throughout the demonstration period with only one failure on a D9 dozer at LACSD. In this failure, the ceramic filter inside the canning shifted and was broken up, causing excessive backpressure and loss of power.

Although basic DPF performance was validated for use on heavy-duty diesel construction equipment, many challenges still remain with installing and mounting large DPFs on large construction equipment. These challenges are compounded by the fact that higher horsepower engines like those tested in this program required two very large filter sizes to handle the high-volume exhaust flow of the engines.

## **2.9 Reliability of DPF-Systems: Experience with 6000 Applications of the Swiss Retrofit Fleet (SAE paper no. 2004-01-0076)**

In 2000, the occupational health agencies of Switzerland (Suva) declared that DPFs are essential for underground workplaces. The environmental agencies of the Swiss federal government (BUWAL) followed in mid-2002 with the Ordinance on Protecting Air Quality at Construction Sites (BauRLL) all over Switzerland. DPFs were first retrofitted onto large public construction sites, with emphasis on air quality in tunnel projects and their associated labor intensive activities. As of 2003, approximately 6,500 construction equipment have been retrofitted with DPFs. This study was conducted to evaluate the filtration quality of VERT-Test compliant traps in both their new state and after 2,000 operating hours. The report examined trap failures, their causes and prevention based on information from manufacturers, retrofitters, and independent inspections.

The first reliability test was conducted in October 2000, asking the manufacturers and retrofitters for feedback. Failure rates in this first survey were in the 5 to 6 percent range. A new survey was conducted in October 2003, based mainly on information provided by manufacturers and retrofitters on overall failure rates. This later survey showed an annual failure rate is below 2 percent. Causes of failure include: defective canning; material defects; faulty gluing of the segmented filters and other manufacturing defects causing functional deficiencies; customer's handling accidents; and operational errors such as using high sulfur fuels with catalyzed filters.

The experience with this large retrofitted fleet shows the applicability of DPFs for all types of diesel construction equipment. It also demonstrated that DPFs are technically, operationally, and economically feasible and that there are no major obstacles to large scale retrofitting of DPFs to existing diesel engines.

A database of DPFs verified by VERT for the Swiss diesel retrofit program is available at: [www.akpf.org/index.html](http://www.akpf.org/index.html).

## **2.10 City of Houston Diesel Field Demonstration Project**

In order to address the air pollution contribution from each City of Houston department, the City established a comprehensive Emission Reduction Plan (ERP) in June 2000. The main goal of the ERP is to reduce NO<sub>x</sub> emission by 50 to 75 percent and PM<sub>2.5</sub> by at least 25 to 33 percent. Under the Diesel Field Demonstration Project a number of diesel emissions control devices were evaluated in the field on various vehicles and equipment, including construction equipment, during the summer of 2000 through the fall of 2001. The goal of the project was to identify retrofit emission control systems that can achieve 75 percent NO<sub>x</sub> reductions and at least 25 to 33 percent reduction in fine particulates.

Environment Canada performed the gaseous and particulate exhaust emissions testing on the City of Houston fleet vehicles at Ellington Field, Houston, Texas. A total of 29 units were selected to be representative of the fleet, of which 26 were field tested with emissions control devices. In addition to demonstrating the effectiveness of emissions control devices, the program also evaluated various emulsified diesel fuel formulations. Several manufacturers

provided various emissions control technologies to demonstrate the effectiveness of these devices to reduce exhaust emissions. Diesel retrofit technologies evaluated included DOCs, passively regenerated DPFs, and SCR systems. With respect to construction equipment, this project evaluated three different retrofit technology options on a 1992 MY Cummins Gradall G3WD 6BTA 5.9L 190 hp: DOC + emulsified diesel fuel, an SCR system, and a combined DPF + SCR system.

After installation, the vehicle was returned to regular service for a period of time advised by the manufacturer to degreen the device. At the end of this period, emissions testing were performed with the device installed. The following is the summary of results from emissions testing with emissions reduction devices installed:

**Table 7. Summary of Emission Testing Results**

Vehicle	Technology Installed	% NOx Reduction from baseline	% TPM Reduction from baseline
Gradall G3WD	DOC + Emulsified Diesel	34.8	76.3
Gradall G3WD	SCR	78.2	26.7
Gradall G3WD	DPF + SCR	84.0	91.9

More information on this project is available at:  
[www.arb.ca.gov/msprog/ordiesel/Documents/houston\\_demo\\_project.pdf](http://www.arb.ca.gov/msprog/ordiesel/Documents/houston_demo_project.pdf).

As a result of the field demonstration program described above, SCR was selected as one of the technologies to be used on City fleet equipment. This City of Houston Fleet Retrofit project involves retrofitting 33 rubber tire excavators with SCR and one SCR system was installed on a 2003 model year dump truck. In addition, the City has retrofitted about 30 to 40 nonroad engines such as backhoes and water pumps with DOCs. This program will include emission testing at the University of Houston’s testing facility with chassis dynamometer to quantify the emission reductions achieved with the retrofit technologies. This project is funded by the Texas Council on Environmental Quality (TCEQ) with Texas Emission Reduction Program (TERP) funds and the Houston-Galveston Area Council with Congestion Mitigation and Air Quality (CMAQ) funds in the amount of \$500,000 for the SCR systems. The vehicles and equipments that were retrofitted include:

- Gradall rubber-tire excavators powered by 1994 to 2000 MY Cummins 5.9L 190 hp engines
- 2003 MY dump truck powered by a Cummins ISC 315 330 hp engine

As of February 18, 2005, all 33 ditch excavators were equipped with an initial design SCR system and the SCR system will be upgraded to increase the level of emission reduction. The SCR systems that were installed included a DOC and a warning signal to indicate when the ammonia supply was getting low. The SCR system was not verified at the time it was installed on the equipment. However, the Houston program helped to provide data for the eventual ARB verification of the SCR for application on nonroad 1991-1995 Cummins 5.9L from 150-200 hp engines. The SCR systems on the excavators will be upgraded with a SCR system that will include a hybrid DPF used with ULSD to achieve greater PM emission reduction. The SCR systems have been in operation for up to three years and have reported no major problems. For

more information on this project, go to Appendix B of the Final Draft of *Diesel Retrofit Technology and Program Experience* report at: [www.epa.gov/cleandiesel/publications.htm](http://www.epa.gov/cleandiesel/publications.htm).

## **2.11 Port of Seattle, Sea-Tac International Airport Project**

In order to meet conformity commitment to keep NO<sub>x</sub> emissions from construction projects to less than 100 tons per year, the Port of Seattle initiated a project to reduce NO<sub>x</sub> emissions from construction activities at Sea-Tac's Runway Three. In 2002, a pilot program was initiated fueling onroad and nonroad vehicles with ULSD. With the success of the program, all vehicles and equipment used in the construction of Runway Three started being fueled with ULSD in February 2004. The next phase of the project involves retrofitting up to 10 or more nonroad engines with DOCs. For this phase, muffler replacement DOCs, rather than DPFs, are planned because some of the equipments emit high levels of PM. Backpressure monitors will also be installed. For more information on this project, go to Appendix B of the Final Draft of *Diesel Retrofit Technology and Program Experience* report at: [www.epa.gov/cleandiesel/publications.htm](http://www.epa.gov/cleandiesel/publications.htm).

## **3.0 Funded Projects**

### **3.1 2005 National Clean Diesel Campaign Demonstration Grant Construction Projects**

On November 7, 2005, U.S. EPA announced grant awards of more than \$1 million to ten grantees to implement projects to demonstrate effective emissions reduction strategies for nonroad equipment and vehicles. The purpose of the grants is to demonstrate a wide variety of technologies such as cleaner fuels, and diesel retrofit devices (DOC, DPF, and engine replacement) for nonroad sector. Below is the list of funded projects:

- *City and County of Denver, Colorado*: The City and County of Denver will install DOCs on diesel alley and street paving fleets operating in low-income and underserved communities. This project has been awarded \$125,000.
- *American Lung Association of Hawaii*: The American Lung Association of Hawaii will replace older, dirtier diesel construction equipment engines with newer, cleaner engines to reduce air pollution on Oahu and Kauai. This project has been awarded \$135,000.
- *Idaho Department of Environmental Quality (DEQ)*: The Idaho DEQ will install DOCs and closed crankcase ventilation systems on portable diesel generators that power rock crushers and hot mix asphalt plants. This project has been awarded \$100,000.
- *Maryland Department of Environment*: The Maryland Department of Environment will install DPFs on front end loaders at landfills in the City of Baltimore. This project has been awarded \$50,000.
- *Massachusetts Executive Office of Environmental Affairs*: The Massachusetts Executive Office of Environmental Affairs will retrofit construction equipment with diesel retrofit devices and use ULSD fuel. This project has been awarded \$120,000.

- *New York State Energy Research and Development Authority (NYSERDA)*: NYSERDA will retrofit nonroad fleets as part of a research project to identify best available retrofit technologies. This project has been awarded \$100,000.
- *Oregon-Columbia Chapter of Associated General Contractors (AGC)*: AGC will install retrofit technologies to diesel equipments used in highway bridge replacement projects and use ULSD fuel. This project has been awarded \$120,000.
- *York Technical College*: York Technical College and several local municipalities will retrofit nonroad equipments with DOCs. This project has been awarded \$95,040.
- *Wisconsin Department of Natural Resources (DNR)*: Wisconsin DNR will install DOCS on construction equipment and use ULSD fuel. This project has been awarded \$100,000.

For more information on the National Clean Diesel Campaign 2005 grants, go to: [www.epa.gov/cleandiesel/awarded-grants.htm](http://www.epa.gov/cleandiesel/awarded-grants.htm).

### **3.2 West Coast Diesel Emissions Reduction Collaborative Construction Projects**

#### *East Side Combined Sewer Overflow Project*

The City of Portland's Combined Sewer Overflow (CSO) program is the largest public works project in the history of the State of Oregon, comprising three "Big Pipe" projects: the Columbia Slough Consolidation Conduit; the West Side "Big Pipe"; and the East Side "Big Pipe". The East Side CSO Tunnel or "Big Pipe", to begin in 2006, is the final and largest of the projects in Portland's 20-year program. During this five year construction project, approximately 150 diesel powered vehicles will be used for construction. The proposed project plan will require the use of ULSD in all project vehicles, use equipment that comply with EPA Tier 2 requirements for nonroad engines at a minimum and install best available retrofit emission control devices, such as DPF, DOC or wire mesh flow-through filters. The funding for the fuel premium will be paid by the contractor and ultimately the ratepayers in the city, but funding for retrofitting is requested from other sources to realize the full environmental and public health benefits that are available. The project is scheduled to be completed in 2011. More information on this project is available at: [www.portlandonline.com/cso.index.cfm?c=31727](http://www.portlandonline.com/cso.index.cfm?c=31727).

#### *City of Fresno Wastewater Treatment Facility Retrofit Project*

City of Fresno, Fleet Management Division has agreed to participate in a demonstration program to retrofit three pieces of nonroad equipment with a diesel retrofit technology currently verified by both EPA and ARB for onroad applications to reduce emissions of PM, NOx, VOC and CO. The equipment to be retrofitted is currently operated daily at a Wastewater Treatment Plant located in southwestern quadrant of the City of Fresno. The equipment will be retrofitted a combined lean NOx catalyst/DPF technology that is currently verified by ARB for PM and NOx reductions on a range of on-road diesel engines. This project will demonstrate the viability of a combined PM/NOx emission reduction technology in nonroad engines. The manufacturer of the retrofit technology will conduct all necessary field engineering work with Cummins West, Inc. and Cleaire will also be responsible for submitting the progress and final reports. The City of Fresno will make the equipments available as well as collect all necessary maintenance and

operational data. More information on this project is available at:  
[www.westcoastdiesel.org/projects.htm](http://www.westcoastdiesel.org/projects.htm).

*Washington Clean Construction: Feasibility Demonstration for Retrofit of Non-road Equipment Project*

In order to reduce toxic air emissions, the Yakima Regional Clean Air Authority (YRCAA) is participating with six local air authorities, the Washington State Department of Ecology (Ecology), and the American Lung Association in a demonstration project to retrofit nonroad diesel equipments. In coordination with local air authorities, Ecology will implement a state-wide program to reduce emissions from diesel-powered construction equipment. The purpose of this demonstration project is to demonstrate to the public and private fleet owners of nonroad, diesel powered equipment, the feasibility of retrofitting these equipment with DOCs without disrupting fleet operations. Approximately 50 vehicles will be retrofitted with federal funding and in-kind contribution. More information on this project is available at:  
[www.westcoastdiesel.org/projects.htm](http://www.westcoastdiesel.org/projects.htm).

*Construction Equipment Retrofit Demonstration Project*

The Construction Equipment Retrofit Demonstration Project is a joint effort of the Collaborative, the Sacramento Metropolitan Air Quality Management District (SMAQMD), and a retrofit technology manufacturer to retrofit five pieces of heavy construction equipment with emission-reducing device. The demonstration project will then evaluate the viability of the retrofit technologies to reduce PM and, to the extent feasible, NO<sub>x</sub>, HC, and CO emissions. This project will be funded through a \$211,000 grant from EPA and \$14,000 from SMAQMD. The goal of the demonstration project is to install emission control devices to five pieces of construction equipment to reduce annual diesel emissions by more than 85 percent for PM, up to 25 percent for NO<sub>x</sub>, and up to 90 percent for CO. More information on this project is available at:  
[www.westcoastdiesel.org/grants/files/Construction%20Equipment%20Retrofit%20Fact%20Sheet.pdf](http://www.westcoastdiesel.org/grants/files/Construction%20Equipment%20Retrofit%20Fact%20Sheet.pdf).

*Oregon Construction Equipment Emissions Reduction Project*

The Oregon Environmental Council (OEC) will work with builders, state environmental officials, the City of Portland, and other jurisdictions to reduce construction equipment diesel emissions. Through diesel engine retrofits, cleaner fuels, and idle reduction policies, the project aims to reduce diesel emissions from construction equipment used in the City of Portland by at least 20 percent. After the evaluation of the project results, the project's most efficient methods may be applied to reducing construction equipment emissions along the West Coast. This project will be funded through a \$26,000 grant from EPA, and \$27,000 from OEC. More information on this project is available at:  
[www.westcoastdiesel.org/grants/files/OEC\\_Construction\\_Reduction\\_fact%20sheet.pdf](http://www.westcoastdiesel.org/grants/files/OEC_Construction_Reduction_fact%20sheet.pdf).

## 4.0 Summary

As shown by the above case studies, experience with retrofitting construction equipment with emission control devices is growing. The majority of the retrofit experience in construction equipment projects has been focused on demonstrating the feasibility of applying verified, onroad retrofit emission control technology on construction equipment and quantifying the diesel emission reductions achieved. Many of the projects have been initiated by the state, local, and federal agencies to promote interest in retrofitting construction equipment and facilitate other retrofit projects that may build on the successes and challenges learned from previous projects. Much of the experience with construction equipment retrofit projects has been with DOCs. This stems, in part, from the more universal applicability of diesel oxidation catalysts on existing diesel engines compared to other retrofit technology options. Experience to date with DPFs on in-use construction equipment is more limited due to the fact that the application of DPFs involves more engineering constraints with respect to the duty cycles and engine out emission characteristics of diesel engines used in construction equipment applications. Retrofit DPFs also generally require the use of ultra-low sulfur diesel fuel (ULSD). The availability of ultra-low sulfur diesel fuel for nonroad diesel engines will expand significantly as the rollout of ULSD for highway applications expands nationwide in the second half of 2006. Emerging onroad verified retrofit technologies such as actively regenerated DPFs and flow-through particulate filters should also find application in nonroad diesel engines and provide more options for significant reductions in diesel particulate emissions from construction equipment. Similarly, verified retrofit technologies that provide reductions in NO<sub>x</sub> emissions, such as lean NO<sub>x</sub> catalysts and SCR systems, will also migrate into the nonroad sector and see greater attention on construction equipment in the future. The construction equipment segment requires an expanded range of verified retrofit technologies to provide broader application coverage for the range of engines and equipment that are currently a part of the existing fleet.

There is an increased interest in the U.S. for retrofitting diesel construction equipment, largely due to the availability of more federal, state, and local incentive funds that can be used for these projects. One such funding source is the federal DOT/EPA Congestion Mitigation and Air Quality (CMAQ) Program. Funds from the CMAQ program have been used to pay for onroad diesel retrofit projects and now can be used for retrofit projects on nonroad engines used in construction projects in nonattainment or maintenance areas with respect to air quality. The CMAQ funding provides priority for diesel retrofit and other cost-effective emission reduction activities, with funding for the overall program of about \$1.4 billion per year through 2009. These CMAQ funds are typically controlled at the state and local level, most often by metropolitan planning organizations. Other significant state sources of funding for construction retrofit projects are available in California through ARB's Carl Moyer incentive funding program (see [www.arb.ca.gov/msprog/moyer/moyer.htm](http://www.arb.ca.gov/msprog/moyer/moyer.htm)) and in Texas through the Texas Emission Reduction Plan (see [www.tceq.state.tx.us/implementation/air/terp/](http://www.tceq.state.tx.us/implementation/air/terp/)). Other states are considering similar funding schemes for incentivizing retrofit projects involving onroad and offroad diesel engines. Through utilization of the available funding sources and building on the lessons learned from previous projects, the retrofit of construction equipment with emission control technology will become more widespread and provide an important tool for reducing emissions from the large number of existing nonroad diesel engines operating in the U.S.

Exhibit 13:  
Manufacturers of Emission Controls Association  
Case Studies of Construction Equipment, Diesel Retrofit Projects



# **Case Studies of Construction Equipment Diesel Retrofit Projects**

*March 2006*



**Manufacturers of Emission Controls Association**

1730 M Street, NW \* Suite 206 \* Washington, DC 20036

[www.meca.org](http://www.meca.org)

[www.dieselretrofit.org](http://www.dieselretrofit.org)



## TABLE OF CONTENTS

<b>1.0 Introduction.....</b>	<b>1</b>
<b>2.0 Completed or Current Projects.....</b>	<b>2</b>
2.1 The Central Artery/Tunnel (CA/T) Project, Boston MA.....	2
2.2 I-95 New Haven Harbor Crossing Corridor Improvement Program, NewHaven, CT .....	3
2.3 Dan Ryan Expressway Road Construction Project.....	3
2.4 New York City Local Law No. 77 .....	4
2.5 WTC Diesel Emissions Reduction Project .....	4
2.6 LAX Master Plan Program: Community Benefits Agreement .....	7
2.7 The Impact of Retrofit Exhaust Control Technologies on Emissions from Heavy-Duty Diesel Construction Equipment .....	8
2.8 Demonstration Projects for Diesel Particulate Filter Technologies on Existing Off- Road Heavy-Duty Construction Equipment .....	9
2.9 Reliability of DPF-Systems: Experience with 6000 Applications of the Swiss Retrofit Fleet.....	11
2.10 City of Houston Diesel Field Demonstration Project .....	11
2.11 Port of Seattle, Sea-Tac International Airport Project .....	13
<b>3.0 Funded Projects .....</b>	<b>13</b>
3.1 2005 National Clean Diesel Campaign Demonstration Grant Construction Projects	13
3.2 West Coast Diesel Emissions Reduction Collaborative Construction Projects.....	14
<b>4.0 Summary.....</b>	<b>16</b>



## 1.0 Introduction

Diesel engines provide important fuel economy and durability advantages for large heavy-duty trucks, buses, and nonroad equipment. Although they are often the power plant of choice for heavy-duty applications, they have the disadvantage of emitting significant amounts of particulate matter (PM) and oxides of nitrogen (NO<sub>x</sub>), and lesser amounts of hydrocarbon (HC), carbon monoxide (CO) and toxic air pollutants.

Due to the lag in emission control regulations until 1996, diesel engines used in construction equipment are typically more polluting than those used for normal highway applications. It is estimated that 47 percent of mobile source diesel PM emissions nationwide comes from nonroad diesels and 25 percent of mobile source NO<sub>x</sub> comes from nonroad diesels. The reduction of diesel emissions from construction equipment has the potential to significantly improve air quality for those who live or work in or adjacent to construction sites. With the approval of the U.S. EPA Clean Air Nonroad Diesel Rule (see [www.epa.gov/nonroad-diesel/2004fr.htm](http://www.epa.gov/nonroad-diesel/2004fr.htm)) that is scheduled for implementation in 2008-2015 timeframe, diesel emissions reduction from nonroad engines will occur through the use of advanced diesel engine technology, ultra-low sulfur diesel fuel (15 ppm S max.), and advanced diesel exhaust emission control technology such as diesel particulate filters (DPFs) for reducing PM emissions, and selective catalytic reduction (SCR) systems and NO<sub>x</sub> adsorber catalysts for reducing NO<sub>x</sub> emissions. These EPA Tier 4 emission standards for nonroad engines will apply to diesel engines used in most kinds of construction, agricultural, and industrial equipment. Technologies for complying with the Tier 4 nonroad diesel regulations will flow from the experience gained in complying with EPA's 2007-2010 heavy-duty highway diesel program (see [www.epa.gov/OMSWWW/diesel.htm](http://www.epa.gov/OMSWWW/diesel.htm)). However, due to the long operating lives of these diesel engines, it will take decades for older, "dirtier" nonroad diesel engines to be replaced with the mandated, newer "cleaner" engines. Given the health and environmental concerns associated with diesel engines and because the nonroad engines make up a significant percentage of diesel pollution emitted, there is an increasing interest in retrofitting the older nonroad diesel engines.

The case studies discussed in this paper focuses on those projects that have been completed, are in progress, or have received funding for retrofitting diesel-powered construction equipment with emission control technology. Many of the projects highlight the feasibility of installing verified onroad technologies on construction equipment and relate some of the lessons learned that may assist others in planning new construction equipment retrofit projects. The limited range of experience with retrofits on construction equipment summarized in this report also serves to point out the need for expanding the range of verified retrofit technology options for nonroad diesel applications in general, and construction equipment in particular. This paper focuses on technology-based strategies and, where available, provides information on the specific type of technology installed on the type of construction equipment and the emission reduction that was achieved. For more detailed descriptions of available emission control technologies that can be retrofit on existing onroad and nonroad diesel engines, please see MECA's white paper, *Retrofitting Emission Controls On Diesel-Powered Vehicles* (see [www.meca.org](http://www.meca.org) or the MECA diesel retrofit web site: [www.dieselretrofit.org](http://www.dieselretrofit.org)).

## **2.0 Completed or Current Projects**

### **2.1 The Central Artery/Tunnel (CA/T) Project, Boston, MA**

The Central Artery/Tunnel (CA/T) Project, also known as the "Big Dig", is a major highway construction project designed to reduce traffic congestion and improve mobility in central Boston. The project requires the use of heavy-duty construction equipment in a concentrated area. Under a Clean Air Construction Initiative Program, 25 percent of long-term nonroad diesel equipment used in constructing the CA/T Project has been retrofitted with advanced pollution control devices, with more than 200 pieces of equipment retrofitted.

The construction equipments were retrofitted with diesel oxidation catalysts (DOCs) over diesel particulate filters (DPFs) because of the reduction in hydrocarbon (HC) associated with diesel odors and carbon monoxide (CO) and PM<sub>10</sub> provided by DOC, the ease of installation and maintenance, and the cost of a DOC compared to DPF that allowed more pieces of equipment to be retrofitted with the available funds. In addition to retrofitting with emission control devices, the project included assigning staging zones for waiting trucks and limiting idling to not more than five minutes. The construction equipment was also refueled with ultra-low sulfur diesel (ULSD) and emulsified diesel fuels.

Equipment retrofitted with DOCs includes:

- Nichi, Caterpillar, SIC, Terex, and JLG lifts
- Mantis cranes
- John Deere and Caterpillar dozers
- Cradel excavators

The model years of the equipment ranged from 1994 to 2000, with most of the equipment being 1999 or 2000 model year. According to the contractors, the equipment retrofitted with DOCs has not experienced any adverse operational problems, such as loss of power or additional fuel consumption. During the pilot program, the Environment Canada used a portable emission-testing device and several DOCs will be removed and sent to Environment Canada for emission testing in subsequent evaluations.

To date, preliminary estimates from 2000-2004 of area-wide emission reductions from the retrofitted equipment indicate a reduction of approximately:

- 36 tons/year of CO,
- 12 tons/year of HC, and
- 3 tons/year of PM

More information on this project can be found at:

[www.massturnpike.com/bigdig/background/airpollution.html](http://www.massturnpike.com/bigdig/background/airpollution.html).

## **2.2 I-95 New Haven Harbor Crossing Corridor Improvement Program, New Haven, CT**

As part of the Connecticut's Clean Air Construction Initiative, the I-95 New Haven Harbor Crossing Corridor Improvement Program, also known as the Q-Bridge Project, has successfully installed DOCs on approximately 70 pieces of construction equipment. The construction contractors have also volunteered to use low sulfur diesel (500 ppm sulfur) on all of their nonroad equipments. The Initiative was established to protect workers and residents from harmful construction emissions along a populated corridor. The contractors are required to implement the following:

- Install emissions control devices on nonroad diesel-powered construction equipment with engine horsepower ratings of 60 hp and above, that are on the project or assigned to the contract for more than 30 days;
- Truck staging zones will be established for diesel-powered vehicles to wait to load or unload;
- Idling is limited to three minutes for delivery and dump trucks and other diesel-powered equipment, with some exception;
- All work must be conducted to ensure that no harmful effects are caused to adjacent sensitive areas;
- Diesel-powered engines must be located away from fresh air intakes, air conditioners, and windows.

The construction began in 2003 and is scheduled to be completed in 2013. All contractors and sub-contractors are required to participate in the Connecticut Clean Air Construction Initiative by the ConnDOT. As bid by each contractor, the costs of purchasing DOCs and/or using clean fuels were included in the overall contract cost. Thus far, all the contractors have decided to install DOCs instead of using clean fuels, such as emulsified diesel fuel. More information on this project can be found at:

[www.i95newhaven.com/poverview/environ\\_init.asp](http://www.i95newhaven.com/poverview/environ_init.asp).

## **2.3 Dan Ryan Expressway Road Construction Project**

The Illinois Department of Transportation (IDOT) implemented a pollution reduction initiative on the reconstruction project of the Dan Ryan Expressway that runs through the middle of the south side of Chicago. Through this project, all heavy construction equipment on the Dan Ryan project will be either retrofitted with emissions control device or will use ULSD fuel (15 ppm sulfur). IDOT has also implemented idling limits and dust controls to reduce air emissions from construction activities. An estimated 290 pieces of construction equipment in use on the Dan Ryan project will have emissions control device or will use ULSD. Funded in part through a grant of \$60,000 from U.S. EPA, these emissions control strategies are a contract requirement for equipment operating on the Dan Ryan project. The focus of this project is on reduced idling, with contractors required to establish truck staging areas while waiting to load or unload, and the idle time is limited to no more than 5 minutes. The Illinois Tollway Authority has also adopted IDOT's Initiative and is requiring the use of either ULSD fuel or retrofitting heavy construction equipment on the reconstruction and widening projects along several highways. The project is

estimated for completion in August 2007. More information on this project can be found at: [www.danryanexpressway.com](http://www.danryanexpressway.com).

## **2.4 New York City Local Law No. 77**

New York City Local Law No. 77 was signed into law on December 22, 2003 and requires the phase-in use of ULSD and best available technology (BAT) for emission control in all diesel-powered nonroad vehicles used in city construction projects. It applies to all diesel nonroad vehicles with an engine rated at 50 hp or greater that is owned by, operated by or on behalf of, or leased by a city agency. From December 19, 2005 on, any solicitation for a public works contract less than \$2 million must specify that the contractors use Best Available Technology (BAT), but this schedule has been delayed. The Commissioner of the New York City Department of Environmental Protection will update the list of approved technology at least every six months, and includes those technologies verified by EPA or ARB. The requirements of Local Law No. 77 are enforced with penalties for those contractors that violate the provisions of the law, such as civil fine between \$1,000 and 10,000 plus twice the amount of money saved by the contractor failing to comply with the requirements. More information on Local Law No. 77 can be found at: [www.nycouncil.info/pdf\\_files/bills/law03077.pdf](http://www.nycouncil.info/pdf_files/bills/law03077.pdf).

## **2.5 WTC Diesel Emissions Reduction Project**

The 7 WTC Diesel Emissions Reduction Project is a national model for demonstrating clean construction by using ULSD and retrofit nonroad, heavy-duty diesel construction equipment with DOCs or DPFs. The WTC Diesel Emissions Reduction Project is the first public/private initiative in New York construction market focused on reducing emissions from heavy-duty diesel construction equipment that was initiated by Clean Air Communities (CAC). The project plan calls for immediate use of ULSD fuel for selected equipment on-site and the phase-in of retrofit technologies on equipment owned by participating contractors or sub-contractors working at the 7 WTC site. CAC provides technical support and funding to construction contractors working at 7 WTC to implement ULSD fuel and to retrofit selected equipment. Funding has also been provided to construction corporations and transit fleets operating in the vicinity of 7 WTC in partnership with the Battery Park City Authority. The CAC project will retrofit 8 pieces of construction equipment at the WTC site and 10 pieces of equipment will use the ULSD fuel. More information on this project can be found at: [www.cleanaircommunities.org/projects/wtc.html](http://www.cleanaircommunities.org/projects/wtc.html).

In order to investigate diesel emission reduction from nonroad construction equipment at the World Trade Center, the Port of Authority of New York and New Jersey initiated a project designed to investigate the use of emission reduction strategies for several pieces of equipment with focus on PM reduction. The construction equipment selected for the project included two Caterpillar 966G wheel loaders and one Caterpillar 2,000 kW generator. First of the emission reduction strategy was to switch the fuel to ultra low sulfur diesel (ULSD) fuel and then the wheel loaders were retrofitted with DPFs. DPFs installed for the project utilized passive regeneration technology. Caterpillar, Inc. installed the DPF into the wheel loader exhaust system with a complete retrofit replacement kit that is a direct replacement for the original muffler. Because it was determined that the generator was unsuitable candidate for a DPF due to the lack

of sufficient exhaust temperature, no emissions test was conducted on the generator. To quantify the emission reduction achieved with the ULSD and DPF, portable emission monitoring systems (PEMS) were installed on the wheel loaders. Two independent portable systems were installed simultaneously because no one system can provide the emission measurement metrics requested by the Port Authority: 1) the Clean Air Technologies International Montana system, and 2) the Environment Canada DOES2 system. Emission testing on the wheel loaders was performed to determine reduction efficiency performance of deploying ULSD and a DPF with ULSD against onroad diesel fuel. Emission testing was performed over a two-week period. The two loaders, TG-22 and TG-25 were exercised through a complete testing sequence one at a time. The following testing sequence was used:

- DPF and ULSD;
- OEM muffler and ULSD; and
- OEM muffler and on-road diesel fuel

The tests were run for each configuration until a minimum of three acceptable test runs were established. The test results are as follows:

*PM Emissions Result*

Significant PM emission reductions were documented as a result of implementing ULSD and installing DPFs. Both of the portable emissions monitoring systems found PM emission reduction in the 15 to 20 percent range when just ULSD was used and greater than 90 percent reduction when ULSD was combined with a DPF.

**Table 1. PM Emission Test Results**

Fuel	Retrofit Technology	Environment Canada PEMS		CATI PEMS	
		g/gal	% reduction	g/gal	% reduction
On-road diesel	None	3.964	---	1.551	---
ULSD	None	3.464	12.6	1.289	16.9
ULSD	DPF	0.100	97.5	0.011	99.3

*CO Emissions Result*

Significant CO emission reductions were observed during this program when the DPF was employed.

**Table 2. CO Emission Test Results**

Fuel	Retrofit Technology	Environment Canada PEMS		CATI PEMS	
		g/gal	% reduction	g/gal	% reduction
On-road diesel	None	25.64	---	25.23	---
ULSD	None	22.98	10.4	24.84	1.5
ULSD	DPF	3.43	86.6	2.15	91.5

*HC Emissions Result*

Results from switching from onroad diesel to ULSD alone indicate a net increase in HC emissions. However, a 97 percent reduction is achieved by switching to ULSD and using the DPF.

**Table 3. HC Emission Test Results**

Fuel	Retrofit Technology	Environment Canada PEMS	
		g/gal	% reduction
On-road diesel	None	1.26	---
ULSD	None	1.93	-52.7
ULSD	DPF	0.03	97.4

Note: Because the CATI Montana system is not equipped with a heated sample line, the HC total mass and real-time data is considered anecdotal and is not presented.

*NOx Emissions Result*

The program as developed by the Port Authority did not target NOx reductions, and the emission test results indicate approximately 16 percent reduction as a result of switching fuels and between about 20 to 30 percent by using the DPF. Applications of DPFs is not expected to impact NOx emissions and the results reported here may be related to engine backpressure effects associated with operations utilizing a DPF.

**Table 4. NOx Emission Test Result**

Fuel	Retrofit Technology	Environment Canada PEMS		CATI PEMS	
		g/gal	% reduction	g/gal	% reduction
On-road diesel	None	100.0	---	123.0	---
ULSD	None	84.5	15.6	103.7	15.7
ULSD	DPF	80.4	19.7	87.93	28.5

*CO<sub>2</sub> Emissions Result*

The test results show that there was little difference in CO<sub>2</sub> results between fuel/retrofit technology configurations. The reductions shown are partially attributable to the differences in hydrogen and carbon content of the two fuels.

**Table 5. CO<sub>2</sub> Emission Test Result**

Fuel	Retrofit Technology	Environment Canada PEMS		CATI PEMS	
		g/gal	% reduction	g/gal	% reduction
On-road diesel	None	10,275	---	11,808	---
ULSD	None	9,714	5.5	11,298	4.3
ULSD	DPF	9,749	5.1	11,340	4.0

More information on this project is available at:  
[www.mjbradley.com/documents/PANYNJ\\_WTC\\_Final\\_Report-09Aug04.pdf](http://www.mjbradley.com/documents/PANYNJ_WTC_Final_Report-09Aug04.pdf).

## **2.6 LAX Master Plan Program: Community Benefits Agreement**

As part of the LAX Master Plan Program, the Community Benefits Agreement provides a range of community benefits and impact mitigations that will be implemented by the Los Angeles World Airports (LAWA). Included in this Agreement is the requirement to retrofit all diesel construction equipment with best available emissions control devices to firstly reduce diesel PM and then NO<sub>x</sub> secondly. This requirement for retrofit applies to all diesel-powered nonroad equipment, onroad equipment, and stationary diesel engines. The emission control devices must be verified or certified by EPA or ARB for onroad or nonroad vehicles. Additionally, as part of a Demonstration Project, LAWA may allow diesel construction equipment used at a LAX Master Plan Program construction site to be retrofitted with a new emission control device that have not yet been certified or verified by ARB or EPA for use for onroad or nonroad vehicles or engines. LAWA, in consultation with the Coalition Representative and LAWA contractors, must develop processes to determine if a Demonstration Project using a new emission control device is needed, and how the project will be implemented. All emission control device installed on the diesel engines must achieve emission reduction no less than the reduction that could be achieved by an ARB Level 2 device (50-85% PM reduction efficiency). The emission reduction device may not increase the emission of any pollutant above the level that is standard for that engine. In order to determine the best available emission control devices for new technology that may become available in the future, the new emission control devices must meet a cost-effectiveness threshold of \$13,600 per ton of NO<sub>x</sub> reduced. For PM<sub>2.5</sub> and PM<sub>10</sub> reduction, any diesel particulate filter, diesel oxidation catalyst, or other technology on EPA or ARB verified list are considered to be cost-effective.

In addition to diesel construction equipment retrofit requirement, all construction equipment used for LAX Master Plan Program must use ultra-low sulfur diesel (ULSD) fuel, provided that there is an adequate supply in the Southern California area. If adequate supply of ULSD is not available, other fuels that do not emit greater emissions of fine PM or NO<sub>x</sub> than would using ULS, could be used.

Designation of the best available emission control devices will be reassessed annually and LAWA must establish processes to revise these designations and include them into construction bid documents before bidding of new construction phases of the LAX Master Plan Program. LAWA must also ensure that the requirements for installing diesel emission control devices and the use of ULSD are followed by all Airport Contractors, Airport Lessees, and Airport Licensees. Violation of these requirements is subject to a fine of \$1,000 per day per violation. Compliance with these requirements will be monitored by an independent third party monitor. Diesel equipment manufactured before 1990 must be retrofitted with DOCs verified by ARB for use on nonroad diesel engines by December 31, 2005. If no verified DOC exists for the particular diesel equipment on or before June 30, 2003, the installation schedule is delayed until ARB can make the appropriate findings to support verification. If ARB verified DPFs are shown to be available and technically feasible, safe, reliable and cost effective for the pre-1990 diesel equipment, it must be retrofitted with the DPF by December 31, 2010. For diesel equipment that is manufactured in or after 1990, verified DPFs or verified DOCs must be installed within 36 months of ARB verification of the technology.

More information on the Community Benefits Agreement is available at:  
[www.laane.org/lax/index.html](http://www.laane.org/lax/index.html).

## **2.7 The Impact of Retrofit Exhaust Control Technologies on Emissions from Heavy-Duty Diesel Construction Equipment** (SAE paper no. 1999-01-0110)

The testing program was conducted to study the in-use emissions and duty cycles from five heavy-duty construction vehicles and examine the emission reduction potential of retrofit control technologies on construction equipment, such as DOCs, passive DPF, and active DPF technologies. For this study, the following emissions reduction devices were installed:

- Backhoe was equipped with an active uncatalyzed particulate filter that was designed to operate a full shift and then at the end of the shift, regenerate using in-line electrical burners powered by 220 V shore power. The substrate was a 100 cells/inch<sup>2</sup> cell wall flow filter.
- Volvo front end loader was retrofitted with an oxidation catalyst with substrates in parallel 19 cm diameter and 13 cm length. The catalyst contained 300 cells/inch<sup>2</sup> and had a total volume of 7 liters. The catalyst washcoat contained a proprietary zeolite and the precious metal catalyst is platinum based. The unit was a direct replacement of the stock muffler.
- Caterpillar front end loader was retrofitted with a catalyzed particulate filter 100 cells/inch<sup>2</sup>. The washcoat is a proprietary precious metal coating.
- Dump truck was retrofitted with an oxidation catalyst that is 3 cm in diameter. The catalyst contains 300 cells/inch<sup>2</sup> with a proprietary precious metal washcoat. The catalyst was a direct replacement of the stock muffler.
- Bulldozer was retrofitted with an oxidation catalyst specifically designed for this application. It contains 200 cells/inch<sup>2</sup> and has a proprietary precious metal coating.

After conducting the tests on each of the five construction equipments along with baseline emissions tests, it was concluded that:

- Dumptruck, equipped with DOC, showed PM reduction of 17%; however, the conversion of the gaseous emissions was low;
- Backhoe, equipped with active DPF, showed PM reduction of 81%;
- Bulldozer DOC system showed PM reduction of 24%, CO emissions were also significantly reduced while HCs were not reduced;
- Caterpillar wheeled loader, equipped with catalyzed DPF, showed a combination of 97% PM reduction and excellent gaseous control; and
- Volvo wheeled loader, equipped with DOC, showed PM reduction of 52% (during the tests a leak developed in the mass flow controller and made it difficult, if not impossible to determine the absolute emission rates).

This test program confirmed that retrofitting exhaust emission control technologies to nonroad construction equipment is feasible and that real in-use emission reductions can be achieved. Based on the results of this study, retrofitting 200,000 diesel construction equipment

with DOCs in the Northeast would reduce PM emissions up to 4,000 tons/year, CO up to 45,000 tons/year, and HCs up to 7,000 tons/year. Retrofitting 200,000 construction equipments with DPFs would reduce PM emissions up to 15,000 tons/year, CO up to 109,000 tons/year, and HCs up to 17,000 tons/year.

## **2.8 Demonstration Projects for Diesel Particulate Filter Technologies on Existing Off-Road Heavy-Duty Construction Equipment**

The South Coast Air Quality Management District (SCAQMD) and California ARB jointly initiated a project to evaluate the durability and effectiveness of passive DPF technology installed on existing nonroad diesel construction equipment. The focus of the project was the installation of 21 PM filters onto 15 diesel engines that are used on 12 heavy-duty construction vehicles. The demonstration study comprised of engineering and retrofitting the construction equipment and monitoring their operation for a period of one year. The effectiveness and durability of the filters and their installation hardware were measured and laboratory dynamometer emission testing under various steady-state and transient conditions was also conducted. The Los Angeles County Sanitation District (LACSD) provided six vehicles (scrapers and dozers) that were fueled with ULSD fuel and two scrapers and two dozers were also operated as control vehicles to provide baseline information for fuel economy, oil consumption, and reliability performance against the vehicles retrofitted with the DPFs. C.W. Poss Construction, Inc. (Poss) also provided six vehicles (scrapers and dozers) as the study vehicles but did not operate any control vehicles. Two different manufacturers provided the DPFs for the construction equipment.

Vehicles and DPFs used:

- LACSD vehicles: 1996 vintage 657 E scrapers, and 2000 vintage D9 dozers
- Poss vehicles: Caterpillar 651 B scrapers and Caterpillar 824/825/834 series dozers manufactured between 1971 and 1983
- DPFs from supplier A: 20"x15" filters for all applications, except for one 15"x15" used on an 825C dozer with a Caterpillar 3406 engine
- DPFs from supplier B: 20"x15" filters on most applications

The final equipment selections are as follows:

- A total of 12 vehicles were retrofitted in the study: 6 with DPFs from supplier A and 6 with DPFs from supplier B; with 6 of the test vehicles located at LACSD and 6 at Poss
- A total of 15 engines were retrofitted: 8 with DPFs from supplier A and 7 with DPFs from supplier B; with 9 located at LACSD and 6 at Poss
- A total of 21 filters were involved in the program: 12 from supplier A and 9 from supplier B; with 12 located at LACSD and 9 located at Poss

After operating these construction equipments with DPFs for a period of one year, filters from suppliers A and B were tested at the West Virginia University (WVU) Engines and Emissions Research Laboratory. Dynamometer tests on a Caterpillar engine using both transient

and 8-mode steady-state duty cycles were conducted. The test showed that DPFs from both suppliers were highly effective in reducing PM emission on the dynamometer tests. Both pre- and post-demonstration testing by WVU on the filter from supplier B showed more than 98 percent PM emissions reduction. Pre-demonstration test of the filter from supplier A showed greater than 98 percent PM emissions reduction, while the post-demonstration testing showed approximately 91 percent PM emission reduction. None of the filters from suppliers A and B affected the levels of total NOx significantly, while the traps greatly reduced the levels of HC and CO emissions (about 79 and 65 percent for the filter from supplier A, respectively, and 93 and 97 percent for the filter from supplier B, respectively).

**Table 6. Post-Demonstration Dynamometer Emissions Test Results**

<b>Emission Type</b>	<b>Fuel Type</b>	<b>8-mode Weighted Average (g/bhp-hr)</b>	<b>Transient Cycle (g/bhp-hr)</b>	<b>% Reduction vs. ECD1 Baseline (Transient Test)</b>
PM	ECD1 Baseline	0.17	0.33	0%
	EDC1-Supplier B	0.01	0.00	>99%
	EDC1-Supplier A	0.01	0.03	90.9%
NOx	ECD1 Baseline	6.52	6.40	0%
	EDC1-Supplier B	6.14	6.05	5.5%
	EDC1-Supplier A	5.96	5.96	6.9%
HC	ECD1 Baseline	0.12	0.30	0%
	EDC1-Supplier B	0	0	>99%
	EDC1-Supplier A	0	0	>99%
CO	ECD1 Baseline	1.31	2.10	0%
	EDC1-Supplier B	0.24	0.16	92.4%
	EDC1-Supplier A	0.03	0.21	90.0%

In evaluating the durability and reliability of the filters, filters from supplier B at LACSD initially performed well, but backpressure began to rise on all units equipped with the larger filters within 400 to 500 hours of operation. Inspection of the filter showed that the ceramic trap elements had “shifted” out of the canister on all of the larger units. These systems were replaced or re-canned. Since then, new filters with new banding design have accumulated approximately 1,000 hours of operation and the original filters that were re-canned using new banding design have accumulated approximately 2,500 hours. The filters from supplier B performed well on 1996 vintage and newer diesel engines, but were deemed incompatible with the 1970s vintage Poss diesel engines. The filters from supplier A showed excellent durability and reliability throughout the demonstration period with only one failure on a D9 dozer at LACSD. In this failure, the ceramic filter inside the canning shifted and was broken up, causing excessive backpressure and loss of power.

Although basic DPF performance was validated for use on heavy-duty diesel construction equipment, many challenges still remain with installing and mounting large DPFs on large construction equipment. These challenges are compounded by the fact that higher horsepower engines like those tested in this program required two very large filter sizes to handle the high-volume exhaust flow of the engines.

## **2.9 Reliability of DPF-Systems: Experience with 6000 Applications of the Swiss Retrofit Fleet (SAE paper no. 2004-01-0076)**

In 2000, the occupational health agencies of Switzerland (Suva) declared that DPFs are essential for underground workplaces. The environmental agencies of the Swiss federal government (BUWAL) followed in mid-2002 with the Ordinance on Protecting Air Quality at Construction Sites (BauRLL) all over Switzerland. DPFs were first retrofitted onto large public construction sites, with emphasis on air quality in tunnel projects and their associated labor intensive activities. As of 2003, approximately 6,500 construction equipment have been retrofitted with DPFs. This study was conducted to evaluate the filtration quality of VERT-Test compliant traps in both their new state and after 2,000 operating hours. The report examined trap failures, their causes and prevention based on information from manufacturers, retrofitters, and independent inspections.

The first reliability test was conducted in October 2000, asking the manufacturers and retrofitters for feedback. Failure rates in this first survey were in the 5 to 6 percent range. A new survey was conducted in October 2003, based mainly on information provided by manufacturers and retrofitters on overall failure rates. This later survey showed an annual failure rate is below 2 percent. Causes of failure include: defective canning; material defects; faulty gluing of the segmented filters and other manufacturing defects causing functional deficiencies; customer's handling accidents; and operational errors such as using high sulfur fuels with catalyzed filters.

The experience with this large retrofitted fleet shows the applicability of DPFs for all types of diesel construction equipment. It also demonstrated that DPFs are technically, operationally, and economically feasible and that there are no major obstacles to large scale retrofitting of DPFs to existing diesel engines.

A database of DPFs verified by VERT for the Swiss diesel retrofit program is available at: [www.akpf.org/index.html](http://www.akpf.org/index.html).

## **2.10 City of Houston Diesel Field Demonstration Project**

In order to address the air pollution contribution from each City of Houston department, the City established a comprehensive Emission Reduction Plan (ERP) in June 2000. The main goal of the ERP is to reduce NO<sub>x</sub> emission by 50 to 75 percent and PM<sub>2.5</sub> by at least 25 to 33 percent. Under the Diesel Field Demonstration Project a number of diesel emissions control devices were evaluated in the field on various vehicles and equipment, including construction equipment, during the summer of 2000 through the fall of 2001. The goal of the project was to identify retrofit emission control systems that can achieve 75 percent NO<sub>x</sub> reductions and at least 25 to 33 percent reduction in fine particulates.

Environment Canada performed the gaseous and particulate exhaust emissions testing on the City of Houston fleet vehicles at Ellington Field, Houston, Texas. A total of 29 units were selected to be representative of the fleet, of which 26 were field tested with emissions control devices. In addition to demonstrating the effectiveness of emissions control devices, the program also evaluated various emulsified diesel fuel formulations. Several manufacturers

provided various emissions control technologies to demonstrate the effectiveness of these devices to reduce exhaust emissions. Diesel retrofit technologies evaluated included DOCs, passively regenerated DPFs, and SCR systems. With respect to construction equipment, this project evaluated three different retrofit technology options on a 1992 MY Cummins Gradall G3WD 6BTA 5.9L 190 hp: DOC + emulsified diesel fuel, an SCR system, and a combined DPF + SCR system.

After installation, the vehicle was returned to regular service for a period of time advised by the manufacturer to degreen the device. At the end of this period, emissions testing were performed with the device installed. The following is the summary of results from emissions testing with emissions reduction devices installed:

**Table 7. Summary of Emission Testing Results**

Vehicle	Technology Installed	% NOx Reduction from baseline	% TPM Reduction from baseline
Gradall G3WD	DOC + Emulsified Diesel	34.8	76.3
Gradall G3WD	SCR	78.2	26.7
Gradall G3WD	DPF + SCR	84.0	91.9

More information on this project is available at:  
[www.arb.ca.gov/msprog/ordiesel/Documents/houston\\_demo\\_project.pdf](http://www.arb.ca.gov/msprog/ordiesel/Documents/houston_demo_project.pdf).

As a result of the field demonstration program described above, SCR was selected as one of the technologies to be used on City fleet equipment. This City of Houston Fleet Retrofit project involves retrofitting 33 rubber tire excavators with SCR and one SCR system was installed on a 2003 model year dump truck. In addition, the City has retrofitted about 30 to 40 nonroad engines such as backhoes and water pumps with DOCs. This program will include emission testing at the University of Houston’s testing facility with chassis dynamometer to quantify the emission reductions achieved with the retrofit technologies. This project is funded by the Texas Council on Environmental Quality (TCEQ) with Texas Emission Reduction Program (TERP) funds and the Houston-Galveston Area Council with Congestion Mitigation and Air Quality (CMAQ) funds in the amount of \$500,000 for the SCR systems. The vehicles and equipments that were retrofitted include:

- Gradall rubber-tire excavators powered by 1994 to 2000 MY Cummins 5.9L 190 hp engines
- 2003 MY dump truck powered by a Cummins ISC 315 330 hp engine

As of February 18, 2005, all 33 ditch excavators were equipped with an initial design SCR system and the SCR system will be upgraded to increase the level of emission reduction. The SCR systems that were installed included a DOC and a warning signal to indicate when the ammonia supply was getting low. The SCR system was not verified at the time it was installed on the equipment. However, the Houston program helped to provide data for the eventual ARB verification of the SCR for application on nonroad 1991-1995 Cummins 5.9L from 150-200 hp engines. The SCR systems on the excavators will be upgraded with a SCR system that will include a hybrid DPF used with ULSD to achieve greater PM emission reduction. The SCR systems have been in operation for up to three years and have reported no major problems. For

more information on this project, go to Appendix B of the Final Draft of *Diesel Retrofit Technology and Program Experience* report at: [www.epa.gov/cleandiesel/publications.htm](http://www.epa.gov/cleandiesel/publications.htm).

## **2.11 Port of Seattle, Sea-Tac International Airport Project**

In order to meet conformity commitment to keep NO<sub>x</sub> emissions from construction projects to less than 100 tons per year, the Port of Seattle initiated a project to reduce NO<sub>x</sub> emissions from construction activities at Sea-Tac's Runway Three. In 2002, a pilot program was initiated fueling onroad and nonroad vehicles with ULSD. With the success of the program, all vehicles and equipment used in the construction of Runway Three started being fueled with ULSD in February 2004. The next phase of the project involves retrofitting up to 10 or more nonroad engines with DOCs. For this phase, muffler replacement DOCs, rather than DPFs, are planned because some of the equipments emit high levels of PM. Backpressure monitors will also be installed. For more information on this project, go to Appendix B of the Final Draft of *Diesel Retrofit Technology and Program Experience* report at: [www.epa.gov/cleandiesel/publications.htm](http://www.epa.gov/cleandiesel/publications.htm).

## **3.0 Funded Projects**

### **3.1 2005 National Clean Diesel Campaign Demonstration Grant Construction Projects**

On November 7, 2005, U.S. EPA announced grant awards of more than \$1 million to ten grantees to implement projects to demonstrate effective emissions reduction strategies for nonroad equipment and vehicles. The purpose of the grants is to demonstrate a wide variety of technologies such as cleaner fuels, and diesel retrofit devices (DOC, DPF, and engine replacement) for nonroad sector. Below is the list of funded projects:

- *City and County of Denver, Colorado*: The City and County of Denver will install DOCs on diesel alley and street paving fleets operating in low-income and underserved communities. This project has been awarded \$125,000.
- *American Lung Association of Hawaii*: The American Lung Association of Hawaii will replace older, dirtier diesel construction equipment engines with newer, cleaner engines to reduce air pollution on Oahu and Kauai. This project has been awarded \$135,000.
- *Idaho Department of Environmental Quality (DEQ)*: The Idaho DEQ will install DOCs and closed crankcase ventilation systems on portable diesel generators that power rock crushers and hot mix asphalt plants. This project has been awarded \$100,000.
- *Maryland Department of Environment*: The Maryland Department of Environment will install DPFs on front end loaders at landfills in the City of Baltimore. This project has been awarded \$50,000.
- *Massachusetts Executive Office of Environmental Affairs*: The Massachusetts Executive Office of Environmental Affairs will retrofit construction equipment with diesel retrofit devices and use ULSD fuel. This project has been awarded \$120,000.

- *New York State Energy Research and Development Authority (NYSERDA)*: NYSERDA will retrofit nonroad fleets as part of a research project to identify best available retrofit technologies. This project has been awarded \$100,000.
- *Oregon-Columbia Chapter of Associated General Contractors (AGC)*: AGC will install retrofit technologies to diesel equipments used in highway bridge replacement projects and use ULSD fuel. This project has been awarded \$120,000.
- *York Technical College*: York Technical College and several local municipalities will retrofit nonroad equipments with DOCs. This project has been awarded \$95,040.
- *Wisconsin Department of Natural Resources (DNR)*: Wisconsin DNR will install DOCS on construction equipment and use ULSD fuel. This project has been awarded \$100,000.

For more information on the National Clean Diesel Campaign 2005 grants, go to: [www.epa.gov/cleandiesel/awarded-grants.htm](http://www.epa.gov/cleandiesel/awarded-grants.htm).

### **3.2 West Coast Diesel Emissions Reduction Collaborative Construction Projects**

#### *East Side Combined Sewer Overflow Project*

The City of Portland's Combined Sewer Overflow (CSO) program is the largest public works project in the history of the State of Oregon, comprising three "Big Pipe" projects: the Columbia Slough Consolidation Conduit; the West Side "Big Pipe"; and the East Side "Big Pipe". The East Side CSO Tunnel or "Big Pipe", to begin in 2006, is the final and largest of the projects in Portland's 20-year program. During this five year construction project, approximately 150 diesel powered vehicles will be used for construction. The proposed project plan will require the use of ULSD in all project vehicles, use equipment that comply with EPA Tier 2 requirements for nonroad engines at a minimum and install best available retrofit emission control devices, such as DPF, DOC or wire mesh flow-through filters. The funding for the fuel premium will be paid by the contractor and ultimately the ratepayers in the city, but funding for retrofitting is requested from other sources to realize the full environmental and public health benefits that are available. The project is scheduled to be completed in 2011. More information on this project is available at: [www.portlandonline.com/cso.index.cfm?c=31727](http://www.portlandonline.com/cso.index.cfm?c=31727).

#### *City of Fresno Wastewater Treatment Facility Retrofit Project*

City of Fresno, Fleet Management Division has agreed to participate in a demonstration program to retrofit three pieces of nonroad equipment with a diesel retrofit technology currently verified by both EPA and ARB for onroad applications to reduce emissions of PM, NOx, VOC and CO. The equipment to be retrofitted is currently operated daily at a Wastewater Treatment Plant located in southwestern quadrant of the City of Fresno. The equipment will be retrofitted a combined lean NOx catalyst/DPF technology that is currently verified by ARB for PM and NOx reductions on a range of on-road diesel engines. This project will demonstrate the viability of a combined PM/NOx emission reduction technology in nonroad engines. The manufacturer of the retrofit technology will conduct all necessary field engineering work with Cummins West, Inc. and Cleaire will also be responsible for submitting the progress and final reports. The City of Fresno will make the equipments available as well as collect all necessary maintenance and

operational data. More information on this project is available at:  
[www.westcoastdiesel.org/projects.htm](http://www.westcoastdiesel.org/projects.htm).

*Washington Clean Construction: Feasibility Demonstration for Retrofit of Non-road Equipment Project*

In order to reduce toxic air emissions, the Yakima Regional Clean Air Authority (YRCAA) is participating with six local air authorities, the Washington State Department of Ecology (Ecology), and the American Lung Association in a demonstration project to retrofit nonroad diesel equipments. In coordination with local air authorities, Ecology will implement a state-wide program to reduce emissions from diesel-powered construction equipment. The purpose of this demonstration project is to demonstrate to the public and private fleet owners of nonroad, diesel powered equipment, the feasibility of retrofitting these equipment with DOCs without disrupting fleet operations. Approximately 50 vehicles will be retrofitted with federal funding and in-kind contribution. More information on this project is available at:  
[www.westcoastdiesel.org/projects.htm](http://www.westcoastdiesel.org/projects.htm).

*Construction Equipment Retrofit Demonstration Project*

The Construction Equipment Retrofit Demonstration Project is a joint effort of the Collaborative, the Sacramento Metropolitan Air Quality Management District (SMAQMD), and a retrofit technology manufacturer to retrofit five pieces of heavy construction equipment with emission-reducing device. The demonstration project will then evaluate the viability of the retrofit technologies to reduce PM and, to the extent feasible, NO<sub>x</sub>, HC, and CO emissions. This project will be funded through a \$211,000 grant from EPA and \$14,000 from SMAQMD. The goal of the demonstration project is to install emission control devices to five pieces of construction equipment to reduce annual diesel emissions by more than 85 percent for PM, up to 25 percent for NO<sub>x</sub>, and up to 90 percent for CO. More information on this project is available at:  
[www.westcoastdiesel.org/grants/files/Construction%20Equipment%20Retrofit%20Fact%20Sheet.pdf](http://www.westcoastdiesel.org/grants/files/Construction%20Equipment%20Retrofit%20Fact%20Sheet.pdf).

*Oregon Construction Equipment Emissions Reduction Project*

The Oregon Environmental Council (OEC) will work with builders, state environmental officials, the City of Portland, and other jurisdictions to reduce construction equipment diesel emissions. Through diesel engine retrofits, cleaner fuels, and idle reduction policies, the project aims to reduce diesel emissions from construction equipment used in the City of Portland by at least 20 percent. After the evaluation of the project results, the project's most efficient methods may be applied to reducing construction equipment emissions along the West Coast. This project will be funded through a \$26,000 grant from EPA, and \$27,000 from OEC. More information on this project is available at:  
[www.westcoastdiesel.org/grants/files/OEC\\_Construction\\_Reduction\\_fact%20sheet.pdf](http://www.westcoastdiesel.org/grants/files/OEC_Construction_Reduction_fact%20sheet.pdf).

## 4.0 Summary

As shown by the above case studies, experience with retrofitting construction equipment with emission control devices is growing. The majority of the retrofit experience in construction equipment projects has been focused on demonstrating the feasibility of applying verified, onroad retrofit emission control technology on construction equipment and quantifying the diesel emission reductions achieved. Many of the projects have been initiated by the state, local, and federal agencies to promote interest in retrofitting construction equipment and facilitate other retrofit projects that may build on the successes and challenges learned from previous projects. Much of the experience with construction equipment retrofit projects has been with DOCs. This stems, in part, from the more universal applicability of diesel oxidation catalysts on existing diesel engines compared to other retrofit technology options. Experience to date with DPFs on in-use construction equipment is more limited due to the fact that the application of DPFs involves more engineering constraints with respect to the duty cycles and engine out emission characteristics of diesel engines used in construction equipment applications. Retrofit DPFs also generally require the use of ultra-low sulfur diesel fuel (ULSD). The availability of ultra-low sulfur diesel fuel for nonroad diesel engines will expand significantly as the rollout of ULSD for highway applications expands nationwide in the second half of 2006. Emerging onroad verified retrofit technologies such as actively regenerated DPFs and flow-through particulate filters should also find application in nonroad diesel engines and provide more options for significant reductions in diesel particulate emissions from construction equipment. Similarly, verified retrofit technologies that provide reductions in NO<sub>x</sub> emissions, such as lean NO<sub>x</sub> catalysts and SCR systems, will also migrate into the nonroad sector and see greater attention on construction equipment in the future. The construction equipment segment requires an expanded range of verified retrofit technologies to provide broader application coverage for the range of engines and equipment that are currently a part of the existing fleet.

There is an increased interest in the U.S. for retrofitting diesel construction equipment, largely due to the availability of more federal, state, and local incentive funds that can be used for these projects. One such funding source is the federal DOT/EPA Congestion Mitigation and Air Quality (CMAQ) Program. Funds from the CMAQ program have been used to pay for onroad diesel retrofit projects and now can be used for retrofit projects on nonroad engines used in construction projects in nonattainment or maintenance areas with respect to air quality. The CMAQ funding provides priority for diesel retrofit and other cost-effective emission reduction activities, with funding for the overall program of about \$1.4 billion per year through 2009. These CMAQ funds are typically controlled at the state and local level, most often by metropolitan planning organizations. Other significant state sources of funding for construction retrofit projects are available in California through ARB's Carl Moyer incentive funding program (see [www.arb.ca.gov/msprog/moyer/moyer.htm](http://www.arb.ca.gov/msprog/moyer/moyer.htm)) and in Texas through the Texas Emission Reduction Plan (see [www.tceq.state.tx.us/implementation/air/terp/](http://www.tceq.state.tx.us/implementation/air/terp/)). Other states are considering similar funding schemes for incentivizing retrofit projects involving onroad and offroad diesel engines. Through utilization of the available funding sources and building on the lessons learned from previous projects, the retrofit of construction equipment with emission control technology will become more widespread and provide an important tool for reducing emissions from the large number of existing nonroad diesel engines operating in the U.S.

Exhibit 14:

CARB highest daily PM2.5 measurements at Sacramento T-Street





### Highest 4 Daily PM2.5 Measurements

Sacramento-T Street

[FAQs](#)

Year:	2003		2004		2005	
	Date	Measurement	Date	Measurement	Date	Measurement
<b>National:</b>						
First High:	Jan 4	49.0	Nov 25	46.0	Dec 11	59.0
Second High:	Nov 24	41.0	Dec 4	43.0	Dec 14	56.0
Third High:	Dec 4	41.0	Jan 19	41.0	Dec 13	53.0
Fourth High:	Nov 6	39.0	Nov 7	41.0	Feb 3	50.0
<b>California:</b>						
First High:	Jan 4	49.0	Nov 25	52.5	Dec 11	63.8
Second High:	Nov 24	41.0	Dec 4	48.0	Dec 14	57.7
Third High:	Dec 4	41.0	Nov 18	43.3	Dec 13	56.3
Fourth High:	Nov 6	39.0	Dec 1	41.7	Feb 4	55.1
# Days Above Nat'l Standard:		0		0		0
3-Year Average 98th Percentile:		*		*		*
1-Year 98th Percentile:		*		*		47.0
National 3-Year Average:		*		*		*
National Annual Average:		*		*		10.9
State 3-Yr Maximum Average:		*		*		13
State Annual Average:		*		*		12.5
	<a href="#">Go Backward One Year</a>		<a href="#">New Top 4 Summary</a>		<a href="#">Go Forward One Year</a>	

13  
12.5

**Notes:** All concentrations are expressed in micrograms per cubic meter.  
 State exceedances are shown in **yellow**. National exceedances are shown in **orange**.  
 An exceedance is not necessarily a violation.  
 State and national statistics may differ for the following reasons:  
 State statistics are based on California approved samplers, whereas national statistics are based on samplers using federal reference or equivalent methods.  
 State and national statistics may therefore be based on different samplers.  
 State criteria for ensuring that data are sufficiently complete for calculating valid annual averages are more stringent than the national criteria.  
 3-Year statistics represent the listed year and the 2 years before the listed year.  
 \* There was insufficient (or no) data available to determine the value.

Switch:	Hourly Ozone	8-Hour Ozone	PM10	Carbon Monoxide	Nitrogen Dioxide	Sulfur Dioxide	Hydrogen Sulfide
Go to:	<a href="#">Data Statistics Home Page</a>			<a href="#">Top 4 Summaries Start Page</a>			



Exhibit 15:  
CEIDARS particulate matter speciation profiles

9/26/2002

CALIFORNIA EMISSION INVENTORY AND REPORTING SYSTEM (CEIDARS)

-- Particulate Matter (PM) Speciation Profiles --

SUMMARY OF OVERALL SIZE FRACTIONS AND REFERENCE DOCUMENTATION

PM PROFILE ID	PM_PROFILE_NAME	NEW FORMAT	SOURCE_REF	FRACTION < PM 10	FRACTION < PM 2.5
110	LIQUID MATERIAL COMBUSTION	N	KVB	0.976	0.967
111	FUEL COMBUSTION-RESIDUAL	N	KVB	0.87	0.76
112	FUEL COMBUSTION-DISTILLATE	N	KVB	0.976	0.967
113	UTILITY BOILERS-RESIDUAL	N	KVB	0.97	0.953
114	STAT. I.C. ENGINE-DIST/DIESEL	N	KVB	0.976	0.967
115	STAT. I.C. ENGINE-GASOLINE	N	KVB	0.994	0.992
116	STAT. I.C. ENGINE-DIESEL	N	KVB	0.96	0.937
119	MARINE VESSELS-LIQUID FUEL	N	KVB	0.96	0.937
120	GASEOUS MATERIAL COMBUSTION	N	KVB	1	1
121	RESIDENTIAL-NATURAL GAS	N	KVB	1	1
123	STAT. I.C.ENGINE-GAS	N	KVB	0.994	0.992
125	PETROLEUM HEATERS-GAS	N	KVB	0.95	0.93
131	COAL/COKE COMBUSTION	N		0.4	0.15
132	STAT. I.C. ENGINE-SOLID FUEL	N	KVB	0.997	0.927
133	WOOD WASTE COMBUSTION	N	KVB	0.997	0.927
137	UNPLANNED STRUCTURAL FIRES	N	KVB	0.98	0.914
141	AIRCRAFT-JET FUEL	N	KVB	0.976	0.967
151	ORCHARD HEATERS	N	KVB	0.976	0.967
161	INCINERATION-LIQUID FUEL	N	KVB	0.976	0.967
162	INCINERATION-GASEOUS FUEL	N	KVB	1	1
163	INCINERATION-SOLID FUEL	N		0.3	0.2
200	EVAPORATION	N	KVB	0.96	0.925
220	COATING MATERIAL EVAPORATION	N	KVB	0.96	0.925
222	PAINT APPLICATION-OIL BASED	N	KVB	0.96	0.925
223	PAINT APPLICATION-WATER BASED	N	KVB	0.68	0.62
311	CHEMICAL MANUFACTURING	N	KVB	0.9	0.89
312	CHEMICAL FERTILIZER-UREA	N	KVB	0.96	0.95
324	FEED AND GRAIN OPERATIONS	N	KVB	0.29	0.01
325	GRAIN DRYING	N	KVB	0.54	0.4
327	COFFEE ROASTING	N	KVB	0.62	0.61
331	PETROLEUM REFINING	N	KVB	0.61	0.555
341	ASPHALT ROOFING MANUFACTURE	N	KVB	0.98	0.945
342	ASPHALTIC CONCRETE BATCH PLANT	N	KVB	0.4	0.333
343	CEMENT PROD./CONCRETE BATCHING	N	KVB	0.92	0.62
344	LIME MANUFACTURING	N	KVB	0.3	0.117
345	CALCINATION OF GYPSUM	N	KVB	0.88	0.495
346	CLAY & RELATED PRODUCTS MFG.	N	KVB	0.56	0.513
348	GLASS MELTING FURNACE	N	KVB	0.98	0.963
349	FIBERGLASS FORMING LINE	N	KVB	0.994	0.992
351	STEEL HEAT TREATNG-SALT QUENCH	N	KVB	0.96	0.86
353	STEEL ABRASIVE BLASTING	N	KVB	0.86	0.79
354	STEEL OPEN HEARTH FURNACE	N	KVB	0.98	0.93
356	ELECTRIC ARC FURNACE	N	KVB	0.83	0.6
358	ALUMINUM FOUNDRY	N	KVB	0.95	0.903
361	WOOD OPERATION-SANDING	N	KVB	0.92	0.885
362	WOOD OPERATION-RESAWING	N	KVB	0.4	0.283
371	MINERAL PROCESS LOSS	N	KVB	0.5	0.146
373	ROCK CRUSHERS	N	KVB	0.1	0.03
374	ROCK SCREENING & HANDLING	N	KVB	0.5	0.146
397	TIRE WEAR (REPLACED BY 472)	N		1	0.25
398	BRAKE WEAR (REPLACED BY 473)	N		0.98	0.42
399	GASOLINE VEHICLES-NO CATALYST	N	KVB	0.9	0.68
400	GASOLINE VEHICLES-CATALYST	N	KVB	0.97	0.9
401	CHROME: HEXAVALENT CHROMIUM	N	SINGLE COMPOUND	1	1
402	HEXAVALENT, TRIVALENT CHROMIUM	N	TWO SINGLE COMPOUNDS	1	1
403	CADMIUM	N	SINGLE COMPOUND	1	1
404	ASBESTOS	N	SINGLE COMPOUND	0.5	0.5
415	UNPAVED ROAD DUST (BEFORE 1997)	Y	OMNI	0.5943	0.126
416	WINDBLOWN DUST-UNPAVED RD/AREA	Y	OMNI	0.5943	0.126
417	AGRICULTURAL TILLING DUST	Y	OMNI	0.4543	0.1007

9/26/2002

CALIFORNIA EMISSION INVENTORY AND REPORTING SYSTEM (CEIDARS)

-- Particulate Matter (PM) Speciation Profiles --

SUMMARY OF OVERALL SIZE FRACTIONS AND REFERENCE DOCUMENTATION

PM PROFILE ID	PM_PROFILE_NAME	NEW FORMAT	SOURCE_REF	FRACTION < PM 10	FRACTION < PM 2.5
418	WINDBLOWN DUST - AGRIC. LANDS	Y	OMNI	0.4543	0.1007
420	CONSTRUCTION DUST	Y	OMNI	0.4893	0.1017
421	LANDFILL DUST	Y	OMNI	0.4893	0.1017
422	PAVED ROAD DUST (BEFORE 1997)	Y	OMNI	0.4572	0.0772
423	LIVESTOCK OPERATIONS DUST	Y	OMNI	0.4818	0.055
424	FIREPLACES AND WOODSTOVES	Y	OMNI	0.935	0.9001
425	DIESEL VEHICLE EXHAUST	Y	OMNI	1	0.92
430	AGRIC. BURNING - FIELD CROPS	Y	UCD	0.9835	0.9379
440	WEED ABATEMENT BURNING	Y	UCD	0.9835	0.9379
441	RANGE IMPROVEMENT BURNING	Y	UCD	0.9825	0.9316
450	ORCHARD PRUNINGS BURNING	Y	UCD	0.9814	0.9252
460	GRASSWOODLAND FIRES	Y	UCD	0.9825	0.9316
461	OPEN BURNING	Y	UCD	0.9825	0.9316
462	WASTE BURNING	Y	UCD	0.9825	0.9316
463	FOREST MANAGEMENT BURNING	Y	UCD	0.961	0.8544
464	TIMBER AND BRUSH FIRES	Y	UCD	0.961	0.8544
470	UNPAVED ROAD DUST (1997 AND AFTER)	Y	CRPAQS	0.5943	0.126
471	PAVED ROAD DUST (1997 AND AFTER)	Y	CRPAQS	0.4572	0.0772
472	TIRE WEAR	N	HILDEMANN + NEA	1	0.25
473	BRAKE WEAR	N	HILDEMANN + NEA	0.98	0.42
900	UNSPECIFIED	N		0.7	0.42
90001	EPA AVG: SOLID WASTE	N	US EPA SPECIATE 3.0	0.19	0.13
90002	EPA AVG: CHEMICAL MANUFACTURNG	N	US EPA SPECIATE 3.0	0.505	0.279
90003	EPA AVG: FOOD AND AGRICULTURE	N	US EPA SPECIATE 3.0	0.49	0.14
90004	EPA AVG: STEEL PRODUCTION	N	US EPA SPECIATE 3.0	0.6	0.52
90006	EPA AVG: METAL MINING - GENRL	N	US EPA SPECIATE 3.0	0.51	0.15
90007	EPA AVG: PRIMARY METAL PRODCN	N	US EPA SPECIATE 3.0	0.644	0.464
90008	EPA AVG: SECONDARY METAL PRDCN	N	US EPA SPECIATE 3.0	0.633	0.474
90010	EPA AVG: GRAY IRON FOUNDRIES	N	US EPA SPECIATE 3.0	0.925	0.835
90011	EPA AVG: STEEL FOUNDRY - GENRL	N	US EPA SPECIATE 3.0	0.86	0.765
90013	EPA AVG: MINERAL PRODUCTS	N	US EPA SPECIATE 3.0	0.545	0.33
90014	EPA AVG: PETROLEUM INDUSTRY	N	US EPA SPECIATE 3.0	0.691	0.396
90015	EPA AVG: PULP AND PAPER INDUST	N	US EPA SPECIATE 3.0	0.608	0.486
90016	EPA AVG: INDUSTRIAL MANUFAC.	N	US EPA SPECIATE 3.0	0.574	0.407



Exhibit 16:

Kern County Planning Department  
Guidelines for Preparing an Air Quality Assessment  
for Use in Environmental Impact Reports



## PLANNING DEPARTMENT

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## RESOURCE MANAGEMENT AGENCY

**DAVID PRICE III, RMA DIRECTOR**

Community & Economic Development Department

Engineering & Survey Services Department

Environmental Health Services Department

Planning Department

Roads Department

### GUIDELINES FOR PREPARING AN AIR QUALITY ASSESSMENT FOR USE IN ENVIRONMENTAL IMPACT REPORTS

The Kern County Planning Department has developed the following guidelines to assist with the preparation of the air quality assessments for use as a technical document in Environmental Impact Reports prepared by the Department. These guidelines are intended to ensure that the assumptions and methodology used in the County's environmental documents are uniform from one project to the next to facilitate the comparison of air quality environmental effects. **All assumptions used are to be reasonably conservative and realistic.** The following is intended as minimum guidance and is to be augmented, as appropriate, by the professional judgment of the air quality preparer in consultation with planning staff. Air Quality Assessments that are submitted without this information, unless such deletions are approved by staff, may be required to be rewritten.

1. A complete project description including construction and operational aspects of the project, in addition to including traffic generation figures that are consistent with any submitted traffic studies.
2. Estimates of short-term construction emissions in tons per year. The estimates shall include both site grading and building construction emissions with comparison to the adopted Kern County California Environmental Quality Act (CEQA) thresholds (Attachment A) and the applicable Air District ( San Joaquin Valley Air Pollution Control District and/or Kern County Air Pollution Control District) thresholds. The current version of URBEMIS 2002 (i.e Version 8.7) model or other documented approach, pre-reviewed and approved by Planning staff, shall be used. All assumptions are to be clearly presented, including length of each construction phase, equipment that will be used during each phase and the amount of soil disturbance, including any import or export of soil. The emission factors used to estimate emissions shall be clearly documented. The model output shall be included in the report.
3. Estimates of long term operational emissions in tons per year. The current version of URBEMIS 2002 (i.e. Version 8.7) model shall be used with comparison to the adopted Kern County CEQA thresholds and the applicable Air District ( San Joaquin Valley Air Pollution Control District and/or Kern County Air Pollution Control District) thresholds. All assumptions are to be clearly presented, including any phasing, year of complete buildout, number of vehicle trips including, if applicable, residential, and commercial, employees, delivery, and other trucks. The emission factors used to estimate emissions

Air Quality Assessment

EIR

1/13/06

shall be clearly documented. All defaults used shall be clearly defined in the form of a project description. The model output shall be included in the report.

4. Estimates of existing onsite agricultural (or other) emissions in tons per year.  
These emission estimates shall be based on emission factors as developed by the California Air Resources Board, the U.S. EPA or other documented sources and clearly presented. The emissions estimated for existing operations should be shown as the baseline emissions in comparison to the project emissions.
5. CO Hotspot analysis using the CALINE4 Model for the following project conditions:  
a) Level of Service ( LOS) of an intersection or roadway identified as Level of Service ( LOS) E or worse; b) signalization and/or channelization is added to an intersection and  
c) sensitive receptors such as residences, schools, hospitals, etc are located in the vicinity of the affected intersection or signalization. If no such conditions exist, then the assessment shall include that information and note the reasons the CO Hotspot analysis was not required. The model output shall be included in the report.
6. SCREEN3 or ISCST3 modeling of maximum 24 –hour average concentration of Primary PM10 and PM2.5 at the project boundary, with comparison to National Ambient Air Quality Standards (NAAQS) ,Kern County CEQA thresholds and the applicable Air District ( San Joaquin Valley Air Pollution Control District and/or Kern County Air Pollution Control District) thresholds. The model output shall be included in the report.
7. SCREEN3 or ISCST3 modeling of maximum 24 –hour average concentrations of odorous compounds at the project boundary and within a six mile limit identifying the location of any residences, schools, or other sensitive receptors, including approved, but not constructed sensitive receptors, with comparison to odor thresholds and CEQA impact thresholds. The model output shall be included in the report.
8. Impacts to visibility are to be evaluated for all industrial projects and any other projects, such as mining projects, that have components that could generate dust or emissions related to visibility. All Class 1 areas located within 100 kilometers of the project site, Edwards Air Force Base, China Lake Naval Weapons Station and the entire R-2508 Airspace Complex shall be included in the analysis.
9. Estimates of all stationary source equipment and whether it is subject to the applicable air district registration or permitting. Include fuel type, maximum rated horsepower, and annual fuel usage and emission estimates for NOx, CO, ROG, PM10, PM2.5 and SOx. The emission factors used shall be based on US EPA AP 42-emission factors and/or vendor guarantees. If EPA emission factors are used, then specific

emission factor ( chapter of AP-42 and the date of the publication) shall be included in documentation. If vendor guarantees are used, a copy of these guarantees shall be included. The model output shall be included in the report.

10. As part of the preparation of the Air Quality Assessment, a determination as to the need for a health risk assessment (HRA), analyzing the acute, chronic, and carcinogenic health risks of pollutants, including Toxic Air Contaminants (TAC), that would be emitted during project operations shall be made in consultation with staff. The HRA shall evaluate the risks of pollutants such as diesel exhaust and any other pollutants emitted by the project that have been identified as acute, chronic, or carcinogenic substances by the California Office of Environmental Health Hazard Assessment. The model output shall be included in the report. The most recent version of the California Air Resources Board's HARP model shall be used to conduct the HRA. Use of the ISC-3 Dispersion Model or other documented approach instead of the HARP model must be discussed and approved by Planning staff prior to completion of the report. The model output shall be included in the report.
11. Tables showing all construction and all operational emissions in tons per year, with a comparison to Kern County CEQA thresholds shall be included. Tables shall be shown with unmitigated emissions and mitigated emissions.
12. The San Joaquin Valley Air Pollution Control District Air Quality Mitigation Checklist, which has been developed for use with Rule 9510( Indirect Source Rule) , ( Attachment B) along with any other recommendations from the applicable air district, shall be consulted for feasible and reasonable mitigation, regardless of the air basin. Mitigation that is not being recommended for inclusion from the checklist or from the air district shall be discussed with staff before completion of the assessment. A summary section shall be included that details all design features used in the modeling as well as all recommended mitigation measures.
13. Projects that choose to enter into a Voluntary Emission Reduction Program (VERP) with the San Joaquin Valley Air Pollution Control District may discuss the program as a design feature. It is not to be discussed or labeled as a mitigation measure. Use of this program shall not substitute for any of the emission estimates required by these guidelines.
14. The most recent air quality guidance documents from the Kern County Air Pollution Control District and the SJVAPCD, such as the Guide For Assessing and Mitigation Air Quality Impacts ( GAMAQI) shall be used and referenced in the preparation of this assessment. However, where the Planning Department guidelines require quantification and the air district does not, for purposes of CEQA, the Planning Department guidelines shall be followed. Discussion and consultation with the appropriate air district and Planning staff is recommended.

15. A complete description of all air pollutants and their associated health effects shall be included. All pollutants should be included, even if the project does not generate those pollutants. An example of the typical scope of discussion required is attached.( Attachment C)
  
16. The cumulative impact assessment shall include all of the following. Certain specialized projects may require a modification of this approach in consultation with planning staff.
  - A. Localized Impacts. Using a list of projects within a one mile and six mile radius of the project boundaries estimate impacts. Depending on the type of project, the impacts may include odors, Toxic Air Contaminants, NOx, ROG, CO, PM 10 and PM 2.5.
  - B. Consistency with Existing Air Quality Plans
    1. Discuss project in relation to KernCog conformity and Traffic Analysis Zones.
    2. Quantify the emissions from similar projects in the Ozone Attainment plan for the applicable basin. Discuss the Ozone Attainment plan for the applicable air district, development and relation to regional basin, Triennial Plan and State Implementation Plan.
  - C. CARB Air Basin Emissions

Download the Air Basin Emissions from the CARB website. Create tables showing the following:

    1. Current year Kern County portion of the air basin
    2. Current year for the entire air basin.
    3. Year 2020 – Kern County portion of the air basin
    4. Year 2020- entire air basin
    5. Composite Table showing total of all results and Project resultsAn example of presentation is attached (Attachment D)

Exhibit 17:  
South Coast Air Quality Management District  
Final—Methodology to Calculate Particulate Matter (PM) 2.5  
and PM 2.5 Significance Thresholds



# SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT

## Final –Methodology to Calculate Particulate Matter (PM) 2.5 and PM 2.5 Significance Thresholds

October 2006

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**SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT  
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                              Speaker of the Assembly Appointee

VICE CHAIRMAN:    S. ROY WILSON, Ed.D.  
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**TABLE OF CONTENTS**

CHAPTER 1 - PROJECT DESCRIPTION

Introduction..... 1

Background..... 1

Methodology to Calculate PM2.5 ..... 2

Localized Significance Threshold for PM2.5 Emissions..... 4

Regional Emissions Threshold of Significance  
for PM2.5 ..... 7

Conclusion ..... 8

Tables

Table 1 Federal Standards for Particulate Matter ..... 1

Table 2 California Standards for Particulate Matter ..... 2

Table 3 Total Stationary Source Fuel Combustion  
Inventory (Tons/Day) ..... 6

Table 4 Total Fugitive PM Inventory (Tons/Day)..... 6

Table 5 Combustion PM Inventory from Off-Road  
Equipment (Tons/Day) ..... 7

Table 6 Regional Air Quality Significance Thresholds..... 7

APPENDIX A - UPDATED CEIDARS TABLE LIST WITH PM2.5  
FRACTIONS

APPENDIX B – PM2.5 LOCALIZED SIGNIFICANCE THRESHOLD  
LOOK-UP TABLES

## Introduction

In the last few years, both California and the federal governments have established ambient air quality standards for fine particulate matter (PM) less than or equal to 2.5 microns in diameter (PM2.5). As a result, there is a need to establish a methodology for calculating PM2.5 and appropriate PM2.5 significance thresholds for the purpose of analyzing local and regional PM2.5 air quality impacts in California Environmental Quality Act (CEQA) and National Environmental Policy Act (NEPA) air quality analyses. This document provides a methodology for calculating PM2.5 and recommendations for localized and regional PM2.5 significance thresholds.

## Background

PM larger than 2.5 microns and less than 10 microns, often referred to as the coarse PM fraction (or PM10), is mostly produced by mechanical processes. These include automobile tire wear, industrial processes such as cutting and grinding, and re-suspension of particles from the ground or road surfaces by wind and human activities such as construction or agriculture. In contrast, PM less than or equal to PM2.5 is mostly derived from combustion sources, such as automobiles, trucks, and other vehicle exhaust, as well as from stationary combustion sources. The particles are either directly emitted or are formed in the atmosphere from the combustion of gases, such as NO<sub>x</sub> and SO<sub>x</sub> combining with ammonia. PM2.5 components from material in the earth's crust, such as dust, are also present, with the amount varying in different locations. Staff's recommendation for calculating PM2.5 focuses only on directly emitted PM2.5.

In 1997, U.S. EPA established an annual and a 24-hour standard for the finest fraction of particulates, PM2.5, to complement the existing PM10 standards. However, U.S. EPA recently modified the 24-hr PM2.5 standard and revoked the annual PM10 standard. (Table 1). The annual component of the standard was established to provide protection against typical day-to-day exposures as well as longer-term exposures, while the daily component protects against more extreme short-term events.

**TABLE 1**

Federal Standards for Particulate Matter

Federal Standards	PM 10	PM 2.5
Annual	Revoked <sup>a</sup>	15 µg/m <sup>3</sup>
24-Hour	150 µg/m <sup>3</sup>	35 µg/m <sup>3</sup> <sup>b</sup>

In June 2002, the California Air Resources Board (CARB) adopted new, stricter standards for particulate matter that would affect both the coarse as well as fine particulate fraction (Table 2). CARB delayed action on the proposed 24-hour PM2.5 standard in light of the

<sup>a</sup> U.S. EPA final rulemaking for CFR 40 Part 50.7 National Primary and Secondary Ambient Air Quality Standards at [http://epa.gov/pm/pdfs/20060921\\_rule.pdf](http://epa.gov/pm/pdfs/20060921_rule.pdf)

<sup>b</sup> U.S. EPA final rulemaking for CFR 40 Part 50.13 National Primary and Secondary Ambient Air Quality Standards at [http://epa.gov/pm/pdfs/20060921\\_rule.pdf](http://epa.gov/pm/pdfs/20060921_rule.pdf)

findings related to statistical issues in several key short-term exposure health effects studies.

**TABLE 2**

## California Standards for Particulate Matter

California Standards	PM 10	PM 2.5
Annual	20 $\mu\text{g}/\text{m}^3$	12 $\mu\text{g}/\text{m}^3$
24-Hour	50 $\mu\text{g}/\text{m}^3$	n/a

**Methodology to Calculate PM 2.5**

Because there are currently few or no PM2.5 emission factors for mechanical or combustion processes, staff is recommending an indirect approach to calculating PM2.5 emissions until such time as PM2.5 factors are developed. Since PM2.5 is a subset of PM10, the current methodology for calculating PM10 from fugitive dust sources (grading, demolition, unpaved roads, open storage piles, etc.) and combustion sources (stationary combustion sources, vehicle exhaust) will continue to be used to calculate PM10 and can also be used to calculate PM2.5. Total suspended PM (TSP) emissions typically contain specific fractions of PM10 and PM2.5 that can be measured. In general, PM from fugitive dust generating sources is primarily composed of PM10 with a relatively small fraction of the fugitive PM consisting of PM2.5. Alternatively, PM from combustion sources is primarily composed of PM2.5 with a small fraction consisting of PM10.

To calculate both PM10 and PM2.5, existing PM10 calculation methodologies for both fugitive dust PM10 and combustion PM10 can be used. To determine the PM2.5 fractions of the PM10 emission results, staff is recommending that the PM10 emissions be calculated using standard PM10 calculation methodologies. The PM10 emission results for each emission source or operation would then be multiplied by the applicable PM2.5 fraction, derived by emissions source, using PM profiles in the California Emission Inventory Data and Reporting System (CEIDARS) developed by the California Air Resources Board (CARB). The CEIDARS PM profiles are used to develop emission inventories for a variety of sources and operations in the Air Quality Management Plan (AQMP). The CEIDARS PM profiles have been streamlined to be used for most types of processes that would be encountered in a CEQA or NEPA document. In addition, AQMD staff has identified the PM2.5 fraction of PM10. The streamlined CEIDARS PM profiles can be found in Appendix A. The CEIDARS PM profiles may be updated as necessary to reflect updates prepared by CARB.

If the project being evaluated is not listed among the categories in Appendix A, then the closest related type of operation/process should be used. For example in analyzing construction activities, e.g., grading, earth moving, etc., if the specific activity is not located in the tables the CEQA practitioner can use the following default factors derived from the 2003 AQMP annual inventories (see Tables 3 and 4 below under the “Localized Significance Thresholds for PM2.5 Emissions” discussion). For mechanical dust generating sources, e.g., construction, the PM2.5 fraction of PM10 is 21 percent and for combustion sources the PM2.5 fraction of PM10 is 99 percent. For off-road combustions

sources, the PM2.5 fraction default would be 89 percent (Table 5). Other publicly available and peer reviewed sources of PM10 and PM2.5 emission factors can also be used if they more closely match the type of emission source than the sources identified in Appendix A. In addition, site-specific or project-specific information can be used.

Once the PM10 fractions from all emissions sources are calculated, these are summed and compared to the appropriate PM10 significance thresholds to determine whether or not a project is significant. Similarly, once the PM2.5 fractions from all emissions sources have been calculated, these are also summed (separate from the PM10 fractions) and compared to the appropriate PM2.5 significance threshold (see following discussion) to determine project significance.

The PM2.5 fraction of PM10 can be easily calculated as follows.

Step 1: Calculate PM10 emissions for each emissions source category.

Step 2: Look up the PM2.5 fraction of PM10 for the applicable source category by year that construction will occur or operation of the project will begin (Appendix A, column 6 of the appropriate table).

Step 3: Multiply the PM2.5 fraction by the PM10 emissions for each source category (PM2.5 emissions = PM10 emissions x [PM2.5 fraction])

Step 4: Sum the PM2.5 emissions from each emissions source.

Step 5: Compare PM2.5 emissions to the appropriate significance threshold.

Example:

A project is estimated to generate 8 pounds per day of PM10 from one piece of construction equipment. The PM2.5 emissions are as follows:

PM2.5 emissions = 8 pounds of PM10 per day x 0.89 = 7.12 pounds of PM2.5 per day.

In conjunction with establishing a methodology for calculating PM2.5, staff has developed the following recommended PM2.5 significance thresholds for both localized and regional significance for both construction and operation.

### **Localized Significance Thresholds for PM 2.5 Emissions**

Localized significance thresholds (LSTs) were developed in response to the SCAQMD Governing Board's environmental justice (EJ) initiatives (EJ initiative I-4) in recognition of the fact that criteria pollutants, carbon monoxide (CO), oxides of nitrogen (NOx), and PM10 in particular, can have local impacts as well as regional impacts. The LST proposal went through extensive public outreach and was adopted by the Governing Board in October 2003. At the time the LST was adopted by the Governing Board, staff had not yet developed proposed LSTs for PM2.5.

Determining localized air quality impacts requires dispersion modeling. Because local lead agencies may not have the expertise or resources to perform dispersion modeling, SCAQMD created a series of look-up tables for CO, NO<sub>x</sub>, and PM<sub>10</sub> in which staff back-calculated the mass emissions necessary to equal or exceed the construction or operation LST. The look-up tables were created for projects one to five acres in size and take into consideration location (source receptor area) and distance to the sensitive receptor. To use the look-up tables, the lead agency calculates daily emission as it normally would and then compares the results to the emissions in the applicable look-up table.

In general, the LSTs will apply primarily to construction because emissions from construction equipment occur at a fixed location compared to operation, which, for most land use projects, consists of emissions from vehicles traveling over the roadways, which, therefore, do not create impacts to a single location. To further assist lead agencies with calculating construction emissions, the SCAQMD conducted construction site surveys for each phase of construction to develop standard construction scenarios relative to construction equipment and hours of operation. Spreadsheets were developed to calculate emissions for the construction scenarios in an effort to create scenarios that would not exceed any applicable LSTs. When preparing a CEQA analysis, lead agencies could use the sample construction projects for their construction analyses, use the spreadsheets to tailor the analysis to their individual projects, or use a combination of the two.

The following subsections describe the proposed PM2.5 LSTs for both operation and construction.

### **Establishing LSTs**

To determine the effects of PM2.5 on local (nearby) receptors, such as residents, hospitals, schools, etc., a PM2.5 localized significance threshold (LST) needs to be established. Since the Basin exceeds one or more of the state or federal ambient air quality standards for PM2.5, the process used to determine significance for attainment pollutants, i.e., NO<sub>2</sub> and CO, developed for the LST program cannot be used<sup>c</sup>. Under the LST program, since PM<sub>10</sub> is a nonattainment pollutant, the LST methodology uses a different process for determining whether localized PM<sub>10</sub> air quality impacts are significant. To determine localized PM<sub>10</sub> air quality impacts during operation, the LST methodology uses as a significance threshold the allowable change in concentration threshold for PM<sub>10</sub> listed in Rule 1303, Table A-2, which is 2.5 micrograms per cubic meter (µg/m<sup>3</sup>). The allowable change in concentration threshold is a modeled concentration that cannot be exceeded at the sensitive receptor, and determines whether or not a permit applicant will receive a permit from the SCAQMD. For the LST program staff used a dispersion model (ISCST3) to convert the 2.5 µg/m<sup>3</sup> concentration into mass daily PM<sub>10</sub> emissions numbers based on the size of the project, location of the project, and distance to the sensitive receptor. The

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<sup>c</sup> Under the LST program, to determine significance for attainment pollutants, the emissions contribution from the project expressed as a concentration is added to the highest local ambient concentration from the last three years where data are available. If the sum is equal to or greater than any applicable state or federal ambient air quality standard, the project is considered to have significant localized air quality impacts for that pollutant. More information on the LST program can be found at the following URL: <http://www.aqmd.gov/ceqa/handbook/LST/LST.html>.

results were then incorporated into an LST look-up table. If the mass emissions from a project exceed the applicable LST look-up tables' mass emission numbers (which are based on the 2.5  $\mu\text{g}/\text{m}^3$  concentration), then localized PM10 air quality impacts are considered to be significant.

### *Operational Localized Significance Thresholds*

To establish operational PM2.5 localized significance thresholds, staff first reviewed the PM inventories in Appendix III of the 2003 AQMP. In particular, staff evaluated the composition of PM10 and PM2.5 from combustion processes in the 2003 AQMP to establish a general ratio of PM2.5 to PM10. Combustion processes were evaluated because, for most land use projects, mobile source combustion emissions comprise the majority of emissions. Table 3 shows the total PM10 and PM2.5 inventories for total fuel combustion process for the years 2005 through 2010. As can be seen in Table 3, over the five-year timeframe considered, the fraction of combustion PM10 that consists of PM2.5 is consistently 99 percent. Since combustion PM10 and PM2.5 fractions are essentially equivalent, staff is recommending that the operational localized significance threshold for PM2.5 be the same as the current operational localized significance threshold for PM10, i.e., 2.5  $\mu\text{g}/\text{m}^3$ .

**TABLE 3**

Total Stationary Source Fuel Combustion Inventory (Tons/Day)

<b>Year</b>	<b>PM 10</b>	<b>PM 2.5</b>	<b>Percent of PM 10 which is PM 2.5</b>
2005	8.13	8.01	99
2006	8.21	8.10	99
2007	8.30	8.18	99
2008	8.38	8.26	99
2010	8.54	8.42	99

Source: Appendix III, 2003 AQMP, Annual Average Emission Inventory

### *Construction Localized Significance Thresholds*

Similarly, to develop a PM2.5 construction significance threshold for localized impacts, staff considered the PM2.5 contribution from fugitive sources and the PM2.5 contribution from combustion sources (construction equipment). As discussed in more detail in the following paragraphs, combustion emissions from the construction equipment contribute a larger portion of the total PM2.5 emissions from construction operations than fugitive sources.

Staff then reviewed the 2003 AQMP, Appendix III fugitive PM inventory for construction and demolition to obtain the PM10 and PM2.5 compositions. Table 4 shows the total PM10 and PM2.5 inventories for construction activities for the years 2005 through 2010. As can be seen in Table 4, over the five-year timeframe, the fraction of PM10 that consists of PM2.5 is consistently 21 percent. Multiplying the fugitive PM2.5 percent fraction of

PM10 by the existing construction PM10 LST,  $10.4 \mu\text{g}/\text{m}^3$ , produces a result of approximately  $2.2 \mu\text{g}/\text{m}^3$ .

**TABLE 4**

Total Fugitive PM Inventory (Tons/Day)

Year	PM 10	PM 2.5	Percent of PM 10 which is PM 2.5
2005	42.7	8.91	21
2006	43.66	9.11	21
2007	44.6	9.3	21
2008	45.54	9.5	21
2010	47.44	9.9	21

Source: Appendix III, 2003 AQMP, Annual Average Emission Inventory

Off-road construction equipment, however, also contributes combustion PM as well as fugitive PM. To determine the contribution of PM2.5 from construction equipment combustion emissions, staff performed dispersion modeling using the ISCST3 dispersion model for one-, two-, and five-acre construction scenarios. The construction scenarios were developed from construction site surveys conducted in connection with staff's original LST proposal. Combustion sources were modeled as adjacent five-meter volume sources and fugitive sources were modeled as adjacent one-meter area sources. Worst-case meteorological data from the West Los Angeles source receptor area were used and receptors were placed at 25, 50, 100, 200, and 500 meter distances from the construction site. Using CARB speciation data, it was assumed that 21 percent of fugitive dust PM10 is comprised of PM2.5 and 89 percent of off-road equipment combustion PM10 emissions are comprised of PM2.5 (based 2003 AQMP inventories, see Table 5).

**TABLE 5**

Combustion PM Inventory from Off-Road Equipment (Tons/Day)

Year	PM 10	PM 2.5	Percent of PM 10 which is PM 2.5
2005	11.95	10.64	89
2006	11.61	10.33	89
2007	11.2	9.97	89
2008	10.93	9.71	89
2010	10.26	9.09	89

Source: Appendix III, 2003 AQMP, Annual Average Emission Inventory

The modeling results showed that combustion PM2.5 from off-road equipment comprise approximately 75 to 100 percent of the total PM2.5 emissions from construction activities. Further, the PM2.5 contribution from fugitive sources is dependant on the construction phase. For example, the modeling showed that the demolition and site preparation phases have the highest fugitive PM2.5 contribution to the overall results, whereas, the building and asphalt paving phases contribute the most combustion PM2.5 to the overall results.

The modeling results indicate that the contribution of off-road combustion PM2.5 emissions can be three to four times higher than the contribution of PM2.5 from fugitive sources. Based on this result, staff recommends that the PM2.5 fugitive dust component be adjusted upward by approximately four times to account for the PM2.5 emissions from the construction equipment. As a result, staff is recommending a PM2.5 construction LST of 10.4  $\mu\text{g}/\text{m}^3$ , the same as the construction LST for PM10. Finally, an exceedance of either the PM10 construction LST or the PM2.5 construction LST is a significant adverse localized air quality impact.

### Regional Emission Threshold of Significance for PM 2.5

Emissions that exceed the regional significance thresholds are mass daily emissions that may have significant adverse regional effects and are the air quality significance thresholds with which most CEQA practitioners are familiar.

**Table 6**  
Regional Air Quality Significance Thresholds

<i>Mass Daily Thresholds<sup>a</sup></i>		
<b>Pollutant</b>	<b>Construction<sup>b</sup></b>	<b>Operation<sup>c</sup></b>
NOx	100 lbs/day	55 lbs/day
VOC	75 lbs/day	55 lbs/day
PM10	150 lbs/day	150 lbs/day
SOx	150 lbs/day	150 lbs/day
CO	550 lbs/day	550 lbs/day
Lead	3 lbs/day	3 lbs/day

The following subsection describes the proposed PM2.5 regional significance thresholds for both operation and construction.

#### Establishing Regional Significance Thresholds

PM emissions also affect air quality on a regional basis. When fugitive dust enters the atmosphere, the larger particles of dust typically fall quickly to the ground, but smaller particles less than 10 microns in diameter may remain suspended for longer periods, giving the particles time to travel across a regional area and affecting receptors at some distance from the original emissions source. Fine PM2.5 particles have even longer atmospheric residency times. Staff is recommending a PM2.5 regional significance threshold based on a recent EPA proposal, as explained in the following paragraphs.

On September 8, 2005, EPA published in the Federal Register “Proposed Rule to Implement the Fine Particle National Ambient Air Quality Standards,” which proposed a significant emission rate for PM2.5 of 10 tons per year. Staff is proposing to use EPA’s

significant emission rate for PM2.5 to develop the daily mass emission regional significance threshold for PM2.5. Converting the annual rate, 10 tons, into a daily rate produces a daily rate of approximately 55 pounds per day. A similar approach was used to derive the operational regional significance thresholds for NO2 and VOC. NO2 and VOC operational regional significance thresholds were derived by using the NOx/VOC emission rate that defined a major source in the South Coast Air Basin, 10 tons per year. Converting the annual emissions rate into a daily rate resulted in a regional operational significance threshold of 55 pounds per day for each pollutant. Similar to the regional significance threshold for PM10 of 150 pounds per day, the proposed PM2.5 regional significance threshold of 55 pounds per day would apply to both construction and operation.

## **Conclusion**

In this document staff identified a methodology to indirectly calculate PM2.5 emissions for a CEQA or NEPA air quality analysis, to be used until such time as PM2.5 emission factors are available, which will allow the CEQA practitioner to calculate PM2.5 emissions directly. In addition, PM2.5 construction and operation LSTs have been identified to address localized impacts. The PM2.5 LSTs will be used to develop look-up tables for projects five acres in size or smaller, similar to those prepared for PM10, nitrogen dioxide (NO2), and carbon monoxide (CO). As with the other pollutants, the PM2.5 look-up tables can be used as a screening procedure to determine whether or not small projects (less than or equal to five acres) will generate significant adverse localized air quality impacts. Screening procedures are by design conservative, that is, the predicted impacts tend to overestimate the actual impacts. If the predicted impacts are acceptable using the LST look-up tables, then a more detailed evaluation is not necessary. However, if the predicted impacts are significant, then the project proponent may wish to perform a more detailed emission and/or modeling analysis before concluding that the impacts are significant. Project proponents are not required to use this LST procedure; and may complete site specific modeling instead. Site-specific modeling is required for projects larger than five acres.





November 3, 2006

Mr. Donald B. Mooney  
129 C. Street  
Suite 2  
Davis, CA 95616

**Subject: Sutter Medical Center Sacramento & Trinity Cathedral Project  
Revised Draft Environmental Impact Report**

Dear Mr. Mooney:

Per your request, I have reviewed the Revised Draft Environmental Impact Report (hereinafter the RDEIR) for the Sutter Medical Center Sacramento (hereinafter SMCS) and Trinity Cathedral Projects with specific focus on traffic and parking matters described in the Transportation and Circulation sections of the document. My qualifications to perform this review include registration as a Civil and Traffic Engineer in California, 38 years of professional transportation/traffic engineering consulting practice in California including preparation and review of transportation/traffic components of environmental documents. I have previously formally commented on the original 2005 Draft Environmental Impact Report (DEIR) on the subject project and provided testimony on the environmental documentation at the Sacramento City Planning Commission and City Council hearings on this matter in November and December 2005 respectively. My resume is attached herewith. This letter documents comments and conclusions resultant from my review.

**PARKING**

The revised Sutter DEIR document circulated in September '06 does not make any change in the parking generation rate and estimated total parking demand for the project from what was contained in the original draft and final EIR on the project. It merely discloses and integrates some backup data materials in an effort to explain how the parking generation rate and estimate of parking demand for the SMCS project was compiled. There are serious flaws in the parking data

that was used to estimate parking demand and parking impacts of the proposed project.<sup>1</sup> These include:

### **Sutter Memorial Parking Survey Does Not Measure Portion of Parking Generation Met by Use of On-Street or Off-Site Parking**

As described in the RDEIR, the EIR parking analysis utilized an occupancy count survey of parking at Sutter Memorial Hospital to estimate the parking demand of the new hospital component of the SMCS project. The parking survey at Sutter Memorial, the basis of the EIR's parking generation rate used to estimate parking demand at the *Women's and Children's Center* at SMCS surveyed parking only in the formal lots managed by Sutter Memorial. Hence, any of the Sutter Memorial parking demand that was met by parking on-street or off-street in lots not formally controlled by Sutter Memorial is not reflected in the parking survey or in the parking generation rates derived therefrom that were then used to compile the 833 space demand estimate for the *Women's and Children's Center* at SMCS. Both the aerial photos of Sutter Memorial included in the RDEIR and others commonly available on the internet evidence heavy on-street parking along the Sutter Memorial frontage on F Street. In the aerial photo of this frontage currently available on *Google Earth*, there are 28 vehicles visible (and possibly more actually present because foliage obscures the aerial view of a portion of the frontage) parked on-street along Sutter Memorial's frontage on F Street. In the aerial view of this same frontage included in the RDEIR, there are 34 vehicles parked on-street along the Sutter Memorial frontage. Hence, the parking demand estimated for the project is low by whatever portion of the demand for Sutter Memorial is met on-street or off-site.

2-44

### **The Occupancy Survey of Sutter Memorial Parking Was Conducted On an Anomalous Day**

The subject parking survey at Sutter Memorial was conducted during normal midday lunch period (11:30 am to 12:30 pm) on March 17, 2005. March 17 is St. Patrick's Day, an informal but widely celebrated holiday on which anyone with common sense would recognize that lunchtime parking occupancy would tend to be abnormal. Hence, the parking demand estimated for the project is low by whatever portion of normal mid-day parking demand was absent due to normally present staff and visitors celebrating St. Patrick's Day lunch elsewhere.

2-45

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<sup>1</sup> Although the City claims on page 56.7R-1 that "the transportation and circulation (including parking) analyses contained in Section 6.7 (Transportation and Circulation) of the EIR are adequate, in fact, the flaws in the parking generation (and trip generation) data collection and rate estimates disclosed in this RDEIR and in the Supplemental Administrative Record disclosed in Court proceedings open the entire analyses and conclusions of the transportation and circulation component of the EIR to further scrutiny and comment.

2-45a

### **The Occupancy Survey of Sutter Memorial Parking Was Conducted At a Time of Day Other Than That Of Peak Parking Occupancy**

The EIR traffic and parking consultants knew or should have known based on traffic counts at Sutter parking entries and exits already in their possession that peak parking occupancy in Sutter parking could occur before 11 AM or after 1 PM instead of in the sole 11:30 AM to 12:30 PM hour in which they chose to count parking accumulation. This is disclosed in Supplemental Record Bate 027 (also disclosed as Bate 002 and 100). If the analyst accepts whatever parking is already in the parking facilities at 7 am as a fixed starting point, and compiles the cumulative differential between the entry counts and exit counts at the end of each hour (the differential being the accumulated parking taking place inside), bate 027 shows the peak parking accumulation at the visitor garage at Sutter General occurring between 10 and 11 AM. For the visitor lot at Sutter Memorial, the peak parking accumulation is shown to be between 2 and 3 PM. Hence, the evidence already in the EIR consultants' possession demonstrated it would be insufficient to count parking occupancy for just one hour of the day and that the 11:30 to 12:30 hour counted might not be the peak hour of occupancy.

2-46

The EIR parking consultants also should have known that it would be insufficient to measure peak parking demand by counting only the 11:30 am to 12:30 pm hour based on authoritative parking reference source information indicating hospital parking tends to peak at mid-morning, slacken somewhat at mid-day and then reach a greater peak at mid-afternoon.<sup>2</sup>

2-47

### **Data Available To the EIR Parking Consultants Indicates More Parking at Sutter Memorial Than Was Observed in the Subject Parking Survey**

The Supplementary Record disclosed by the City in connection with this matter demonstrates that the consultants preparing the DEIR had knowledge of prior parking studies at Sutter Memorial that showed considerably higher parking occupancy on the Sutter Memorial parking facilities than was counted in the subject Saint Patrick's Day survey. In a memo dated April 13, 2005 from Pelle Clarke and Vic Maslanka (DKS) to Christine Kronenberg (EIP), the consultants who prepared the traffic and parking sections of the subject EIR indicate that a May 2003 parking study of the same Sutter Memorial parking facilities by the Hoyt Company observed that parking demand often exceeded the available 960 parking spaces – in other words, that the parking occupancy often *exceeded* the 898 level observed in the St. Patrick's Day survey by 62 spaces and that the demand could be yet more than that.

2-48

The report that parking demand often *exceeded* the 960 space capacity of the parking supply under Sutter Memorial's direct control supports our observation that there probably is Sutter Memorial-generated parking that takes place on-

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<sup>2</sup> See *Parking*, Weant, Robert A., and Levinson, Herbert S., Eno Foundation, 1990, pages 114-116.

street or in nearby off-site, off-street locations and that the procedures used in surveying the parking demand failed to account for the portion of Sutter Memorial's demand that is met on-street or in non-Sutter-controlled off-street sites.

2-49  
(con't.)

The failure to acknowledge and incorporate the Hoyt data in the actual EIR analysis (as opposed to only disclosing it obliquely in the supplemental record) appears to be of itself an improper action with regard to CEQA obligations.

2-50

Had the Hoyt data been relied on as it should have, given the questionable reliability of a parking survey taken for one hour at midday on St. Patrick's Day, the parking demand rate for the Sutter Memorial lots surveyed, according to the analysis procedures followed would have been 2.23 spaces per thousand square feet instead of the 2.09 rate used. If the on-street parking demand from Sutter Memorial evident in the aerial photos as described above were also factored into the analysis, the correct parking demand rate for Sutter Memorial would have been compiled at 2.30 spaces per thousand square feet of hospital floor area. Had this latter rate accounting for all the actual parking generation at Sutter Memorial been used in estimating the parking demand for the *Women's and Children's Center* component at SMCS, the demand would have been stated as 916 spaces instead of 833, a difference of 83 stalls. This would consequently increase the net parking deficit ultimately disclosed in the analysis of parking impacts by another 83 spaces.

2-51

### **The RDEIR Analysis Fails To Account For The Parking Reservoir Needed At Shift-change Time When the Parking Demands Of Both Shifts Overlap**

The entire parking analysis fails to take into account need for shift-change parking reservoir to respond to overlapping parking demands at shift-change time despite the obvious evidence of such a reservoir in the data from the subject survey at Sutter Memorial. The need for such a reservoir is obvious. The incoming shift must be able to park before coming into their work stations to relieve the personnel of the shift that is departing. Members of the departing shift can only then depart and remove their vehicles from the parking areas. The incoming shift cannot be left to hunt for potentially rare parking spaces at times of peak occupancy. So there must be a reservoir of readily available employee parking to meet the simultaneous parking demands of the incoming and outgoing shifts.<sup>3</sup> The detailed field documents from the subject parking survey and the Clarke memo of 9-20-06 disclosed in the RDEIR show that the vacant reservoir designated "A Lot" and observed "chained off" and "not occupied" and signed "Lot A PM Staff" in the DKS parking survey, but its implication is unrecognized in the analysis.

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<sup>3</sup> This is not so much of a problem at the late evening and early morning shift-changes, times when there is very little visitor or out-patient parking demand, but it is a clear need at the mid-to-late afternoon shift change when visitor and out-patient parking demand is heavy.

## 9-20-06 Memo in RDEIR Inaccurately Describes Parking Data Analysis

The 9-20-06 Pelle Clarke (DKS) memo incorporated in the RDEIR parking analysis references the Center City Parking Master Plan study and 158 pages of parking inventory/occupancy data sheets on aerial photo maps are appended in the RDEIR. The subject memo states that the data from that study “(specifically parking counts conducted in the garages and on-street adjacent to the SMH) were used to establish existing parking conditions for both on-street and off-street parking.” However, the analysis shows no evidence that any adjustment for on street or non-Sutter off-street parking was incorporated into the estimate of the SMH parking generation rate that was subsequently employed to estimate the parking demand for the *Women’s and Children’s Center* component at SMCS. The parking generation rate estimated at 2.09 spaces per thousand square feet of hospital use was purely based on the DKS St. Patrick’s Day survey counts of vehicles parked in the midday hour in SMH-controlled off-street lots.

2-53

Moreover, the study limits of the Center City Parking Master Plan extend only as far east as Alhambra Boulevard. Sutter Memorial Hospital is located between 51<sup>st</sup> Street and Lagomarsino Way, some 21 blocks (1.33 miles) outside (east of) the east limits of the Center City Parking Master Plan study. Clearly, DKS did have a large bundle of Center City Parking Master Plan data gathered sometime in April 2005. However, it is quite obvious that there is no Center City Parking Master Plan data adjacent to SMH to establish existing parking conditions for both on-street and off-street parking as claimed in the subject Clarke memo. Hence, the statement in the 9-20-06 Clarke parking memo disclosed in the RDEIR that Center City Parking Master Plan data was relied upon in deriving the parking generation rate is not only quite evidently factually incorrect; it also appears to be an improper effort to mislead the public as to the nature of parking data considered to derive the parking generation rates that were applied to estimate the Women’s and Children’s Center component of the future parking demand at SMCS.

2-54

### Combined Effect of Errors In Parking Data Analysis Understates Parking Impacts

The flaw in the estimated parking generation described above, including the underestimate due to on-street and off-site parking, result in understatement of the parking demand at the proposed Womens’ and Children’s Center and the overall SMCS of 83 stalls. In addition, the failure to reflect the need for a shift-change parking reservoir for the Womens’ and Children’s Center component results, if one estimates this reservoir proportionate to the shift change reservoir stalls per square foot of hospital at Sutter Memorial<sup>4</sup>, in an understatement of 50

2-55

<sup>4</sup> Sutter Memorial has 430,627 square feet and has approximately 54 spaces in the shift change parking reservoir (Lot A), or about .125 spaces per thousand square feet. At this same shift change parking

stalls in additional parking space demand related to the Women's and Children's Center.

2-55  
(con't.)

The original DEIR's estimate of incremental parking demand for the SCMS project is 1427 parking spaces<sup>5</sup>, a total which remains unchanged in the RDEIR. The DEIR states that the additional parking supply to be provided by the SMCS project (reflecting deductions for existing spaces to be removed by the project) is 890 spaces. Hence, according to the RDEIR, the project could result in a parking deficit of 537 spaces for SMCS. However, that is all based on the flawed, one-hour St. Patrick's Day survey that didn't observe Sutter Memorial parking at a peak time, didn't measure the portion of Sutter Memorial demand met by on-street parking, and missed accounting for the shift-change reservoir.

2-56

If the parking generation for the Women's and Children's Center component is computed based on the Hoyt Company data for Sutter Memorial and also adjusted for the portion of Sutter Memorial parking demand met on-street, and the need for a shift change parking reservoir is factored in, the SMCS project parking demand becomes 1560 spaces (1427 +83 +50) and the potential deficit becomes 670 spaces. This is a significant difference (133 spaces, approximately 25 percent) from the parking space deficit that has been reported to the public and public policy makers in the DEIR (and that remains unchanged in the RDEIR).

2-57

### **Parking Surplus in Existing Facilities Overstated**

Among the factors the DEIR (unchanged in the RDEIR) cites as potentially mitigating the impact of the parking deficit inherent in the SMCS project is availability of underutilized space in existing SCMS parking facilities. However, this assessment is flawed in that it overestimates the available space in existing facilities that could be available to the subject SMCS project because it estimates the parking demand for a previously entitled 71,300 square foot expansion of Sutter General at the understated rates of the St. Patrick's Day survey at Sacramento Memorial and because it fails to consider the shift change parking reservoir needs of Sutter General. If the estimate for the parking demand of the 71,300 square foot addition used Sutter Memorial rates that considered the Hoyt data, on-street use and the shift change reservoir, there would be 58 fewer vacant spaces in existing parking facilities available to offset the project's parking deficit (213 instead of 271). However, if 'practical capacity' of parking facilities (described below) is considered, as few as 25 stalls in existing facilities may be available to offset the parking deficits of the project.

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reservoir rate, the 398,362 square feet, the Women's and Children's Center component of the SMCS project would require a shift change reservoir of about 50 parking spaces (398.652 x 0.125). Sutter General Hospital at 351,000 square feet plus 71,300 square feet of previously entitled expansion would require a shift change reservoir of about 53 parking spaces (422.300 x 0.125).

<sup>5</sup> This total is for the SMCS project alone, excluding the parking demand contributions of the adjacent Trinity Cathedral project and the Children's Theater project.

## EIR Analysis Failed to Consider Practical Capacity of Parking Facilities

In addition, documents in the Supplemental Record disclosed by the City in the course of proceedings, specifically the previously cited memo from Pelle Clarke and Vic Maslanka (DKS) to Christine Kronenberg (EIP) dated June 7, 2005, makes evident that the DEIR and the RDEIR did not disclose how much additional parking would actually have to be provided to actually offset the projected parking deficits and did not consider the ‘practical capacity’ of parking facilities in defining the deficits. The memo correctly identifies the fact that when, in its terms, *“parking facilities are occupied at 90 percent or more of their capacities, it is difficult to find spaces. Therefore, facilities are often planned with a buffer to minimize these effects.”* What the memo is addressing is the conventional practice among parking design and evaluation professionals of regarding the ‘practical capacity’ of a parking facility as being 90 percent of the stall total, because of operational considerations involving the difficulty for drivers in finding the last available spaces and because of the congestion in the circulation aisles caused by drivers hunting for those scarce available spaces. However, the cited memo notes that in the parking analysis of the original DEIR (unchanged in the RDEIR) that impacts have been defined purely on the basis of differential between parking demand and spaces provided with “no such buffers” (or, in our terms, no consideration of practical capacity of the parking facilities) included in the calculations. This has several key implications:

2-59

The 890 additional parking spaces provided by the SMCS project would have a practical capacity of about 801 spaces (a difference of 89 spaces). Therefore, the potential parking deficit of the project would be 626 based on the DEIR’s original estimate of demand (537) or 731 based on our revised estimate of demand described above (642).

2-60

If conventional parking industry practice with regard to ‘practical capacity’ were considered, it would take creation of an additional 696 parking spaces additional spaces to offset or fully mitigate the parking deficit based on the DEIR’s original computation of demand or 812 additional spaces to fully offset the parking deficit based on our computation of demand above.

2-61

Instead of there being a surplus of 420 stalls in the existing SMCS facilities to partly offset the proposed project’s deficit, there would be only 25 stalls available in those facilities to offset project parking deficits, considering our computation of demand in them (with the previously approved expansion to Sutter General, the need for a shift change reservoir for Sutter General and ‘practical capacity’ of the parking facilities).

2-62

Hence, in addition to the RDEIR disclosing a flawed and understated total parking demand of the SCMS project, there is also a substantial gap between what has been disclosed to the public and public policy makers as the Project’s parking deficit (the impact) and the amount of parking that ordinarily would need

2-63

to be provided to mitigate the impact (the added spaces including consideration of “practical capacity”).

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(cont.)

### **Entire Parking Analysis Must Be Recompiled and Recirculated in Draft**

In leaving the actual quantification of SCMS project parking demand and parking impacts unchanged, the RDEIR fails to remedy the obvious defects noted above in the parking analysis contained in the original EIR and DEIR. These are defects that, had the information now disclosed with the RDEIR and with the City’s earlier disclosure of the Supplemental Record on this matter been properly disclosed with the circulation of the original DEIR been the subject of comments of the same nature as above, which the City would have been required to respond to at that time.

2-64

Considering the flaws in the parking analysis described above and the incorrect, incomplete and misleading information provided to the public and public policy makers, the entire parking analysis contained in the original DEIR and RDEIR must be recomputed and the revised document must be recirculated in “draft” status.

### **TRIP GENERATION**

The RDEIR discloses additional details of the trip generation data that supported the original EIR analysis, but does nothing to correct the obvious flaws in the data and consequent flaws in the DEIR traffic analysis.

### **Sutter Memorial Trip Generation Survey Failed to Count Trips Involving On-street Pick-ups or Drop-offs, and Trips That Parked On-street or Off-site**

In our comments on the original DEIR in this matter, we pointed out that the trip generation estimated for the hospital components of the project, reportedly based on a survey of trip generation at Sutter Memorial hospital appeared very low relative to authoritative trip generation rates for this use published in *Trip Generation, 7<sup>th</sup> Edition*, identified the fact that the differences between the trip generation rate used in the original DEIR and that in *Trip Generation, 7<sup>th</sup> Edition* resulted in differences in significant numbers of estimated project trips that could alter the findings regarding significant traffic impacts of the project and, knowing that reasonably accurate measurement of trip generation of a land use like a hospital set within an urban environment requires very thorough traffic survey techniques to avoid missing significant components of the trip generation, asked for details of the Sutter Memorial trip generation survey the DEIR relied upon.

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The City’s response to these comments was to assert that the trip generation rates derived from the survey at Sutter Memorial were correct and appropriate for use in the analysis. But the response failed to provide any clarifying details regarding the trip generation survey procedures and data at Sutter Memorial.

2-66

Now that the RDEIR has provided the details of the Sutter Memorial trip generation survey in response to the order of the Court, those details prove that our concern that the survey missed a portion of Sutter Memorial's trip generation was well founded. The RDEIR information reveals that the Sutter Memorial trip generation survey was structured to measure only that portion of Sutter Memorial's trip generation that involved use of parking fields under Sutter Memorial's direct control or pick-ups and drop-offs in formally designated pick-up/drop-off zones normally used for patient transfers during admissions and discharges. Only the entries and exits to Sutter's parking areas and the patient transfer pick-up/drop-off zone were counted. Any of the trip generation of Sutter Memorial that involved people parking in on-street locations or in off-street locations not controlled by Sutter were *not measured* in the subject survey. Nor were people who were picked-up or dropped off at curbside locations other than the formal patient transfer pick-up/drop-off areas. Because it is commonplace for workers who carpool with others not destined for the same location, or hospital visitors or even out-patients who ride with someone not destined for the same location to be dropped by curbside, and because recent aerial photos commonly available on the internet show heavy curb parking on the F Street frontage of Sutter Memorial, there is good reason to conclude that the trip generation studies conducted at Sutter Memorial for the purposes of the subject EIR *did fail to count* a meaningful portion of that hospital's trip generation.

2-67

The EIR parking consultants should have been aware that a portion of Sutter Memorial's parking generation was being served on-street just by observation. Moreover, in a 4-13-05 memo to Christine Kronenberg (EIP) disclosed as part of the City's Supplemental Administrative Record in the matter, Pelle Clarke and Vic Maslanka (DKS), the EIR parking consultants, indicate they are aware that a portion of Sutter General Hospital's parking demand was being met on-street. If they knew that, they obviously should have been aware that the same thing was taking place at Sutter Memorial and counted it in the parking generation study.

2-68

The assertions made by the City in response to comment on the original environmental documents and reiterated again in the RDEIR (as part of its' appended Clarke 9-20-06 memo on Sutter Medical Center Trip Generation) regarding appropriateness of the trip generation surveys at Sutter Memorial as the basis of trip generation estimates for the new hospital components at SMCS are unconvincing and completely miss the point. The statement in the Clarke memo that both the Institute of Transportation Engineers *Trip Generation Handbook* and the City of Sacramento Traffic Study Guidelines allow substitution of trip generation information specific to a project or from sites representative of a project has never been disputed. *The issue is that the trip generation data utilized is understated because, as described previously and as the RDEIR details show, the consultants counted only a part of the trip generation at the purportedly representative site, Sutter Memorial.* Neither the *Trip Generation*

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*Handbook* nor the City Traffic Study Guidelines encourage use of incomplete counts to represent the entire trip generation of the representative site.

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(cont.)

### **RDEIR Fails To Remedy Serious Flaws in Trip Generation Analysis That City Is Now Aware Of**

In testimony at the Planning Commission and City Council hearings on the original DEIR/FEIR, in response to our comments questioning the trip generation rates based on the Sutter Memorial survey, City staff stated that the EIR analysis also considered data collected from Kaiser Roseville hospital that corroborated the Sutter Memorial trip generation rates. When the Kaiser Roseville data was finally made available in a late supplemental disclosure of the administrative record, we found, and disclosed in Court proceedings, that the City's EIR consultants interpretation of the Kaiser data contained an obvious computational blunder and that the Kaiser data did not corroborate the Sacramento Memorial trip generation data at all; instead it supported use of the ITE trip generation data that we had suggested in our original comments. Despite that revelation, in this RDEIR the City has not taken the opportunity to correct the trip generation analysis, but has persisted in proceeding with the flawed trip generation data based on the partial Sutter Memorial survey.

2-70

### **RDEIR Inconsistent In Describing Sutter Memorial Trip Generation Data Collection**

RDEIR Table 6.7-13R states in footnote that trip generation survey estimates are based on counts taken on June 8<sup>th</sup> through 10<sup>th</sup> in 2004 plus ones on March 17, 2005. This suggests that the trip generation rates may be tainted by anomalous data collected on St. Patrick's Day. The 9-20-06 Clarke memo on trip generation included in the RDEIR states that the data used in the computation of trip generation rates were collected only on the June 8<sup>th</sup> through 10<sup>th</sup>, 2004 dates. This discrepancy must be resolved, because use of the anomalous St. Patrick's Day data would be a concern.

2-71

### **RDEIR Fails to Account For Traffic Impacts of Trips Between Patient Pick-up/Drop-off Areas and Parking Facilities**

The RDEIR provides a specific accounting of trip generation at the project's patient pick-up/drop-off areas but asserts that valet-park or self-park movements between the project's pick-up/drop-off areas and its' parking facilities are "internal trips" that do not need to be accounted for in the traffic impact analysis. While this is true in the case of trips between the pick-up/drop-off zones and some of the parking facilities mentioned in the RDEIR, it is also clear that given the location of some of the parking facilities involved, secondary trips to those facilities would pass through key street intersections in the project vicinity that are the subject of traffic level-of-service analysis and would be additive to traffic there. Hence, those trips are not purely "internal" to the project and therefore

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that portion of the trips between the pick-up/drop-off zones and parking must be taken into consideration in the LOS analysis for those intersections.

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(cont.)

### **RDEIR Reveals Details of Two-Way Conversion Traffic Known**

In our prior comments, we indicated that the original DEIR should have included a short range traffic analysis of the project's impacts on the feasibility of the two-way street conversion project that the City was concurrently considering. City staff responded at the City Planning Commission or City Council hearing on the matter that such an analysis was not possible because the City did not know how to define a "short-term no-project scenario" as the baseline for such an analysis.

2-73

However, by including the resume Mr. Pelle Clarke of DKS Associates, the RDEIR now reveals that he was a principal directly involved in preparing the City's two-way streets conversion evaluation study concurrently with his work on the original DEIR traffic studies. In addition, documents disclosed by the City as part of the Supplemental Administrative Record in these proceedings appear to indicate that at an early stage of the EIR analysis Clarke and DKS representatives suggested consideration of just such a scenario. These current disclosures appear to indicate that the City's response on the issue was improper and that the EIR should be revised to include consideration of such a scenario.

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### **Conclusion**

Given all of the foregoing, we believe that the RDEIR and earlier EIR analysis must be revised extensively to address all of the issues raised herein, and that the document(s) must be recirculated in draft status.

2-75

Sincerely,

Smith Engineering & Management  
A California Corporation



Daniel T. Smith Jr., P.E.  
President



**COMMENT LETTER 2: Law Offices of Donald B. Mooney, Donald B. Mooney and John L. Marshall****Response to Comment 2-1:**

The comment references attached reports. Responses to the reports attached to the letter appear below.

The comment also references comments submitted by SEIU on the July 2005 Draft EIR and October 2005 Final EIR. The commenter is directed to the City's previous responses to those comments.

The remainder of the comment asserts that the City should have prepared and circulated an entirely new EIR rather than republish only portions of the July 2005 Draft EIR.

As discussed in the Revised Draft EIR, the document's scope was limited to areas where the Superior Court concluded that the October 2005 Final EIR lacked adequate evidence to support its conclusions. Specifically, the Superior Court ruled:

[T]he record does not contain sufficient underlying documentation of the analysis set forth in the [EIR] with respect to trip generation, parking and construction-related NO<sub>x</sub> emissions that may be associated with the proposed Sutter Medical Center Project ("Project"). Underlying documentation regarding trip generation, parking and construction-related NO<sub>x</sub> emissions were not present in the materials made available to the public during the review and comment stage or in the administrative record originally lodged with the Court. The petition for writ of mandate is granted on the grounds that [the City] committed a prejudicial abuse of discretion in approving the [P]roject and certifying the EIR.

(Judgment, pp. 2-3, 4.)

Based on this determination, the City prepared the Revised Draft EIR to present additional supplemental information regarding traffic trip generation, parking and construction-related air quality (NO<sub>x</sub>) impacts of the SMCS project as analyzed in the previously certified October 2005 Final EIR.

The Revised Draft EIR is the appropriate document for compliance with the Judgment and Writ of Mandate issued by the Court. Public Resources Code section 21168.9 states that a court's order in a CEQA case must "include only those mandates which are necessary to achieve compliance with [CEQA] and only those specific project activities in noncompliance with [CEQA]." (Pub. Resources Code § 21168.9, subd. (b).) This emphasis on finality and specificity is also reflected in Public Resources Code section 21005, subdivision (c) which provides:

It is further the intent of the Legislature that any court, which finds, or in the process of reviewing a previous court finding, finds that a public agency has taken an action without compliance with this division, shall specifically address each of the alleged grounds for noncompliance.

Section 21005, subdivision (c), and section 21168.9, subdivision (b) effectively create a presumption that the Superior Court, in stating grounds for the issuance of a writ, has declared all of the deficiencies in the challenged environmental documentation. (See also *Friends of the Santa Clara River v. Castaic Lake Water Agency* (2002) 95 Cal.App.4<sup>th</sup> 1373, 1387.)

In this instance, the Court's tentative ruling addressed all the CEQA violations alleged by SEIU in the litigation. The Court ruled the EIR was adequate, except for the specific issues identified and

analyzed in the Revised Draft EIR. The Court's ruling and judgment incorporated and adopted the tentative ruling. (See Revised Draft EIR, Appendix A.) Thus, the Court identified the specific issues that, in the Court's view, required additional analysis. The Revised Draft EIR addressed those specific issues.

Based on the preceding legal standards, the City appropriately considered the Court's order to require the City to address only those specific issues identified by the Court: the adequacy of the underlying documentation regarding trip generation, parking and construction-related NO<sub>x</sub> emissions. The information contained in the Revised Draft EIR supplements and is in addition to the analysis and technical information contained in the October 2005 Final EIR. Consistent with the Court's ruling, the Revised Draft EIR includes only the portions of the EIR that were found by the Court to be deficient. Portions of the Final EIR that are revised include: Section 6.2 (Air Quality) and Section 6.7 (Transportation and Circulation). The remainder of the EIR was either not challenged in litigation, and is therefore presumed adequate, or was determined by the Court to be adequate.

The comment states the City erred by revising and recirculating 15 pages out of the October 2005 EIR. The 15 pages to which the comment refers represent the 15 pages of text in the October 2005 EIR that was revised in the Revised Draft EIR. The Revised Draft EIR does not consist solely of these 15 pages. The Revised Draft EIR also consists of an introductory chapter, technical memoranda, supporting data, and an appendix.

The comment also states that the City excluded the Writ of Mandate from its compilation of court documents in Appendix A to the Revised Draft EIR, and that the Writ of Mandate issued by the Court controls the City's actions with respect to environmental review of the SMCS project. Appendix A included the Court's Ruling and Judgment. Appendix A did not include the Writ of Mandate. The comment is correct that Writ of Mandate controls the City's actions with respect to its approval of the SMCS project. The comment is incorrect in its implication that the City could not rely on the Judgment in preparing the Revised Draft EIR. A writ must in all cases be consistent with the judgment granting that writ. The comment points to no legal principle requiring the City to await receipt of the Writ prior to conducting its environmental analysis, rather than rely on the Judgment. As the Writ must correspond with the Judgment, the City properly relied on the Judgment in conducting its additional environmental review contained in the Revised Draft EIR.

The Court's Judgment was issued on September 1, 2005. The Court Clerk issued the Writ on September 15, 2006. Notice of the Writ was mailed to the City on September 20, 2006. The City released the Revised Draft EIR on September 21, 2006. At that time, the City had not received a signed copy of the Writ. For this reason, the City did not include a copy of the Writ in Appendix A. A copy of the Writ signed by the Clerk is attached as Appendix A to this Revised Final EIR. The Writ is consistent with the Court's Judgment, and contains the same directives regarding the scope and content of the analysis of the Revised Draft EIR. Thus, the Writ does not affect the analysis set forth in the Revised Draft EIR. There is no legal authority supporting the contention that the City had to await receipt of the signed Writ before the City released the Revised Draft EIR.

The comment states the City should withdraw the Revised Draft EIR and recirculate a complete draft EIR that will replace the decertified October 2005 Final EIR. Public Resource Code section 21092.1 provides that if "significant new information is added to an environmental impact report" after the agency has made the draft EIR available for public review but before the EIR is certified, the agency must make a revised EIR available for public review prior to certification. (See also CEQA Guidelines, § 15088.5, subd. (a).) If the record contains substantial evidence that new information will not result in a new or substantially more significant impact, then the Draft EIR need not be recirculated. (CEQA Guidelines, § 15088.5, subd. (e).) If recirculation of a Draft EIR is required, then the lead agency may recirculate only those chapters or portions of the Draft EIR for which significant new information exists. (CEQA Guidelines, § 15088.5, subd. (c).)

Here, information has been added to the October 2005 Final EIR, as required by the Court. The information includes supplemental information regarding traffic trip generation, parking, and construction-related air quality (NO<sub>x</sub>) impacts. The information does not disclose any new significant environmental effects. Nor does the information indicate a substantial increase in the severity of the significant effects identified in the October 2005 Final EIR. Instead, the information responds to the Court's ruling that the record contained insufficient information to support the City's conclusions on these issues. Under such circumstances, the City was not required to recirculate an entirely new EIR to replace the October 2005 Final EIR. (See *Federation of Hillside and Canyon Associations v. City of Los Angeles* (2005) 126 Cal.App.4<sup>th</sup> 1180, 1200 (petitioners failed to demonstrate that, because of a change in the city's findings, significant environmental effects of the project would be different or more severe than analyzed in the EIR, and as such, the city's new findings did not trigger the need for a subsequent or supplemental EIR).)

The comment cites a reference in the Writ to the need for "a new EIR." (Writ, 2.) The October 2005 EIR, as revised and supplemented by the Revised Draft and Final EIRs, constitutes "a new EIR." The new EIR will consist of the October 2005 Final EIR, together with the Revised Draft and Final EIR. It is envisioned that the City will consider whether to certify all of these documents as together comprising a single EIR. The October 2005 EIR was largely unchallenged or upheld. The analysis set forth in that document is therefore valid, with the exception of the specific issues identified and analyzed in the Revised Draft EIR. The October 2005 EIR is being de-certified pursuant to Court order. The relevant legal issue is whether, and how much, of the October 2005 EIR must be recirculated for further public review and comment. The Revised Draft EIR represents the City's actions to recirculate portions of the October 2005 EIR. The Revised Draft EIR explains the basis for this course of action. (See Revised Draft EIR, chapter 1.)

The comment cites noise impacts associated with the SMCS heliport to support its contention that an entirely new EIR needs to be prepared and circulated. The comment states that the 2005 EIR did not adequately disclose noise impacts associated with helicopter overflights and that the Revised Draft EIR should be withdrawn so that a new EIR can be prepared to replace the October 2005 Final EIR. As discussed above, the City was only required to address the concerns cited by the Court in its Judgment. The Court found that the October 2005 Final EIR adequately addressed noise impacts. (See Court's Judgment, p. 3.) The Court's tentative ruling, which was incorporated by the Judgment and Ruling, rejected SEIU's claims with respect to helicopter noise impacts. No further discussion of this impact was required in the Revised Draft EIR.

#### **Response to Comment 2-2:**

The comment states that it incorporates by reference all comments SEIU-UHW has previously submitted to the City on the 2005 Draft and Final EIRs. Please see Response to Comment 2-1. The City has already provided responses to these comments. The City's responses to comments on the Draft EIR are set forth in the October 2005 Final EIR. There is no obligation to provide responses to comments on a Final EIR. In any event, the City's responses to comments on the Final EIR are set forth in staff reports to the City Council prepared in December 2005. Comments presented by SEIU at the Planning Commission and City Council hearings were responded to by City staff at those hearings. SEIU's comments, and the City's responses, are all part of the record of proceedings in *SEIU v. City of Sacramento* (No. 06 CS 00026). To the extent these previously submitted comments pertain to issues other than those specified by the Court as requiring additional environmental review, the comments are beyond the scope of the Revised Draft EIR.

**Response to Comment 2-3:**

The comment states that the Revised Draft EIR focuses on rationalizing the conclusions reached in the July 2005 Draft EIR rather than conducting new analysis of environmental impacts. In support of its contention, the comment cites correspondence between the consultant retained to prepare the environmental documents and the City related to analysis of the construction-related NO<sub>x</sub> emissions.

As stated in the memorandum cited by the comment, at the time the original Draft EIR (July 2005) was prepared, URBEMIS modeling had been performed in order to estimate construction-related NO<sub>x</sub> emissions. Estimated "peak" emissions calculated by the URBEMIS model were reported in the Draft EIR as totaling approximately 324 pounds per day. The Court ruled the record did not contain sufficient information showing how the EIR arrived at this estimate of emissions. By that time, however, the output tables from the URBEMIS model that contained the original construction equipment NO<sub>x</sub> emission estimates presented in the Draft EIR could not be located. The consultant's inability to locate the output files from the URBEMIS model run was regrettable. Faced with these facts, however, the consultant concluded that the only way to provide back-up documentation was to perform a new model run.

The 2005 and 2006 URBEMIS model runs were performed using the same basic approach. In both instances, a construction schedule and a list of equipment provided by the applicants construction manager were used to calculate peak NO<sub>x</sub> emissions. The modeling performed in 2006 was aimed at recreating the URBEMIS modeling output, because the original output could not be located. The URBEMIS modeling performed in 2006 estimated that construction-related NO<sub>x</sub> emissions would total approximately 293 pounds per day. Estimated emissions differ between the two model runs because, for the modeling performed in 2006, a more detailed list of equipment was available, enabling a more precise estimate of construction-related NO<sub>x</sub> emissions.

The re-modeling effort focused solely on construction equipment NO<sub>x</sub> emissions to address the Court's concern. The other pollutants and phases of project development were not identified in the Court's ruling and thus were not re-modeled. The URBEMIS model was re-run with the best available current information regarding the equipment that would be used to construct the SMCS project.

The URBEMIS modeling performed in 2006 was not a post hoc attempt to justify the conclusions reached in the July 2005 Draft EIR. Rather, the URBEMIS modeling performed in 2006 was designed to respond to the Court's ruling, in view of the unavailability of the data output from the original URBEMIS modeling.

Please see also Response to Comment 1-1.

**Response to Comment 2-4:**

The comment states that instead of assessing the impacts of NO<sub>x</sub> emissions, the City focuses on recreating the 2003-2004 numbers upon which the July 2005 Draft EIR was based. Please see Responses to Comments 1-1 and 2-3 above.

The comment states that the Revised Draft EIR substantially underestimates the actual NO<sub>x</sub> emissions from the construction equipment list supplied by the SMCS general contractor. While the estimated NO<sub>x</sub> emissions differ between the July 2005 Draft EIR and the Revised Draft EIR, the difference is due to use of a more accurate list of equipment in the second model runs undertaken for the Revised Draft EIR, enabling a more precise estimate of construction-related NO<sub>x</sub> emissions.

The comment cites an attached report prepared by Dr. Petra Pless. Responses to Dr. Pless' comments are set forth below.

The re-modeling effort focused solely on construction equipment NO<sub>x</sub> emissions to address the Court's concern. The other pollutants and phases of project development were not identified in the Court's ruling and were not re-modeled. The URBEMIS model was re-run with the best available current information regarding the equipment that would be used to construct the SMCS project.

Table 2 in Section 6.2R of the Revised Draft EIR presents a schedule of equipment obtained from Turner Construction. The equipment list focuses on equipment expected to be in use in Spring 2007, when "peak" NO<sub>x</sub> emissions are expected to occur. The table "assigns" equipment to each of the four buildings that would be under construction at that time. In fact, equipment would not be strictly assigned to a particular building; some equipment would be used jointly for more than one building. The list in Table 2 segregated the equipment data that Turner Construction specified for joint use associated with construction of the four buildings. This is the equipment use assumed in the Revised Draft EIR URBEMIS run and it represents the best available estimate of equipment to be used during construction.

Further, the Final Revised Draft EIR has revised the text of Mitigation Measure 6.2-3 to include:

- 6.2-3 (i) During the peak construction period, the amount of construction equipment in use on the project site at any one time shall be limited to the following pieces, or equipment that would produce equivalent emissions:
- four concrete pumps;
  - tract/tower crane;
  - seven small hydraulic cranes;
  - thirteen welding machines;
  - four boom lifts;
  - six forklifts.

This mitigation measure will ensure that the amount of equipment operating at any one time on the project site will not exceed the list of equipment used to perform URBEMIS modeling of construction-related construction-related NO<sub>x</sub> emission in the Revised Draft EIR. Please see also Responses to Comment 1-1 and 1-6.

The comment concludes that the City has not undertaken an effort to actually assess the environmental impacts of the project and that in order to comply with the Writ of Mandate and its obligations under CEQA, the scope of the Revised Draft EIR must be comprehensive. The City respectfully disagrees with this comment. Please see Response to Comment 2-1.

#### **Response to Comment 2-5:**

The comment criticizes the City's decision to release the Revised Draft EIR prior to decertification of the 2005 Final EIR and prior to the expiration of the applicable appeal period in the *SEIU v. City of Sacramento* litigation. There is no legal authority supporting the contention that the City had to await decertification of the October 2005 EIR prior to conducting its environmental analysis.

The Writ requires the City to decertify the October 2005 EIR. On November 14, 2006, the City Council took this action. The City Council has therefore complied with this aspect of the Writ. In acting to decertify the EIR, the City has waived its right to appeal the Judgment. (See *Save Our Residential Environment v. City of West Hollywood* (1992) 9 Cal.App.4<sup>th</sup> 1745, 1750-1751; *Bowman v. City of Petaluma* (1986) 185 Cal.App.3d 1065, 1070, fn. 2.) Sutter, as the applicant for

the project, may have the right to separately appeal the Court's judgment. (Ibid.) The filing of an appeal by Sutter, however, would not affect the City's discretion whether to comply with or appeal from the Judgment, or deprive the Trial Court of jurisdiction to consider whether the City has complied with the Judgment.

The comment characterizes the City's statement that it may decide to file a notice of appeal rather than act to void its certification of the October 2005 Final EIR as calculated to dampen any public motivation to comment on the Revised Draft EIR. The City disagrees with this comment. The Revised Draft EIR reflects the fact that, as of the date of publication of that document, the City had not decided whether to comply with or to appeal the Judgment. (Revised Draft EIR, p. 1-2, fn. 4.) This footnote is accurate, in that the City had the legal right to either comply with or appeal from the Judgment. Nothing in CEQA, however, required the City to delay publication of the Revised Draft EIR pending a decision on that issue. This footnote was not designed to discourage public review and comment. Rather, the footnote was designed to ensure that the publication of the Revised Draft EIR did not constitute a waiver of the City's right to appeal the Judgment. In any event, the City has subsequently decided to comply with the Writ, rather than to file an appeal.

The comment requests that the City provide the distribution list of the Revised Draft EIR and copies of all associated notices of availability. A copy of the distribution list and the notice of availability that was sent to everyone on the list is attached as Appendix B to this Revised Final EIR. The City provided notice of the availability of the Revised Draft EIR, and encouraged interested parties to submit comments on that document.

#### **Response to Comment 2-6:**

The comment states that the City's obligation to proceed with CEQA analysis of the project ceased as of October 30, 2006, the date SEIU filed its notice of appeal. Upon filing a notice of appeal, the effect of the Judgment is stayed. In this case, once SEIU filed its notice of appeal, the City was no longer under a Court mandate to rescind its certification of the October 2005 EIR, or to rescind its approval of the project. Thus, the filing of an appeal by SEIU means that the project could proceed, without regard to the Judgment. (See Code Civ. Proc., § 1110b; *Agricultural Labor Relations Bd. v. Tex-Cal Land Management, Inc.* (1987) 43 Cal.3d 696, 706, n. 9; *Building Code Action v. Energy Resources Conservation and Development Commission* (1979) 88 Cal.App.3d 913, 918; *Hayworth v. City of Oakland* (1982) 129 Cal.App.3d 723, 727.)

Although SEIU appealed the Judgment, the City retains discretion to comply with the Writ (even though it may no longer be under Court order to do so). That is the approach the City has taken. On November 14, 2006, the City rescinded its resolutions and ordinance certifying the EIR and approving the Project. At the same time, the City authorized construction to proceed, as set forth in the Judgment.

SEIU's appeal did not deprive the City of discretion to take these steps. Nor would SEIU's appeal deprive the City of discretion to consider whether to certify the Revised EIR, or to re-approve the project. Nor would SEIU's appeal deprive the trial court of jurisdiction to determine whether the City has complied with the Judgment.

The comment's request to delay the CEQA process pending the outcome of SEIU's appeal is noted, and will be forwarded to City decision-makers for their consideration. An appeal generally takes at least a year to resolve. Delaying compliance with the Writ throughout this period would have the effect of shutting down construction of the project for this period of time. This outcome would have the effect of imposing a de facto injunction on the project, absent a Court order enjoining construction. Such an outcome would be inappropriate in the event the City re-certifies the EIR and re-approves the project, and the Trial Court concludes the City has complied with the Writ.

**Response to Comment 2-7:**

Please see Responses to Comments 1-6 and 2-4 that address construction equipment to be used to construct the SMCS project components.

**Response to Comment 2-8:**

Please see Responses to Comments 2-29 through 2-39 that address potential air quality mitigation measures.

**Response to Comment 2-9:**

Please see Responses to Comments 2-40 through 2-43 that address  $PM_{2.5}$  associated with project construction activities.

**Response to Comment 2-10:**

Please see Responses to Comments 2-44 through 2-74 that address concerns associated with parking demand and trip generation.

**Response to Comment 2-11:**

Please see Responses to Comments 2-44 through 2-74 that address concerns raised by the commenter associated with additional data.

**Response to Comment 2-12:**

The comment states that the Revised Draft EIR does not meet the standards for impact analysis, public disclosure and mitigation and that the City must therefore circulate an entirely new draft EIR for public comment. The comment summarizes the Commenter's conclusions regarding the adequacy of the document. Please see Responses to Comments 2-1 through 2-11.

**Response to Comment 2-13:**

This introductory comment questions the emissions estimates presented in the revised air quality assessment. A more detailed response is provided in Responses to Comments 2-17 through 2-28.

**Response to Comment 2-14:**

This introductory comment claims that the Revised Draft EIR should have included additional mitigation measures to reduce  $NO_x$  emissions. A more detailed response is provided in Responses to Comments 2-29 through 2-39.

**Response to Comment 2-15:**

This introductory comment claims that the Revised Draft EIR should have addressed impacts on air quality from  $PM_{2.5}$  emissions. A more detailed response is provided in Responses to Comments 2-40 through 2-43.

**Response to Comment 2-16:**

As noted in the comment, the commenter has previously submitted comments on the air quality analysis prepared in the July 2005 Draft EIR. Please see Responses to Comments 8-8 through 8-15, 8-28 through 8-38, and 8-42 through 8-44 included on pages 4-26 through 4-30, 4-37 through 4-40, and 4-42 through 4-47 in the October 2005 Final EIR.

**Response to Comment 2-17:**

The comment addresses the list of construction equipment provided by Turner Construction and included in the Revised Draft EIR. The list of construction equipment was provided to EIP Associates, a division of PBS&J, on August 16, 2006. The list presents a comprehensive off-road vehicle/equipment inventory compiled at an advanced stage of construction planning for all construction phases of the SMCS project. The 2005 Draft EIR's URBEMIS modeling of construction air pollutant emissions, the input parameters and output sheets from which were inadvertently purged and are not available either electronically or in hard copy. The 2005 URBEMIS modeling was based on much more preliminary construction equipment data. The Revised Draft EIR's recalculation of project air pollutant emissions focused on one particular air pollutant (i.e., NO<sub>x</sub>) emitted during one particular construction phase (i.e., building construction) at a particular time during project construction (i.e., Spring 2007) when it was anticipated construction of four buildings would be underway. The construction equipment list used in the Revised Draft EIR URBEMIS calculations (as specified in Table 2, Revised Draft EIR page 6.2-6R) is a subset of the equipment provided by Turner Construction and contains only the equipment that would be in use during the "worst case" (or peak) for NO<sub>x</sub> emissions during the building construction phase in Spring 2007.

Please see also Response to Comment 1-6.

**Response to Comment 2-18:**

The difference between the list of equipment provided by Turner Construction (Turner list) and the Revised Draft EIR equipment list is explained above in Response to Comment 2-17. The Revised Draft EIR equipment list does not contain "a single excavator" because excavators would be used during the project demolition and site preparation/grading phases. By the time building construction is in progress, which was the exclusive focus of the Revised Draft EIR analysis, excavators would not be needed. The commenter also notes that the Turner equipment list includes backhoes, while the Revised Draft EIR list includes only boom lifts/skid steer loaders. Again, backhoes would be used during project demolition and site preparation/grading phases, while boom lifts/skid steer loaders, which would be used to unload building supplies and to move them to where they are needed for the buildings under construction, would be used during the building construction phase. Finally, the Turner list does not include smaller equipment because it is a list of "Off-Road Vehicles/Equipment" that are considered "heavy-duty" (i.e., greater than 50 horsepower) and hence subject to consideration under SMAQMD CEQA guidelines. (Sacramento Metropolitan Air Quality Management District, *Guide to Air Quality Assessment in Sacramento County* (July 2004), p. 3-19.)

**Response to Comment 2-19:**

The comment states that the number of pieces of construction equipment presented in the Revised Draft EIR is inconsistent with the list of equipment provided by Turner Construction. The reason for the difference in the number of pieces of construction equipment is explained above in Responses to Comments 2-17 and 2-18. Off-road dump trucks and on-road concrete delivery trucks are not included because the equipment list in the Revised Draft EIR focuses on equipment expected to be in use during the building construction phase in Spring 2007, when "peak" NO<sub>x</sub> emissions are

expected to occur. Off-road dump trucks and on-road concrete delivery trucks would not be used during this phase.

**Response to Comment 2-20:**

The Revised Draft EIR referenced the same construction schedule included in the 2005 Final EIR. Both the Revised Draft EIR and the 2005 Final EIR used the same construction schedule, which estimates peak emissions from construction activities in Spring 2007. This construction schedule, combined with a list of equipment that would be in use during that phase, were used to model peak NO<sub>x</sub> emissions. Estimated emissions differ between the two model runs because, for the modeling performed in 2006, a more detailed list of equipment from Turner Construction was available, enabling a more precise estimate of construction-related NO<sub>x</sub> emissions. Please see also Responses to Comments 2-17, 2-18, and 2-19.

**Response to Comment 2-21:**

Specific information about the type and number of concrete delivery trucks is difficult for Turner Construction to provide because these trucks would be operated by concrete vendors, unlike the other off-road vehicles/equipment to be used for the project which would generally be operated by Turner Construction itself. Turner Construction would contract for a specified amount of concrete to be delivered to the project site on a specified schedule. The type and number of concrete delivery trucks would be under the control of the concrete vendor. Concrete delivery trucks were not included in the URBEMIS model because NO<sub>x</sub> emissions from on-site heavy equipment would not occur during the building construction phase that was the focus of the Revised Draft EIR analysis.

**Response to Comment 2-22:**

The 32-residential units are included as part of the SMCS project, but would not be constructed by Turner Construction. A different contractor would be constructing this component of the project. However, the type and number of pieces of construction equipment included in the model is standard to construct this type of use. For modeling purposes the list of equipment described in Response to Comment 1-6 is adequate. Please see Response to Comment 1-6 for more detail on specific construction equipment assumptions.

**Response to Comment 2-23:**

The Revised Draft EIR analysis follows the recommendations of the SMAQMD's *Guide to Air Quality Assessment*. The SMAQMD focuses its efforts on achieving a fleet-average 20 percent reduction in NO<sub>x</sub> emissions associated with the large, heavy-duty construction equipment (> 50 horsepower) expected to contribute the largest share of such emissions. (Sacramento Metropolitan Air Quality Management District, *Guide to Air Quality Assessment in Sacramento County* (July 2004), p. 3-19.) The Revised Draft EIR therefore calculated emissions for off-road equipment with engine ratings higher than 50 horsepower.

**Response to Comment 2-24:**

Water trucks are not included in the Revised Draft EIR equipment list because the Revised Draft EIR analysis focused on estimating NO<sub>x</sub> emissions during the peak project building construction phases. Water truck use would be primarily associated with project demolition, site grading, and excavation phases. Thus, emissions from water trucks would not occur during the construction phase with peak NO<sub>x</sub> emissions. This approach is consistent with direction provided in the SMAQMD's *Guide to Air Quality Assessment*, which recommends that water trucks be included for cut-and-fill, trenching and grading operations, but not for other project construction activities (See Sacramento Metropolitan Air

Quality Management District, *Guide to Air Quality Assessment in Sacramento County* (July 2004), p. 3-4, Table 3.1 Construction Activity Equipment Types and Number Requirements).

**Response to Comment 2-25:**

As stated in Responses to Comments 2-17 and 2-18, the list of construction equipment provided by Turner Construction is a comprehensive list of all equipment that would be used during all project construction phases. As such, it does not specify the construction phase when any particular listed piece of equipment would most likely be used. Further, the listing of several pieces of a similar type of equipment (e.g., seven types of crane of various horsepower ratings) does not define the use frequency of each individual piece of that type of equipment. For example, the inclusion of a Terex 17-ton TC3470 crane with the other six cranes does not imply that the TC3470 crane would be used one-seventh of the time during all project construction phases. Thus, averaging the horsepower ratings of all equipment of a similar type in the Turner list would give a more accurate indication of average horsepower of the equipment and, consequently, its average pollutant emissions. The default horsepower specifications for the equipment in the URBEMIS model are based on surveys of equipment horsepower ratings. For some equipment types, use of averaged Turner horsepower ratings would yield higher emissions than the URBEMIS default, for other equipment types they would be lower. The use of different assumptions would result in a different estimate of emissions. Estimated emissions using different assumptions, however, would likely be comparable to those set forth in the Revised Draft EIR. For example, estimated emissions reported in the 2005 Draft EIR (approximately 324 pounds per day) are comparable to the emissions reported in the Revised Draft EIR. Regardless of which assumptions are used about equipment type, number, or horsepower ratings, etc. to estimate NO<sub>x</sub> emissions for the Revised Draft EIR the emissions would result in emissions that exceed the SMAQMD significance threshold of 85 lbs/day resulting in a significant impact. To help offset the magnitude of the impact from NO<sub>x</sub> emissions, Mitigation Measure 6.2-3 is included; however, the impact remains significant and unavoidable. In response to comments from the SMAQMD regarding the URBEMIS modeling performed for the Revised Draft EIR, Mitigation Measure 6.2-3(i) has been revised to specify the equipment that can be used on site during the peak construction period. (See Response to Comment 1-6.)

**Response to Comment 2-26:**

Construction equipment that has a higher engine rating would result in higher emissions of NO<sub>x</sub> and other air pollutants. Any reasonable choice of an equipment fleet appropriate for a project of this size would produce NO<sub>x</sub> emissions that exceed the SMAQMD's 85 lbs/day significance threshold. This would require the implementation of Mitigation Measure 6.2-3 and the commitment of the project contractor to achieve at least a 20 percent reduction in construction equipment fleet emissions of NO<sub>x</sub>. To ensure this 20 percent reduction, the project contractor is required to provide an equipment fleet list to SMAQMD for review and approval prior to receiving a building permit.

**Response to Comment 2-27:**

Please see Response to Comment 2-26. This project would exceed the SMAQMD 85 lbs/day significance threshold for construction-related NO<sub>x</sub> emissions. SMAQMD requires that the mitigation specified in Mitigation Measure 6.2-3 (a-c) be implemented for all construction projects that identify a significant impact. This mitigation measure requires the project contractor to commit to achieving at least a 20 percent reduction in construction equipment fleet emissions of NO<sub>x</sub>.

**Response to Comment 2-28:**

The comment states that the Revised Draft EIR underestimates emissions because it does not account for all equipment on site and because it relies on URBEMIS default values for engine ratings

and a different set of equipment than that specified by the general contractor. Please see Responses to Comments 2-20 through 2-27 and 2-29 through 2-39.

The comment states that emissions from other criteria pollutants such as PM<sub>10</sub>, PM<sub>2.5</sub>, and reactive organic gases (“ROG”) would be higher than estimated in the 2005 Final EIR and that additional mitigation is required. Please see Responses to Comments 2-40 through 2-43. Impacts associated with these criteria pollutants are beyond the scope of the Revised Draft EIR’s analysis. The air quality impact analysis included in the Draft EIR (July 2005) provided estimates of all the major air pollutants (i.e., ROG, NO<sub>x</sub>, and PM<sub>10</sub>) for all project phases (i.e., demolition, grading, construction, and operation). The construction equipment impact analysis addressed in both documents (Impact 6.2-3 in the Draft EIR and Impact 6.2-3R in the Revised Draft EIR) focused solely on NO<sub>x</sub> emissions for which the SMAQMD has established a significance threshold (85 lbs/day). The air quality analysis included in the Revised Draft EIR was prepared in order to respond to the Court’s ruling in litigation challenging the adequacy of the EIR; the other pollutants and phases of project development were not identified in the Court’s ruling and thus the analysis of these pollutants contained in the 2005 Draft EIR was either not challenged in the litigation or was deemed adequate by the Court. Please see Response to Comment 2-29 regarding the scope of the Revised Draft EIR.

#### **Response to Comment 2-29:**

This comment asserts that additional mitigation measures are available to further reduce NO<sub>x</sub> emissions. The comment addresses issues that are outside the scope of the analysis presented in the Revised Draft EIR. Public Resources Code section 21168.9 states that a court’s order in a CEQA case must “include only those mandates which are necessary to achieve compliance with [CEQA] and only those specific project activities in noncompliance with [CEQA].” (Pub. Resources Code § 21168.9, subd. (b).) This emphasis on finality and specificity is also reflected in Public Resources Code section 21005, subdivision (c) which provides: “It is further the intent of the Legislature that any court, which finds, or in the process of reviewing a previous court finding, finds that a public agency has taken an action without compliance with this division, shall specifically address each of the alleged grounds for noncompliance.” Section 21005, subdivision (c), and section 21168.9, subdivision (b) effectively create a presumption that the Superior Court, in stating grounds for the issuance of a writ, has declared all of the deficiencies in the challenged environmental documentation. (See also *Friends of the Santa Clara River v. Castaic Lake Water Agency* (2002) 95 Cal.App.4<sup>th</sup> 1373, 1387.)

The City considered the Court’s order to require the City to address only those specific issues identified by the Court: the adequacy of the underlying documentation regarding trip generation, parking, and construction-related NO<sub>x</sub> emissions. The information contained in the Revised Draft EIR supplements and is in addition to the analysis and technical information contained in the October 2005 Final EIR. Consistent with the Court’s ruling, the Revised Draft EIR includes only the portions of the EIR that were found by the Court to be deficient. Portions of the Final EIR that are revised include: Section 6.2 (Air Quality) and Section 6.7 (Transportation and Circulation). The remainder of the EIR was either not challenged in litigation, and is therefore presumed adequate, or was determined by the Court to be adequate.

The information in the Revised Draft EIR responds to the Court’s ruling that the record contained insufficient information to support the City’s conclusions on these issues. Under such circumstances, the City was not required to recirculate an entirely new EIR to replace the October 2005 Final EIR. (See *Federation of Hillside and Canyon Associations v. City of Los Angeles* (2005) 126 Cal.App.4<sup>th</sup> 1180, 1200 (petitioners failed to demonstrate that, because of a change in the city’s findings, significant environmental effects of the project would be different or more severe than analyzed in the EIR, and as such, the city’s new findings did not trigger the need for a subsequent or

supplemental EIR); CEQA Guidelines, § 15088.5, subd. (c) (lead agency may recirculate revised portions of Draft EIR.)

In light of the above, the air quality analysis included in the Revised Draft EIR was prepared to respond to the Court's ruling in litigation challenging the adequacy of the EIR. The history surrounding this issue is summarized in Chapter 1 of the Revised Draft EIR, which includes a description of the scope of the Revised Draft EIR. The Revised Draft EIR air quality analysis focused exclusively on the modeling of NO<sub>x</sub> emissions from construction equipment. Additional analysis of mitigation measures contained in the 2005 Draft EIR addressing ozone precursor emissions, including NO<sub>x</sub> was not required. The Superior Court ruled the EIR was adequate in this respect. (See Revised Draft EIR, Appendix A; see also Response to Comment 2-1.)

The City worked in consultation with the SMAQMD to develop feasible mitigation measures for this project. At the time the Draft EIR was published (July 2005) it contained all the mitigation measures the SMAQMD felt were adequate to mitigate or off-set the construction-related emissions to the extent feasible and practicable. In response to comments raised by the SMAQMD and others, the 2005 Final EIR revised certain air quality mitigation measures and added new measures to minimize construction emissions. In addition, a number of additional mitigation measures were considered and rejected as being infeasible. Please see Responses to Comments 8-42 and 8-43 in the 2005 Final EIR for a complete list of proposed mitigation measures considered and either included in the Final EIR or rejected as infeasible. These conclusions were deemed adequate by the Court. In response to comments from the SMAQMD regarding the URBEMIS modeling performed for the Revised Draft EIR, Mitigation Measure 6.2-3(i) was revised to specify the equipment that can be used on site during the peak construction period. (See Response to Comment 1-6.)

#### **Response to Comment 2-30:**

The comment states that Mitigation Measure 6.2-3(e), which requires the use of alternative fuel, is unenforceable. Please see Responses to Comments 2-1 and 2-29. All portions of the 2005 EIR not specifically identified by the Court as requiring additional analysis, including its discussion of mitigation measures for air quality impacts, were not challenged and are therefore presumed adequate, or were determined by the Court to be adequate and are beyond the scope of this Revised EIR. Further, all of the air quality mitigation measures proposed in both the Draft EIR and the Revised Draft EIR are enforceable through the intervention of the SMAQMD. Mitigation Measure 6.2-3(a) requires the *"project developer or contractor to provide a plan for approval by SMAQMD demonstrating ... a project wide fleet-average 20 percent NO<sub>x</sub> reduction ..."* Mitigation Measure 6.2-3(b) requires the *"project developer or contractor to submit to SMAQMD a comprehensive inventory of all off-road construction equipment ..."* Mitigation Measure 6.2-3(c) requires the *"... SMAQMD shall be notified within 48 hours of identification of non-compliant equipment ..."* It is implicit in the wording of Mitigation Measure 6.2-3(e) (i.e., *"if required, use alternative-fueled (such as aqueous fuel) and/or catalyst-equipped diesel construction equipment."*) that the SMAQMD would have a significant role in the decision as to whether it would be feasible to substitute alternative-fueled and/or catalyst-equipped construction equipment for conventional diesel-powered equipment. Therefore, the mitigation measure is enforceable by SMAQMD.

#### **Response to Comment 2-31:**

Please see Response to Comment 1-9 in Letter 1, contained in this Revised FEIR, the SMAQMD notes that PuriNO<sub>x</sub> fuel is no longer manufactured because it created too many problems with construction equipment engines. Therefore, the air district no longer recommends the use of this fuel. This is new information provided by the air district.

**Response to Comment 2-32:**

The comment states that Mitigation Measure 6.2-3(a), which specifies that the contractor's project-specific fleet of heavy-duty, off-road vehicles achieve a 20 percent reduction in NO<sub>x</sub> emissions, is enforceable by requiring newer equipment or by requiring add-on controls. Please see Responses to Comments 2-1 and 2-29. All portions of the 2005 EIR not specifically identified by the Court as requiring additional analysis, including its discussion of mitigation measures for air quality impacts, are presumed adequate, or were determined by the Court to be adequate and are beyond the scope of this Revised EIR.

NO<sub>x</sub> from heavy-duty, diesel-powered construction equipment is a major contributor of ozone precursor emissions in the Sacramento area. Accordingly, the following strategies for reducing NO<sub>x</sub> emissions from such sources were included in the Sacramento Area Regional Ozone Attainment Plan (SMAQMD 1994):

- Replace diesel powered vehicles with vehicles powered by cleaner fuels.
- Replace older, more polluting diesel engines with newer, cleaner diesel engines.
- Repower existing construction equipment with newer, lower-emitting engines or emissions control technologies.
- Retrofit existing construction equipment with low-emissions emissions control equipment.
- Encourage the fuel industry to make cleaner fuels more available and more competitive.

The SMAQMD determined that a reduction of 5 tons per day in NO<sub>x</sub> emissions from mobile sources was necessary to keep the Sacramento metropolitan area on track toward ozone standard attainment. Accordingly, the SMAQMD adopted a construction emissions threshold of 85 pounds per day of NO<sub>x</sub> as its CEQA significance standard and, as part of its CEQA Guide, set a 20 percent reduction goal for NO<sub>x</sub> emissions from construction equipment for each development project that exceeds the significance threshold of 85 lbs/day. The SMAQMD believes that a 20 percent reduction is sufficient to maintain adequate progress toward regional attainment of the ozone standard. If the SMAQMD has reason to believe that further NO<sub>x</sub> emission reductions are feasible for this project, it can pursue them during the pre-construction conference with the project contractor to address the construction fleet.

**Response to Comment 2-33:**

The comment states that another City EIR included a mitigation measure requiring the use of aqueous fuel and cooled exhaust gas recirculation systems to reduce NO<sub>x</sub>. Judging from the example provided in the comment, the City did not require that the Metropolitan Project Draft EIR use specific, aggressive NO<sub>x</sub> control technologies such as aqueous fuel and cooled exhaust gas recirculation systems on construction equipment for that project. Rather, the mitigation measure notes that if that project exceeds the SMAQMD significance threshold, it would be liable for payment of an off-site mitigation fee unless additional control technologies could be found to reduce its NO<sub>x</sub> emissions below the SMAQMD significance threshold. The decision as to what specific control technologies would be applicable to this project was left open pending the project developer/contractor's consultation with the SMAQMD.

**Response to Comment 2-34:**

The comment states that the Revised Draft EIR cites to and incorporates an outdated version of the Sacramento Metro Air Quality Management District's recommended standard mitigation measures. The mitigation measures the comment refers to as outdated are the mitigation measures included in the 2005 Draft EIR. The Air Quality chapter of the Revised Draft EIR consists of the text of the 2005 Draft EIR with changes made in red-line/strike-out mode. The changes that have been made to the

2005 Draft EIR respond to the Court's ruling that the record contained insufficient underlying documentation to support the City's conclusions on construction-related air quality (NO<sub>x</sub>) impacts. The supplemental information contained in the Revised Draft EIR does not disclose any new significant air quality impacts. Nor does the information indicate a substantial increase in the severity of the significant air quality impacts identified in the 2005 Draft EIR. The Revised Draft EIR therefore did not make changes to the text of the mitigation measures included in the 2005 Draft EIR. Those measures represent the mitigation recommended by the District as of the date the 2005 Draft EIR was released. In response to comments from the SMAQMD regarding the URBEMIS modeling performed for the Revised Draft EIR, Mitigation Measure 6.2-3(i) has been revised to specify the equipment that can be used on site during the peak construction period. (See Response to Comment 1-6.)

The comment states that the Revised Draft EIR does not include the District's mitigation measure recommending payment of an off-site mitigation fee if NO<sub>x</sub> emissions from construction exceed the District's threshold of significance after implementation of standard construction mitigation measures. The fee to which this comment refers is now included in the District's CEQA guidance for preparation of EIRs. At the time the 2005 Draft EIR for the SMCS project was released, the District recommended mitigation fees as a mechanism to reduce air quality impacts to less than significant for projects approved based on a mitigated negative declaration. The District later expanded application of the fee mechanism to apply to projects approved based on an EIR. According to a guidance letter to local lead agencies issued by the District on July 8, 2005, the expanded mitigation fee program applies to environmental documents published on or after October 10, 2005. (A copy of this letter is attached as Appendix D to this Revised Final EIR.) Therefore, the 2005 Draft EIR for the SMCS project, issued prior to October 10, 2005, was not required to include this mitigation measure.

The Revised Draft EIR has not been revised to include this mitigation measure because the conclusion of the 2005 Draft EIR air quality analysis -- that NO<sub>x</sub> emissions would result in a short-term significant impact -- has not changed. The 2005 Draft EIR disclosed a short-term significant impact in the form of increased NO<sub>x</sub> emissions generated by construction equipment that were not reduced to less than significant after mitigation. The Revised Draft EIR re-modeled emissions using more precise equipment information and yielded a slightly lower amount of NO<sub>x</sub>, 292.99 lbs/day, compared to what was reported in the 2005 Draft EIR, 323.86 lbs/day. The threshold of significance for construction-related NO<sub>x</sub> emissions is 85 pounds per day. NO<sub>x</sub> emissions for the SMCS project would therefore be significant either as calculated in the 2005 Draft EIR or in the Revised Draft EIR. These totals differ because the modeling performed for the Revised Draft EIR used a more precise equipment list than the modeling performed for the 2005 Draft EIR. In addition, the Revised Draft EIR includes a technical report documenting how this modeling was performed, whereas the 2005 Draft EIR did not.

SEIU challenged the adequacy of mitigation measures contained in the 2005 Draft EIR addressing ozone precursor emissions, including NO<sub>x</sub>. The Superior Court ruled the EIR was adequate in this respect. (See Revised Draft EIR, Appendix A.) The Court identified the specific issues that, in the Court's view, required additional analysis. These issues included the adequacy of the underlying documentation regarding trip generation, parking and construction-related NO<sub>x</sub> emissions. The remainder of the EIR, including its discussion of mitigation measures for air quality impacts, was not challenged and is presumed adequate, or was determined by the Court to be adequate. (Please see also Response to Comment 2-1.)

Further, the District approved the mitigation measures required for the short-term construction impacts associated with the SMCS project. In its *amicus* brief submitted to the Court in the *SEIU-CHW v. City of Sacramento* litigation, the District stated that it had implemented a construction emission mitigation fee program in October 2005, three months after the release of the Draft EIR

and that the offsite fee program applied only prospectively to environmental documents issued on or after October 10, 2005, and thus did not apply to the SMCS project. The District went on to note that SMCS nevertheless voluntarily agreed to contribute \$100,000 to the District's program. The administrative record reflects that the contribution was a "proactive contribution in an agreed upon amount . . . to ensure construction emission impacts are mitigated for the project." (See Brief Of Amicus Curiae In Support Of Respondents And Real Parties In Interest attached as Appendix C to this Revised Final EIR.)

The District also submitted comments on the Revised Draft EIR. The District's comment letter focused on the modeling performed to estimate construction-related NO<sub>x</sub> emissions. The District did not state that the SMCS project was subject to the mitigation fee referenced by the comment.

The comment states that the City is aware of the SMAQMD program as it has required the payment of off-site mitigation fees from a number of other recent projects. The comment is correct that the City is aware of the fee program. The comment is also correct that the City has recently required payment into this fee program as a mitigation measure for projects that had projected construction related emissions above the District's threshold of significance after applying standard construction mitigation. The environmental impact reports that included these mitigation measures were published after October 10, 2005, the date that the District expanded its mitigation fee program to apply to all environmental documents, rather than just negative declarations. The 2005 Draft EIR for the SMCS project was released prior to the District's recommendation that the fee program apply to all projects with significant air quality impacts after standard construction mitigation measures. Although the Revised Draft EIR was published after the October 10, 2005, effective date of the SMAQMD guidance regarding the fee requirement, the Revised Draft EIR is not a new environmental document; rather, the Revised Draft EIR supplements the information in the 2005 EIR. The City therefore has not required this mitigation measure from the SMCS project.

#### **Response to Comment 2-35:**

The comment states that a number of additional feasible construction management and add-on control technologies exist to reduce the significant NO<sub>x</sub> emission levels beyond what is required by the Revised Draft EIR including exhaust gas recirculation (EGR) systems, selective catalytic reduction (SCR), and lean NO<sub>x</sub> catalysts (LNC). Please see Responses to Comments 2-1 and 2-29. All portions of the 2005 EIR not specifically identified by the Court as requiring additional analysis, including its discussion of mitigation measures for air quality impacts, are presumed adequate, or were determined by the Court to be adequate and are beyond the scope of this Revised EIR.

The comment sets forth various examples of new technology that could be used to reduce NO<sub>x</sub> emissions. The technologies presented in the comment represent new technologies that are emerging on the market to address NO<sub>x</sub> emissions. As stated in Mitigation Measure 6.2-3 the applicant would use catalyst-equipped diesel construction equipment if required by the SMAQMD to achieve the 20 percent NO<sub>x</sub> reduction. In addition, the applicant would use new technologies to control ozone precursor emissions as they become available and feasible if required by the SMAQMD to meet the required 20 percent reduction in emissions. The commenter is setting forth various examples of new technology that could be used if required.

The comment does not provide specific examples from other CEQA studies showing that NO<sub>x</sub> technologies, such as EGR, SCR, and LNC have been required by the City as conditions of project approval. The preferred CEQA approach to reducing NO<sub>x</sub> emissions from construction equipment for projects in Sacramento is a general requirement that construction equipment attain at least a 20 percent reduction in NO<sub>x</sub> emissions. This is the approach taken in the Fulton Avenue Development Project EIR, 500 Capitol Mall EIR, and the Greenbriar Development Project EIR, all of which that were cited in the comment.

**Response to Comment 2-36:**

This comment states that exhaust gas recirculation (EGR) can reduce NO<sub>x</sub> impacts and engine retrofits with low pressure EGR have been successfully demonstrated on off-road equipment. The facts and references cited by the commenter concerning the use and expected efficiency of EGR present this technology as an emerging candidate for attaining further reductions in NO<sub>x</sub> emissions from construction equipment. Nothing prevents the SMAQMD from promoting its use as a supplement/alternative to more conventional approaches when it meets with project contractors for the required pre-construction consultation on attaining (and possibly surpassing) the present 20 percent emission reduction target.

**Response to Comment 2-37:**

The comment states that selective catalytic reduction (SCR) can reduce NO<sub>x</sub> impacts. The facts and references cited by the comment concerning the use and expected efficiency of SCR present this technology as an emerging candidate for attaining further reductions in NO<sub>x</sub> emissions from construction equipment. Nothing prevents the SMAQMD from promoting its use as a supplement/alternative to more conventional approaches when it meets with project contractors for the required pre-construction consultation on attaining (and possibly surpassing) the present 20 percent emission reduction target. Please see also Responses to Comments 2-35 and 2-36.

**Response to Comment 2-38:**

The comment states that lean NO<sub>x</sub> catalysts (LNC) can reduce NO<sub>x</sub> impacts. The facts and references cited by the comment concerning the use and expected efficiency of LNC present this technology as an emerging candidate for attaining further reductions in NO<sub>x</sub> emissions from construction equipment. Nothing prevents the SMAQMD from promoting its use as a supplement/alternative to more conventional approaches when it meets with project contractors for the required pre-construction consultation on attaining (and possibly surpassing) the present 20 percent emission reduction target. Please see also Responses to Comments 2-35 and 2-36.

**Response to Comment 2-39:**

The comment recommends appointment of a construction site manager to assure that truck idling time be limited to two minutes and to maintain a log verifying proper maintenance of diesel powered equipment. This suggestion has been added to the Revised Draft EIR.

The text on page 6.2-7R under Mitigation Measure 6.2-3 is revised to include:

6.2-3(j)            *The project applicant shall require that the construction contractor retain a construction site manager. The construction site manager shall verify that all truck idling is limited to two minutes for delivery trucks, dump trucks and other construction equipment. The construction site manager shall also verify that engines are properly maintained.*

**Response to Comment 2-40:**

The comment states that the Revised Draft EIR does not address potential adverse impacts on ambient air quality and public health from direct emissions of so-called fine particulate matter or PM<sub>2.5</sub>, i.e. particulate matter 2.5 micrometers (“µm” or “micron”) or smaller in diameter, for either construction or operation.

The comment addresses issues that are outside the scope of the analysis presented in the Revised Draft EIR. Public Resources Code section 21168.9 states that a court's order in a CEQA case must "include only those mandates which are necessary to achieve compliance with [CEQA] and only those specific project activities in noncompliance with [CEQA]." (Pub. Resources Code § 21168.9, subd. (b).) This emphasis on finality and specificity is also reflected in Public Resources Code section 21005, subdivision (c) which provides: "It is further the intent of the Legislature that any court, which finds, or in the process of reviewing a previous court finding, finds that a public agency has taken an action without compliance with this division, shall specifically address each of the alleged grounds for noncompliance." Section 21005, subdivision (c), and section 21168.9, subdivision (b) effectively create a presumption that the Superior Court, in stating grounds for the issuance of a writ, has declared all of the deficiencies in the challenged environmental documentation. (See also *Friends of the Santa Clara River v. Castaic Lake Water Agency* (2002) 95 Cal.App.4<sup>th</sup> 1373, 1387.)

The City considered the Court's order to require the City to address only those specific issues identified by the Court: the adequacy of the underlying documentation regarding trip generation, parking, and construction-related NO<sub>x</sub> emissions. The information contained in the Revised Draft EIR supplements and is in addition to the analysis and technical information contained in the October 2005 Final EIR. Consistent with the Court's ruling, the Revised Draft EIR includes only the portions of the EIR that were found by the Court to be deficient. Portions of the Final EIR that are revised include: Section 6.2 (Air Quality) and Section 6.7 (Transportation and Circulation). The remainder of the EIR was either not challenged in litigation, and is therefore presumed adequate, or was determined by the Court to be adequate.

The information in the Revised Draft EIR responds to the Court's ruling that the record contained insufficient information to support the City's conclusions on these issues. Under such circumstances, the City was not required to recirculate an entirely new EIR to replace the October 2005 Final EIR. (See *Federation of Hillside and Canyon Associations v. City of Los Angeles* (2005) 126 Cal.App.4<sup>th</sup> 1180, 1200 (petitioners failed to demonstrate that, because of a change in the city's findings, significant environmental effects of the project would be different or more severe than analyzed in the EIR, and as such, the city's new findings did not trigger the need for a subsequent or supplemental EIR); CEQA Guidelines, § 15088.5, subd. (c) (lead agency may recirculate revised portions of Draft EIR).)

In light of the above, the air quality analysis included in the Revised Draft EIR was prepared in order to respond to the Court's ruling in litigation challenging the adequacy of the EIR. The history surrounding this issue is summarized in Chapter 1 of the Revised Draft EIR, which includes a description of the scope of the Revised Draft EIR. The Revised Draft EIR air quality analysis focused exclusively on the modeling of NO<sub>x</sub> emissions from construction equipment. Additional analysis of fine particulate matter (PM<sub>2.5</sub>) was not requested by the Court.

The Draft EIR recognized PM<sub>2.5</sub> as an air pollutant for which air quality standards had been set and from which associations with adverse health impacts had been established. The Draft EIR identified the particular form of PM<sub>2.5</sub> that would be emitted by diesel-powered equipment/vehicles, specifically diesel particulate matter (DPM), which has the strongest association with adverse health impacts from long-term exposure. A detailed impact assessment on project DPM impacts was not conducted because there was no strong, long-term project-related source of DPM to consider. Construction equipment is a source of DPM, but it would not operate long enough on the project site to be considered a significant threat to local health. As stated in the FEIR in Response to Comment 8-13, the CARB's *Risk Management Guidance for the Permitting of New Stationary Diesel-Fueled Engines* (CARB, 2000) clearly indicates that it is the long-term chronic impacts that are at issue when evaluating diesel toxic air contaminants. As stated in the Draft EIR, the recommended

exposure duration is 70 years. Construction of the SMCS project would occur over a much shorter time period, significantly less than 70 years; therefore, this is not an issue.

**Response to Comment 2-41:**

The comment provides an overview of PM<sub>2.5</sub> and its health effects. Please see Response to Comment 2-40.

**Response to Comment 2-42:**

The comment addresses state and federal ambient air quality standards for PM<sub>10</sub> and PM<sub>2.5</sub>. Please see Response to Comment 2-40, the discussion of PM<sub>2.5</sub> is outside the scope of this Revised Draft EIR.

The comment is correct that the state and federal air quality agencies have issued new PM<sub>2.5</sub> standards in addition to the current PM<sub>10</sub> standards. The SMAQMD chooses to analyze the impacts of all particulate matter emissions, both PM<sub>10</sub>, and PM<sub>2.5</sub>, together. The SMAQMD *Air Quality Guide* provides methodologies for evaluating PM<sub>10</sub> impacts, which would include all particulate matter less than ten microns in diameter. PM<sub>2.5</sub> consists of particulate matter less than 2.5 microns in diameter, so PM<sub>10</sub> estimates would also include PM<sub>2.5</sub>. The SMAQMD *Guide* was published in July 2004, one full year after the state PM<sub>2.5</sub> standard took effect; however, the *Guide* does not make any references to the need for a separated PM<sub>2.5</sub> analysis, and the SMAQMD does not recommend any method for estimating the impacts of PM<sub>2.5</sub>. Sacramento County is in compliance with the federal PM<sub>2.5</sub> standard. In addition, the SMCS project does not include any significant stationary sources of PM<sub>10</sub>, which includes PM<sub>2.5</sub>. Stationary equipment, such as water heaters and boilers, would be under permit and regulated by the SMAQMD. As shown in the Draft EIR, the project's contribution to overall area traffic would not be substantial. Mobile sources would generate PM<sub>10</sub> and PM<sub>2.5</sub>, but they would not generate more particulate matter than other mobile sources from other projects. Emissions from these mobile sources would be dispersed throughout the route of a particular vehicle trip, and would not be concentrated in the vicinity of the project site.

The SMAQMD currently does not offer guidance for estimating PM<sub>2.5</sub> concentrations from diesel construction equipment, and the SMAQMD CEQA Guide does not suggest that these emissions be calculated. To research whether other local air districts besides the SMAQMD had guidance for assessing construction diesel concentrations, the South Coast Air District (SCAQMD) was contacted. The SCAQMD does not provide guidance for the calculation of PM<sub>2.5</sub> concentrations from diesel construction equipment, although it is in the process of developing a tool that would provide guidance for calculating mass PM<sub>2.5</sub> emissions.<sup>3</sup> The SCAQMD has a PM<sub>2.5</sub> mass emission threshold of significance (the SMAQMD currently does not have a mass PM<sub>2.5</sub> threshold). This tool would not be applicable to evaluating concentrations.

**Response to Comment 2-43:**

The comment gives a concise and informed summary of the procedures by which PM<sub>10</sub> emission data from the project URBEMIS modeling could have been used, together with available speciation profiles, to obtain project PM<sub>2.5</sub> emissions, which could have been used with an accepted dispersion model, like ISCST3, to obtain PM<sub>2.5</sub> exposure profiles at sensitive receptors close to the project site. Please see Response to Comment 2-40. The discussion of PM<sub>2.5</sub> is outside the scope of this Revised Draft EIR.

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3 Conversation with Steve Smith, SCAQMD, November 16, 2005.

Further, the methodology the commenter identifies for conducting such an analysis (i.e., Kern County Planning Department or the South Coast Air District guidelines) is applicable only in those specific areas that have much more serious PM<sub>2.5</sub> problems than the Sacramento area. The SMAQMD has no methodology at present for the assessment of PM<sub>2.5</sub> effects from development projects in the Sacramento area, nor did it at any time provide comments on the Notice of Preparation, the Draft EIR or the Revised Draft EIR to note that there was a potential for a significant impact from project sources of PM<sub>2.5</sub> that would require a dispersion analysis and health risk assessment. In addition, the Court did not request such an analysis in its ruling on the adequacy of the Draft EIR.

#### **Response to Comment 2-44:**

The comment asserts that the parking survey conducted for the project relied only on data taken from the parking lots at Sutter Memorial Hospital (SMH) and did not take into account off-site parking (on-street and off-street) around the Sutter Memorial site.

Off-site parking around SMH was not included in the parking survey for the following reasons. The project is located in midtown Sacramento, among residential and office uses, retail stores, restaurants, and other commercial establishments. A majority of the off-site parking around SMH in the residential neighborhood is associated with the surrounding residential neighborhood, not SMH. Consequently, it would be difficult to accurately assess which cars are associated with the hospital and which cars are associated with the neighboring residences. Further, because of the specific characteristics of street parking in the project location as described below, only a minimal amount of off-site parking associated with the hospital is believed to occur.

There are no known off-site parking lots available to SMH employees or visitors during peak parking periods. All nearby off-site, off-street lots are associated with particular private entities (such as residences, businesses and offices) that do not permit public parking. Therefore, little off-site, off-street parking near SMH is associated with Sutter Memorial uses.

Much of the on-street parking around SMH is included in the City's Residential Permit Parking program, which limits the use of on-street parking by non-residents, such as hospital employees and visitors. Based on a field review, this on-street parking is in Residential Permit Zone A, which limits parking by non-residents to one to two hours depending on location. In addition, the south side of F Street between 50th Street and 54th Street across from Sutter Memorial's frontage is signed "NO PARKING" between the hours of 7:00 a.m. and 6:00 p.m. Because of these residential permit parking restrictions, little off-site, on-street parking near SMH is associated with Sutter Memorial uses.

As noted by the commenter, aerial photographs (noted in the comment letter provided by Google Earth) do show on-street parking occurring adjacent to SMH. However, it cannot be concluded that all of this parking is associated with the hospital, or that this parking should be included in the parking calculations for purposes of determining the appropriate size of on-site facilities. For the limited amount of off-site parking that does occur at SMH, it is not necessary that this component of parking be accommodated on-site at the project site. Regardless of the amount of on-site parking provided, some project parkers will choose to park off-site, both on-street and off-street, and it is therefore not necessary to provide parking for these patrons. There is more off-site parking available in the vicinity of the project than exists at SMH. There are numerous off-street parking facilities not associated with Sutter General Hospital (SGH) near the proposed SMCS project. In addition, as noted on page 6.7-27 of the Draft EIR, there are approximately 728 on-street parking spaces located within about one block of the project area around SGH, of which only 55 percent were occupied at midday. Thus, the minimal amount of off-site parking at SMH could also be served

off-site at the proposed site, and therefore not be included in the supply of off-street parking associated with the project.

Based on these factors, although the parking survey conducted for the project did not take into account off-site parking (on-street and off-street) around the Sutter Memorial site, the City believes the survey contains adequate information to estimate the parking demand associated with the project.

If all nearby off-site parking were included in the parking calculations, then the demand for project parking would be greater than calculated. Even under this approach, however, the conclusions of the EIR analysis would not change. The analysis in the Draft EIR showed a significant impact related to parking supply because the proposed supply does not meet estimated demand. Accordingly, the EIR includes a mitigation measure to address this shortfall and mitigate the impact. Mitigation Measure 6.7-1 (see page 6.7-48 of the Draft EIR) requires the applicant to “make additional parking supplies available in an expeditious fashion such that parking supply is equal to or exceeds demand.” In addition, as an element of the project description, Sutter must create and implement a Transportation Systems Management Plan (TSM) and Parking Demand Management Program to ensure that Sutter’s parking supply meets its parking demand through programs like alternative commute programs, transit subsidies, an on-site Employee Transportation Coordinator, and bicycle lockers, racks, and showers.

#### **Response to Comment 2-45:**

The commenter is correct: the parking survey conducted for the SMCS project was performed on March 17, 2005 during the hours of between 11:30 and 12:30 p.m. March 17, 2005, was Saint Patrick’s Day. It is possible that some deviation from typical parking accumulation patterns may have occurred on that date. However, hospitals are usually not affected by a day such as Saint Patrick’s Day, since most employees do not have schedules that permit extended lunch hours, and patient demand is not affected by days that are not weekends or official holidays. St. Patrick’s day is not recognized as a state or federal holiday, nor is it generally celebrated by adults during business hours. Further, while detailed accumulation counts were not conducted on other days, SMH parking was observed at other dates during 2004 and 2005 by DKS Associates and at no time was the parking supply observed to be fully occupied.

Even if the parking lots were typically totally full, and the demand for project parking would be greater than calculated, the conclusions of the analysis included in the Draft EIR would not change. The analysis showed a significant impact related to parking supply since the proposed supply does not meet estimated demand. Accordingly, the Draft EIR includes a mitigation measure to address this shortfall and mitigate the impact. Mitigation Measure 6.7-1 (see page 6.7-48 of the Draft EIR) requires the applicant to “make additional parking supplies available in an expeditious fashion such that parking supply is equal to or exceeds demand.”

#### **Response to Comment 2-45a:**

In response to the comment raised in the footnote that states that the data collected for the Draft EIR is flawed therefore the data collection and rate estimates disclosed in this RDEIR and in the Supplemental Administrative Record disclosed in Court proceedings open the entire analyses and conclusions of the transportation and circulation component of the EIR to further scrutiny and comment.

The comment addresses issues that are outside the scope of the analysis presented in the Revised Draft EIR. Public Resources Code section 21168.9 states that a court’s order in a CEQA case must “include only those mandates which are necessary to achieve compliance with [CEQA] and only

those specific project activities in noncompliance with [CEQA].” (Pub. Resources Code § 21168.9, subd. (b).) This emphasis on finality and specificity is also reflected in Public Resources Code section 21005, subdivision (c) which provides: “It is further the intent of the Legislature that any court, which finds, or in the process of reviewing a previous court finding, finds that a public agency has taken an action without compliance with this division, shall specifically address each of the alleged grounds for noncompliance.” Section 21005, subdivision (c), and section 21168.9, subdivision (b) effectively create a presumption that the Superior Court, in stating grounds for the issuance of a writ, has declared all of the deficiencies in the challenged environmental documentation. (See also *Friends of the Santa Clara River v. Castaic Lake Water Agency* (2002) 95 Cal.App.4<sup>th</sup> 1373, 1387.)

The City considered the Court’s order to require the City to address only those specific issues identified by the Court: the adequacy of the underlying documentation regarding trip generation, parking, and construction-related NO<sub>x</sub> emissions. The information contained in the Revised Draft EIR supplements and is in addition to the analysis and technical information contained in the October 2005 Final EIR. Consistent with the Court’s ruling, the Revised Draft EIR includes only the portions of the EIR that were found by the Court to be deficient. Portions of the Final EIR that are revised include: Section 6.2 (Air Quality) and Section 6.7 (Transportation and Circulation). The remainder of the EIR was either not challenged in litigation, and is therefore presumed adequate, or was determined by the Court to be adequate.

The information in the Revised Draft EIR responds to the Court’s ruling that the record contained insufficient information to support the City’s conclusions on these issues. Under such circumstances, the City was not required to recirculate an entirely new EIR to replace the October 2005 Final EIR. (See *Federation of Hillside and Canyon Associations v. City of Los Angeles* (2005) 126 Cal.App.4<sup>th</sup> 1180, 1200 (petitioners failed to demonstrate that, because of a change in the city’s findings, significant environmental effects of the project would be different or more severe than analyzed in the EIR, and as such, the city’s new findings did not trigger the need for a subsequent or supplemental EIR); CEQA Guidelines, § 15088.5, subd. (c) (lead agency may recirculate revised portions of Draft EIR).)

#### **Response to Comment 2-46:**

The comment questions whether the EIR analysis used an appropriate timeframe that represented peak parking accumulation. The examples cited in the comment refer to the visitor lot at SGH and the visitor lot at SMH. However, peak parking accumulation at hospitals includes not just visitor parking, but also parking by staff and doctors. It is the combined peak parking value that is important, since visitor and employee parking may not peak at the same time. To determine the appropriate time for parking occupancy surveys, the parking consultants utilized the ITE Parking Generation, Third Edition. The ITE manual contains 48 data points collected at hospitals through the year 2000. This document is a more recent document than the 1990 Eno Foundation publication referenced by the commenter, which is important because of ongoing changes in the nature of health care services over time. The ITE manual shows that midday parking accumulation at surveyed hospitals is at or above 90 percent of the daily maximum from 9:00 a.m. to 4:00 p.m. The ITE data shows that the typical parking accumulation for the hour beginning at 2:00 p.m. is no higher (and in some cases lower) than parking accumulation for the hours beginning from 9:00 a.m. through 3:00 p.m. The ITE data also indicates that the parking accumulation for the hour beginning at 2:00 p.m. is seven percent lower than the hour beginning at 11:00 a.m., and the same as the hour beginning at 12:00 noon. Therefore, it is determined that accumulation counts at SMH between 2:00 p.m. and 3:00 p.m. would not be substantially different than those that were collected between 11:30 and 12:30 p.m.

However, even if the accumulation counts were taken at a different time, and the demand for project parking would be greater than calculated, the conclusions of the EIR analysis would not change. As stated in Response to Comment 2-44, the analysis showed a significant impact related to parking supply since the proposed supply does not meet estimated demand. Accordingly, the EIR includes a mitigation measure to deal with this shortfall and mitigate the impact. Mitigation Measure 6.7-1 (see Draft EIR page 6.7-48) requires the applicant to “make additional parking supplies available in an expeditious fashion such that parking supply is equal to or exceeds demand”. In addition, as an element of the project description, Sutter must create and implement a Transportation Systems Management Plan (TSM) and Parking Demand Management Program to ensure that Sutter’s parking supply meets its parking demand through programs like alternative commute programs, transit subsidies, an on-site Employee Transportation Coordinator, and bicycle lockers, racks, and showers.

#### **Response to Comment 2-47:**

As noted in Response to Comment 2-46, the parking consultants relied upon the ITE Parking Generation, Third Edition, rather than the Eno Foundation publication. It is their professional opinion that the ITE publication is more appropriate since it is based upon more recent survey information.

#### **Response to Comment 2-48:**

During preparation of the traffic analysis attempts were made to obtain the data upon which the conclusions of The Hoyt Company memorandum are based. However, such data were not available. Therefore, since the conclusions of the report were unsubstantiated by actual available data, and since the data would have been two years old at that time, new parking accumulation studies were conducted at SMH. The memo from The Hoyt Company was not referenced in the Draft EIR or relied upon in the analysis. In addition, as noted in Response to Comment 2-52, the lots at SMH were not totally full during Spring 2005 because an area was reserved for shift changes.

The methodology for determining the parking demand of the SMCS project is detailed in the Revised Draft EIR on pages 6.7R-5 through 6.7R-7 and in the memorandum entitled “Sutter Medical Center Estimated Parking Demand” from Pelle R. Clarke to Lezley Buford dated September 20, 2006. The parking demand for the proposed new Women’s and Children’s (WCC) hospital and medical office buildings is based on a survey of existing parking demand (“use”) at SMH. SMH is proposed to be closed, and its uses moved about 1.5 miles west to the proposed SMCS site. The midday parking accumulation counts (or the total number of vehicles on the SMH site) were conducted by DKS Associates between 11:30 and 12:30 p.m. on Thursday, March 17, 2005 at SMH. The midday time period was chosen for the parking survey because it was determined that midday would have the greatest number of vehicles on-site and, therefore, the highest parking demand based on data from the vehicle trip hose counts. A peak accumulation of 898 occupied spaces was recorded. A hospital “parking-rate” was then developed by dividing the number of counted occupied spaces by the size of SMH. Dividing the number of occupied parking spaces (898) by the existing hospital size (430,627 square feet), yields a peak-parking rate of 2.09 spaces per 1,000 square feet. This rate is shown in Table 6.7-19 in the Final EIR (October 2005). Multiplying the SMH rate (2.09 spaces per 1,000 square feet) by the proposed WCC component (398,362 square feet) results in 833 required spaces. Based on information from the surveys taken at SMH approximately five percent (5%) of the existing space at SMH is solely dedicated to medical office uses. The remainder of the parking spaces (95%) is used for the hospital; therefore, the observed parking rate was considered appropriate for hospital uses. In addition, this calculated parking rate was compared to information contained in the ITE Parking Generation, 3rd Edition (see page 153). The ITE parking rate for an “urban hospital,” applied to the 272 hospital beds proposed for the SMCS would generate a demand for 944 parking spaces. However, since the data from SMH is considered representative of local

conditions, SMH is located close by the SMCS project site, and the parking survey recorded actual, local conditions, this information was used rather than the ITE Manual data.

As noted in the Response to Comment 2-44, off-site parking surveys were not conducted at SMH since it was concluded that off-site parking associated with SMH is minimal, based upon the lack of off-site public off-street parking and the residential permit parking restrictions. However, even if the parking accumulation equaled the capacity of the lots or more, and the demand for project parking would be greater than calculated, the conclusions of the EIR analysis would not change. The analysis showed a significant impact related to parking supply since the proposed supply does not meet estimated demand. Accordingly, the EIR includes a mitigation measure to deal with this shortfall and mitigate the impact. Mitigation Measure 6.7-1 (Draft EIR page 6.7-48) requires the applicant to “make additional parking supplies available in an expeditious fashion such that parking supply is equal to or exceeds demand.”

**Response to Comment 2-49:**

See Responses to Comments 2-44 and 2-48.

**Response to Comment 2-50:**

See Response to Comment 2-48.

**Response to Comment 2-51:**

As discussed in Response to Comment 2-48, no data to substantiate the Hoyt memo could be obtained. Further, the statements that the parking lots were completely full could not be verified. Therefore, the commenter’s calculations of 2.23 spaces per 1,000 square feet are based upon data that cannot be verified and may not be accurate. The rate of 2.30 spaces per 1,000 square feet is also incorrect, since it assumes that all observed on-street parking near SMH is associated with the hospital, which as discussed in Response to Comment 2-44, may not be correct.

**Response to Comment 2-52:**

The comment states that the parking analysis should have taken into account the need for parking during shift-changes. The comment assumes that the peak parking accumulation occurs at shift change, which has not been substantiated by either the commenter or direct observation. Most hospitals, including Sutter Memorial, operate on staggered shifts, reducing the effects of parking accumulation near shift changes. Hospitals (and other industries that have employees on multiple shifts) often provide reserved parking areas for second shift employees as an employee benefit. Otherwise, these employees must park at the extreme locations in the lots, and walk to their vehicles in the dark at the end of the shift. However, this is an inefficient use of parking resources and is commonly only employed when excess parking is available. The parking analysis prepared for the EIR did not disregard the implications of the area reserved for second shift parking at SMH. It was not necessary to include these unoccupied spaces in the analysis since the project does not propose to provide a similar reserved buffer for second shift parking. An equivalent effect can be produced by valet parking for employees, as is already in place at SMH during the accumulation studies, and which is included in the SMCS project. The use of valet parking can increase the effective capacity of the parking lots/garages to over 100 percent of actual capacity. Second shift employee vehicles can be temporarily parked in aisles until first shift employees depart.

Even if extra space were to be included in the parking demand calculations to account for shift changes, the conclusions of the analysis would not change. The analysis showed a significant impact related to parking supply since the proposed supply does not meet estimated demand. Accordingly, the EIR includes a mitigation measure to deal with this shortfall and mitigate the impact.

Mitigation Measure 6.7-1 (see Draft EIR page 6.7-48) requires the applicant to “make additional parking supplies available in an expeditious fashion such that parking supply is equal to or exceeds demand”.

**Response to Comment 2-53:**

The memorandum referenced in the comment contains a typographical error (Memo to Lezley Buford from Pelle R. Clarke on September 20, 2006 included in the Revised Draft EIR). The sentence should read: “Data from the City’s ongoing Central City Parking Master Plan (specifically parking counts conducted in the garages and on-street adjacent to the SGMH) were used to establish existing parking conditions for both on-street and off-street parking.” The abbreviation should be SGH (Sutter General Hospital), not SMH (Sutter Memorial Hospital). This is further substantiated in the next paragraph, which discusses use of the data sheets “in and around Sutter General Hospital.” The memorandum was not intended to state or imply that the data sheets from the Central City Parking Master Plan were used in the calculation of parking rates at SMH, or to “mislead the public.”

As discussed in Responses to Comments 2-44 and 2-48 through 2-51, it was determined that off-site parking (off-street and on-street) associated with SMH is minimal due to the lack of off-site public off-street parking facilities and the restrictions of the residential on-street parking controls. Therefore, there was no need to include off-site facilities in the analysis. In addition, as discussed in Response to Comment 2-45, the data gathered on Saint Patrick’s Day is not considered anomalous.

The Central City Parking Master Plan information was used only to establish existing conditions near the project site, which is located within the Central City Parking Master Plan study area. Because the Central City Parking Master Plan does not cover that area, the Central City Parking Master Plan data was not referenced in the parking accumulation survey performed at SMH.

**Response to Comment 2-54:**

Please see Response to Comment 2-53. The Central City Parking Master Plan data was not used to calculate parking demand rates at the SMCS project. The Central City Parking Master Plan information was used only to establish existing conditions near the project site, which is located within the Central City Parking Master Plan study area. Because the Central City Parking Master Plan does not cover that area, the Central City Parking Master Plan data was not referenced in the parking accumulation survey performed at SMH. It was not “an improper effort to mislead the public.” It was solely a typographical error.

**Response to Comment 2-55:**

The comment states that the Draft EIR and the Revised Draft EIR include errors in how the parking generation was determined, including not addressing the effects of off-site parking, shift changes, the day of the parking survey, the time of the parking survey, and disregarding The Hoyt Company memorandum which all resulted in an underestimate of the parking demand.

Response to Comment 2-44 addresses the issue of off-site parking, which concludes that off-site parking accumulation associated with SMH is minimal, based upon the lack of off-site public off-street parking and the residential permit parking restrictions. Response to Comment 2-45 addresses the issue of the specific day of the survey, which concludes that hospitals do not exhibit substantially different parking behavior on a day such as Saint Patrick’s Day. Responses to Comments 2-46 and 2-47 address the time of day of the surveys, which conclude that the peak hour suggested by the commenter is the same or lower than the peak hour that was utilized in the field studies. Responses to Comments 2-48 through 2-51 address the issue of The Hoyt Company memorandum, which

explains that no actual data was ever identified to verify the findings in the memo and that the memo described a scenario that occurred much earlier than the date of the actual parking accumulation surveys. The Hoyt data was not utilized, nor referenced in the Draft EIR. Response to Comment 2-52 addresses the shift-change issue, in which it is shown that there is no reason to include an area for shift change parkers because the SMCS project would rely on valet parking rather than a parking buffer to meet this demand.

The parking analysis conducted for the Draft EIR does not indicate that an additional shortage of between 50 to 83 spaces would occur, as suggested by the commenter. However, assuming all of the commenter's assertions were accurate, the conclusions of the EIR analysis would not change. The analysis showed a significant impact related to parking supply since the proposed supply does not meet estimated demand. Accordingly, the EIR includes a mitigation measure to deal with this shortfall and mitigate the impact. Mitigation Measure 6.7-1 (see Draft EIR page 6.7-48) requires the applicant to "make additional parking supplies available in an expeditious fashion such that parking supply is equal to or exceeds demand". Thus, the mitigation measure assures that any deficit would be alleviated by the applicant, whether it is the number of spaces shown in the document, the number of spaces alleged by the commenter, or some other number.

#### **Response to Comment 2-56:**

As noted in the Revised Draft EIR, the project is expected to result in a parking deficit of 537 spaces. The preparers of the document disagree with the commenter's conclusions regarding the day of the parking survey, the implications of off-site parking at SMH, and the effects of shift changes on parking. These issues are discussed in the Responses to Comments 2-44, 2-45, and 2-52.

#### **Response to Comment 2-57:**

As noted in the Revised Draft EIR, the project is expected to result in a parking deficit of 537 spaces. Response to Comment 2-48 addresses the Hoyt memorandum. During preparation of the traffic analysis attempts were made to obtain the data upon which the conclusions of The Hoyt Company memorandum are based. However, such data were not available. Therefore, since the conclusions of the report were unsubstantiated by actual available data, and since the data would have been two years old at that time, new parking accumulation studies were conducted at SMH. The memo from The Hoyt Company was not referenced in the Draft EIR or relied upon in the analysis. In addition, as noted in Response to Comment 2-52, the lots at SMH were not totally full during Spring 2005 because an area was reserved for shift changes. Therefore, the preparers of the document disagree with the commenter's conclusion that the parking facilities at SMH were completely filled. Accordingly, the parking deficit does not change from 537 spaces to become 670 spaces.

#### **Response to Comment 2-58:**

The comment states that the parking surplus referenced in the Draft EIR is incorrect. The existing parking surplus, measured during field studies, was reduced to acknowledge the parking demand associated with the already entitled 71,300 square foot (sf) hospital expansion. SGH was originally entitled approval was granted for a larger building than was constructed. As discussed in Chapter 2, Project Description, on page 2-51 of the Draft EIR, the increase of 71,300 sf of space in SGH was previously evaluated in the EIR prepared for SGH in 1984. The reduction in parking was based upon the hospital parking demand rate calculated from the accumulation studies at SMH. As discussed in Responses to Comments 2-45 through 2-57, the affects of off-site parking, shift changes, the day of the parking survey, the time of the parking survey, and The Hoyt memorandum are addressed. In Response to Comment 2-44 issue of off-site parking is further addressed, in which it concludes that off-site parking accumulation associated with SMH is minimal, based upon the lack of off-site public off-street parking and the residential permit parking restrictions. Response

to Comment 2-45 addresses the issue of the specific day of the survey, in which it concludes that hospitals do not exhibit substantially different parking behavior on Saint Patrick's Day. Responses to Comments 2-46 and 2-47 address the time of day of the surveys, in which it is shown that the peak hour suggested by the commenter is the same, or lower, than the peak hour that was utilized in the field studies. Responses to Comments 2-48 through 2-51 address the issue of The Hoyt memorandum. Response to Comment 2-52 addresses the shift-change area, in which it is shown that there is no reason to include this area because the SMCS project relies on valet parking rather than a parking buffer to meet this demand. Further, the commenter introduces the concept of practical parking capacity, which is discussed in Responses to Comments 2-59 through 2-63.

Even if all of commenter's assertions were accurate, the conclusions of the analysis would not change. The analysis showed a significant impact related to parking supply since the proposed supply does not meet estimated demand. Accordingly, the EIR includes a mitigation measure to deal with this shortfall and mitigate the impact. Mitigation Measure 6.7-1 (Draft EIR page 6.7-48) requires the applicant to "make additional parking supplies available in an expeditious fashion such that parking supply is equal to or exceeds demand."

#### **Response to Comment 2-59:**

The commenter states that the affects of the "practical capacities" of parking facilities are not addressed. As the comment notes, parking supply is often planned to allow a buffer of extra spaces for the convenience of parkers. The purpose of this buffer is to enable parkers to easily find spaces, rather than have to search for the last available space. Such a buffer is not always available in urban environments, nor is it required to meet parking demand. The need for any buffer is premised on parking facilities that are primarily self-parked. The SMCS project plans on using valet parking. In the Draft EIR in Chapter 2, Project Description, the valet parking services associated with the parking supply is discussed. To address the issues of convenience for patients, visitors, and employees, the project proposes to use valet parking, similar to the valet service currently provided at the Sutter Cancer Center. Valet parking can readily fill every available parking space, as well as exceed actual capacities by storing vehicles in parking aisles. Therefore, it is not necessary for the project to provide a parking buffer for the purpose of convenience; the valet parking feature of the project renders the "buffer" unnecessary.

Based upon a desire to provide a parking buffer, the commenter has calculated that the surplus of parking described in the Draft EIR and the project parking demand are incorrect. However, the "gap" referred to by the commenter only exists if the need for a parking buffer for convenience is required. As discussed above, a buffer is not required. The City's standards of significance for parking impacts do not include the need for a buffer. In addition, the project's use of valet parking negates the need for a buffer. Therefore, there is not a "substantial gap" in the information provided to the public and decision maker in the Draft EIR or the Revised Draft EIR.

#### **Response to Comment 2-60:**

Please see Response to Comment 2-59. As explained in this response, although a 10 percent buffer may be appropriate in other settings, a buffer is not required here due to the use of valet parking. The reduction in available capacity proposed by the commenter is therefore considered inappropriate. With valet parking (as included in the project description), the practical capacity of the 890 spaces provided with the project is 890 spaces, not a reduced number.

#### **Response to Comment 2-61:**

Please see Response to Comment 2-59. As explained in this response, increasing the projected deficit of parking spaces by 10 percent to provide a "buffer" is considered unnecessary for the

project due to the use of valet parking. The increase in the projected parking deficit proposed by the commenter is therefore considered inappropriate.

**Response to Comment 2-62:**

The commenter reduces the SMCS parking surplus from 420 spaces to 25 spaces based upon his calculations of parking demand for the entitled hospital space, a buffer for shift changes, and his application of practical capacity. The preparers of the document disagree with the commenter's conclusions on each of these issues. Please see Response to Comment 2-58 for a discussion of the parking demand of the entitled hospital space. Please see Response to Comment 2-52 for a discussion of the shift change issues. Please see Response to Comment 2-59 for a discussion of practical capacity.

**Response to Comment 2-63:**

Please see Response to Comment 2-59.

**Response to Comment 2-64:**

The comment restates and summarizes the commenter's conclusion that parking calculations are inaccurate. Notwithstanding the commenter's concerns, the City believes the October 2005 EIR and the Revised Draft EIR contain an adequate analysis of the project's parking impacts. The parking analysis is not flawed, misleading or incorrect. Recirculation of the parking analysis is not warranted.

The Court ruled that adequate information was not available in the record that documented parking occupancy surveys used to calculate peak parking demand for the hospital component of the SMCS project. Therefore, the parking count data sheets have been included in the Revised Draft EIR along with a more thorough explanation of the process that was followed to obtain that information. This explanation is included in the memorandum entitled "Sutter Medical Center Estimated Parking Demand" dated September 20, 2006. Parking accumulation surveys were conducted during a peak time of day at SMH to determine the total number of parked vehicles. The number of vehicles was divided by the occupied square footage of the hospital to derive a rate of parked vehicles per 1,000 square feet of occupied hospital space.

Please see Responses to Comments 2-44 through 2-52 that address the other issues raised in the comment. Lastly, as stated before, assuming all of the commenter's assertions were accurate, the conclusions of the EIR analysis would not change. The analysis showed a significant impact related to parking supply since the proposed supply does not meet estimated demand. Accordingly, the EIR includes a mitigation measure to deal with this shortfall and mitigate the impact. Mitigation Measure 6.7-1 (see Draft EIR page 6.7-48) requires the applicant to "make additional parking supplies available in an expeditious fashion such that parking supply is equal to or exceeds demand". Thus, the mitigation measure assures that any deficit would be alleviated by the applicant, whether it is the number of spaces shown in the document, the number of spaces alleged by the commenter, or some other number. In addition, as part of the project description, Sutter is required to create and implement a Transportation Systems Management Plan (TSM) and Parking Demand Management Program to ensure that Sutter's parking supply meets its parking demand through programs like alternative commute programs, transit subsidies, an on-site Employee Transportation Coordinator, and bicycle lockers, racks, and showers.

**Response to Comment 2-65:**

The comment reiterates the concerns previously submitted in the Final EIR in Comment Letter 8 (see Comment 8-16). As noted in Response to Comment 8-16 in the Final EIR (see page 4-30), the trip generation rates utilized in the subject study are not “very low relative to authoritative trip generation rates.” ITE Trip Generation, 7th Edition, provides the following rates (trips per 1,000 square feet):

- A.M. Peak Hour – 1.20 average, range of 0.63 (minus 48 percent) to 5.45 (plus 354 percent)
- P.M. Peak Hour – 1.18 average, range of 0.70 (minus 41 percent) to 6.94 (plus 488 percent)

The rates calculated from the studies at SMH are 1.02 in the a.m. peak hour and 0.83 in the p.m. peak hour. These rates are well within the range of values reported by ITE. The wide variation in rates reported by ITE, along with a limited number of studies (seven), were among the reasons that suggested local information would be preferable to simply applying the average ITE rates. When information that is more specific is available concerning a project, and/or when unique project characteristics exist, the correct procedure is to collect specific data at sites representative of the project. See, for example, ITE Trip Generation Handbook, Chapters 3 and 4. In addition, the City’s Traffic Study Guidelines address the use of traffic counts at comparable locations for specific uses. Since this project involves the relocation of SMH uses and personnel to the project site, it is logical and appropriate to consider the existing trip generation characteristics of SMH in the analysis.

**Response to Comment 2-66:**

The comment states that the trip generation information provided in the Revised Draft EIR failed to provide details regarding how the trip generation information was compiled. As noted in Response to Comment 2-65, this information was provided in the Revised Draft EIR. The comment notes that the trip generation estimates do not count a “meaningful” portion of the Sutter Memorial Hospital’s trip generation, namely, off-site locations. As noted in Response to Comment 2-44, while some parking does occur off-site near SMH, the amount of this parking is not believed to be extensively associated with the hospital. A residential permit parking program limits parking by hospital employees and visitors, and there are no known off-site, off-street lots available for public parking. The fact that the commenter was able to see parked cars on-street by using Google Earth does not mean that these cars are associated with the hospital. SMH is located in an urban environment with many other surrounding institutional, commercial, and residential uses. As discussed previously, because of the character of the project site, this number is not quantifiable with any degree of certainty. Based upon field observations during the collection of traffic count data on-site, no substantial volumes of drop-offs were observed to occur along the street.<sup>4</sup> Volumes of employee or patient drop-offs on-site were collected as part of the traffic count program. Based upon the above information concerning the relatively low vehicular trip generation occurring off-site, the trip generation rate estimates are believed to be reasonable for purposes of the traffic impact analysis.

**Response to Comment 2-67:**

Please see Responses to Comments 2-44 and 2-66.

**Response to Comment 2-68:**

It is acknowledged that on-street parking serves the SGH campus. However, contrary to the comment, it cannot be therefore concluded, “the same thing was taking place at Sutter Memorial.” As noted in Responses to Comments 2-44 and 2-66, the amount of off-site parking available to SMH

<sup>4</sup> DKS Associates staff visited the SMH site numerous times during the preparation of the traffic analysis to set up hose counts, confer with subconsultants doing data gathering, and to verify the collection of data.

employees and visitors is small in relationship to the overall supply and accumulation of parking. SGH is located in an area of the City where there is more access to on-street parking because there are fewer parking restrictions in place, and more on-street parking (including metered) available to retail and institutional visitors. Due to the heterogeneous nature of this neighborhood, the amount of on-street parking attributable to the hospital cannot be quantified.

#### **Response to Comment 2-69:**

The comment states that the issue of trip generation data used in the EIR analysis is understated because, as described previously and as the Revised Draft EIR details show, the consultants counted only a part of the trip generation at the representative site, SMH. Regarding the use of SMH this exact facility is being relocated to the project site. Because the facility being analyzed is the relocation of an existing facility, trip generation rates at the existing facility are considered more representative of trip generation rates at the new facility than any other potential estimate of these rates. It would be impossible to find a more representative site than the very facility that is being relocated. This site and its data is far more representative than data from the seven unnamed sources for hospital trip generation rates listed in ITE Trip Generation, Seventh Edition, which under land use category 610 exhibit a wide range of trip generation rates, as described in Response to Comment 2-65. Regarding the issue that only “part” of the trip generation was counted, the evidence described in Response to Comments 2-66 and 2-67 indicates that the number of off-site trips are insignificant. Off-street parking is very low due to the lack public off-street facilities and the on-street residential parking restrictions. Therefore, the trip generation rate calculated from data collected on-site is reasonable for the estimation of trips associated with the new hospital facility and the resultant traffic impacts.

#### **Response to Comment 2-70:**

The commenter is incorrect. The analysis of transportation in the Draft EIR does not rely on any data from Kaiser Roseville. Neither the Draft EIR nor Revised Draft EIR reference Kaiser Roseville as a source of trip generation data. The trip generation rates are based on data collected solely at the SMH campus. As noted in Response to Comment 2-65, the rates are well within the “authoritative” rates published by ITE.

#### **Response to Comment 2-71:**

The footnote in Table 6.7-13R is in error. The trip generation data are based on three days of counts on June 8th through 10th, 2004. The data were collected by ATD. To address this discrepancy the footnote in Table 6.7-13R on page 6.7R-2 is revised to read:

1. Based on trip generation and ~~parking occupancy~~ surveys conducted at Sutter Memorial Hospital, by ~~DKS Associates on March 17, 2005~~ ATD on June 8, 9, 10, 2004.

#### **Response to Comment 2-72:**

The comment states that trips between the drop-off/pick-up areas and the valet or self-park areas were not included in the EIR traffic analysis. As discussed on page 6.7-31 of the Draft EIR, 290 a.m. peak hour trips and 294 p.m. peak hour trips were assigned to the roadway network to represent the flow of traffic between the drop-off/pick-up areas and the parking garages. These trips would be made by both private motorists and valet attendants. These trips are in addition to the 838 a.m. peak hour external trips and 909 p.m. peak hour external trips.

To clarify the discussion in the Revised Draft EIR, the last two sentences of the last paragraph on page 6.7R-4 are revised to read:

The additional trips are considered internal link trips and do not represent a net increase in the total number of vehicle trips accessing the project site from external locations. These trips are in addition to have already been accounted for in the 838 external vehicle trips during the a.m. peak hour, and 909 external vehicle trips during the p.m. peak hour.

**Response to Comment 2-73:**

The transportation analysis includes consideration of the City's Two-Way Conversion project in the analysis of cumulative effects. The Two-Way Conversion project is not part of the proposed SMCS project, and therefore there is no CEQA requirement to generate additional analysis scenarios, such as a short-term analysis with Two-Way Conversion. The preparers of the traffic analysis for the SMCS project also had a role in preparing the Two-Way Conversion studies, but this has no bearing on this environmental documentation.

This concern was also raised previously by the commenter in the Final EIR in Comment Letter 8 (see Comment 8-18). It was noted in Response to Comment 8-18 (see FEIR page 4-31) that the Draft EIR appropriately evaluated the cumulative traffic effects of the SMCS project in light of reasonably foreseeable probable future projects, including those that would increase traffic volumes (such as other development in the vicinity and region) and those that would affect the traffic capacity of the local and regional roadway network (such as the Central City Two-Way Conversion project currently being studied, and other reasonably foreseeable projects presented in the Metropolitan Transportation Plan). These probable future projects are consistent with the CEQA Guidelines requirements for cumulative analysis.

The cumulative analysis includes a 20-year horizon and, as such, represents a conservative analysis of the potential effects of the project (combined with other traffic demand increases) on the roadway network, including as it may be altered by the Two-Way Conversion project, if the City Council chooses to implement it. Evaluation of the project-specific impacts in light of the as-of-yet-unapproved Two-Way Conversion project would be inconsistent with Section 15125 (a) of the State CEQA Guidelines, which states that the baseline for evaluation should be the conditions that existed at the time that the NOP was published. To artificially decrease the capacity of some nearby streets, assuming the Two-Way Conversion project were approved, would presuppose the actions of the City Council in the future. Rather, inclusion of the Two-Way Conversion Study in a future cumulative scenario (the Draft EIR also includes a cumulative scenario that does not presume approval of the Two-Way Conversion project) provides a long-term analysis, consistent with the City's standard approach for cumulative analyses.

**Response to Comment 2-74:**

Mr. Pelle Clarke, a Senior Engineer with DKS Associates, had a role in the preparation of the SMCS traffic and parking analysis as well as the Two-Way Conversion studies. However, this does not result in the commenter's conclusion that a short-term analysis of the combined effects of the SMCS project and the Two-Way Conversion project was improperly omitted from the EIR. During the scoping for the EIR, many potential analysis scenarios were considered. Some were included in the documentation, and others were rejected as inappropriate or unnecessary. As noted in the Response to Comment 2-73, there is no CEQA requirement to generate additional analysis scenarios, such as a short-term analysis with Two-Way Conversion.

**Response to Comment 2-75:**

Comment noted. The request by the commenter to recirculate the prior information is noted.

STATE OF CALIFORNIA - THE RESOURCES AGENCY

ARNOLD SCHWARZENEGGER, Governor

**DEPARTMENT OF WATER RESOURCES**1416 NINTH STREET, P.O. BOX 942836  
SACRAMENTO, CA 942360001  
(916) 653-5791

October 3, 2006

Lezley Buford  
City of Sacramento  
2101 Arena Boulevard, Suite 200  
Sacramento, California 95834Sutter Medical Center, Sacramento (SMCS) Project and the Trinity Cathedral Project  
~~Draft EIR~~  
State Clearinghouse (SCH) Number: 2003102002

The project corresponding to the subject SCH identification number has come to our attention. The limited project description suggests your project may be an encroachment on the State Adopted Plan of Flood Control. You may refer to the California Code of Regulations, Title 23 and Designated Floodway maps at <http://recbd.ca.gov/>. Please be advised that your county office also has copies of the Board's designated floodways for your review. If indeed your project encroaches on an adopted food control plan, you will need to obtain an encroachment permit from the Reclamation Board prior to initiating any activities. The attached Fact Sheet explains the permitting process. Please note that the permitting process may take as much as 45 to 60 days to process. Also note that a condition of the permit requires the securing all of the appropriate additional permits before initiating work. This information is provided so that you may plan accordingly.

3-1

If after careful evaluation, it is your assessment that your project is not within the authority of the Reclamation Board, you may disregard this notice. For further information, please contact Sam Brandon of my staff at (916) 574-0651.

Sincerely,

A handwritten signature in black ink, appearing to read "Mike Mirmazaheri".

Mike Mirmazaheri, Chief  
Floodway Protection Sectioncc: Governor's Office of Planning and Research  
State Clearinghouse  
1400 Tenth Street, Room 121  
Sacramento, CA 95814

## Encroachment Permits Fact Sheet

### **Basis for Authority**

State law (Water Code Sections 8534, 8608, 8609, and 8710 – 8723) tasks the Reclamation Board with enforcing appropriate standards for the construction, maintenance, and protection of adopted flood control plans. Regulations implementing these directives are found in California Code of Regulations (CCR) Title 23, Division 1.

### **Area of Reclamation Board Jurisdiction**

The adopted plan of flood control under the jurisdiction and authority of the Reclamation Board includes the Sacramento and San Joaquin Rivers and their tributaries and distributaries and the designated floodways.

Streams regulated by the Reclamation Board can be found in Title 23 Section 112. Information on designated floodways can be found on the Reclamation Board's website at [http://recbd.ca.gov/designated\\_floodway/](http://recbd.ca.gov/designated_floodway/) and CCR Title 23 Sections 101 - 107.

### **Regulatory Process**

The Reclamation Board ensures the integrity of the flood control system through a permit process (Water Code Section 8710). A permit must be obtained prior to initiating any activity, including excavation and construction, removal or planting of landscaping within floodways, levees, and 10 feet landward of the landside levee toes. Additionally, activities located outside of the adopted plan of flood control but which may foreseeable interfere with the functioning or operation of the plan of flood control is also subject to a permit of the Reclamation Board.

Details regarding the permitting process and the regulations can be found on the Reclamation Board's website at <http://recbd.ca.gov/> under "Frequently Asked Questions" and "Regulations," respectively. The application form and the accompanying environmental questionnaire can be found on the Reclamation Board's website at <http://recbd.ca.gov/forms.cfm>.

### **Application Review Process**

Applications when deemed complete will undergo technical and environmental review by Reclamation Board and/or Department of Water Resources staff.

### **Technical Review**

A technical review is conducted of the application to ensure consistency with the regulatory standards designed to ensure the function and structural integrity of the adopted plan of flood control for the protection of public welfare and safety. Standards and permitted uses of designated floodways are found in CCR Title 23 Sections 107 and Article 8 (Sections 111 to 137). The permit contains 12 standard conditions and additional special conditions may be placed on the permit as the situation warrants. Special conditions, for example, may include mitigation for the hydraulic impacts of the project by reducing or eliminating the additional flood risk to third parties that may caused by the project.

Additional information may be requested in support of the technical review of

your application pursuant to CCR Title 23 Section 8(b)(4). This information may include but not limited to geotechnical exploration, soil testing, hydraulic or sediment transport studies, and other analyses may be required at any time prior to a determination on the application.

#### Environmental Review

A determination on an encroachment application is a discretionary action by the Reclamation Board and its staff and subject to the provisions of the California Environmental Quality Act (CEQA) (Public Resources Code 21000 et seq.). Additional environmental considerations are placed on the issuance of the encroachment permit by Water Code Section 8608 and the corresponding implementing regulations (California Code of Regulations – CCR Title 23 Sections 10 and 16).

In most cases, the Reclamation Board will be assuming the role of a "responsible agency" within the meaning of CEQA. In these situations, the application must include a certified CEQA document by the "lead agency" [CCR Title 23 Section 8(b)(2)]. We emphasize that such a document must include within its project description and environmental assessment of the activities for which are being considered under the permit.

Encroachment applications will also undergo a review by an interagency Environmental Review Committee (ERC) pursuant to CCR Title 23 Section 10. Review of your application will be facilitated by providing as much additional environmental information as pertinent and available to the applicant at the time of submission of the encroachment application.

These additional documentations may include the following documentation:

- California Department of Fish and Game Streambed Alteration Notification (<http://www.dfg.ca.gov/1600/>),
- Clean Water Act Section 404 applications, and Rivers and Harbors Section 10 application (US Army Corp of Engineers),
- Clean Water Act Section 401 Water Quality Certification, and
- corresponding determinations by the respective regulatory agencies to the aforementioned applications, including Biological Opinions, if available at the time of submission of your application.

The submission of this information, if pertinent to your application, will expedite review and prevent overlapping requirements. This information should be made available as a supplement to your application as it becomes available. Transmittal Information should reference the application number provided by the Reclamation Board.

In some limited situations, such as for minor projects, there may be no other agency with approval authority over the project, other than the encroachment permit by Reclamation Board. In these limited instances, the Reclamation Board

may choose to serve as the "lead agency" within the meaning of CEQA and in most cases the projects are of such a nature that a categorical or statutory exemption will apply. The Reclamation Board cannot invest staff resources to prepare complex environmental documentation.

Additional information may be requested in support of the environmental review of your application pursuant to CCR Title 23 Section 8(b)(4). This information may include biological surveys or other environmental surveys and may be required at anytime prior to a determination on the application.

**COMMENT LETTER 3: Department of Water Resources, Mike Mirmazaheri, Chief  
Floodway Protection Section**

**Response to Comment 3-1:**

As stated in the Initial Study included in Appendix A of the July 2004 Draft EIR, the project site is not located within a 100-year floodplain. The project is located in an urbanized area of the City of Sacramento designated for future development. The project applicant will obtain an encroachment permit from the Reclamation Board if it is determined such a permit is required.





Arnold Schwarzenegger  
Governor

STATE OF CALIFORNIA  
Governor's Office of Planning and Research  
State Clearinghouse and Planning Unit



Sean Walsh  
Director

November 7, 2006

Lezley Buford  
City of Sacramento  
2101 Arena Boulevard, Suite 200  
Sacramento, CA 95834

Subject: Sutter Medical Center, Sacramento (SMCS) Project and the Trinity Cathedral Project Draft EIR  
SCH#: 2003102002

Dear Lezley Buford:

The State Clearinghouse submitted the above named Draft EIR to selected state agencies for review. On the enclosed Document Details Report please note that the Clearinghouse has listed the state agencies that reviewed your document. The review period closed on November 6, 2006, and the comments from the responding agency (ies) is (are) enclosed. If this comment package is not in order, please notify the State Clearinghouse immediately. Please refer to the project's ten-digit State Clearinghouse number in future correspondence so that we may respond promptly.

Please note that Section 21104(c) of the California Public Resources Code states that:

"A responsible or other public agency shall only make substantive comments regarding those activities involved in a project which are within an area of expertise of the agency or which are required to be carried out or approved by the agency. Those comments shall be supported by specific documentation."

These comments are forwarded for use in preparing your final environmental document. Should you need more information or clarification of the enclosed comments, we recommend that you contact the commenting agency directly.

This letter acknowledges that you have complied with the State Clearinghouse review requirements for draft environmental documents, pursuant to the California Environmental Quality Act. Please contact the State Clearinghouse at (916) 445-0613 if you have any questions regarding the environmental review process.

Sincerely,

Terry Roberts  
Director, State Clearinghouse

Enclosures

cc: Resources Agency

**Document Details Report  
State Clearinghouse Data Base**

**SCH#** 2003102002  
**Project Title** Sutter Medical Center, Sacramento (SMCS) Project and the Trinity Cathedral Project Draft EIR  
**Lead Agency** Sacramento, City of

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**Type** EIR Draft EIR  
**Description** The SMCS project includes development of a new Women's and Children's Hospital, medical office building(s), parking garage, and 32 units of housing. Due to the Court's ruling, a Revised EIR is being circulated that addresses air quality and traffic issues.

---

**Lead Agency Contact**

**Name** Lezley Buford  
**Agency** City of Sacramento  
**Phone** (916) 808-5935 **Fax**  
**email**  
**Address** 2101 Arena Boulevard, Suite 200  
**City** Sacramento **State** CA **Zip** 95834

---

**Project Location**

**County** Sacramento  
**City** Sacramento  
**Region**  
**Cross Streets** 28th / L Streets  
**Parcel No.**  
**Township**

**Range** **Section** **Base**

---

**Proximity to:**

**Highways** I-80, I-5, Hwy 99  
**Airports**  
**Railways** UPRR  
**Waterways** American River  
**Schools** St. Francis ES, Sutter MS, Fremont School for Adults, Montessor  
**Land Use** SMCS - RCO, PQDM, CNC, HDR; C-2-SPD, C-2-R-SPD-W/C, H-SPD, R-3A-SPD, OB-SPD, RO-SPD, TC-SPD

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**Project Issues** Traffic/Circulation

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**Reviewing Agencies** Resources Agency; Regional Water Quality Control Bd., Region 5 (Sacramento); Department of Parks and Recreation; Native American Heritage Commission; Department of Fish and Game, Region 2; Department of Water Resources; California Highway Patrol; Caltrans, District 3; Air Resources Board, Transportation Projects; Department of Toxic Substances Control

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**Date Received** 09/21/2006 **Start of Review** 09/21/2006 **End of Review** 11/06/2006

Note: Blanks in data fields result from insufficient information provided by lead agency.

**COMMENT LETTER 4: Governor's Office of Planning and Research State Clearinghouse and Planning Unit, Terry Roberts, Director, State Clearinghouse**

**Response to Comment 4-1:**

Comment noted.



## **APPENDICES**

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**APPENDIX A**  
**Writ of Mandate (signed)**

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Pleadings  
X-tra

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SUPERIOR COURT OF THE STATE OF CALIFORNIA  
IN AND FOR THE COUNTY OF SACRAMENTO

SERVICE EMPLOYEES INTERNATIONAL )  
UNION, et al. )  
Petitioners, )  
Vs. )  
CITY OF SACRAMENTO, et al. )  
Respondents. )  
SUTTER HEALTH, INC., et al. )  
Real Parties in Interest )

Case No.: 06CS00026  
WRIT OF MANDATE

1 TO: Respondents CITY OF SACRAMENTO and SACRAMENTO CITY COUNCIL  
2 (collectively, "Respondents"):

3 Judgment having been entered in this proceeding ordering that a peremptory writ of  
4 mandate issue from this Court,

5 YOU ARE HEREBY COMMANDED to comply with the following:

6 1. Within a time not to exceed 60 days from service of the writ of mandate,  
7 Respondents shall void its certification of the EIR and approval of Resolution No.  
8 2005-882, Resolution No. 2005-883, Resolution No. 2005-884, Resolution No.  
9 2005-886, Resolution No. 2005-887, Resolution No. 2005-888 and Ordinance No.  
10 2005-094, and all other actions taken by Respondents to approve or effectuate the  
11 Sutter Medical Center, Sacramento Project (hereinafter, collectively "Sutter  
12 Approvals") excluding, however, any and all separate approvals granted by  
13 Respondents and relating to the Trinity Cathedral Project and Sutter Midtown  
14 Housing Project which were not challenged by Petitioners.

15 2. Respondents shall not reapprove the Sutter Approvals unless and until Respondents  
16 have first prepared, recirculated and certified a new EIR in accordance with CEQA  
17 standards and procedures and this Court's Final Ruling, including provisions for  
18 public comment and findings regarding the underlying documentation of trip  
19 generation, parking and construction-related NOx emissions.

20 3 Pursuant to the discretion afforded by CEQA to fashion relief (See Pub. Resources  
21 Code, § 21168.9; *Laurel Heights Improvement Ass'n v Regents of University of*  
22 *California* (1988) 47 Cal 3d 376, 423-25), the Court finds that, except as set forth  
23 in paragraph 5 below, proceeding further with the Sutter Project or any portion  
24

1           thereof could prejudice Respondents' consideration or implementation of  
2           mitigation measures to the Sutter Approvals. Therefore, except as set forth in  
3           paragraph 5 below, until this Court determines that Respondents have taken the  
4           actions specified herein to bring their approval of the Sutter Approvals into  
5           compliance with CEQA, the Court mandates that Respondents, Real Parties in  
6           Interest, and their agents suspend all project approvals and activities that are based  
7           upon the Sutter Approvals and that could result in any change or alteration to the  
8           physical environment.

9           4       The Court additionally finds that equitable considerations indicate that  
10           completely suspending the Sutter Project is not appropriate in light of the social and  
11           economic harms that would result to the general public and Real Parties in Interest.

12           5       The Court additionally finds that Respondents may allow Real Parties in  
13           Interest to proceed with the following three distinct components of construction of  
14           the Project pursuant to the Sutter Approvals:

15           a       Excavation of the new Energy Center, including the area below grade for medical  
16           office space and ninety (90) parking spaces, and excavation for the related tunnel  
17           under 28<sup>th</sup> and L Streets;

18           b       Construction of the Community Parking Structure and associated uses; and

19           c       Completion of reconstructing streets after laying down utility trenches  
20           (collectively the "construction activities")

21           6       The construction activities listed in paragraph 5 are severable from the remainder of  
22           the Sutter Approvals because (i) each serves a separate independent and immediate  
23           public need for safety and infrastructure improvements such that the benefits to the  
24

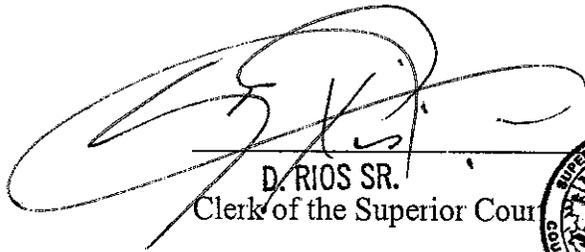
1 general public and Real Parties in Interest outweigh any ongoing adverse effect on  
2 the environment; and (ii) severance of the construction activities will not in any  
3 way prejudice complete and full compliance with CEQA, including consideration  
4 or implementation of additional mitigation measures.

5 7 Respondents shall file an initial return to the peremptory writ of mandate within 31  
6 days of completion of the activities mandated by paragraph 1 of this writ.

7 Respondents shall file a supplemental return to the writ of mandate after they have  
8 certified an environmental review document for the Sutter Approvals in compliance  
9 with CEQA and the CEQA Guidelines, or after Respondents have determined not  
10 to reapprove the Sutter Approvals. This Court shall retain jurisdiction over  
11 Respondents' proceedings by way of the returns to the peremptory writ of mandate  
12 until this Court has determined that Respondents have complied with CEQA or that  
13 Respondents have determined not to reapprove the Sutter Approvals.

14 8. Under Public Resources Code section 21168.9, subdivision (c), this Court  
15 does not direct Respondents to exercise their lawful discretion in any particular  
16 way.

17  
18  
19  
20 Date: SEP 15 2006

  
D. RIOS SR.  
Clerk of the Superior Court



**APPENDIX B**  
**Distribution List**

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DEVELOPMENT SERVICES  
DEPARTMENT

**CITY OF SACRAMENTO**  
CALIFORNIA

2101 Arena Boulevard  
Suite 200  
SACRAMENTO, CA  
95834

**ENDORSED:**

PLANNING DIVISION

SEP 22 2006

ENVIRONMENTAL PLANNING  
SERVICES  
916-808-8458  
FAX 916-264-5328

TO: Interested Persons

CRAIG A. KRAMER, CLERK-RECORDER

By   
DEPUTY

FROM: LE Buford, Principal Planner

SUBJECT: **NOTICE OF AVAILABILITY AND RECIRCULATION OF REVISED PORTIONS OF THE DRAFT ENVIRONMENTAL IMPACT REPORT (REVISED DRAFT EIR) FOR THE SUTTER MEDICAL CENTER MASTER PLAN (P03-090)**

**BACKGROUND:** The Revised Draft EIR has been prepared to meet all of the substantive and procedural requirements of California Environmental Quality Act (CEQA) and Guidelines. As provided for in Section 15088.5(c) of the CEQA Guidelines, "[i]f the revision is limited to a few chapters or portions of the EIR, the Lead Agency need only recirculate the chapters or portions that have been modified." This Revised Draft EIR therefore includes only those portions of the October 2005 Final EIR that must be revised in order to provide the information required by the Superior Court's judgment and writ. This Revised Draft EIR should be reviewed in conjunction with the October 2005 Final EIR. The full text of the October 2005 Final EIR is available for public review at City of Sacramento Development Services, 2101 Arena Boulevard, Ste. 200, Sacramento, CA, 95834. In compliance with CEQA, this Revised Draft EIR is being circulated for 45 days for review and comment by local, responsible and trustee agencies, interested organizations and individuals. The Revised Draft EIR contains only the information necessary to comply with the Superior Court's judgment and writ. As further provided for in Section 15088.5(f) (2) of the CEQA Guidelines, comments should, therefore, be limited only to the additional information provided herein. Comments on those parts of the July 2005 Draft EIR unaffected by the Superior Court's judgment and writ will not be considered.

Pursuant to the Superior Court judgment, the Revised Draft Environmental Impact Report ("Revised Draft EIR") presents additional information regarding traffic trip generation, parking, and construction-related air quality (emissions of oxides of nitrogen or "NO<sub>x</sub>") impacts of the Sutter Medical Center, Sacramento project ("SMCS project" or "Project").

**PROJECT LOCATION AND DESCRIPTION:** The proposed Sutter Medical Center Master Plan (SMCS) projects include a geographic area that is roughly bounded by 26th Street to the west, N Street to south, L Street to the north, and 30th Street to the east, in the City of Sacramento, Sacramento County, California. The Master Plan addresses property owned by Sutter Medical Center, Sacramento throughout the seven-block area adjacent to the existing Sutter General Hospital located at 28th and L Streets in Midtown Sacramento.

#### PROJECT DESCRIPTION:

In general, the Sutter Master Plan includes the following development projects for which the applicant seeks City approval. The following project components, collectively, are referred to as the Proposed Project. These specific project components will be addressed in the EIR: 1) A new 8-story (plus one level below grade), 385,400 square foot (sf), Women's and Children's Hospital building (New Hospital Building) located on the half block immediately east of the existing Buhler Building (Sutter Cancer Center); 2) A new 5-story (plus one level below grade), 150,000 sf Ambulatory Services/Medical Office building (AS/MOB) located west of the Buhler Building along 28th Street,

between L Street and Capitol Avenue; 3) A new 7-story (plus one level below grade), 1,100 maximum space parking structure (Community Parking Structure) to be located in the block bounded by 27th Street to the west, Capitol Avenue to the north, 28th Street to the east, and N Street to the south; 4) Demolition and rebuilding of the approximately 70,000 sf St. Luke's Medical Office Building located at the corner of 26th Street and Capitol Avenue and either enhancements to the 249-space parking garage located on N Street between 26th and 27th Streets, or, if it is found not to be structurally sound, the parking structure would be removed and rebuilt to meet current city parking standards; 5) A minimum of 32 residential units with a potential maximum of 50 units fronting, or "wrapping", the proposed Community Parking Structure; 6) Utility infrastructure improvements to bring water and sewer lines, storm drainage, and underground electrical up to code and to address existing substandard conditions.

Copies of the Revised Draft EIR are available at 2101 Area Blvd., STE 200, Sacramento, from 8:00 am to 3:30 pm or by contacting Ellie Buford at (916) 808-5935. The Revised Draft EIR is being circulated for a 45 day public review period from **Friday, September 22, 2006 through Monday, November 6, 2, 2006**. Written comments regarding the Revised Draft EIR should be received by Environmental Planning Services **NO LATER THAN 5:00 P.M., Monday, November 6, 2006**. Written comments should be submitted to:

City of Sacramento, Development Services Department  
Environmental Planning Services, Ellie Buford  
2101 Arena Blvd., STE. 200  
Sacramento, CA 95834  
FAX#: (916) 566-3968  
[lbuford@cityofsacramento.org](mailto:lbuford@cityofsacramento.org)

Thank you.



0001037

DEVELOPMENT SERVICES  
DEPARTMENT

**CITY OF SACRAMENTO**  
CALIFORNIA

2101 Arena Boulevard  
Suite 200  
SACRAMENTO, CA  
95834

**FILED**

PLANNING DIVISION

ENVIRONMENTAL PLANNING  
SERVICES  
916-808-8458  
FAX 916-264-5328

9-22-2006

CRAIG A. KRAMER, CLERK-RECORDER  
By: *[Signature]*  
DEPUTY

TO: Interested Persons

FROM: LE Buford, Principal Planner

SUBJECT: **NOTICE OF AVAILABILITY AND RECIRCULATION OF REVISED PORTIONS OF THE DRAFT ENVIRONMENTAL IMPACT REPORT (REVISED DRAFT EIR) FOR THE SUTTER MEDICAL CENTER MASTER PLAN (P03-090)**

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POSTED BY SACRAMENTO CO. CLERK-RECORDER

FROM: \_\_\_\_\_ TO: \_\_\_\_\_

SEP 22 2006 NOV - 2 2006

**PROJECT DESCRIPTION:**

In general, the Sutter Master Plan includes the following development projects for which the applicant seeks City approval. The following project components, collectively, are referred to as the Proposed Project. These specific project components will be addressed in the EIR: 1) A new 8-story (plus one level below grade), 385,400 square foot (sf), Women's and Children's Hospital building (New Hospital Building) located on the half block immediately east of the existing Buhler Building (Sutter Cancer Center); 2) A new 5-story (plus one level below grade), 150,000 sf Ambulatory Services/Medical Office building (AS/MOB) located west of the Buhler Building along 28th Street,

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City of Sacramento, Development Services Department  
Environmental Planning Services, Ellie Buford  
2101 Arena Blvd., STE. 200  
Sacramento, CA 95834  
FAX#: (916) 566-3968  
[lbuford@cityofsacramento.org](mailto:lbuford@cityofsacramento.org)

Thank you.

P03-090

**PROOF OF SERVICE BY MAIL**

**Project Name:** Sutter Medical / Trinity Cathedral Project REVISED EIR

**Project Number:** P03-090

I declare that:

I am employed in the County of Sacramento, California. I am over the age of eighteen years and not a party to the within entitled proceedings. My business address is 2101 Arena Boulevard, Second Floor, Sacramento, CA 95834. I am familiar with the mail collection and processing protocols of the City of Sacramento in which the mail, with postage thereon fully prepaid, is deposited with the United States Postal Service on the same day that it is deposited for collection and mailing in the area designated for outgoing mail in the ordinary course of business. On the date executed below, I served the following documents:

**Documents:**

on the applicant and the property owners whose names appear on the attached list(s).

**Via the United States Postal Service** by causing a true copy and/or original thereof to be placed in a sealed envelope and addressed as shown on the attached list(s) in the designated area for outgoing mail.

**By Personal Delivery** by causing a true copy and/or original thereof to be delivered by hand to the addressee.

**Via Facsimile** by causing the document(s) to be served by facsimile via the facsimile number(s) as stated on the attached list(s).

**Via Certified Mail, Return Receipt Requested** by causing a true copy and/or original thereof to be placed in a sealed envelope and addressed as shown on the attached list(s) in the designated area for outgoing mail.

A true copy of the document(s) served is attached hereto.

I declare under penalty of perjury that the foregoing is true and correct, and that this declaration was executed on September 22, 2006 at Sacramento, California.

  
\_\_\_\_\_  
Name

Sutter Hospital Expansion Project P03-090

Jeane Borkenhagen  
Sacramento Metropolitan Air Quality  
Management District  
777 12<sup>th</sup> Street, 3<sup>rd</sup> Floor  
Sacramento, CA 95814-1908

Bruce DeTerra  
Dept. of Transportation, District 3  
Venture Oaks, MS-15  
P.O. Box 942874  
Sacramento, CA 94274-0001

Robert B. Inman  
Owner/Manager, 26<sup>th</sup> St. Apartments  
5031 BEVIL ST  
Sacramento, CA 95819-1501

Dorothy M. Inman  
Owner/Manager, 26<sup>th</sup> St. Apartments  
5031 BEVIL ST  
Sacramento, CA 95819-1501

Maureen Daly Pascoe  
680 53<sup>rd</sup> Street  
Sacramento, CA 95819

Tim Schmelzer  
Winn Park/Capitol Avenue  
Neighborhood Association  
P.O. Box 162555  
Sacramento, CA 95816-2555

Mark Whisler  
Whisler Land Company  
2509 Capitol Ave., Suite 100  
Sacramento, CA 95816

NAME	ADDRESS	CITY	STATE	ZIP
Neighbor	1008 27th St	Sacramento	CA	95816
Neighbor	1015 27th St	Sacramento	CA	95816
Neighbor	1017 30th St	Sacramento	CA	95816
Neighbor	1112 26th St	Sacramento	CA	95816
Neighbor	1211 25th St	Sacramento	CA	95816
Neighbor	1214 26th St	Sacramento	CA	95816
Neighbor	1214 27th St Apt 1	Sacramento	CA	95816
Neighbor	1214 27th St Apt 2	Sacramento	CA	95816
Neighbor	1214 27th St Apt 3	Sacramento	CA	95816
Neighbor	1214 27th St Apt 4	Sacramento	CA	95816
Neighbor	1214 27th St Apt 5	Sacramento	CA	95816
Neighbor	1214 27th St Apt 6	Sacramento	CA	95816
Neighbor	1214 27th St Apt 7	Sacramento	CA	95816
Neighbor	1214 27th St Apt 8	Sacramento	CA	95816
Neighbor	1215 25th St	Sacramento	CA	95816
Neighbor	1216 26th St Apt 1	Sacramento	CA	95816
Neighbor	1216 26th St Apt 2	Sacramento	CA	95816
Neighbor	1216 26th St Apt 3	Sacramento	CA	95816
Neighbor	1216 26th St Apt 4	Sacramento	CA	95816
Neighbor	1216 26th St Apt 5	Sacramento	CA	95816
Neighbor	1216 26th St Apt 6	Sacramento	CA	95816
Neighbor	1216 27th St	Sacramento	CA	95816
Neighbor	1217 25th St Apt A	Sacramento	CA	95816
Neighbor	1217 25th St Apt B	Sacramento	CA	95816
Neighbor	1217 25th St Apt C	Sacramento	CA	95816
Neighbor	1217 25th St Apt D	Sacramento	CA	95816
Neighbor	1220 27th St	Sacramento	CA	95816
Neighbor	1221 25th St Apt E	Sacramento	CA	95816
Neighbor	1221 25th St Apt F	Sacramento	CA	95816
Neighbor	1221 25th St Apt G	Sacramento	CA	95816
Neighbor	1221 25th St Apt H	Sacramento	CA	95816
Neighbor	1309 25th St Apt A	Sacramento	CA	95816
Neighbor	1309 25th St Apt B	Sacramento	CA	95816
Neighbor	1309 25th St Apt C	Sacramento	CA	95816
Neighbor	1309 25th St Apt D	Sacramento	CA	95816
Neighbor	1310 26th St Apt B	Sacramento	CA	95816

Neighbor 1310 26th St Apt B	Sacramento CA	95816
Neighbor 1311 1/2 27th St	Sacramento CA	95816
Neighbor 1311 27th St	Sacramento CA	95816
Neighbor 1312 26th St Apt B	Sacramento CA	95816
Neighbor 1312 26th St Apt B	Sacramento CA	95816
Neighbor 1312 26th St Apt F	Sacramento CA	95816
Neighbor 1314 26th St Apt B	Sacramento CA	95816
Neighbor 1314 26th St Apt B	Sacramento CA	95816
Neighbor 1315 27th St	Sacramento CA	95816
Neighbor 1324 27th St	Sacramento CA	95816
Neighbor 1326 27th St	Sacramento CA	95816
Neighbor 2431 L St Unit 1	Sacramento CA	95816
Neighbor 2431 L St Unit 2	Sacramento CA	95816
Neighbor 2500 Capitol Ave	Sacramento CA	95816
Neighbor 2500 L St	Sacramento CA	95816
Neighbor 2501 L St	Sacramento CA	95816
Neighbor 2504 Capitol Ave	Sacramento CA	95816
Neighbor 2505 Capitol Ave	Sacramento CA	95816
Neighbor 2506 L St	Sacramento CA	95816
Neighbor 2507 Capitol Ave Unit 10	Sacramento CA	95816
Neighbor 2507 Capitol Ave Unit 20	Sacramento CA	95816
Neighbor 2507 Capitol Ave Unit 30	Sacramento CA	95816
Neighbor 2508 Capitol Ave	Sacramento CA	95816
Neighbor 2508 L St Apt 1	Sacramento CA	95816
Neighbor 2508 L St Apt 10	Sacramento CA	95816
Neighbor 2508 L St Apt 11	Sacramento CA	95816
Neighbor 2508 L St Apt 12	Sacramento CA	95816
Neighbor 2508 L St Apt 13	Sacramento CA	95816
Neighbor 2508 L St Apt 14	Sacramento CA	95816
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**APPENDIX C**  
**Brief of Amicus Curiae in Support of Respondents**  
**and Real Parties In Interest**

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**FILED / ENDORSED**  
MAY - 5 2006  
By M. McLaughlin, Deputy Clerk

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6 SACRAMENTO METROPOLITAN AIR  
QUALITY MANAGEMENT DISTRICT

8 SUPERIOR COURT FOR THE STATE OF CALIFORNIA  
9 COUNTY OF SACRAMENTO

10 SERVICE EMPLOYEES INTERNATIONAL UNION, )  
11 UNITED HEALTHCARE WORKERS WEST, )  
12 Petitioners, )  
13 v. )  
14 CITY OF SACRAMENTO, )  
SACRAMENTO CITY COUNCIL, and DOES 1 to 10, )  
15 Respondents , )  
16 SUTTER HEALTH, INC., a California non-profit )  
17 corporation; )  
SUTTER HEALTH-SACRAMENTO SIERRA )  
18 REGION (formerly known as Sutter Community )  
Hospitals of Sacramento); and )  
19 SUTTER MEDICAL CENTER, SACRAMENTO )  
20 Real Parties in Interest. )

Case No. 06CS00026  
BRIEF OF *AMICUS CURIAE* IN  
SUPPORT OF RESPONDENTS  
AND REAL PARTIES IN  
INTEREST  
Assigned for all purposes:  
Honorable G. Patrick Marlette  
Department 19  
Filing date of action:  
January 9, 2006  
Trial Date: June 9, 2006  
Time: 9:00 a.m.

1           The Sacramento Metropolitan Air Quality Management District (“SMAQMD” or  
2 “District”) writes to apprise this Court of the District’s extensive role in the  
3 environmental process carried out by Respondent City of Sacramento (“City”) in  
4 connection with the City’s consideration and ultimate approval of the Sutter Medical  
5 Center, Sacramento (“SMCS” or “Sutter”) project.

6           The District initially formally commented on the project’s potential air quality  
7 impacts in response to the Notice of Preparation, released in October 2003 (AR 2:270).<sup>1</sup>  
8 The District remained fully engaged in addressing the potential air quality impacts of the  
9 project throughout the process leading up to certification of the Final EIR by the City  
10 Council in December 2005. (AR 9:3482.) As a result of the District’s participation  
11 Sutter and the City made changes and incorporated mitigation measures into the project.  
12 (AR 4:1457, 1459.) These changes resulted in the District’s ability to express support of  
13 the project while concluding that the project satisfied the District’s requirements and  
14 mitigated, to the extent feasible, the significant air quality impacts of the project. (AR  
15 9:3483.)

16           SMAQMD is responsible for ensuring that air quality within the Sacramento  
17 region meets state and federal standards. The District is a special district with jurisdiction  
18 over the Cities of Sacramento, Citrus Heights, Elk Grove, Folsom, Rancho Cordova, Galt,  
19 and Isleton, as well as unincorporated Sacramento County. The District’s mission is to  
20 achieve clean air and protect public health and the environment by regulating air pollutant  
21 emissions from stationary sources, participating in the land-use entitlement and  
22 environmental review processes, and engaging in public education. The SMAQMD  
23 collaborates with local, state and federal government agencies, the business community,  
24 environmental groups, and private citizens on projects throughout the region.

25           In recognition of the potential air quality impacts of land use development  
26 projects, and to aid in the District’s review of such projects under the California

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27 <sup>1/</sup>       The citation “AR” refers to the Administrative Record on file in this case. “AR  
28 2:720” refers to Volume II, page 720 of the Record.

1 Environmental Quality Act (CEQA), the District promulgated its Guide to Aid Quality  
2 Assessment in Sacramento County (July 2004). (AR 23: 8478- 8606.) This document  
3 provides comprehensive guidance for the District when it acts as a CEQA lead agency.  
4 The Guide serves a similar purpose when used by other local and state lead, responsible  
5 or trustee agencies under CEQA. (AR 23:8484.)

6 The Guide provides various CEQA thresholds of significance. The Guide also  
7 contains chapters that address, among other things, construction impacts and mitigation,  
8 operational impacts and mitigation, and cumulative air quality impacts. (AR 23:8481.)

9 The Air District first voiced its concerns regarding the potential effects of the  
10 Project on air quality after reviewing the notice of preparation of the EIR released in  
11 2003. (AR 2:720.) In a letter dated October 13, 2003, the Air District commented that,  
12 due to the size of the project, "it seems clear that an Air Quality Plan will be necessary to  
13 define the air quality impacts and the mitigation measures proposed to offset those  
14 impacts." (*Ibid.*)

15 On September 2, 2005, after reviewing the Draft EIR, the SMAQMD submitted  
16 another comment letter on the adequacy of the EIR. (AR 4:1289.) The September 2,  
17 2005, letter made it clear that the Air District did not endorse the Project in its then-  
18 proposed form, but that the District remained willing to work with the City and Sutter to  
19 refine and revise the list of mitigation measures proposed for the Project. (*Ibid.*)

20 On October 17, 2005, SMAQMD staff met with the EIR consultant, the City and  
21 Sutter representatives to discuss ways the Project's air quality mitigation plan could be  
22 improved. (AR 4:1457.) As a result of that meeting and ongoing discussions, the City's  
23 consultant released a revised air quality mitigation plan that included 17 mitigation  
24 measures. (*Ibid.*) Under the Air District's calculations, the additional mitigation  
25 measures brought the total level of mitigation achieved under the Project to 15.1 points,  
26 exceeding the Air District's mitigation program requirements. (*Ibid.*; AR 4:1459.)

27 In addition to the 17 operation-specific mitigation measures incorporated into the  
28 EIR, the document also reflects incorporation of the SMAQMD's: (i) thresholds of

1 significance; (ii) recommended modeling method to assess construction impacts (AR  
2 4:1459; 11:4201); and (iii) recommended mitigation measures for construction practices,  
3 implementation of which will reduce off-road construction equipment NOx emissions by  
4 20 percent and particulate matter by 45 percent. (AR 11:4202.)

5 The Air District implemented a construction emission mitigation fee program in  
6 October 2005, three months after the release of the Draft EIR. (AR 9:3439-3440.) The  
7 offsite fee program applied only prospectively to environmental documents issued on or  
8 after October 10, 2005, and thus did not apply to the Sutter Project. (AR 8:02987;  
9 9:3439-3440; 23:8789.) Nevertheless, Sutter voluntarily agreed to contribute \$100,000 to  
10 the SMAQMD program. (AR 9:3439-3440.) SMAQMD staff wrote a letter stating that  
11 the check is a "proactive contribution in an agreed upon amount . . . to ensure  
12 construction emission impacts are mitigated for the project." (AR 23:8789.)

13 In short, the City and Sutter actively engaged the Air District to address its  
14 concerns by incorporating all feasible mitigation measures into the Project, thus avoiding  
15 or substantially lessening the significant air quality impacts of the Project. As a result,  
16 Air District staff deemed the EIR adequate and participated in the City's approval  
17 process. (AR 4:1457.) Specifically, Larry Greene, Executive Director of the Air District,  
18 expressed his satisfaction with the EIR at the December 6, 2005, City Council hearing.  
19 (AR 9:3482-3483.)

20 SMAQMD respectfully requests that this Court uphold the air quality analysis  
21 contained within the EIR certified by the City.

22 Date: May 5, 2006

Respectfully submitted,

23  
24  
25 By: Kathrine C. Pittard  
Kathrine C. Pittard

26 Attorney for *Amicus Curiae*  
27 SACRAMENTO METROPOLITAN AIR  
28 QUALITY MANAGEMENT DISTRICT

**APPENDIX D**  
**Letter from the SMAQMD to the Elk Grove School District**  
**Regarding Off-Site Construction Fees**

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*M. Robbins dg*  
*M. Robbins dg*  
*M. Robbins dg*

Larry Greene  
AIR POLLUTION CONTROL OFFICER

RECEIVED

July 8, 2005

JUL 14 2005

ELK GROVE UNIFIED SCHOOL DISTRICT  
SUPERINTENDENT'S OFFICE

Superintendent Steven M. Ladd  
Elk Grove Unified School District  
9510 Elk Grove - Florin Road  
Elk Grove, CA 95624

RECEIVED

JUL 15 2005

FACILITIES PLANNING  
ELK GROVE UNIFIED SCHOOL DISTRICT

RE: Off-site Mitigation Fees for Significant Construction Air Quality Impacts

Dear Mr. Ladd:

The purpose of this letter is to advise all local lead agencies and interested individuals that Sacramento Metropolitan Air Quality Management District (SMAQMD) staff is preparing to issue new CEQA guidance to recommend an expanded mitigation fee program for all significant construction air quality impacts identified in any CEQA document. Currently, mitigation fees are an acceptable mechanism in mitigated negative declarations (MNDs) to reduce air quality impacts to less than significant. The proposed new CEQA guidance will expand the application of mitigation fees to off-set significant air quality impacts identified in environmental impact reports (EIRs).

CEQA requires that MNDs mitigate any significant impact to below the threshold of significance. In the case of construction related air quality impacts, if the District's standard recommended mitigation does not reduce impacts to below the construction threshold, a mitigation fee is recommended to reduce emissions below the threshold. The mitigation fee is calculated based on the amount of emissions over the construction threshold, and the cost of reducing equivalent off-site emissions. Mitigation fees are used by SMAQMD to fund cost-effective and quantifiable emission reduction projects, such as replacing older construction equipment engines with newer, lower emission engines.

Since these mitigation alternatives can offset emissions from most projects, there is no reason to limit the application of the mitigation measure to MND projects. Consequently, SMAQMD staff intends to recommend an off-site mitigation fee for all significant construction impacts identified in EIRs. The details of how to implement this recommendation are being finalized as of this writing; however, we expect to recommend off-site mitigation fees on those projects that show significant air quality impacts after the SMAQMD standard mitigation has been applied. As a reminder, the SMAQMD standard construction mitigation involves the use of construction equipment that is documented to be 20 percent cleaner than the average California fleet. At this time, we are not planning to recommend mitigation fees for significant operational impacts in EIRs. Before such a recommendation can be made, additional research is needed on methodologies to quantify the potential benefits of off-site operational mitigation projects.

To assist lead agencies with understanding how this mitigation fee program will affect their work and the SMAQMD review of projects, it is our intent to host a workshop for interested lead agency staff. You will be notified once the workshop is scheduled. We anticipate having the expanded mitigation fee program in place for any environmental documents published on or after October 10, 2005. This proposed schedule should allow time to have the workshop and address any issues or concerns that may arise.

Please contact Ron Maertz of my staff at 916.874.4882 (rmaertz@airquality.org) if you have any questions or concerns. Thank you for your cooperation in this matter.

Sincerely,

Larry Greene  
Air Pollution Control Officer

