



**NEW HARMONY AFFORDABLE APARTMENT  
COMMUNITY PROJECT**

**S.W. CORNER OF COWELL BOULEVARD  
AND DRUMMOND AVENUE, DAVIS**

**DRAFT  
ENVIRONMENTAL IMPACT REPORT**

**Community Development Department  
City of Davis**

**December 2008**



**December 23, 2008**

**TO: All Interested Parties**

**SUBJECT: Notice of Availability of the Draft Environmental Impact Report for the New Harmony Affordable Apartment Community and Notice of Public Meeting**

The City of Davis has prepared a Draft Environmental Impact Report (DEIR) to consider the potential environmental effects of the proposed New Harmony Affordable Apartment Community Project located at the southwest corner of Cowell Boulevard and Drummond Avenue, City Davis, Yolo County. This is a notice of the public review period to receive comments on the New Harmony DEIR for a 45-day period beginning December 24, 2008 and ending February 6, 2009.

**Description:**

The project is proposing to construct a 69-unit affordable apartment community on a vacant parcel in south Davis. Development would consist of approximately 70,000 square feet made up of two three-story apartment buildings (41,256 sq. ft. and 23,175 sq. ft.) and a one-story community building (3,871 sq. ft.). The project includes landscaping, parking, play areas, a community garden, bicycle path/greenbelt, site and frontage improvements. The apartment community would be located on a residential parcel on the south side of Cowell Boulevard. An office parcel on the north side of Cowell Boulevard would remain undeveloped. The project includes a General Plan Amendment to change the land use designation from "Business Park" to "Residential High Density" and a Rezone from "Industrial Research" to "Multi-Family" for the residential parcel.

The DEIR focused on the potentially significant impacts related to air quality and noise on future residents due to the site's proximity of Interstate 80.

**Availability of Documents:**

Beginning December 24, 2008, copies of the DEIR are available for review or purchase at the Community Development Department, in the City Offices located at 23 Russell Boulevard, Davis, California, 95616. City Offices will be closed from December 24, 2008 through January 4, 2009. During this time, copies will be available for viewing and check-out at the Davis Police Department located at 2600 Fifth Street. A copy will also be available at the Davis City Library located at 351 East 14<sup>th</sup> Street, or may be downloaded from the city website at:

<http://cityofdavis.org/cdd/projects/New-Harmony-Apartment/documents.cfm>

**Public Comments:**

Reviewers should focus comments on the adequacy of the DEIR in discussing possible impacts upon the environment, ways in which adverse effects might be minimized, and alternatives to the proposed project. Reviewers who wish to comment on the DEIR are urged to submit written comments to:

Eric Lee, Assistant Planner,  
City of Davis Community Development Department  
23 Russell Boulevard  
Davis, CA 95616

FAX: (530) 757-5660

EMAIL: [elee@cityofdavis.org](mailto:elee@cityofdavis.org)

Written comments are due to the City by no later than **5:00 pm on February 6, 2009**.

**Public Meeting**

Public meetings are also scheduled with the Planning Commission and Natural Resources Commission for their comment on the DEIR. The Planning Commission is scheduled to comment at a meeting beginning at 7:00 p.m. on Wednesday, January 14, 2009. The Natural Resources Commission meeting is scheduled to comment at a meeting beginning at 6:30 p.m. on Monday, January 26, 2009. The meetings are will be held in the Community Chambers, City Offices, located at 23 Russell Boulevard, Davis. Please contact the project planner for the approximate time the item will be discussed.

The City does not transcribe its proceedings. Persons who wish to obtain a verbatim record should arrange for attendance by a court reporter or for some other acceptable means of recordation. Such arrangements will be at the sole expense of the person requesting the recordation.

Katherine Hess, Community Development Director

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# SECTION 1

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## 1.0 INTRODUCTION

The New Harmony Draft Environmental Impact Report (Draft EIR) is being prepared in accordance with the California Environmental Quality Act of 1970 (CEQA) as amended. The City of Davis is the lead agency for this environmental review of the affordable apartment project evaluated herein and has the principal responsibility for taking final action on the project. CEQA requires the public agency to consider the information in the Draft EIR along with other information that may be presented to the agency. As required by Section 15121 of the CEQA Guidelines, this EIR will:

- Inform public agency decision-makers, and the general public, of the significant environmental effects of the project;
- Identify possible ways to minimize the significant adverse environmental effects; and
- Describe reasonable and feasible project alternatives, which reduce environmental effects.

## 1.1 SCOPE OF THE EIR

This Draft Environmental Impact Report (EIR) has been prepared in accordance with the requirements of the California Environmental Quality Act (CEQA) and the City of Davis Environmental Review procedures in order to assess potential impacts associated with the proposed New Harmony Affordable Apartment Community Project.

In accordance with CEQA guidelines, Section 15121, an EIR is identified as an informational document that is used to inform public agency decision makers and the public of the potential significant environmental effect of a project, identify possible ways to minimize the significant effect, and describe reasonable alternatives. The EIR does not recommend approval or denial of the project. However, the City must respond to each significant effect identified in the EIR and is required to certify that it has reviewed and considered information contained in the Final EIR prior to action on the project (Guidelines §15090).

A public agency may only approve a project after it has determined that it will not have a significant effect on the environment, or the impacts have been significantly reduced to an acceptable level, if possible. However, CEQA also requires the decision-making agency to balance the economic, legal, social, technological or other benefits of a proposed project against its unavoidable effects when determining whether to approve a project. According to Section 15093 of the CEQA Guidelines, the City may approve a project that has an adverse effect on the environment, but must state in writing the specific reasons to support its action based on

information in the EIR and other information in the public record as a “Statement of Overriding Considerations.”

This Draft EIR has been prepared as a focused EIR. EIRs for the General Plan and Specific Plan environmental documents present a general analysis of environmental issues within the project area as well as other areas of the city. This Draft EIR for the New Harmony project presents a more detailed analysis concerning the noise and air quality impacts associated with the project.

An Initial Study was prepared for the proposed project and circulated for public comment (Appendix 8.1). The Initial Study discussed potential impacts expected as a result of the project. Based on the Initial Study and review by the City Council, which adopted findings for preparation of an EIR (Appendix 8.2), potentially significant impacts to two environmental issue areas were identified and are analyzed in more detail within this EIR and include: Air Quality and Noise

## **1.2 CEQA REVIEW PROCESS**

The EIR process begins with the decision by the lead agency to prepare an EIR, either during a preliminary review of a project or at the conclusion of an Initial Study. Once the decision is made to prepare an EIR, the lead agency sends a Notice of Preparation (NOP) to appropriate government agencies, and when required, to the State Clearinghouse (SCH) in the Office of Planning and Research (OPR), which will ensure that responsible State agencies reply within the required time. The SCH assigns an identification number to the project, which then becomes the identification number for all subsequent environmental documents on the project. Interested agencies have 30 days to respond to the NOP, indicating, at minimum, reasonable alternatives and mitigation measures they wish to have explored in the Draft EIR and whether the agency will be a responsible agency or a trustee agency for the project.

For this EIR, it was determined that a NOP was not necessary because an Initial Study had already been prepared and circulated to the public and appropriate agencies for comment. The Initial Study was reviewed during public hearings on the project by the City of Davis Planning Commission and City Council. The City Council determined that additional environmental analysis was necessary and adopted findings to initiate preparation of an EIR.

As soon as the Draft EIR is completed, a Notice of Completion is filed with the OPR. A public notice is published to inform interested parties that a Draft EIR is available for agency and/or public review and provides information regarding location of drafts and any public meetings or hearings that are scheduled. The Draft EIR is circulated for a specified period, typically 45 days, during which time reviewers may make comments. The lead agency must evaluate and respond to comments in writing, describing the disposition of any significant environmental issues raised

and explaining in detail the reasons for not accepting any specific comments concerning major environmental issues. Should comments received result in the addition of significant new information to an EIR, after public notice is given, the revised EIR or affected chapters must be re-circulated for another public review period with related comments and responses.

Once the lead agency is satisfied that the EIR has adequately addressed the pertinent issues in compliance with CEQA, a Final EIR will be prepared comprised of the Draft EIR, comments, responses to comments, and any errata and/or changes. The Final EIR is made available for review by the public or commenting agencies. Before approving a project, the lead agency shall certify that the Final EIR has been completed in compliance with CEQA and has been presented to the decision-making body of the lead agency and has been reviewed and considered by that body, and that the Final EIR reflects the lead agency's independent judgment and analysis.

This Draft EIR will be circulated for a 45-day public and agency review period. Copies of the document have been made available to the Office of Planning and Research, applicable local agencies and interested organizations and individuals wishing to review and comment on the report. The publication of this document marks the beginning of the 45-day review period during which written comments will be received by the City of Davis at the following address:

City of Davis  
Community Development Department  
23 Russell Boulevard  
Davis, CA 95616  
Attention: Eric Lee, Assistant Planner

Fax: (530) 757-5660  
Email: elee@cityofdavis.org

Comments will be addressed in a Response to Comments, which, together with the Draft EIR and any necessary Mitigation Monitoring Reporting Program will constitute the Final EIR for the proposed project. The Davis City Council will then review the proposal, the EIR, and public testimony, and decide whether to certify the EIR and consider approval or denial of the project.

In order to adopt the project, state law requires that the City Council make several types of "findings." Findings are a recitation of the conclusions of the Council on particular issues, including documentation of the evidence in support of those conclusions. The required findings are as follows:

- Certification of the EIR (CEQA Guidelines Section 15090) -- These findings support the adequacy of the EIR for decision-making purposes.

- Significant Impacts (CEQA Guidelines Section 15091) -- These findings explain how the City Council chose to address each identified significant impact, including the mitigation measures adopted or an explanation of why such measures are infeasible.
- Project Approval (CEQA Guidelines Section 15092) -- These findings support the City Council's action to adopt the project.
- Statement of Overriding Considerations, if necessary (CEQA Guidelines Section 15093) -- These findings document the City Council's decision to adopt the project despite the fact that unavoidable impacts will result, due to other overriding benefits of the project.

### 1.3 FORMAT OF THE DOCUMENT

This Draft EIR is organized into the following chapters:

**Section 1.0 Introduction.** This chapter describes the purpose and organization of the EIR and the EIR preparation, review and certification process.

**Section 2.0 Executive Summary.** This chapter presents a summary of the project description, key environmental issues and the significant environmental impacts that are expected to result from the proposed project implementation.

**Section 3.0 Project Description.** This chapter describes the location, the components of the proposed project, project background, and objectives.

**Section 4.0 Environmental Analysis.** This chapter includes discussions of environmental issue areas for which impacts are expected to result from the proposed project, focusing on the issues of air quality and noise. For each environmental issue area, a description of the environmental setting, a discussion of expected impacts resulting from the proposed project, and proposed mitigation measures are provided.

**Section 5.0 Analysis of Alternatives.** This chapter presents a description of project alternatives and their expected impacts.

**Section 6.0 CEQA-Required Considerations.** This chapter discusses cumulative impacts of the project and other foreseeable projects within the affected area, growth-inducing impacts, and significant unavoidable impacts resulting from the project.

**Section 7.0 References and Bibliography.** This chapter provides a list of references, contacts and materials consulted during the preparation of the EIR and a list of EIR authors.

**Section 8.0 Appendices.** The appendices consist of supporting and referenced documents, including the Initial Study and various reports. See the Table of Contents for the full listing.

## 1.4 TERMINOLOGY USED IN THIS EIR

Terminology to describe the environmental effects of the proposed project in this EIR include:

**Significance Criteria:** A set of standards used by the lead agency to determine at what level or threshold an impact would be considered significant. Significance criteria used in this document include those discussed in the CEQA Guidelines; factual or scientific information; regulatory standards of local, state, and federal agencies; and goals, objectives, and policies identified in the City of Davis General Plan and Zoning Ordinance.

**Less Than Significant Impact:** An impact that would cause no substantial adverse change in the environment, requiring no mitigation.

**Potentially Significant Impact:** An impact that could cause a substantial adverse change in the environment. Mitigation measures may be identified to reduce or eliminate these impacts to the environment.

**Significant Unavoidable Impact:** A potentially significant impact that cannot be avoided or mitigated to a less-than-significant level.

## 1.5 THRESHOLDS OF SIGNIFICANCE

Section 15064.7 of the CEQA Guidelines encourages agencies to develop and publish thresholds of significance that would be used to determine the significance of environmental effects. The determination of whether a project may have a significant effect on the environment is based to the extent possible on scientific evidence and factual data. However, an iron clad definition of significant effect is not always possible because the significance of an activity may vary with the setting. The CEQA Guidelines describe a threshold of significance as “an identifiable quantitative, qualitative or performance level of a particular environmental effect, non-compliance with which means the effect will normally be determined to be significant by the agency and compliance with which means the effect normally will be determined to be less than significant.” Established thresholds may be ordinances, resolutions, rules, and regulations. When an established threshold does not exist or for impacts that are not quantifiable, relevant policies, qualitative descriptions, or standard practices may be applicable, as determined by the lead agency.

## 1.6 MITIGATION MEASURES

CEQA authorizes a lead agency to require feasible changes as mitigation measures in any or all activities involved in a project in order to substantially lessen or avoid significant effects on the environment and to ensure that any adopted measures to mitigate or avoid significant adverse changes are fully enforceable through permit conditions, agreements, or other measures. Section 15370 of the CEQA Guidelines defines mitigation as an action that:

- Avoids an impact altogether by not implementing a certain action or parts of an action.
- Minimizes an impact by limiting the degree or magnitude of the action.
- Rectifies an impact by repairing, rehabilitating, or restoring the affected environment.
- Reduces or eliminates an impact over time through the use of preservation and maintenance operations during the life of the project.
- Compensates for an impact by replacing or providing substitute resources or environments.

CEQA Section 21081.6(a) requires lead agencies to “adopt a reporting and mitigation monitoring program for the changes to the project, which it has adopted or made a condition of project approval in order to mitigate or avoid significant effects on the environment.” A mitigation monitoring program would be prepared for the proposed project in addition to standard conditions of approval, if approved. This program would be organized in a tabular format and would include the required mitigation measures identified herein.

## 1.7 THE DRAFT EIR

State CEQA Guidelines § 15126.2(a) states that:

An EIR shall identify and focus on the significant environmental effects of the proposed project. In assessing the impact of a proposed project on the environment, the lead agency should normally limit its examination to changes in the existing physical conditions in the affected area as they exist at the time the notice of preparation is published, or where no notice of preparation is published, at the time environmental analysis is commenced.

The scope of this Draft EIR focuses on air quality and noise impacts, which were identified as potentially significant. The determination was based on the Initial Study, and review of the Initial Study by the City Council. The complete text of the Initial Study is contained in Appendix 8.1. The Initial Study concluded that impacts to other resources would be less than significant. The evaluation of effects is presented on a resource-by-resource basis in Subsections 4.2 and 4.3. Each subsection is divided into four parts: Introduction, Environmental Setting, Regulatory Context, and Impacts and Mitigation Measures. Impacts that are determined to be significant in Section 4 and for which no feasible mitigation measures are available to reduce those impacts to a less than significant level are identified as *significant and unavoidable*. Section 4 in the Draft

EIR presents a discussion and comprehensive list of all significant and unavoidable impacts identified.

## **1.8 COMMENTS**

No Scoping Meeting was conducted. However, adequate opportunity has been provided to identify potential project impacts requiring further analysis. An Initial Environmental Study (Initial Study) was prepared for this project and analyzed potential impacts. A Notice of Intent to Adopt a Negative Declaration was posted at the County Clerk's Office, published in the local paper, and mailed to property owners and residents within 1,000 feet of the project site, interested members of the public, and relevant agencies. During the 20-day public review period, no comments were received.

Comments were received from the public throughout general project review period. There were concerns about the project in general and impacts to the neighborhood, but comments were not specifically directed at the environmental issues or the Initial Study. Comments were subsequently received from the Yolo Solano Air Quality Management District (YSAQMD). YSAQMD stated that the air quality analysis in the Initial Study was generally accurate and included clarifying and correction comments about the conclusions related to the conservative assumptions in the HRA methodology, references to the Sacramento Metropolitan Air Quality Management District Protocol for Sensitive Land Uses and background cancer risks, discussion of the peer review and information by an outside consultant, and difficulty of quantifying the proposed mitigation measures.

Public hearings on the project and the Initial Study were held by the City of Davis Planning Commission and Davis City Council. During the hearings, concerns about health impacts were raised based on a study by Gauderman et. al. that was published in the medical journal *The Lancet* in 2007. The study examined the impact of traffic exposure on the lung development of children. Based on the comments, preparation was begun on an Environmental Impact Report focusing on the air quality and noise impacts, with specific concerns about impacts from the project's proximity to Interstate 80.

## **1.9 REQUIRED APPROVALS**

This EIR analyzes the specific proposal for the New Harmony Affordable Apartment Project. The proposed project includes specific design details as well as General Plan and Zoning changes that require approval by the Davis City Council. The project has already undergone review by the City of Davis Planning Commission, which considered the proposed project and the Initial Study prepared for it, on September 10, 2008. The Planning Commission voted to recommend denial of the project to the City Council, largely due to air quality health concerns to potential residents from the nearby freeway. On October 7, 2008, the City Council considered

the project and the Initial Study and continued the item. On November 5, 2008, the City Council adopted findings to begin preparation of an EIR due to the potential air quality impacts.

The City of Davis Planning Commission and Natural Resources Commission will provide comment on the Draft EIR to the City Council. Approval of the project requires City Council approval of the land use entitlements and certification of the EIR. In addition, the proposed project includes anticipated funding from the United States Department of Housing and Urban Development (HUD). Approval of the funding requires compliance with the National Environmental Protection Act (NEPA).

# SECTION 2

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## 2.0 EXECUTIVE SUMMARY

### 2.1 SUMMARY DESCRIPTION OF PROPOSED PROJECT

#### 2.1.1 Project Location

The New Harmony Apartment project site consists of three vacant parcels located at the southwest corner of Cowell Boulevard and Drummond Avenue in south Davis (Figure 2.1 – Location Map). The parcels are split by Cowell Boulevard which cuts through the site. It includes a 3.38-acre site on the south side of Cowell Boulevard where the New Harmony development is proposed. The New Harmony site consists of a 0.75-acre land dedication site owned by the City and an approximately 2.56-acre remainder parcel acquired by the applicant. The project site also includes an additional 1.16-acre, triangular-shaped piece of the remainder parcel on the north side of Cowell Boulevard. This triangular parcel is not proposed for development as part of this project, but could accommodate possible future office uses.

#### 2.1.2 Environmental Setting and Surrounding Land Uses

The project site is flat and undeveloped. Vegetation consists primarily of a mix of non-native grasses with several small trees scattered about. The triangular parcel is a partially disturbed site with blacktop remnants of Chiles Road and power lines (Figure 2.2 – Aerial Photo).

The project site is part of a band of generally undeveloped business park parcels fronting on Interstate 80. Single-family residences predominate in the surrounding area. However, the site is bounded by a mix of uses and facilities. To the immediate east of the site are several vacant parcels designated for business park, retail, and residential use. It includes the Willowcreek Commons site approved for a 21-unit single-family residential subdivision. South of the project site is the existing 45-unit Owendale Apartment Community. To the immediate west is a City well site with driveway access and a UC Davis bookstore warehouse just beyond it. A designated City bicycle pathway and greenbelt will run along the southern border between the project site and the Owendale Community. The project site is within 500 feet of Interstate 80 to the north.

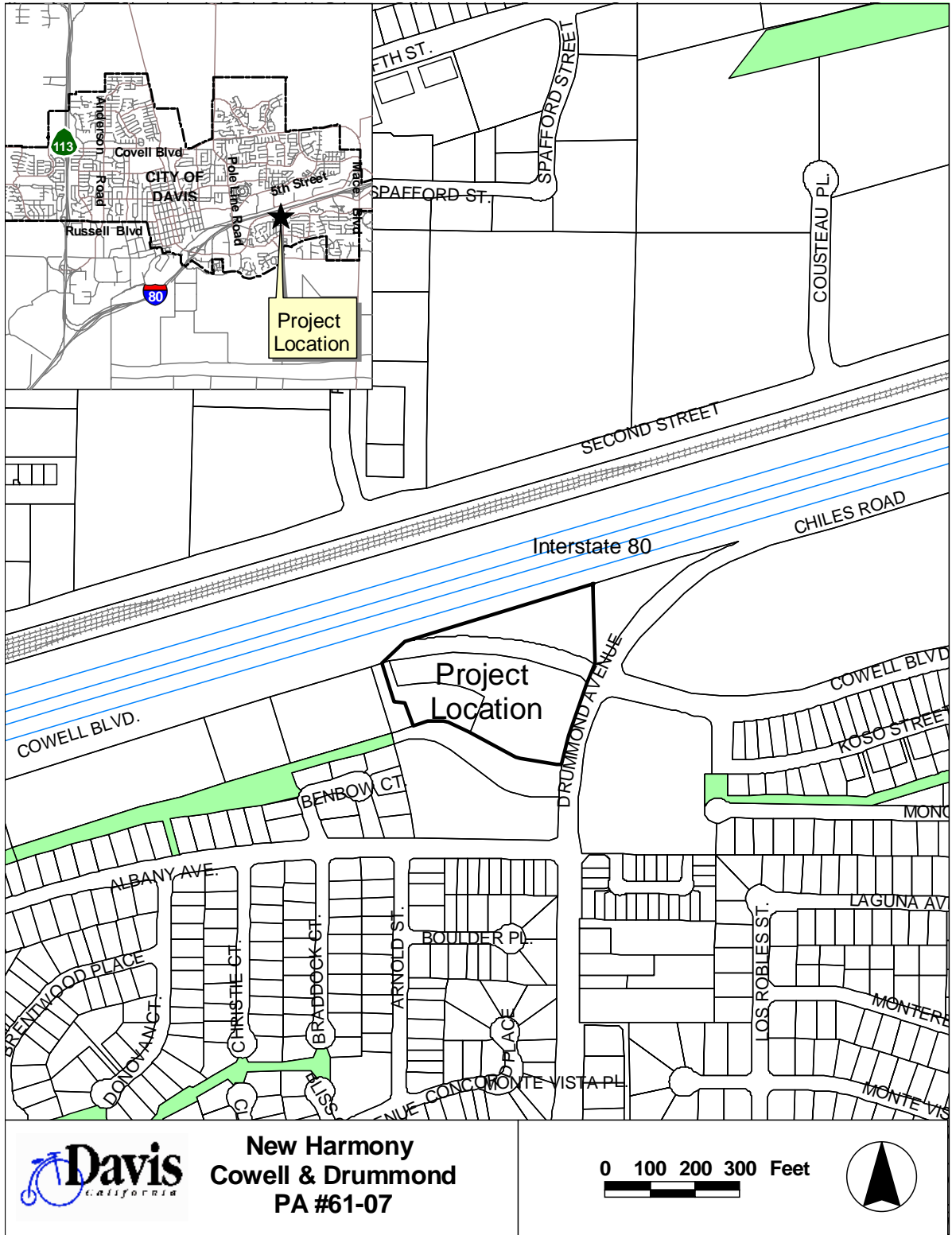


Figure 2.1: Location Map



**Figure 2.2: Aerial Site Photo**

### 2.1.3 General Project Description

The New Harmony Affordable Apartment Project is proposing to construct a 69-unit, affordable rental apartment community. Development would consist of approximately 70,000 square feet made up of two three-story apartment buildings (41,256 sq. ft. and 23,175 sq. ft.) and a one-story community building (3,871 sq. ft.). The one, two, and three-bedroom apartment units would range in size from 667 square feet to 1,130 square feet. The project includes landscaping, parking, play areas, a community garden, bicycle path, greenbelt, and site and frontage improvements. Proposed density is approximately 20 units per acre on the residential parcel. A tentative parcel map would divide the property and create a residential parcel on the south side of Cowell Boulevard where the apartment development is proposed and an office parcel on the north side of Cowell Boulevard which is not proposed for development.

### 2.1.4 Required Entitlements

While the current zoning allows a multi-family use with a Conditional Use Permit and is allowed under the General Plan designation as a secondary use, the project requires the following entitlements by ordinance and to improve consistency:

- General Plan Amendment to change the land use designation from “Business Park” to “Residential High Density,”
- Rezone of the residential parcel from “Industrial Research” to “Multi-Family,”
- Specific Plan Amendment to reflect the changes. The office parcel would retain its Business Park designation and Industrial Research zoning.
- Final Planned Development, Design Review, Tentative Parcel Map, and Minor Modification for the site plan, map, and improvement work.

## **2.2 KEY ENVIRONMENTAL ISSUES**

The key environmental issues discussed in this draft EIR is the potential for significant air quality and noise impacts that may occur as a result of the proposed project. Specific issues are the air quality and noise impacts due to the site’s proximity to Interstate 80. As discussed in Section 1.1, Scope of EIR, this document is a focused EIR. The specific reports prepared for this project and referenced in this document and the Initial Study are also incorporated by reference. In Section 4, the expected environmental impacts from air quality and noise are discussed. Other resources are not expected to be impacted by the proposed project or would have a less than significant impact and not require further evaluation.

The Initial Study prepared for the project included proposed mitigation measures for potential impacts related to biological resources and traffic and circulation. Those mitigation measures are included below in Table 2.1.

## **2.3 GROWTH-INDUCING IMPACTS**

The proposed project is a new 69-unit apartment building that would potentially result in additional growth. The goal of the project is to provide for local housing needs for low and very-low-income households as determined by the City’s Regional Housing Needs Allocation. The units are targeted for people who already live or work in the City of Davis, but there is the chance that some of the potential residents would move in from outside of Davis and result in additional population growth. However, the project would not result in the need for any new or expansion of facilities or infrastructure to serve the project. The project is an infill site in an urbanized area. It would add a relatively small number of new units and falls within the City’s projected growth. It would not result in any significant new growth.

## **2.4 CUMULATIVE IMPACTS**

The proposed project will result in increased vehicle trips with potential cumulative impacts on air quality and climate change. Other potential development in the area includes the approved Willowcreek Commons project located to the immediate southeast of the project site. It consists

of a 21-unit single-family project on two acres. Willowcreek Commons is an approved project, but it is not certain when development would occur. It could occur simultaneously with the proposed New Harmony project. Although both projects would generate additional vehicle trips and contribute pollutants which the area is in non-attainment, the projects would not result in a cumulatively considerable net increase.

The traffic study prepared for the proposed project considered the additional vehicle trips from both projects and determined that the affected intersections and roadways would still maintain adequate levels of service. The District Air Quality Plan assumes some increase in growth and a cumulative impact from all development projects. It anticipates that all projects will mitigate their incremental emissions contribution as much as possible and is addressed in General Plan policies encouraging infill development, proximity to services, and alternative transportation modes which the proposed project is consistent with. The Program EIR for the General Plan Update determined that mitigation measures could be implemented to reduce potential air quality impacts, but that the impacts would remain significant and unavoidable.

The project also produces greenhouse gases that contribute global warming impacts. However, information and thresholds are not yet available to determine the project's contribution or appropriate mitigation. As proposed, the project includes a number of elements that help to reduce overall carbon emissions. It is an infill site with a proposed density of 20 units per gross acre that makes efficient use of the site. The location is well-served by transit and is directly adjacent to a city greenbelt/bicycle path and city streets with bike lanes. Siting of the buildings take advantage of southern exposures and roofs will allow for photovoltaics to be installed if desired. The project will comply with city requirements for energy conservation and efficiency. Therefore, the project is considered to have less than significant cumulative impacts.

## **2.5 SIGNIFICANT AND UNAVOIDABLE IMPACTS**

CEQA Section 2100(b)(2) requires that any significant effect on the environment that cannot be avoided from implementation of the proposed project must be identified. If there are significant impacts that cannot be mitigated, the City of Davis must prepare and adopt a Statement of Overriding Considerations. No significant and unavoidable impacts have been identified related to the proposed project.

## **2.6 SUMMARY OF IMPACTS AND MITIGATION MEASURES**

A complete discussion of the anticipated impacts and mitigation measures is presented in Section 4.0 of this EIR. It has been determined that there will be potentially significant adverse impacts

related to air quality and noise issues as a result of the proposed project. Table 2.1 summarizes the impacts and mitigation measures.

<i>Impact</i>	<i>Level of Significance prior to Mitigation</i>	<i>Mitigation Measure</i>	<i>Level of Significance after Mitigation</i>
<p><u>Air Quality:</u> The proposed project would expose potential residents to elevated health risks associated with vehicle emissions from the nearby freeway.</p>	Potentially Significant	<p><b>Indoor Air Quality Mitigation.</b> In order to minimize air quality impacts and improve indoor air quality, prior to issuance of building permits the applicant shall incorporate the following mitigation measures into the building plans subject to review and approval of the Community Development Director and Building Official:</p> <ul style="list-style-type: none"> <li>a) Provide an enhanced filtration for all dwelling units using passive electrostatic filters and low air velocities or equivalent;</li> <li>b) Use low-VOC materials, paints, and carpeting in the dwelling units consistent with Build It Green's Multi-Family Green Building Guidelines.</li> </ul>	Less Than Significant
<p><u>Biological:</u> The western burrowing owl (<i>Athene cunicularia hypugea</i>) is a Federal Bird of Conservation Concern and state Species of Special Concern which is known to exist in the City of Davis and the vicinity. It inhabits</p>	Potentially Significant	<p><b>Burrowing Owl Mitigation.</b> Prior to any grading or construction on site, a preconstruction survey for burrowing owls shall be conducted in areas of suitable habitat on and within 250 feet of the project site. A minimum of one survey shall be conducted by a qualified biologist and shall be completed no less than 14 days and no more than 30 days before grading or construction begins. Surveys shall be conducted by walking transects no more than 100 feet apart to achieve 100% visual coverage.</p> <ul style="list-style-type: none"> <li>a) If no occupied burrows are found during preconstruction surveys, a letter report documenting survey methods and findings should be submitted to the City of Davis for review and approval, and no further mitigation is required for potential impacts to burrowing owls.</li> <li>b) If an occupied burrow is found on or within 250 feet of the project</li> </ul>	Less Than Significant

<p>vacant parcels and fields similar to the project site. Although none have been observed on the project site, burrowing owls were observed on an adjacent property in 2003. The burrowing owl is an opportunistic species that will occupy existing burrows and could potentially move onto the site to nest prior to construction. Disturbance and impacts to nesting burrowing owls could occur.</p>		<p>site, potential disturbance shall be minimized by establishing a 160-foot radius buffer during non-breeding season (September 1 through January 31) or a 250 foot radius buffer around the burrow during breeding season (February 1 through August 31) until the breeding season ends, or it is confirmed by a qualified biologist that the burrow is no longer occupied.</p> <p>c) If destruction of an occupied burrow in the project area is unavoidable, passive relocation techniques shall be used during the non-breeding season (September 1 through January 31) to exclude the owls from the burrow in accordance with DFG guidelines (DFG 1995). Following relocation, the project site shall be monitored for five consecutive days to ensure that owls are no longer present. If site grading does not occur within three days after the five consecutive days of monitoring is completed, a biologist shall resurvey the site to determine if owls have reoccupied the site. If owls have reoccupied the site, passive relocation and monitoring procedures must be repeated. A qualified biologist shall be present during initial grading. If owls are present during initial grading, all grading must cease and passive relocation and monitoring procedures shall be repeated. Following completion of the passive relocation, a letter shall be submitted to the City of Davis documenting the methods and results of burrowing owl passive relocation on the project site. If there are no occupied nests or if nesting owls have been relocated as described above, the site may be maintained per City requirements to prevent occupation by any burrowing owls.</p> <p>d) In addition to passive relocation, DFG guidelines suggest mitigating for the loss of burrowing owl nesting habitat on protected lands at a ratio of 6.5 acres per pair or individual displaced by development. If occupied nests are detected on-site during breeding season, the</p>	
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		applicant shall mitigate for the loss of nesting habitat consistent with DFG guidelines.	
<u>Noise:</u> Noise from construction activities for the proposed project could exceed acceptable noise thresholds for nearby residences.	Potentially Significant	<p><b>Construction Noise Mitigation.</b> In order to reduce potential impacts from short-term construction noise on nearby residences to a less than significant level for development of the residential parcel, the project contractor shall implement the following measures to be included as notes on grading and building plans. If the residential parcel is developed and occupied before construction on the commercial/office parcel occurs, the following measures shall also be implemented for construction on the commercial/office parcel.</p> <ul style="list-style-type: none"> <li>a) The project contractor shall permit only one piece of earthmoving equipment (including scrapers, haul trucks, rollers, dozers, tractors, front end loaders, hydraulic backhoes or excavators, graders, or similar equipment) to operate at any single time within 100 feet of the Owendale Community property line;</li> <li>b) During all project site excavation and on-site grading, the project contractors shall equip all construction equipment, fixed or mobile, with properly operating and maintained mufflers and bafflers consistent with manufacturers' standards;</li> <li>c) The project contractor shall place all stationary construction equipment so that emitted noise is directed away from sensitive receptors nearest the project site; and</li> <li>d) The construction contractor shall locate equipment staging in areas that will create the greatest possible distance between construction-related noise sources and noise-sensitive receptors nearest the project site during all project construction.</li> <li>e) During all project construction, the construction contractor shall limit all noise-producing construction related activities to the hours of 7:00 a.m. to 7:00 p.m., Monday through Friday, and to the hours of 8:00</li> </ul>	Less Than Significant

		a.m. and 8:00 p.m. on Saturdays and Sundays. For the office/commercial parcels which are located more than two hundred feet from existing homes, the contractor may request a special use permit to begin work at 6 a.m. on weekdays from June 15 <sup>th</sup> until September 1 <sup>st</sup> .	
<u>Noise:</u> Noise from the nearby freeway could exceed acceptable indoor and outdoor residential noise levels.	Potentially Significant	<b>Residential Parcel Traffic Noise Mitigation.</b> In order to reduce impacts from traffic noise on the residential parcel to a less than significant level, the applicant shall incorporate the following measures into the building plans for the residential parcel subject to review and approval of the Community Development Director: <ul style="list-style-type: none"> <li>a) A minimum setback of 260 feet from the centerline of I-80 shall be required of all noise sensitive land uses on the residential parcels;</li> <li>b) An alternate form of ventilation, such as an air conditioning system and trickle ventilation, shall be required for all residential units directly exposed to I-80 to ensure that windows can remain closed for a prolonged period of time;</li> <li>c) Windows with a minimum STC-32 rating shall be required for all residential units with façades directly exposed to I-80; and</li> <li>d) All outdoor active use areas (including playgrounds, patios, and balconies) shall be located on the south side of buildings on the residential parcels.</li> </ul>	Less Than Significant
<u>Noise:</u> Noise from the nearby freeway could exceed acceptable indoor and outdoor noise levels for office uses.	Potentially Significant	<b>Office Parcel Traffic Noise Mitigation.</b> In order to reduce impacts from traffic noise on the office parcel to a less than significant level, the applicant shall incorporate the following measures into the building plans for the office parcel subject to review and approval of the Community Development Director: <ul style="list-style-type: none"> <li>a) A berm a minimum of 4 feet in height above the finished pad elevation and extending the length of the property should be constructed on the</li> </ul>	Less Than Significant

		<p>northern property boundary adjacent to I-80;</p> <ul style="list-style-type: none"> <li>b) The berm should be landscaped with dense vegetation and tree cover to aid in blocking the line of sight to the traffic noise source;</li> <li>c) A minimum setback of 165 feet from the centerline of I-80 shall be required of all noise sensitive land uses on the office/commercial parcel;</li> <li>d) An alternate form of ventilation, such as an air conditioning system, shall be required for all office/commercial spaces directly exposed to I-80 to ensure that windows can remain closed for a prolonged period of time.</li> <li>e) Outdoor active use areas shall be placed on the south side of the berm or of the building.</li> </ul>	
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## SECTION 3

### 3.0 PROJECT DESCRIPTION

#### 3.1 DETAILED PROJECT DESCRIPTION

The New Harmony Affordable Apartment Project site consists of two parcels (2.56 acres and 0.75 acres) on the south side of Cowell Boulevard where the apartments are proposed. A 1.09-acre parcel on the north side of Cowell Boulevard is also part of the property and would not be developed as part of this project. A tentative parcel map would merge and resubdivide the parcels into two parcels, a 3.38-acre residential parcel on the south side of Cowell Boulevard and a 1.16 business park/office remainder parcel on the north side of Cowell Boulevard (Figure 3.1 – Conceptual Aerial View).



**Figure 3.1: Conceptual Aerial View of Proposed Project**

The project is proposing to construct a 69-unit, affordable rental apartment community. Development would consist of approximately 70,000 square feet made up of two three-story apartment buildings (41,256 sq. ft. and 23,175 sq. ft.) and a one-story community building (3,871 sq. ft.). The one, two, and three-bedroom apartment units would range in size from 667 square feet to 1,130 square feet. The project includes landscaping, parking, play areas, a community garden, bicycle path and greenbelt, and site and frontage improvements (Figure 3.2 – Site Landscaping Plan). The buildings are set back on the property from the road and located closer to the greenbelt. Open space areas are nestled between the buildings. Parking is located along the front of the property and the site is buffered by a landscape strip with evergreen trees and other vegetation. Proposed density is approximately 20 units per acre on the residential parcel.

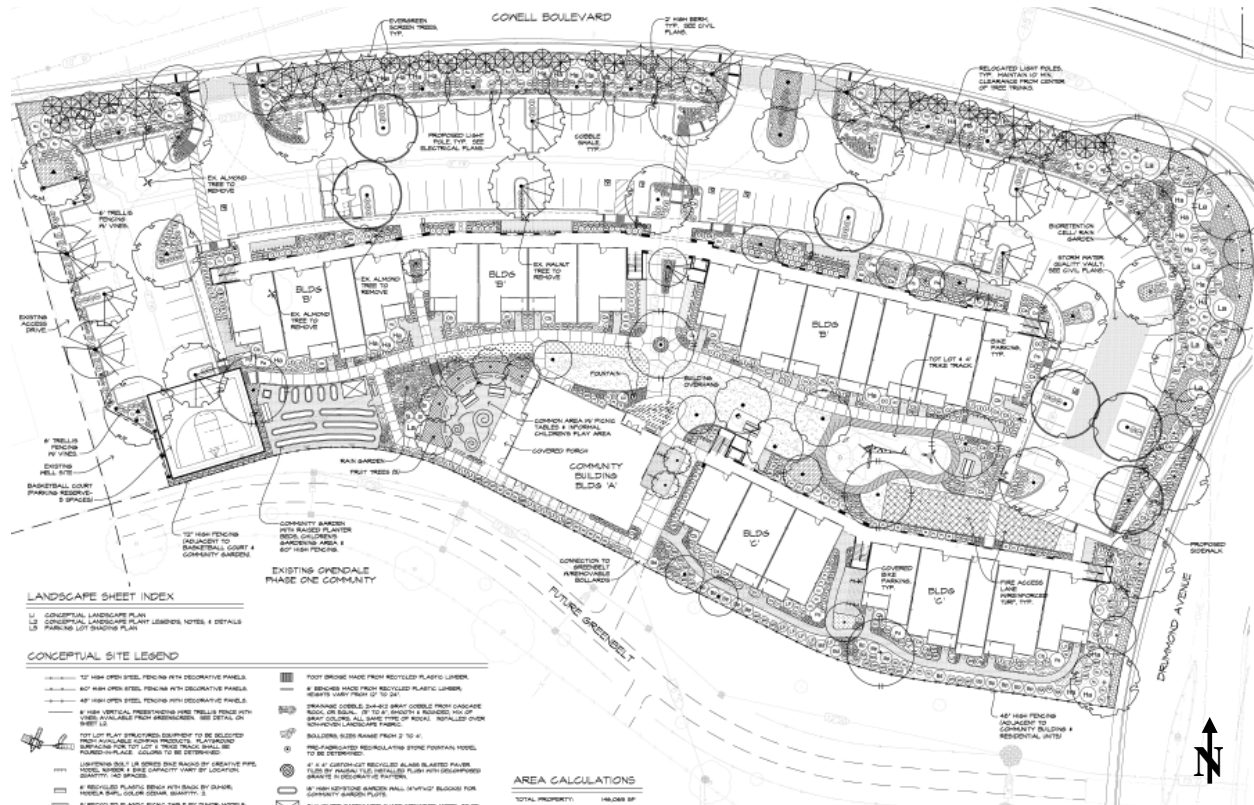


Figure 3.2: Site Plan with Landscaping

The project includes a General Plan Amendment to change the land use designation from “Business Park” to “Residential High Density,” a Rezone of the residential parcel from “Industrial Research” to “Multi-Family,” and a Specific Plan Amendment to reflect the changes. The current zoning allows multi-family uses with a Conditional Use Permit and allows accessory residential uses under the existing land use, the changes are needed to improve consistency. The office parcel would retain its Business Park designation and Industrial Research zoning. The applications include a Minor Modification to allow an increase in the height of the apartment buildings from 38 feet to 41 feet 9 inches.

### 3.2 PROJECT OBJECTIVES

Pursuant to the City’s General Plan Policies, the City Council’s Goals and Objectives, and City requirements in the loan agreement and in the award of the land dedication site to the applicant, SMHA/YMHA, the City has identified the following project objectives:

- Provision of high-quality, long-term affordable housing for the target population of low and very-low income households.
- Efficient use of City funds for the creation of housing units to help the City meet its Regional Housing Needs Allocation requirements.

### 3.3 PROJECT BACKGROUND

During 2000-2001, a 0.75-acre parcel off of Cowell Boulevard was given to the City as a land dedication site as part of the nearby Oakshade Development. The dedication included the requirement to build a minimum of 15 units on it for affordable housing. At the same time an amendment to Planned Development #12-87, Ordinance 2024, was adopted by the City Council adding Multi-Family residential uses to the list of conditional uses for the parcel's Industrial Research zoning district.

The land dedication site borders a vacant property (Lillard parcel) located at the north and southwest corners of Cowell Boulevard and Drummond Avenue. The Lillard parcel consists of two parcels split by Cowell Boulevard, the southern parcel being 2.56 acres and the northern parcel being 1.09 acres. The northern parcel, and surrounding parcels, were once considered for a possible highway interchange, but were not chosen. The Lillard parcel is part of a group of sites adjacent to the freeway that have been designated for Business Park uses, but have remained undeveloped. Although the properties have good highway visibility, the sites lacks good access to the highway for potential customers. In 2004, a Commercial Feasibility Study was prepared for the City by Economics Research Associates and included the subject property which was called the "Lillard Parcel" in the study. The study determined that commercial development of the site was "Highly Infeasible" for most uses. Three uses, automobile dealership, mixed use small office with residential and small office on small parcels, were considered "Somewhat Infeasible."

As a marginal commercial site, it was determined appropriate for the City to consider alternative development of the property. Proximity of the Lillard parcel to the Oakshade land dedication site offered an opportunity to create a larger site that would allow for more feasible affordable housing development, greater amenities, and more efficient use of the site. Potential development of the 0.75-acre Oakshade site by itself presented difficulties. Development to accommodate the 15-unit minimum would be difficult due to its small size, the reduction in economies of scale related to construction costs, its less competitive status in State and Federal funding applications, and operational challenges of a small rental housing project. Other local affordable rental projects that are 15 units or fewer operate at a deficit or barely break even each year on their budgets. Development of this land dedication site on its own, as a 15 unit project, would likely require that the City be the majority or sole investor in completing in the project and it is unlikely that the City would get an equivalent return on its investment due to the small project size.

The project is being proposed as a joint effort between Yolo Mutual Housing Association (YMHA), a local housing non-profit, and Sacramento Mutual Housing Association (SMHA), a

Sacramento-based housing non-profit), two organizations that have recently affiliated as partners. YMHA and SMHA have developed and operate a number of permanently affordable communities. YMHA already owns and operates other affordable housing in the city.

### **3.3.1 Purchase of Lillard Parcel**

At their January 9, 2007 meeting, the City Council approved a loan of \$900,000 for YMHA/SMHA's purchase of the property, based on conditions of affordability for housing developed at the site. The approval included direction to the applicant, City staff, and Planning Commission to analyze and consider during the project review process neighborhood concerns that had been raised at a neighborhood meeting on November 15, 2006. Issues included:

- a) Project density appropriate for traffic and parking issues in the current neighborhood.
- b) Adequate parking for expected residents of the parcels.
- c) Appropriate models of permanently affordable housing for the site.
- d) The impact of the proposed housing development on local schools.
- e) Alternative sites for affordable housing development.
- f) Impacts of the project on the remaining light industrial/business park parcels along Interstate 80.
- g) Traffic impacts from the proposed project on the surrounding neighborhood.

Additionally, the Loan Agreement on the project specified 60 to 70 units in the project. Units were to be affordable to households at 60% and 50% Area Median Income (AMI) and below, with a focus on 50% and below. This model proposed by this project would provide permanent affordable housing at the required income levels. A for-sale housing model would not be feasible to serve the income groups identified for this project. The mutual housing model also provides a sense of ownership and accountability for residents who are encouraged to participate in general decision-making and governance of individual sites. For both YMHA and SMHA residents hold 40-50% of the board positions and Resident Councils at each community meet monthly to make important site-based decisions.

### **3.3.2 Land Dedication Site and Project Funding**

At their July 24, 2007 meeting, the City Council awarded development of the land dedication site to YMHA and SMHA. It allowed the applicant to combine the two sites to develop a larger 69-unit project that provides more open space and greater amenities. The majority of the project would be affordable housing for extremely low and very low income families. Target households served by the project would be 60%, 50%, and 35% of Area Median Income (AMI). The resolution awarding the land dedication included the following requirements.

- a) Project consisting of 15 affordable units, as required by this site, and a minimum of 60 units for the total development of this parcel and the neighboring corner parcel.

- b) Development of this project with the neighboring parcel shall maximize distance from the freeway (to mitigate health and noise impacts), include but not be limited to health and noise mitigations measures such as construction materials, landscaping barriers and a berm, provide accessibility to the greatest extent possible - aiming for complete project accessibility, and maximize energy efficiency aspects throughout the project.
- c) YMHA and SMHA's development of this site and the corner parcel shall incorporate a process that will continue to include outreach to the neighborhood surrounding the land dedication site and to allow for input during the design phases, in an effort to integrate the project into its respective neighborhood.
- d) Construction of this site shall commence no later than October 1, 2009.
- e) Construction of the project shall not commence until YMHA and SMHA can demonstrate that there is adequate financing available for the construction and permanent financing of the project.
- f) As proposed, in combination with the neighboring corner parcel, a minimum of 25 units shall be provide for households at or below 35% of Area Median Income, at least fifty percent of the units shall be provided for very-low income households at or below 50% of Area Median Income, and the remainder of the units shall be provided to households at or below 60% of Area Median Income.

The \$250,000 loan from City HOME funds that was committed to the project in April 2007 has assisted YMHA and SMHA with the predevelopment costs of planning the project (planning application, environmental studies, architectural services, engineering, etc.). In addition to that loan, the City and Redevelopment Agency committed \$5,950,000 to these non-profits in April 2008 as assistance for the completion of the project, subject to the following conditions:

- a) The project must continue neighborhood outreach, obtain planning approvals, address potential impacts of this development on the remaining light industrial/business park parcels along I-80, and address concerns related to potential noise and air quality impacts due to the project's proximity to the freeway.
- b) At least 60 units shall be included in the New Harmony project, with a minimum of 25 extremely low income units (for households at 35% of AMI) and no less than half of total project units as low income units (for households at 50% of AMI). Remaining units shall be provided to households at or below 60% of AMI. All of the units shall remain affordable in perpetuity.
- c) Consistent with the Agency land loan to the project, construction of the project shall start prior to the July 1, 2009 deadline, or this funding commitment will expire and would require renewal by the Agency Board.
- d) YMHA and SMHA must actively pursue other financing options and cost savings opportunities that reduce their dependence on City and Agency assistance whenever

possible, while not compromising the quality of the project, project reserves, or the project's energy efficiency.

- e) Construction of the project shall not commence until YMHA and SMHA can demonstrate that there is adequate funding committed for the project's construction and permanent financing.
- f) All City and Agency legal fees associated with their loans to the New Harmony project and other staff time associated with the project that is not paid for by project planning fees shall be paid for through loan proceeds in an amount not to exceed \$45,000. If portions of this allotment are unused, the City and Agency funding commitment will be reduced by the same amount of unused funds.
- g) Yolo Mutual Housing Association and Sacramento Mutual Housing Association shall take the necessary steps and shall provide adequate documentation during all project phases (planning, construction, and permanent financing) to ensure that one or both of the organizations maintain status as a Community Housing Development Organization, or "CHDO" under the federal HOME program.
- h) The project pro forma shall generally be maintained in accordance with the version submitted with the HOME application, allowing for updates based on construction cost changes and the results of other funding applications. YMHA and SMHA shall maintain its commitment to contributing over a million dollars in equity to the project, deferring at least fifteen percent of the developer fee, and splitting cash developer fee from the project.
- i) The Agency expects that the project will take all necessary steps to avoid returning to the Agency Board for additional funds, including the reduction of project developer fees if project costs exceed budget.
- j) Agency assistance shall be based on City assistance to the project and the two shall not exceed \$5,950,000 in combined loans.

# SECTION 4

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## 4.0 ENVIRONMENTAL SETTING, IMPACTS, AND MITIGATION

### 4.1 INTRODUCTION

This section of the EIR describes potential impacts of the New Harmony Affordable Apartment project related to air quality and noise. Subsections 4.2 and 4.3 describe the focus of the analysis, references and other data sources for the analysis, the environmental setting as it relates to specific issues, project-specific impacts and mitigation measures, and cumulative impacts of the proposed project for each issue area.

#### 4.1.1 Initial Study

As discussed in Section 1.1 of this document, this is a focused EIR based on the City's Program EIR (SCH 199072014) for the 2001 General Plan and the South Davis Specific Plan (SDSP) EIR, certified by the Davis City Council on July 15, 1987, as amended. While this specific project is not identified in General Plan EIR or SDSP EIR, the proposed project is generally consistent with the General Plan, Specific Plan, and proposed zoning and land use designations for the subject parcel.

The Initial Study (Appendix 8.1) prepared for this project as part of this EIR includes a detailed environmental checklist addressing a range of technical environmental issues. For each technical environmental issue, the Initial Study identifies the level of impact for the proposed project. The Initial Study identifies the environmental effects as either "no impact," "less-than-significant," "potentially significant unless mitigation incorporated," or "potentially significant." The Initial Study identified potential impacts related to air quality, biological resources, noise, and traffic/circulation and proposed mitigation measures to reduce impacts to a less than significant level. Subsequent review of the Initial Study determined that the potentially significant air quality and noise impacts required additional environmental analysis due to the project's proximity to Interstate 80. Analysis of the impacts and proposed mitigation measures for biological resources and traffic/circulation was determined to be adequate. This EIR is focused on evaluating the potential significant negative impacts of the project related to air quality and noise. The proposed biological and traffic mitigation measures from the Initial Study have been incorporated in this EIR, but no further analysis has been conducted for those issue areas. Impacts to other resources were determined to be less than significant or to have no impact, and excluded from further study in this EIR.

#### **4.1.1 Determination of Significance**

Pursuant to Public Resources Code Section 21068, under CEQA, a significant effect is defined as a substantial or potentially substantial adverse change in the environment. The Guidelines implementing CEQA direct that this determination be based on scientific and factual data and should rely on established thresholds of significance as described in Section 1.5. The specific thresholds and criteria for determining the significance of a particular impact are identified within the impact discussion in each section.

Analysis of the potential air quality impacts uses thresholds established by Yolo Solano Air Quality Management District (YSAQMD), where applicable, for operational-related and construction-related project impacts, and stationary source emissions. For other potential air quality impacts that do not have established thresholds, YSAQMD and other air quality guidelines are referenced and discussed. Analysis of the potential noise impacts uses standards established by the City of Davis in the General Plan and City Noise Ordinance for acceptable noise levels for different land uses.

#### **4.1.2 Environmental Setting**

##### Regional Setting

The proposed project is in the City of Davis which is located 11 miles west of Sacramento and approximately 79 miles northeast of the City of San Francisco. The City covers approximately 10 square miles and has a population of approximately 64,000 residents. The City is also home to the University of California at Davis (UCD). The area is characterized by agricultural/open space landscapes to the north, west, and south of the city; developed urban landscapes within the City Limits and portions of UCD; and open space lands, including the Yolo Bypass Wildlife Area to the east. The City of Davis is located in Yolo County which is a rich agricultural region in California's Central Valley and Sacramento River Delta area. Interstate Highway 80 cuts through the City running east-southwest. A Union Pacific Rail Line generally parallels the highway on its north side.

##### Project and Area Setting

The project site is a vacant site located at the southwest corner of Cowell Boulevard and Drummond Avenue in south Davis. It consists of two properties. One property is a 0.75-acre parcel owned by the City as a land dedication site (Assessor's Parcel Number (APN): 069-020-85). The other property is a 3.68-acre property previously owned by the Lillard family, referred to as the Lillard parcel. The property is split by Cowell Boulevard into a 2.56-acre parcel on the south side (APN: 069-020-84) and a triangular-shaped 1.16-acre parcel on the north side (APN: 069-020-46). The combined land dedication site and southern portion of the Lillard parcel would compose the proposed residential site and would be 3.38 acres in size after adjustments.

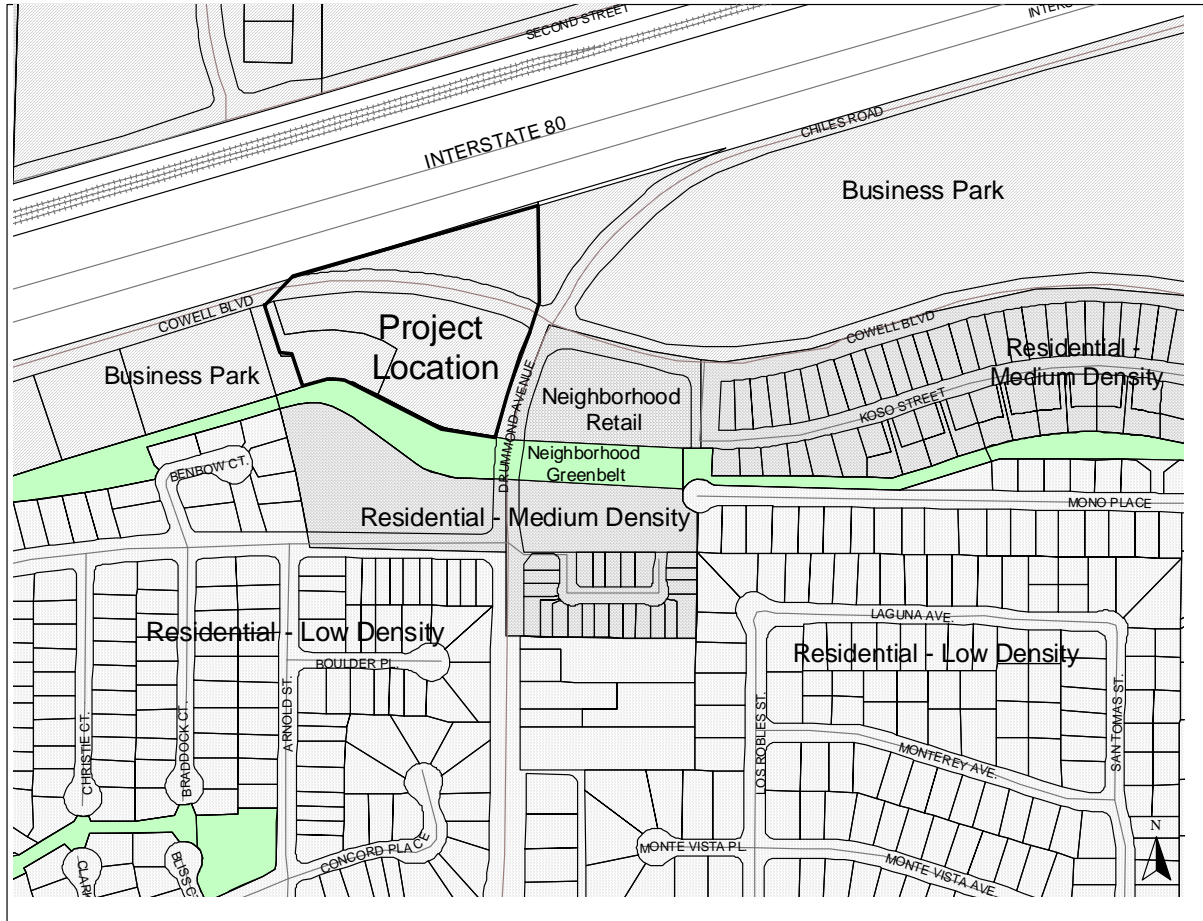
The project site is flat and undeveloped. Vegetation consists primarily of a mix of non-native grasses with several small trees scattered about. The triangular parcel is a disturbed site and contains blacktop remnants of Chiles Road and power lines. Cowell Boulevard runs along the north side of the proposed residential site and Drummond Avenue borders it on the east side. The project site is adjacent to Interstate 80, which runs along the northern property line of the triangular office parcel. The proposed residential parcel is approximately 67 feet to the edge of the highway right-of-way at its closest point and is approximately 122 feet to the nearest travel lane.

#### 4.1.3 Surrounding Land Uses

The site is bounded by a mix of uses and facilities. To the immediate east of the site are several vacant parcels designated for business park, retail, and residential use. One of the sites is the approved Willowcreek Commons site, an attached single-family residential project. The Owendale Community apartments are located south of the site. A commercial/business park site to the west contains a UC Davis bookstore warehouse. A City well site with driveway access borders the site on its western boundary. A designated City bicycle pathway and greenbelt will run along the southern border between the site and the Owendale Community. North of the project site is Interstate 80. Single-family residences surround the general area. Surrounding land uses are summarized in Table 4.1 below and shown in Figure 4.1.

**Table 4.1: Adjacent Zoning and Land Uses:**

	<b>Existing Use</b>	<b>Zoning District</b>	<b>General Plan Designation</b>
<b>Project Site</b>	Vacant	PD 12-87 (Industrial Research)	Business Park
<b>North</b>	Interstate 80	N/A	N/A
<b>South</b>	Owendale Apartments	PD 1-92 (Multi-Family)	Residential – Medium Density
<b>East</b>	Vacant;	PD 6-87 (Office Research); PD 2-02 (Willowcreek Commons)	Business Park; Neighborhood Retail; Residential - Medium Density
<b>West</b>	UCD Warehouse; City Well Site	PD 10-72; PD 12-87	Business Park



**Figure 4.1 Existing General Plan Designations**

## **4.2 AIR QUALITY**

### **4.2.1 INTRODUCTION**

This section describes the impacts of the New Harmony project on local and regional air quality and uses thresholds of significance consistent with the California Air Resources Board and Yolo-Solano Air Quality Management District (YSAQMD) standards and guidelines. This section includes a discussion of the existing air quality in the region; construction-related air quality impacts; impacts from direct and indirect operational emissions associated with the project; an analysis of the carcinogenic, acute, and chronic impacts related to toxic air contaminants and highway vehicle emissions; and mitigation measures necessary to reduce or eliminate any identified significant impacts.

The air quality discussion is based primarily on:

- The Air Quality Analysis and Health Risk Assessment, plus additional information, prepared for the project by LSA Associates, Inc.;
- An evaluation of the project site and local air quality conditions provided by Dr. Thomas Cahill for the City of Davis; and
- The peer review of the LSA report and analysis of the project's air quality health impact provided by Sierra Research Air Quality Consulting for the City of Davis and Sacramento Area Council of Governments.

### **4.2.2 ENVIRONMENTAL SETTING**

#### **Air Pollution Climatology**

Air pollution in the project area is from a combination of natural and man-made sources. Natural and man-made sources of air pollution consist of windblown dust, agricultural operations, fires from prescribed burning and agricultural burning, hydrocarbons emitted from natural vegetation, and other pollutants from mobile and stationary sources. The amount of a given pollutant in the atmosphere is determined by the amount of a pollutant released and the atmosphere's ability to transport and dilute the pollutant. The major determinants of transport and dilution are wind, atmospheric stability, terrain, and for photochemical pollutants, sunshine.

A region's topographic features have a direct correlation with air pollution flow and therefore are used to determine the boundary of air basins. A local air district is then assigned to each air basin and is responsible for providing air quality strategies to bring the air basin into compliance with the National Ambient Air Quality Standards (NAAQS). The proposed project is located in the Sacramento Valley Air Basin (SVAB), which encompasses eleven counties including all of Shasta, Tehama, Glenn, Colusa, Butte, Sutter, Yuba, Sacramento, and Yolo Counties, the westernmost portion of Placer County and the northeastern half of Solano County. The SVAB is

bounded by the North Coast Ranges on the west and Northern Sierra Nevada Mountains on the east. The intervening terrain is relatively flat.

YSAQMD is located within the boundaries of the SVAB. Hot dry summers and mild rainy winters characterize the Mediterranean climate of the SVAB. The prevailing winds are from the south-southeast. Surface or radiation inversions in the region are formed when the ground surface becomes cooler than the air above it during the night. Inversions can create high levels of surface concentrations of pollutants resulting in elevated levels of carbon monoxide (CO) and PM<sub>10</sub> during the winter and high ozone levels during summer and fall.

### Ambient Air Quality Standards

Both the U.S. Environmental Protection Agency (EPA) and the California Air Resources Board (ARB) have established ambient air quality standards for common pollutants. These ambient air quality standards are levels of contaminants which represent safe levels that avoid specific adverse health effects associated with each pollutant. The ambient air quality standards cover what are called “criteria” pollutants. These standards are designed to protect the health and welfare of the populace with a reasonable margin of safety. The standards would have to be exceeded by a large margin or for a prolonged period of time for the health effects to occur. Health effects of criteria pollutants and their potential sources are summarized in Table 4.2. Federal and State standards for ambient air quality are summarized in Table 4.3.

**Table 4.2: Health Effects Summary of the Common Pollutants Found in Air**

Pollutant	Health Effects	Examples of Sources
Particulate Matter (PM <sub>10</sub> : less than or equal to 10 microns)	<ul style="list-style-type: none"> <li>Increased respiratory disease</li> <li>Lung damage</li> <li>Premature death</li> </ul>	<ul style="list-style-type: none"> <li>Cars and trucks, especially diesels</li> <li>Fireplaces, wood stoves</li> <li>Windblown dust from roadways, agriculture, and construction</li> </ul>
Ozone (O <sub>3</sub> )	<ul style="list-style-type: none"> <li>Breathing difficulties</li> <li>Lung damage</li> </ul>	<ul style="list-style-type: none"> <li>Formed by chemical reactions of air pollutants in the presence of sunlight; common sources are motor vehicles, industries, and consumer products</li> </ul>
Carbon Monoxide (CO)	<ul style="list-style-type: none"> <li>Chest pain in heart patients</li> <li>Headaches, nausea</li> <li>Reduced mental alertness</li> <li>Death at very high levels</li> </ul>	<ul style="list-style-type: none"> <li>Any source that burns fuel such as cars, trucks, construction and farming equipment, and residential heaters and stoves</li> </ul>
Nitrogen Dioxide (NO <sub>2</sub> )	<ul style="list-style-type: none"> <li>Lung damage</li> </ul>	<ul style="list-style-type: none"> <li>See carbon monoxide sources</li> </ul>
Toxic Air Contaminants	<ul style="list-style-type: none"> <li>Cancer</li> <li>Chronic eye, lung, or skin irritation</li> <li>Neurological and reproductive disorders</li> </ul>	<ul style="list-style-type: none"> <li>Cars and trucks, especially diesels</li> <li>Industrial sources such as chrome platers</li> <li>Neighborhood businesses such as dry cleaners and service stations</li> <li>Building materials and products</li> </ul>

Source: LSA Associates. *Air Quality Analysis*. (ARB, 2005)

**Table 4.3: Ambient Air Quality Standards (AAQS)**

Pollutant	Unit of Measure	California <sup>1</sup>	National <sup>2</sup>
Ozone	1-Hour	0.09 ppm	—
	8-Hour	0.07 ppm	0.08 ppm
Carbon Monoxide	1-Hour	20.0 ppm	35.0 ppm
	8-Hour	9.0 ppm	9.0 ppm
Nitrogen Dioxide	1-Hour	0.18 ppm	—
	Annual	0.30 ppm	0.05 ppm
Sulfur Dioxide	1-Hour	0.25 ppm	—
	24-Hour	0.04 ppm	0.14 ppm
	Annual	—	0.03 ppm
Coarse Particulate Matter (PM <sub>10</sub> )	24-Hour	50 µg/m	150 µg/m
	Annual Average	20 µg/m	—
Fine Particulate Matter (PM <sub>2.5</sub> )	24-Hour	—	35 µg/m
	Annual Average	12 µg/m	15 µg/m
Sulfates	24-Hour	25 µg/m	—
Lead <sup>4</sup>	30-Day Average	1.5 µg/m	—
	Calendar Quarter	—	1.5 µg/m
Hydrogen Sulfide	1-Hour	0.03 ppm	—
Vinyl Chloride <sup>4</sup>	24-Hour	0.010 ppm	—
Visibility Reducing Particles	8-Hour	<sup>3</sup>	—

<sup>1</sup> California standards for Sulfates, Lead, Hydrogen Sulfide, and Vinyl Chloride are values that are not to be equaled or exceeded. All others are not to be exceeded.

<sup>2</sup> Only the primary standards are established to protect the public health and are the most stringent federal standards. The levels of air quality necessary, with an adequate margin of safety to protect the public health.

<sup>3</sup> In sufficient amount to produce an extinction coefficient of 0.23 per kilometer due to particles when the relative humidity is less than 70 percent.

<sup>4</sup> The ARB has identified lead and vinyl chloride as 'toxic air contaminants' with no threshold level of exposure for adverse health effects determined. These actions allow for the implementation of control measures at levels below the ambient concentrations specified for these pollutants.

ppm = parts per million  
µg/m<sup>3</sup> = micrograms per cubic meter  
Sources: California Air Resources Board (02/22/07), for more information please call ARB-PIO at (916) 322-2990.

Source: YSAQMD, *Handbook for Assessing and Mitigating Air Quality Impacts*.

### Local Air Quality

Ambient air data collected at permanent monitoring stations are used by the EPA to identify regions as "attainment" or "non-attainment" depending on whether the regions met the requirements stated in the primary NAAQS. Attainment areas are required to maintain their status through moderate, yet effective air quality maintenance plan. Non-attainment areas are imposed with additional restrictions as required by the EPA. A region is determined to be unclassified when the data collected from the air quality monitoring stations do not support a designation of attainment or non-attainment, due to lack of information, or a conclusion cannot be made with the available data.

YSAQMD monitors air quality at several locations within their jurisdiction in the Sacramento Valley. The closest multi-pollutant monitoring site to the project site is located in Davis and its air quality trends are representative of the ambient air quality in the project area. The monitored pollutants include CO, O<sub>3</sub>, PM<sub>10</sub>, PM<sub>2.5</sub>, NO<sub>2</sub>, and SO<sub>2</sub>. Table 4.4 summarizes exceedances of State and federal standards at this monitoring site from 2004 through 2006. The one pollutant known to occasionally exceed the State standard in the project area is ozone. Ozone is a regional pollutant and is not determined by proximity to individual sources, but shows a relative uniformity over a region. Thus, the data shown in Table 4.4 for these pollutants provide a good characterization of levels of these pollutants within the project site.

The ambient air quality data in Table 4.4 show that CO, NO<sub>2</sub>, and SO<sub>2</sub> levels are well below relevant State and federal standards. PM<sub>2.5</sub> levels were consistently lower than standards. Ozone and PM<sub>10</sub> levels occasionally exceeded State and federal standards during the last three years. The closest PM<sub>10</sub> and PM<sub>2.5</sub> monitoring station is located in Woodland; the closest SO<sub>2</sub> monitoring station is located in Vallejo.

**Table 4.4: Ambient Air Quality at the Davis Air Monitoring Station**

Pollutant	Standard	2004	2005	2006
<b>Carbon Monoxide (CO)</b>				
Maximum 1 hour concentration (ppm)		1.6	0.9	0.9
Number of days exceeded:	State: > 20 ppm	0	0	0
	Federal: > 35 ppm	0	0	0
Maximum 8 hour concentration (ppm)		1.0	0.7	0.5
Number of days exceeded:	State: > 9 ppm	0	0	0
	Federal: > 9 ppm	0	0	0
<b>Ozone (O<sub>3</sub>)</b>				
Maximum 1 hour concentration (ppm)		0.092	0.097	0.105
Number of days exceeded:	State: > 0.09 ppm	0	1	3
	Federal: > 0.08 ppm	0	0	1
Maximum 8 hour concentration (ppm)		0.075	0.080	0.094
Number of days exceeded:	State: > 0.07 ppm	0	0	1
	Federal: > 0.08 ppm	0	0	1
<b>Coarse Particulates (PM<sub>10</sub>) (Woodland-Gibson Road closest monitoring station)</b>				
Maximum 24 hour concentration (µg/m <sup>3</sup> )		169	59	77
Number of days exceeded:	State: > 50 µg/m <sup>3</sup>	13	1	6
	Federal: > 150 µg/m <sup>3</sup>	1	0	0
Annual arithmetic average concentration (µg/m <sup>3</sup> )		35	24	25
Exceeded for the year:	State: > 20 µg/m <sup>3</sup>	Yes	Yes	Yes
	Federal: > 50 µg/m <sup>3</sup>	No	No	No
<b>Fine Particulates (PM<sub>2.5</sub>) (Woodland-Gibson Road closest monitoring station)</b>				
Maximum 24 hour concentration (µg/m <sup>3</sup> )		36	35	44
Number of days exceeded:	Federal: > 65 µg/m <sup>3</sup>	0	0	0
	State: > 12 µg/m <sup>3</sup>	No	No	No
Annual arithmetic average concentration (µg/m <sup>3</sup> )		10.4	8.4	9.3
Exceeded for the year:	State: > 12 µg/m <sup>3</sup>	No	No	No
	Federal: > 15 µg/m <sup>3</sup>	No	No	No
<b>Nitrogen Dioxide (NO<sub>2</sub>)</b>				
Maximum 1 hour concentration (ppm)		0.057	0.043	0.045
Number of days exceeded:	State: > 0.25 ppm	0	0	0
	Federal: > 0.053 ppm	No	No	No
Annual arithmetic average concentration (ppm)		0.009	0.009	0.009
Exceeded for the year:	State: > 0.053 ppm	No	No	No
	Federal: > 0.053 ppm	No	No	No
<b>Sulfur Dioxide (SO<sub>2</sub>) (Vallejo-Tuolumne Street closest monitoring station)</b>				
Maximum 1 hour concentration (ppm)		0.016	0.011	0.016
Number of days exceeded:	State: > 0.25 ppm	0	0	0
	Federal: > 0.5 ppm	0	0	0
Maximum 3 hour concentration (ppm)		0.011	0.008	0.012
Number of days exceeded:	State: > 0.04 ppm	0	0	0
	Federal: > 0.14 ppm	0	0	0
Maximum 24 hour concentration (ppm)		0.005	0.005	0.004
Number of days exceeded:	State: > 0.04 ppm	0	0	0
	Federal: > 0.14 ppm	0	0	0
Annual arithmetic average concentration (ppm)		0.002	0.002	0.001
Exceeded for the year:	State: > 0.030 ppm	No	No	No
	Federal: > 0.030 ppm	No	No	No

ppm = parts per million      µg/m<sup>3</sup> = micrograms per cubic meter

Source: LSA Associates. *Air Quality Analysis*. (ARB and EPA, 2007)

### 4.2.3 REGULATORY CONTEXT

Regulation of air quality is achieved through both federal and State ambient air quality standards and emission limits for individual sources of air pollutants.

#### Federal Regulations

The federal Clean Air Act (CAA) and the California CAA of 1988 require that the California Air Resources Board, based on air quality monitoring data, designate portions of the State where the

federal or State ambient air quality standards are not met as “non-attainment areas.” Because of the differences between the national and State standards, the designation of non-attainment areas is different under the federal and State legislation. Generally, the State standards for these pollutants are more stringent than the federal standards.

The project site is located within the Yolo-Solano Air Quality Management District which is part of the Sacramento Valley Air Basin and designated by the U.S. Environmental Protection Agency (EPA) as the Sacramento Federal Ozone Non-Attainment Area. The non-attainment area consists of all of Sacramento and Yolo counties, and parts of El Dorado, Solano, Placer and Sutter counties. Air quality within YSAQMD violates the federal 8-hour ozone standard and is summarized in Table 4.5 below.

**Table 4.5: Attainment Status for the Yolo-Solano AQMD**

Pollutant	Averaging Time	State Standards	National Standards
Ozone	1-Hour	Non-attainment	N/A
	8-Hour	Non-attainment	Non-attainment
Carbon Monoxide	1-Hour	Attainment	Unclassified/Attainment
	8-Hour	Attainment	Unclassified/Attainment
Nitrogen Dioxide	1-Hour	Attainment	N/A
	Annual	N/A	Attainment
Sulfur Dioxide	1-Hour	Attainment	N/A
	24-Hour	Attainment	Attainment
	Annual	N/A	Attainment
Coarse Particulate Matter (PM <sub>10</sub> )	24-Hour	Non-attainment	Unclassified
	Annual Average	Non-attainment	N/A
Fine Particulate Matter (PM <sub>2.5</sub> )	24-Hour	N/A	Unclassified
	Annual Average	N/A	Unclassified
Sulfates	24-Hour	Attainment	N/A
Lead	30-Day Average	Attainment	N/A
	Calendar Quarter	N/A	Attainment
Hydrogen Sulfide	1-Hour	Attainment	N/A
Vinyl Chloride	24-Hour	Attainment	N/A
Visibility Reducing Particles	8-Hour	Attainment	N/A

Notes: N/A – not applicable, state or federal standard does not exist for the combination of pollutant and averaging time. Unclassified areas are those for which air monitoring has not been conducted but which are assumed to be in attainment.  
Source: California Air Resources Board State and National Area Designation Maps ([www.arb.ca.gov/desig/adm/adm.htm](http://www.arb.ca.gov/desig/adm/adm.htm))

Source: YSAQMD, *Handbook for Assessing and Mitigating Air Quality Impacts*.

The 1994 Sacramento Regional Clean Air Plan was developed cooperatively with all the districts in the Sacramento Region (e.g., El Dorado APCD, Feather River AQMD, Placer County APCD, Sacramento Metropolitan AQMD, and Yolo-Solano AQMD). The Clean Air Plan was adopted in 1994 in compliance with the 1990 Amendments to the Federal Clean Air Act. The plan identified a detailed comprehensive strategy for reducing emissions to the level needed for attainment and showed how the region would make progress toward meeting this goal.

The U.S. Environmental Protection Agency established new national air quality standards for groundlevel ozone and for fine particulate matter in 1997. The 1-hour ozone standard was phased out and replaced by an 8-hour standard of 0.08 ppm. Implementation of the 8-hour standard became effective in July 2005. New national standards for fine Particulate Matter (diameter 2.5 microns or less) were adopted for 24-hour and annual averaging periods. An update to the Clean Air Plan is in progress to address the new 8-hour ozone standard and the associated control strategies that would be required to meet the new standards. The Clean Air Plan is expected to be finalized by the end of 2008.

### **State Regulations**

The California Air Resources Board (ARB) is California's air quality management agency and regulates mobile emission sources and oversees the activities of County Air Pollution Control Districts (APCDs) and regional Air Quality Management Districts (AQMDs). ARB regulates local air quality indirectly using State standards and vehicle emission standards, by conducting research activities, and through its planning and coordinating activities.

Under the California Clean Air Act areas are designated as attainment or non-attainment with respect to State standards. California has adopted ambient standards that are in some cases more stringent than the federal standards for the criteria air pollutants. This is particularly true for ozone and particulate matter. Air quality within YSAQMD violates state standards for ozone and for particulate matter (PM<sub>10</sub>) and is summarized in Table 4.5 above.

### Toxic Air Contaminants

In addition to the criteria pollutants discussed above, Toxic Air Contaminants (TACs) are another group of pollutants of concern. TACs are injurious in small quantities and are regulated by the EPA and ARB despite the absence of criteria documents. Some examples of TACs include: benzene, butadiene, formaldehyde, and hydrogen sulfide. The identification, regulation and monitoring of TACs is relatively recent compared to that for criteria pollutants.

In 1998, ARB identified particulate matter from diesel-fueled engines as a toxic air contaminant. ARB has completed a risk management process that identified potential cancer risks for a range of activities using diesel-fueled engines. High volume freeways, stationary diesel engines, and facilities attracting heavy and constant diesel vehicle traffic (distribution centers, truck stops) were identified as having posing the highest risk to adjacent receptors. Other facilities associated with increased risk include warehouse distribution centers, large retail or industrial facilities, high volume transit centers or schools with a high volume of bus traffic. Health risks from TACs are a function of both concentration and duration of exposure.

### Air Quality and Land Use Handbook

ARB has also developed an *Air Quality and Land Use Handbook*, which is intended to serve as a general reference guide for evaluating and reducing air pollution impacts associated with new projects that go through the land use decision-making process. The ARB handbook recommends that planning agencies strongly consider the proximity of air pollution sources when finding new locations for "sensitive" land uses such as homes, medical facilities, daycare centers, schools and playgrounds.

Air pollution sources of concern include freeways, rail yards, ports, refineries, distribution centers, chrome plating facilities, dry cleaners and large gasoline service stations. Key recommendations in the Handbook include taking steps to avoid siting new, sensitive land uses (including residences, day care centers, playgrounds or medical facilities):

- Within 500 feet of a freeway, urban roads with 100,000 vehicles / day or rural roads with 50,000 vehicles / day;
- Within 1,000 feet of a major service and maintenance rail yard;
- Immediately downwind of ports (in the most heavily impacted zones) and petroleum refineries;
- Within 300 feet of any dry cleaning operation (for operations with two or more machines, provide 500 feet); or
- Within 300 feet of a large gas station (defined as a facility with a throughput of 3.6 million gallons per year or greater).

For instance, studies have demonstrated elevated health risks associated with proximity to high traffic roadways. The Handbook specifically states that these recommendations are advisory and acknowledges land use agencies have to balance other considerations, including housing and transportation needs, economic development priorities, and other quality of life issues.

### **Local Regulations**

Yolo-Solano Air Quality Management District is responsible for implementing emission standards and other requirements of federal and State laws in Yolo County. The Yolo-Solano Air Quality Attainment Plan (1992) addresses the requirement to attempt to bring the district into compliance with the federal and State ambient air quality standards. The plan includes strategies for reduction of air pollutants through public involvement, by encouraging compliance, and through public education. YSAQMD also published a *Handbook for Assessing and Mitigating Air Quality Impacts* to provide guidelines for determining air quality thresholds and mitigation measures for proposed development projects. The handbook also references ARB's recommendations to avoid siting new, sensitive land uses near sources of pollution.

The City of Davis General Plan contains goals and policies for air quality that include:

**Goal Air 1.** Maintain and strive to improve air quality

**Policy Air 1.1.** Take appropriate measures to meet the AQMD's goal for improved air quality.

Recommended actions in the General Plan include participating in regional air quality planning activities, working with various air quality groups and agencies, and implementing transit- and pedestrian-oriented land use and design strategies.

#### **4.2.4 IMPACTS AND MITIGATION MEASURES**

##### **Standards of Significance**

The YSAQMD air quality handbook and State CEQA Guidelines state that a project would normally have a significant adverse air quality impact if project-generated pollutant emissions would:

- a) Conflict with or obstruct implementation of the applicable air quality plan;
- b) Violate any air quality standard or contribute substantially to an existing or projected air quality violation;
- c) Result in a cumulatively considerable net increase of any criteria pollutant for which the project is non-attainment under applicable federal or state ambient air quality standards (including releasing emissions, which exceed quantitative thresholds for ozone precursors);
- d) Expose sensitive receptors to substantial pollutant concentrations; or
- e) Create objectionable odors affecting a substantial number of people.

Sensitive receptors are defined as facilities where sensitive population groups (children, elderly, acutely and/or chronically ill) are likely to be located. These land uses include residences, schools, playgrounds, child care centers, retirement homes, convalescent homes, hospitals, and medical clinics.

##### Criteria Pollutants

Air pollutants associated with a project can be short-term emissions from construction activities and long-term emissions from occupation and operation of the land use, as well as from related vehicle trips and increased traffic impacts. Operational emissions can be direct stationary sources and indirect mobile sources.

The YSAQMD has established numeric thresholds of significance in its CEQA Air Quality Handbook (2007) to evaluate the air quality impacts of operations, mobile sources, and construction activities of a project. Pollutants from these sources contribute to the deterioration of air quality and potentially prevent the region from achieving compliance with air quality

standards. The thresholds are based on amount of ROG, NOX, and PM<sub>10</sub> emissions that would be produced. Motor vehicles are the major source of ozone through emission of reactive organic gasses (ROG) and nitrogen oxides (NOX), which are precursor components of ozone. PM-10 sources primarily derive from construction, demolition, farming activities and road dust. The thresholds are 10 tons per year of ROG, 10 tons per year of NOX, and 80 pounds per day of PM<sub>10</sub>. Projects with related emissions that exceed any of the emission thresholds are considered significant by YSAQMD.

The significance of localized project impacts depends on whether ambient CO levels in the vicinity of the project are above or below State and federal CO standards. If ambient levels are below the standards, a project is considered to have significant impacts if project emissions result in an exceedance of one or more of these standards. California standards for CO are as follows: 20.0 ppm for 1-hour and 9.0 ppm for 8-hours.

The YSAQMD Handbook also identifies examples of projects that would be expected to exceed these thresholds of significance based on size characteristics. For a low-rise apartment project, it is 345 units. For an office building, it is 870,000 square feet. Similar projects falling under these size categories are not expected to exceed District thresholds for ROG, NOX, and PM<sub>10</sub>. These hypothetical examples are intended as a screening tool to estimate operational emissions only. Projects that do not exceed operational thresholds may still exceed thresholds during construction.

The proposed project for 69 units on the proposed residential parcel is well under the screening threshold for operational emissions. Development on the triangular, office parcel is currently undetermined and not included in this project. However, potential development of the 1.16-acre, office parcel could not accommodate a building that meets or exceeds the screening threshold. The Business Park designation limits the floor area ratio of a building to no more than 50 percent of the site. An Air Quality Analysis was prepared for the project by LSA Associates to provide site-specific analysis.

The analysis used Urban Emission Model (URBEMIS 2007) software to model potential long-term operational emissions associated with the proposed project as well as construction-related emissions. It provides detailed information on expected project emissions. Results were compared against YSAQMD emission thresholds to determine significance and are included as an appendix to the LSA Air Quality Analysis.

#### Cumulative Threshold

YSAQMD considers development projects cumulatively significant if project emissions (ROG, NOx or PM10) are individually significant. CO impacts are cumulatively significant when

modeling shows that the combined emissions from the project and other existing and planned projects (i.e., background concentration) will exceed air quality standards.

#### Odors

Projects can also create objectionable odors that can be a nuisance and cause distress. The general nuisance rule (H&SC §41700 and District Rule 2.5) is the basis for this threshold. A project may reasonably be expected to have a significant adverse odor impact where it “generates odorous emissions in such quantities as to cause detriment, nuisance, or annoyance to any considerable number of persons or to the public, or which may endanger the comfort, repose, health, or safety of any such person or the public, or which may cause, or have a natural tendency to cause, injury or damage to business or property.”

#### Toxic Air Contaminants

In addition to pollutants produced by the project, potential exposure of sensitive receptors to air pollutants is a concern. The residential units are considered a sensitive receptor. Exposure to pollutants from certain manufacturing processes and particulate emissions from diesel engines pose a cancer risk and are considered Toxic Air Contaminants (TACs). The YSAQMD Handbook establishes thresholds of significance for exposure to TACs from stationary sources. Exposure from stationary sources in excess of the following thresholds would be considered a significant air quality impact:

- Probability of contracting cancer for the Maximally Exposed Individual (MEI) equals to 10 in one million ( $1 \times 10^{-5}$ ) or more; and
- Ground-level concentrations of non-carcinogenic toxic air contaminants would result in a Hazard Index equal to 1 for the MEI or greater.

The Handbook notes that these thresholds are used for stationary sources, but do not address TACs from mobile sources. The Air Quality District has no permitting authority or other regulatory authority over mobile sources and there is currently no specific mobile source TAC threshold. The YSAQMD Handbook cites the California Air Resources Board (ARB) which recommends avoiding the siting of sensitive land uses such as housing within 500 feet of freeways. Studies have shown that sensitive uses within this distance risk substantial exposure to toxic air contaminants (TACs). California’s Office of Environmental Health and Hazard Assessment (OEHHA) has determined that exposure to TACs from mobile sources poses cancer risks and may cause other health problems to nearby residents.

#### Exposure to Mobile Source Emissions

The proposed residential parcel is located over 100 feet from the nearest travel lane of Interstate 80. The entire site is within 500 feet of the freeway and the nearest building would be approximately 200 feet away from the travel lane. ARB specifically states in its Air Quality

Land Use Handbook that their recommendations against siting residential land uses within 500 feet of high-traffic roadways and freeways is advisory. It acknowledges that local agencies must also balance other considerations, such as housing and transportation needs, economic development, and other quality of life issues.

ARB has not provided specific thresholds of significance for TACs from mobile sources. As a result, the Air District recommends that facilities within the distance threshold are considered to be exposed to an elevated health risk requiring further analysis. To determine the health risk for the project site, LSA conducted a health risk analysis using ARB's health risk model, HARP, which includes the EPA dispersion model ISCST3. The model provides a detailed estimate of concentrations considering site and source geometry, source strength, distance to receptor, and site-specific meteorological data.

While the 10 in one million threshold for stationary sources serves as a guideline when considering exposure risks to mobile source emissions, it is not a strict threshold for mobile sources. The authority to determine the impact significance falls to the Lead Agency and may include consideration of site-specific factors and the overall context.

#### Health Risk Assessment

An Air Quality Analysis was prepared by LSA Associates to examine the potential impacts related to the project. The analysis included a site-specific Health Risk Assessment (HRA) to evaluate the health risks for potential residents of the project because of the site's proximity to the highway. As discussed above, stationary source emissions are regulated and YSAQMD has established thresholds for stationary sources based on their Risk Management Policy, but mobile sources are not covered by the policy. An HRA estimates if current or future exposures will result in health risks to a broad population. Epidemiological studies look at past exposure and try to link that exposure, often in a population, to a disease. The HRA is intended to present the best data available about the potential risks and to be used as an informational document for decision-makers. It addresses chronic and acute impacts in a cumulative sense but cannot quantify the non-cancer impacts, such as additional cases of childhood asthma, over the long-term.

#### **Impacts from Construction Emissions**

The project does result in an increase in short-term construction-related emissions. URBEMIS results from the Air Quality Analysis for construction-related emissions for ROG, NOX, and PM<sub>10</sub> do not exceed the district thresholds. In addition, standard City conditions for construction activities address construction-related emissions and ensure that potential impacts are less than significant. Results are summarized in the Table 4.6 below.

**Table 4.6: Project Construction Emissions (2008)**

	ROG (tons/year)	NOX (tons/year)	PM <sub>10</sub> (lbs/day)
Office Development Emissions	0.73	2.01	19.33
Apartment Development Emissions	0.83	2.34	25.03
YSAQMD Threshold	10	10	80

Additionally, large heavy-duty, diesel-powered equipment can produce toxic air pollutants during construction. In the short-term, diesel exhaust can cause eye, nose, and throat irritation, headaches, and tightness of the chest. However, these are not generally considered severe effects and are not permanent. Construction activity will be short-term and there are no sensitive receptors in the immediate vicinity of the project that would require additional analysis. Therefore, impacts are considered **less than significant**.

#### **Impacts from Operational Emissions**

Long-term impacts are associated with stationary and mobile sources. The project will contribute ROG and NOX (two ozone precursors) and PM<sub>10</sub> from the consumption of natural gas and electricity for the residential and office activity and from new vehicle trips generated by the uses. The URBEMIS results indicate that the project would not exceed the YSAQMD emissions threshold for apartment and office development. Results are summarized in Table 4.7 below. Therefore, impacts to air quality from operational emissions are considered **less than significant**.

**Table 4.7: Project Operational Emissions (2008)**

	ROG (tons/year)	NOX (tons/year)	PM <sub>10</sub> (lbs/day)
Office Development Emissions	1.47	2.23	11.45
Apartment Development Emissions	1.88	1.50	16.62
YSAQMD Threshold	10	10	80

#### **Impacts from Carbon Monoxide**

The proposed project would not result in a violation of state ambient air quality standards for CO based on the YSAQMD screening threshold. Vehicular trips associated with the project will contribute to congestion at intersections and roadways in the project area. Concentration of carbon monoxide from vehicle idling time and traffic flow conditions is a potential impact if it reaches unhealthy levels. High carbon monoxide levels are generally associated with unacceptable levels of service or extremely high traffic volumes. According to the Traffic Impact Analysis prepared for the project KD Anderson & Associates, the project will not reduce the nearby intersections or roadway segments to unacceptable levels of service and would not create

any “hot spots” or any significant traffic congestion or delays. Therefore, the project is considered to have a **less than significant impact**.

### **Impacts on Climate Change**

The project produces greenhouse gases that can impact the climate and contribute to global warming. Impacts to the project by climate change would not be specific to the project, but would be expected to impact the region as a whole. As of yet there are no established measures or requirements for individual projects to address the hazards of climate change that could include changes in water supply and quality, extreme weather events, changes in rainfall patterns.

Greenhouse gas emissions from the project are produced from the materials and construction of the project, energy usage for normal activities, and vehicle emissions. However, information and thresholds are not yet available to determine the incremental impact of a project. The City is in the process of determining baseline information and formulating policies to address the City’s contribution to climate change. The project is consistent with General Plan policies for land use, circulation, air quality that seeks to coordinate land use and transportation planning and encourage alternatives automobile transportation and a reduction in vehicle usage. Standard City requirements for stormwater drainage, water conservation, energy efficiency, and the recently adopted Green Building Ordinance help to reduce potential impacts. Although the project would have an incremental contribution within the context of the City and region, the individual impact is considered **less than significant**.

### **Cumulative Air Quality Impacts**

Other projects within the city will be under construction simultaneously with the proposed project. Generation of fugitive dust and pollutant emissions from cumulative construction activities for this and other projects may result in short-term increases in air pollutants. Within the vicinity of the project, there is one approved project for 21 single-family units (Willowcreek Commons) on a 2-acre vacant parcel located to the immediate east of the project site. No significant air quality impacts related to the project were identified during review of that project. The site is not currently under construction and it is unknown when development of the site will take place, but construction could potentially occur simultaneously.

Implementation of standard requirements and best management practices during construction for this and other projects would reduce cumulative construction impacts to a less than significant level. YSAQMD considers projects that are considered individually less than significant to be cumulatively less than significant. Operational emissions from the project are not significant. The project would also be consistent with the General Plan which adopted a statement of

significant but unavoidable impacts relative to air quality. Therefore, the proposed project is considered to have a **less than significant cumulative impact** on air quality and climate change.

### **Odor Impacts**

The proposed project is a residential project with future potential office uses on the undeveloped lot. There are no objectionable odors associated with these uses. The site is surrounded by other residential and commercial uses. There may be odors associated with construction equipment, but the activity is temporary and short-term. Therefore, the project is considered to have a **less than significant impact**.

### **Air Quality Health Impacts**

According to the Air Quality Analysis prepared by LSA Associates, the proposed project is not expected to generate any Toxic Air Contaminants (TACs) that would result in significant air quality impacts. Additionally, surrounding land uses are residential or office/warehouse in nature and there are no nearby stationary sources of TACs that would adversely impact sensitive receptors. However, traffic on I-80 and local streets emit TACs in diesel exhaust which has been determined to pose cancer risks and other non-cancer-related health problems. The Air Quality Analysis included a Health Risk Assessment (HRA) to determine the risk to residents of the project from diesel exhaust particulates.

#### Health Risk Assessment (HRA)

The Health Risk Assessment by LSA Associates was conducted as recommended by OEHHA Guidelines and by ARB. The assessment looked at existing PM<sub>10</sub> emission rates using traffic data for I-80, determined the PM<sub>10</sub> concentrations, and translated the concentrations to health risk values. The methodology assumes 100 percent outdoor air exposure 24 hours-a-day for a 70-year period. It determined the acute emission impacts and the carcinogenic and chronic impacts of the project.

#### HRA Methodology

The HRA includes assumptions that are consistent with OEHHA guidelines. It produces health-protective results. The results assume exposure to outdoor air will be 24-hours a day, 350 days a year for a 70-year period. In its conclusions, the Air Quality Analysis prepared for the project discusses some of the mitigating factors. It does not take into account that people in residential dwellings spend most of their time indoors. One report to ARB estimated that the average individual spent 22.5 hours per day indoors. Indoor air quality can be made much cleaner than outdoor air with the use of filters. Additionally, the 70-year period is based on a lifetime residency. However, the U.S. EPA estimates that the average residence time is 9 years. The Air Quality Analysis concludes that *“the exposure estimate likely overstates the potential increased health risk for residents.”*

The HRA also uses 2008 emission rates that do not take into account anticipated technological improvements that would occur over the 70-year period of analysis and potentially lower the exposure risk. The risk from diesel PM is expected to decrease over time. ARB has developed the “Risk Reduction Plan to Reduce Particulate Matter Emissions from Diesel-Fueled Engines and Vehicles,” which sets a goal of 75% reduction of diesel PM by 2010 and an 85% reduction by 2002. For example, when anticipated emission rates for 2020 were used in the HRA for the project, it resulted in an exposure risk of only 3.8 in one million. However, as previously stated future reductions in emissions from technological improvements could be offset by increased traffic. For this reason, the risk is calculated more conservatively. Even if technological improvements are discounted, a reduced exposure period for residents at this site to a more realistic amount and systems that improve indoor air would substantially reduce the exposure risk results.

### **Acute Emissions Impacts**

Exposure to diesel exhaust can have immediate health effects causing irritation of the eyes, nose, throat, and lungs, and other effects. It can also aggravate chronic respiratory symptoms and asthma attacks. However, according to Air Quality Analysis, the available data from studies of humans exposed to diesel exhaust are not sufficient for deriving an acute noncancer health risk guidance value. While the lung is a major target organ for diesel exhaust, studies of the gross respiratory effects of diesel exhaust in exposed workers have not provided sufficient exposure information to establish a short-term noncancer health risk guidance value for respiratory effects. The maximum acute hazard index for the project was calculated as  $2.6 \times 10^{-4}$ .

### **Carcinogenic and Chronic Impacts**

According to studies, long-term exposure to diesel exhaust particles poses the highest cancer risk of any toxic air contaminant. ARB estimates that in 2000 the overall cancer risk due to all toxic air contaminants monitored in the Sacramento Valley Air Basin was 520 in one million. The cancer risk from diesel PM alone was 360 in one million. These existing levels are generally considered high and unhealthy. Any added exposure risk from the proposed project would be in addition to already high levels. Improvements to diesel fuel and diesel engines have already reduced emissions of some contaminants and when fully implemented are expected to lower emissions substantially. However, reductions in emissions from fuel and engine improvements may be offset by increased vehicle miles. The HRA calculated the carcinogenic risk on the project site at different distances from the highway. Results are detailed in Table 4.8.

**Table 4.8: Carcinogenic Risk at Different Distances from the Highway ROW**

Measurement Location	Approximate Distance from Highway ROW	Carcinogenic Inhalation Health Risk
Fenceline of Office Parcel at Edge of Highway ROW	0 feet	16.0 in 1 million
Northern Property Line of Residential Parcel	67 feet	9.0 in 1 million
Edge of Nearest Proposed Residential Building	166 feet	7.6 in 1 million

No residential and no development is currently proposed on the office parcel adjacent to the highway. Table 4.9 summarizes the results of the HRA for residents on the proposed residential parcel. It shows that the maximum exposed individual (MEI) inhalation cancer risk associated with living at the proposed development for 70 years would be exposed to an inhalation cancer risk of 9 in 1 million. The maximum chronic hazard index would be 0.010.

**Table 4.9: Inhalation Health Risks from Vehicle Sources on I-80**

	Carcinogenic Inhalation Health Risk	Chronic Inhalation Health Index	Acute Inhalation Health Index
MEI onsite	9 in 1 million	0.010	$2.6 \times 10^{-4}$

While no established thresholds currently exist to evaluate the impacts from mobile source emissions, the thresholds for stationary source discussed above provide a reference point. Indices for chronic inhalation, 0.010, and acute inhalation,  $2.6 \times 10^{-4}$ , both fall well below the YSAQMD noncarcinogenic hazard index of 1.0 for stationary sources and their potential impacts would be considered **less than significant**.

The carcinogenic inhalation risk of 9 in one million also falls below the stationary source threshold of 10 in one million. Additional considerations are the health-protective assumptions in the HRA methodology, the measures that have been incorporated in the project design to minimize exposure to vehicle exhaust. It includes trees and vegetation buffers, setbacks, and site design, and meteorological conditions such as the prevailing winds from the south that generally favor the site. Therefore, the potential impact of exposure to cancer-causing TACs would be considered **less than significant**.

### Proximity to Freeway Health Impacts

The YSAQMD Handbook, consistent with ARB guidelines, recommends avoiding locating new, sensitive land uses within 500 feet of freeways because of potential health impacts. The

ARB Land Use Handbook notes that traffic-related studies have shown that an additional non-cancer health risk attributable to proximity was seen within 1,000 feet of freeways and was strongest within 300 feet. Studies have reported associations between residential proximity to high traffic roadways and a variety of respiratory symptoms, asthma exacerbations, and decreases in lung function in children. California freeway studies show about a 70% drop off in particulate pollution levels at 500 feet. The key finding in the studies is that proximity increases both exposure and the potential for adverse health effects. Children are a particularly sensitive group because of their developmental stage.

The findings from the various studies are consistent with air quality modeling and risk analyses done by ARB staff that show an estimated range of potential cancer risk that decreases with distance from freeways. The estimated risk varies with the local meteorology, including wind pattern. As an example, the ARB Handbook noted that 300 feet downwind from a freeway (Interstate 80) with truck traffic of 10,000 trucks per day, the potential cancer risk was as high as 100 in one million (ARB Roseville Rail Yard Study). The cancer health risk at 300 feet on the upwind side of the freeway was much less. The risk at that distance for other freeways will vary based on local conditions – it may be higher or lower. However, in all these analyses the relative exposure and health risk dropped substantially within the first 300 feet.

The combination of the children's health studies and the distance-related findings suggests that it is important to avoid exposing children to elevated air pollution levels immediately downwind of freeways and high traffic roadways. These studies suggest a substantial benefit to a 500-foot separation. However, the 500-foot distance from freeways is a guideline for initial project screening. Developments farther away can still have significant exposure impacts while sites within 500 feet might have minimal exposure impacts. Being closer to the freeway does not necessarily mean that the impacts will be greater. Some studies have shown that concentrations can be greater farther from the freeway depending on meteorology and because emissions blown out the stack of a truck stay elevated for a while before they start to descend to ground level. The impact of traffic emissions is on a gradient that at some point becomes indistinguishable from the regional air pollution problem. A distance threshold is an artificial line that would not take into account site-specific conditions. An HRA is necessary to evaluate the specific site and to calculate the exposure risks. The HRA results for the proposed New Harmon project indicate that potential impacts are less than significant.

#### *Gauderman et. al. Study*

During public hearings on the project and the Initial Study, concerns were raised about the health impacts to future residents of the project. Specific concerns about children were cited and a recent study published by Gauderman et. al. in 2007 was referenced. This study examined the effect of exposure to traffic on the lung development of children in 12 southern California

communities. The study found that children living within 500 meters (1,640 feet) of a freeway had substantial deficits in lung-function development compared with children living at least 1500 meters from a freeway. This was independent of regional air quality.

This study confirms findings from other studies cited or commissioned by ARB that have shaped California's air quality standards and rules. Despite these studies, there is little information on how to quantify the adverse health impacts from living near highways and consequently there are no clear thresholds. The basic guideline is that residential development adjacent to highways should be generally avoided, but when it is proposed site-specific studies should be done to evaluate the health risks.

#### *Cahill Analysis*

Additional independent analysis of the project's air quality impacts was performed by Dr. Thomas Cahill on behalf of the City and is included in the Appendix 8.5 and 8.6. Dr. Cahill provided data and expert opinion on local air quality characteristics based on numerous studies he has conducted in the Davis and Sacramento area. Dr. Cahill is a scientist associated with the University of California at Davis. He specializes in airborne particulates and climate studies and has published numerous air quality studies.

In his analysis, Dr. Cahill determined that the impact of Interstate 80 on the New Harmony project site would be minor. He noted that the dominant characteristic of the site is that it lies upwind of Interstate 80 in most prevailing wind conditions. Both higher traffic speeds and the prevailing northerly winds would help to dilute the highway pollutants and direct them away from the site. He also pointed out that regional influences were more important determinants of the air quality. Based on local data and measurements from a similar nearby site, there were no indications that the project site would experience particularly high concentrations of pollutants. Dr. Cahill also recommended adding vegetative barriers with non-deciduous trees which have been shown to absorb diesel exhaust and installing air filtration systems in the dwelling units to mitigate the potential impact.

#### *Sierra Research Analysis*

Sierra Research, an air quality consulting firm, was hired by the Sacramento Area Council of Governments (SACOG) and the City of Davis to peer review the LSA Air Quality Analysis and Health Risk Assessment and to provide expert opinion on the potential air quality health impacts, including the Gauderman et. al. study. Their assessment is included in the Appendix 8.4. Sierra Research determined that the LSA report addressed the necessary elements of an HRA, used accepted methodology, appeared to provide accurate data, and conducted a proper analysis. Sierra Research found that the conclusions of the LSA analysis, the HRA, the general health-

related determinations, and the cancer and non-cancer risk assessments were reasonable and consistent with other similar analyses.

According to Sierra Research, the local ambient data indicate that air quality in the area is generally good. There were no recent violations reported of state or federal ambient air quality standards for the criteria pollutants except for the occasional exceedance of ozone and PM<sub>10</sub>, which is consistent with other communities in the lower Sacramento Valley. There was nothing to suggest that the project site was a pollution “hot spot” with significantly higher concentrations than in surrounding areas. Sierra Research did not dispute the conclusion by Gauderman et. al. that concentrations of pollutants near freeways are higher than at locations farther away. However, the concentrations representative of the project site do not appear to be excessive or unusual.

In their review of the Gauderman et. al. study, Sierra Research concluded that because the statistical confidence intervals for the reductions measured in the lung development of the children living in the three different distance ranges overlapped each other, it would be “*difficult to apply the results of the study, on a quantitative level, to a conclusion that exposures to emissions from I-80 in residents of the New Harmony project would decrease lung function growth in children between 10 and 18 years of age.*” They pointed out that the decreased lung function growth measured in the study cannot be related to cancer risk or non-cancer chronic or acute health effects, which were the health impacts addressed in the HRA. In their concluding remarks, Sierra Research repeated their general agreement with LSA’s work and stated that the Gauderman et. al. study did not undermine the conclusions of the LSA report.

#### *Applicability to Project*

None of the studies or reports discussed directly contradict each other or inherently conflict, but they do not necessarily complement one another. Given the complexity and scope of air quality issues and health impacts, this is understandable. There are many sides to the issue. There is no doubt about the adverse health effects of traffic and vehicle emissions. Nor is there any dispute that pollutants are more concentrated closer to their source, such as near roads and highways. The Gauderman et. al. study is one study out of many that has contributed to the knowledge base and has informed decision-making. However, it is important to note that it is a generalized health study. To the degree that it is applicable to the New Harmony project site, the study’s conclusions only apply in a general sense. Site-specific analysis and information were provided in the Health Risk Assessment for the project. The results of the HRA did not indicate any unusual concerns or impacts about the project or project site. It acknowledged that there would be an elevated exposure risk at the project’s location because of the nearby freeway. However, the level of concentration, the local meteorological setting, the site-specific conditions and measures, as well as other factors, all influence exposure levels and their impacts.

The background cancer risk in the Sacramento Valley Air Basin was about 520 per million in 2000. This level is already considered high and unhealthy and any increase in exposure should be evaluated and carefully considered. The HRA calculated the additional cancer risk for residents of the proposed project at 9.0 per million, which would be in addition to the 520 per million. By contrast, ARB estimates that the background cancer risk in the South Coast Air Basin (the area of the Gauderman et. al. study) in 2000 was already 1,000 per million. It is an indication of the overall higher pollutant levels found in the South Coast Air Basin.

### *Mitigation*

The YSAQMD handbook recognize that sensitive land uses may be placed within the 500-foot distance from a freeway because of other considerations, such as housing, transportation, or economic development. The handbook also recognizes that site-specific design improvements may help to reduce air pollution exposure, but specific measures are not provided. The Sacramento Metropolitan Air Quality Management District (SMAQMD) has drafted recommendations for evaluating the location of sensitive land uses in its “Recommended Protocol for Evaluating the Location of Sensitive Land Uses next to Major Roadways, Version 2.0” (October 2008). The SMAQMD Protocol was used to evaluate the proposed project.

The SMAQMD Recommended Protocol suggests potential mitigation measures to reduce exposure levels. They include increasing the project distance from the freeway, site design to create a buffer, enhanced vegetative plantings, and other filtering systems. It cited a study measuring the filtration effectiveness of leaves and needles. The study found that all forms of vegetation were able to remove 65-85 percent of very fine particles at wind velocities below 1.5 meters per second (roughly 3 miles per hour) with redwood and deodar cedar being the most effective.

The project already incorporates all feasible and recommended design measures to minimize exposure risks to pollutants. The residential buildings are set back from the Interstate 80 as far as possible. A generous landscape area along Cowell Boulevard will be planted with a dense buffer of trees. A large percentage of the trees will consist of redwood trees which have been shown to be effective in filtering out pollutants and will be planted 10 feet off center. Units will have alternative ventilation to allow for fresh air without the need to open the windows. The project layout uses Building B as a buffer for the rest of the site, particularly for the open space areas. The active outdoor areas are located internal to the site and direct exposure to the freeway is minimized.

The project is also subject to potential noise impacts from traffic on I-80 which is discussed in Section 4.3. Noise mitigation measures for maximizing the setback from the freeway, higher quality windows for sound attenuation, alternative ventilation for units, and siting of outdoor

areas where they would be buffered from the highway traffic noise are proposed. Because the noise impact is related to freeway traffic, these measures are also effective at addressing air quality impacts.

Unfortunately, it is not yet possible to quantify the benefits of these various measures and the close proximity of the freeway would still result in elevated exposure risks for the site compared to a site farther away. In addition, residents of the project are expected to spend a majority of their time indoors and without filtration the indoor air quality is only as good as the outdoor air quality. Therefore, the impacts are potentially significant and mitigation is required to reduce potential air quality impacts to residents of the project. Minimizing indoor materials that off-gas and incorporating enhanced filtration within the dwellings using passive electrostatic filters and low air velocities to remove residual pollutants would ensure that indoor air quality is better than the outdoor air.

***Mitigation Measure - Indoor Air Quality***

*In order to minimize air quality impacts and improve indoor air quality, prior to issuance of building permits the applicant shall incorporate the following mitigation measures into the building plans subject to review and approval of the Community Development Director and Building Official:*

- a) Provide an enhanced filtration for all dwelling units using passive electrostatic filters and low air velocities or equivalent;*
- b) Use low VOC materials, paints, carpeting in the dwelling units consistent with Build It Green's Multi-Family Green Building Guidelines.*

The proposed New Harmony project does not exceed any air quality standards and there are no indications that the site would have an unusually high concentration of pollutants. Health studies that have linked proximity to freeways with increased health impacts support previous studies and provide general health findings. However, they do not provide site-specific data that can be used to evaluate the New Harmony project or provide results that allow the specific health impacts associated with the project site to be quantified. The HRA is site-specific and uses very health-protective assumptions. The results demonstrate that the additional exposure risks are within generally acceptable levels. The project site also benefits from the prevailing winds that disperse highway pollutants away from the site. Feasible and recommended measures are already incorporated into the project design and implementation of the above mitigation would further reduce the potential health risk. Therefore, health impacts from proximity of the site to the freeway are considered **less than significant**.

Impacts on the Office Parcel

There are no minimum distance recommendations for the proposed office/research use on the parcel adjacent to the Interstate 80. A commercial use on the office parcel would primarily consist of indoor activity during normal work hours with limited exposure to outdoor air contaminants. For these reasons an office use is not considered a sensitive receptor for air quality. Proposed mitigation measures discussed below for noise impacts on the office parcel would further reduce potential exposure to harmful pollutants. Measures include an alternate form of ventilation to ensure that windows can remain closed for a long period of time.

Therefore, the project is considered to have a **less than significant impact** on the office parcel.

## 4.3 NOISE

### 4.3.1 INTRODUCTION

This section discusses the existing noise environment in the immediate project vicinity and identifies potential noise-related impacts and mitigation measures associated with the proposed project. Specifically, this section analyzes potential noise impacts due to and upon development within the project site relative to applicable noise criteria and to the existing ambient noise environment. This section is primarily based upon an *Acoustical Analysis* prepared by LSA Associates, as well as the *City of Davis General Plan*.

### 4.3.2 ENVIRONMENTAL SETTING

#### Characteristics and Measurements of Sound

Noise is usually defined as unwanted sound. Noise consists of any sound that may produce physiological or psychological damage and/or interfere with communication, work, rest, recreation, and sleep. To the human ear, sound has two significant characteristics: pitch and loudness. A specific pitch can be an annoyance, while loudness can affect our ability to hear. Loudness can be measured based on the intensity of the sound wave as it strikes an object.

Several noise measurement scales exist which are used to describe noise in a particular location. A *decibel* (dB) is a unit of measurement which indicates the relative intensity of a sound. The 0 point on the dB scale is based on the lowest sound level that the healthy, unimpaired human ear can detect. Changes of 3.0 dB or less are only perceptible in laboratory environments. Audible increases in noise levels generally refer to a change of 3.0 dB or more, as this level has been found to be barely perceptible to the human ear in outdoor environments. Sound levels in dB are calculated on a logarithmic basis. An increase of 10 dB represents a 10-fold increase in acoustic energy, while 20 dB is 100 times more intense, 30 dB is 1,000 times more intense. Each 10- dB increase in sound level is perceived as approximately a doubling of loudness. Sound intensity is normally measured through the *A-weighted sound level* (dBA). This scale gives greater weight to the frequencies of sound to which the human ear is most sensitive.

As noise spreads from a source, it loses energy so that the farther away the noise receiver is from the noise source, the lower the perceived noise level would be. Geometric spreading causes the sound level to attenuate or be reduced, resulting in a 6-dB reduction in the noise level for each doubling of distance from a single point source of noise to the noise sensitive receptor of concern. There are many ways to rate noise for various time periods, but an appropriate rating of ambient noise affecting humans also accounts for the annoying effects of sound. Equivalent continuous sound level ( $L_{eq}$ ) is the total sound energy of time-varying noise over a sample period. However, the predominant rating scales for human communities in the State of California

are the  $L_{eq}$  and community noise equivalent level (CNEL) or the day-night average level ( $L_{dn}$ ) based on A-weighted decibels (dBA). CNEL is the time-varying noise over a 24-hour period, with a 5 dBA weighting factor applied to the hourly  $L_{eq}$  for noises occurring from 7:00 p.m. to 10:00 p.m. (defined as relaxation hours) and a 10 dBA weighting factor applied to noise occurring from 10:00 p.m. to 7:00 a.m. (defined as sleeping hours).  $L_{dn}$  is similar to the CNEL scale but without the adjustment for events occurring during the evening hours. CNEL and  $L_{dn}$  are within one dBA of each other and are normally exchangeable. The noise adjustments are added to the noise events occurring during the more sensitive hours. City of Davis documents use both CNEL and  $L_{dn}$ . The LSA report generally uses CNEL.

Other noise rating scales of importance when assessing the annoyance factor include the maximum noise level ( $L_{max}$ ), which is the highest exponential time-averaged sound level that occurs during a stated time period. The noise environments discussed in this analysis are specified in terms of maximum levels denoted by  $L_{max}$  for short-term noise impacts.  $L_{max}$  reflects peak operating conditions and addresses the annoying aspects of intermittent noise.

Another noise scale often used together with the  $L_{max}$  in noise ordinances for enforcement purposes is noise standards in terms of percentile noise levels. For example, the  $L_{10}$  noise level represents the noise level exceeded 10 percent of the time during a stated period. The  $L_{50}$  noise level represents the median noise level. Half the time the noise level exceeds this level, and half the time it is less than this level. The  $L_{90}$  noise level represents the noise level exceeded 90 percent of the time and is considered the background noise level during a monitoring period. For a relatively constant noise source, the  $L_{eq}$  and  $L_{50}$  are approximately the same.

### **Physiological Effects of Noise**

Physical damage to human hearing begins at prolonged exposure to noise levels higher than 85 dBA. Exposure to high noise levels affects our entire system, with prolonged noise exposure in excess of 75 dBA increasing body tension, and thereby affecting blood pressure, functions of the heart, and the nervous system. In comparison, extended periods of noise exposure above 90 dBA would result in permanent cell damage. When the noise level reaches 120 dBA, a tickling sensation occurs in the human ear even with short term exposure. This level of noise is called the threshold of feeling. As the sound reaches 140 dBA, the tickling sensation is replaced by the feeling of pain in the ear. This is called the threshold of pain.

The ambient or background noise problem is widespread and generally more concentrated in urban areas than in outlying, less developed areas. It is not only exposure to extremely high noise levels that can lead to hearing loss. Irreversible hearing damage can occur with long-term cumulative exposure to levels as low as 70 dBA. This 70 dBA threshold is not for singular or peak events; rather it is the average environmental sound level a person is exposed to over weeks

and years that is critical in preventing hearing loss. So, if enough “quiet times” are also experienced, this threshold can be surpassed without significant damage occurring.

### Sensitive Land Uses in the Project Vicinity

There are existing sensitive land uses adjacent to the project site that would potentially be exposed to project related short-term construction noise impacts. The closest noise sensitive land uses are the multi-family units which border the project site immediately south of the project’s residential parcels. The next closest sensitive receptors include single family units also located south of the project site on Benbow Court and Albany Avenue. One home at 607 Benbow Court is located within 75 feet of the project site. The project site itself would consist of the office parcel adjacent to Interstate 80 that is not proposed for development and the residential parcel on the south side of Cowell Boulevard where the New Harmony Apartment Project is proposed. The proposed residential parcel is approximately 67 feet from the edge of the highway right-of-way and over 100 feet from the nearest travel lane. The closest residential apartment building would be approximately 166 feet from the highway right-of-way and over 200 feet from the travel lane.

### Overview of Existing Noise Sources

Vehicular traffic on I-80 is the dominant source of ambient noise in the project vicinity. The existing noise conditions in the project vicinity are described below.

#### Ambient Noise Levels

LSA Associates conducted short-term and long-term ambient noise monitoring on the proposed project site. The purpose of this noise monitoring was to document the existing noise environment and capture the noise levels associated with operations or activities in the project vicinity. Table 4.10 lists the noise levels measured during short-term noise monitoring. Maximum noise levels were recorded as well as the equivalent continuous noise level measure  $L_{eq}$ . The maximum noise levels all reflect vehicular traffic noise sources.

**Table 4.10: Short-Term Ambient Noise Monitoring Results, dBA (August 27, 2007)**

Location Number	Location	Start Time	$L_{eq}$ <sup>a</sup>	$L_{max}$ <sup>b</sup>	$L_{min}$ <sup>c</sup>	Noise Sources
1	Residential parcel, southeast corner, 99 feet from Drummond Avenue, 40 feet from south fence	10:00 a.m.	54.8	64.7	50.6	Traffic on I-80, Cowell Boulevard, Drummond Avenue
2	Residential parcel, northwest corner, 55 feet south of Cowell Boulevard, 34 feet from west fence	10:35 a.m.	67.2	74.3	59.7	Traffic on I-80 & Cowell Boulevard, a few truck deliveries to adjacent UC Davis bookstore warehouse
3	Office/commercial parcel, 148 feet south of fence by I-80	11:05 a.m.	63.8	70.1	54.1	Traffic on I-80
4	Office/commercial parcel, 25 feet south of fence by I-80	11:30 a.m.	72.3	80.1	60.8	Traffic on I-80

Source: LSA Associates, Inc. *Acoustical Analysis*. December 2007.

Table 4.11 lists the long-term noise monitoring results; these include the calculated 24-hour  $L_{eq}$  and CNEL values. CNEL is the time-varying noise over a 24-hour period, with a 5 dBA weighting factor applied to the hourly  $L_{eq}$  for noises occurring from 7:00 p.m. to 10:00 p.m. (defined as relaxation hours) and a 10 dBA weighting factor applied to noise occurring from 10:00 p.m. to 7:00 a.m. (defined as sleeping hours). The ambient noise level for the measured time period was 71.0 dBA CNEL.

**Table 4.11: Long-Term Ambient Noise Monitoring Results (August 22-23, 2007)**

Measurement	Description	dBA	Time Period the Event Occurred
CNEL	Weighted 24 hour average	71.0	NA
$L_{eq}$	24 hour average	67.0	NA
$L_{max}$	Highest recorded $L_{max}$ for 24 hour period	99.7	9:00 p.m. – 10:00 p.m.
$L_{min}$	Lowest recorded $L_{min}$ for 24 hour period	44.8	3:00 p.m. – 4:00 p.m.

Source: LSA Associates, Inc. *Acoustical Analysis*. December 2007.

### Vehicular Traffic

Noise from vehicular traffic is a major source of ambient noise levels in urban settings. The primary existing noise source in the project area is vehicular traffic on I-80. Traffic noise levels along Cowell Boulevard, Drummond Avenue and Chiles Road do not significantly influence the ambient noise levels at the project site.

Besides the ambient noise monitoring that was conducted which documented the existing roadway traffic noise levels, the existing traffic noise levels from adjacent roadway segments were also modeled by using the Federal Highway Administration (FHWA) Highway Traffic Noise Prediction Model. The model used existing traffic data from the City of Davis for adjacent roadway segments. Traffic volumes on I-80 were obtained from the Caltrans 2005 annual average daily traffic report for California highways and assume a 3 percent annual increase in daily traffic volumes along this segment of I-80. It should be noted that the existing traffic noise levels along I-80 were shown to be more than 10 dBA higher than the traffic noise levels on Cowell Boulevard, Drummond Avenue, and Chiles Road. Therefore traffic noise levels on these roadways do not significantly affect the ambient noise levels in the project vicinity. This would be expected to remain true even if an office building is constructed on the office parcel.

In order to predict the future traffic noise increases and to determine noise mitigation, the traffic noise model was calibrated to the existing measured conditions. At the portion of the office parcel closest to I-80, located at a distance of approximately 65 feet from the centerline of the outermost travel lane, the noise from existing traffic on I-80 would be reduced to 78.7 dBA CNEL. At the nearest boundary line of the residential parcels, noise from existing traffic on I-80 would be reduced to 74.9 dBA CNEL. The calculated traffic noise level at the long-term

monitoring location is 72.5 dBA CNEL. This is slightly higher than, but shows strong correlation to, the measured ambient noise level of 71.0 dBA CNEL.

#### Railroad Operations

Factors that influence the overall impact of railroad noise on adjacent uses include the distance of the uses from the tracks, surrounding land topography, the intermittent nature of train events, and the presence of sound walls or other barriers between the tracks and adjacent uses. The Union Pacific railroad tracks lie on the north side of I-80. The segment of the railroad line across from the project site consists of three tracks running parallel to I-80. The measured 24-hour noise level at the project site is 71.0 dBA CNEL; this includes all ambient noise sources in the project vicinity including train activity. Noise from vehicular traffic on I-80 was the dominant noise source, exceeding train noise sources in the project vicinity. Therefore, railroad related noise levels do not significantly affect ambient noise levels in the project vicinity.

#### Aircraft Operations

Airport related noise levels are primarily associated with aircraft engine noise made while aircraft are taking off, landing or running their engines while still on the ground. The University of California-Davis Airport is the closest airport, located approximately 3.9 miles west of the project site. The Yolo County-Davis Woodland Winters Airport is located 7.5 miles west of the project site. The next closest airport is the Sacramento International Airport located 10.5 miles to the northwest of the project site. Watts-Woodland Airport to the northwest and the Sacramento Executive Airport to the east are both located approximately 12 miles from the project site. Due to the orientation and distance of these airports from the project site, aircraft related noise levels do not significantly affect ambient noise levels in the project vicinity.

#### Stationary Noise Sources

Stationary noise sources in the project vicinity also influence the ambient noise levels at the project site. These sources include truck delivery loading/unloading activities at the UC Davis bookstore warehouse facility, located at 2828 Cowell Boulevard. Another stationary noise source adjacent to the project site is the City's Well 26 (a local pump for the City's department of public works water system) located at 2850 Cowell Boulevard. Noise levels from operation of these stationary noise sources were recorded and documented in the short-term ambient noise level measurements conducted by LSA on the project site. However, noise from vehicular traffic noise sources was the dominant influence on ambient noise levels at all measurement locations on the project site. Therefore, noise levels from stationary noise sources in the project vicinity would result in less-than-significant impacts on proposed sensitive land uses.

### 4.3.3 REGULATORY CONTEXT

In order to limit population exposure to physically and/or psychologically damaging noise levels, the State of California, various county governments, and most municipalities in the state have established standards and ordinance to control noise. The City of Davis General Plan Noise Element, Noise Ordinance, and CEQA provide regulations regarding noise levels for uses relevant to the proposed project. The following provides a general overview of the existing regulations established by the City and CEQA.

#### State Regulations

The California Environmental Quality Act (CEQA) Guidelines in Appendix G, indicates that a significant noise impact may occur if a project exposes persons to noise levels in excess of local general plan or noise ordinance standards, or cause substantial permanent or temporary increase in ambient noise levels.

#### Local Regulations

The City of Davis addresses noise in the Noise Element of the General Plan and in the City's Noise Ordinance in the Municipal Code.

#### City of Davis General Plan

The City's General Plan identifies interior noise standards for residences as 45 dBA Ldn, and 55 dBA Ldn for offices (Table 4.12). City standards for acceptable exterior noise levels for residential and office uses are summarized in Table 4.13.

**Table 4.12: Standards for Interior Noise Levels**

Use	Noise Level (dBA)
Residences	45
Offices	55

**Table 4.13: Standards for Exterior Noise Exposure**

Use	Community Noise Exposure (Ldn or CNEL, dBA)			
	Normally Acceptable	Conditionally Acceptable	Normally Unacceptable	Clearly Unacceptable
Residential	Under 60	60-70*	70-75	Above 75
Office Buildings, Business Commercial and Professional	Under 65	65-75	Above 75	NA

NORMALLY ACCEPTABLE: Specified land use is satisfactory assuming all buildings involved are of conventional construction, without special noise insulation requirements.

**CONDITIONALLY ACCEPTABLE:** New construction or development should be undertaken only after a detailed analysis of the noise reduction requirements is conducted, and needed noise attenuation features are included in the construction or development.

**NORMALLY UNACCEPTABLE:** New construction or development should be discouraged. If new construction or development does proceed, a detailed analysis of the noise reduction requirements must be conducted and needed noise attenuation features shall be included in the construction or development.

**CLEARLY UNACCEPTABLE:** New construction or development shall not be undertaken.

\* The City Council shall have discretion within the “conditionally acceptable” range for residential use to allow noise levels in outdoor spaces to go up to 65 dBA if cost effective or aesthetically acceptable measures are not available to reduce noise levels in outdoor use spaces to the “normally acceptable” levels. Outdoor spaces which are designed for visual use only (for example, streetside landscaping in an apartment project), rather than outdoor use space, may be considered acceptable up to 70 dBA.

Source: City of Davis, *City of Davis General Plan, Chapter 21: Noise*.

### City of Davis Noise Ordinance

The City also addresses noise in Chapter 24 of the Municipal Code, including regulating maximum noise limits on stationary noise sources, construction noise, and air conditioners and similar equipment. The City’s adopted maximum permitted noise levels from stationary noise sources by land uses are shown in Table 4.14.

**Table 4.14: Maximum Allowable Noise Levels from Stationary Sources by Land Use**

Land Use	Time Period	Maximum Noise Level (dBA)
Residential	9 pm – 7 am	50
	7 am – 9 pm	55
Commercial/Industrial/ Core Commercial	10 pm – 7 am	55
	7 am – 10 pm	60
High Noise Traffic Corridor*	Anytime	65

\*Properties bordering designated "high noise" corridors to be designated by resolution of city council. "Bordering" will be defined as falling wholly or partially within one hundred feet of designated "high noise" corridor (e.g., Highway 113).

Source: City of Davis. *City of Davis Municipal Code, Section 24.02 Noise Regulations*.

The Municipal Code further establishes acceptable hours of construction and limitations on construction related noise impacts on adjacent sensitive receptors. These regulations in Section 24.02.040 of the Municipal Code are included below.

(b) Construction and Landscape Maintenance Equipment. Notwithstanding any other provision of this chapter, between the hours of 7:00 a.m. and 7:00 p.m. on Mondays through Fridays, and between the hours of 8:00 a.m. and 8:00 p.m. on Saturdays and Sundays, construction, alteration, repair or maintenance activities which are authorized by valid city permit or business license, or carried out by employees of contractors of the city shall be allowed if they meet at least one of the following noise limitations:

(1) No individual piece of equipment shall produce a noise level exceeding 83 dBA at a distance of 25 feet. If the device is housed within a structure on the property, the measurement shall be made outside the structure at a distance as close to 20 feet from the equipment as possible.

(2) The noise level at any point outside of the property plane of the project shall not exceed 86 dBA.

(3) The provisions of subdivisions (1) and (2) of this subsection shall not be applicable to impact tools and equipment; provided, that such impact tools and equipment shall have intake and exhaust mufflers recommended by manufacturers thereof and approved by the Director of Public Works as best accomplishing maximum noise attenuation, and that pavement breakers and jackhammers shall also be equipped with acoustically attenuating shields or shrouds recommended by the manufacturers thereof and approved by the Director of Public Works as best accomplishing maximum noise attenuation. In the absence of manufacturer's recommendations, the Director of Public Works may prescribe such means of accomplishing maximum noise attenuation as he/she may determine to be in the public interest.

Construction projects located more than 200 feet from existing homes may request a special use permit to begin work at 6:00 a.m. on weekdays from June 15th until September 1st. No percussion type tools (such as ramsets or jackhammers) can be used before 7:00 a.m. The permit shall be revoked if any noise complaint is received by the police department.

#### **4.3.4 IMPACTS AND MITIGATION MEASURES**

##### **Standards of Significance**

A project will normally have a significant effect on the environment related to noise if it will substantially increase the ambient noise levels for adjoining areas or conflict with adopted environmental plans and goals of the community in which it is located. More specifically, the applicable noise standards governing the project site include State standards as well as the standards found in the City of Davis's Noise Element of the General Plan and Municipal Code, as discussed above. For this analysis, noise impacts associated with the proposed project would be considered significant if they:

- Exceed the City of Davis General Plan Noise Element thresholds;
- Exceed the City of Davis Noise Ordinance significance thresholds; or
- Expose existing noise-sensitive land uses to a traffic noise level increase of 3 dB or more.

##### **Long-Term Traffic Noise Impacts**

The LSA analysis calculated future roadway traffic noise levels along I-80 using the calibrated traffic noise model results. Results indicated that the I-80 traffic noise levels in 2025 would increase to 81.9 dBA at 50 feet from the centerline of the outermost travel lane, which is an increase of 2.3 dBA over existing conditions.

### **Impacts from Local Roadways and from Additional Project Traffic**

Since the existing traffic noise levels along I-80 would be more than 10 dBA higher than the traffic noise levels on Cowell Boulevard, Drummond Avenue, and Chiles Road, the traffic noise levels on these roadways do not significantly affect the ambient noise levels in the project vicinity. As this would be expected to remain true even with construction of the proposed office/commercial buildings, further analysis of on-site traffic noise impacts from adjacent roadway segments is not needed. In addition, the increase in traffic associated with the proposed project on adjacent roadways is not expected to result in a perceptible increase in ambient noise levels. Therefore, project related traffic noise impacts to off-site sensitive land uses would be considered **less than significant**. On-site traffic noise impacts are discussed below.

### **Impacts to Residential Parcel**

Based on the traffic noise modeling performed by LSA Associates, the closest outdoor sensitive receptor areas on the residential parcel would be exposed to future traffic noise levels from I-80 of up to 73.9 dBA CNEL. The model inputs included a minimum setback of 260 feet from the centerline of I-80 and a K-factor (calibration) of -1.5 dBA based on noise monitoring measurements. This exposes residential parcel to traffic noise levels in the normally unacceptable range (70 dBA to 75 dBA CNEL) for new residential development for interior and exterior levels, according to the City's standards. It would result in a potentially significant impact. In order to reduce highway noise impacts on the proposed residential use, mitigation would be required.

### Indoor Noise Levels

Based on the EPA's Protective Noise Levels (EPA 550/9-79-100, November 1978), with a combination of walls, doors, and windows, standard construction for northern California residential buildings would provide more than 25 dBA in exterior to interior noise reduction with windows closed and 15 dBA or more with windows open. With windows open, residential units with direct exposure to I-80 would not meet the City's residential interior noise standard of 45 dBA CNEL (i.e.,  $73.9 \text{ dBA} - 15 \text{ dBA} = 58.9 \text{ dBA}$ ). Therefore, an alternate form of ventilation, such as an air conditioning system would be required for all buildings on the residential parcels with façades exposed to I-80 to ensure that windows can remain closed for a prolonged period of time. However, even with windows closed units directly exposed to I-80 traffic noise levels on the project site would not meet the City's residential interior noise standard of 45 dBA (i.e.,  $73.9 \text{ dBA} - 25 \text{ dBA} = 48.9 \text{ dBA}$ ). Therefore, in addition to an alternate form of ventilation, windows with a minimum STC-32 rating would be necessary for all residential units with façades exposed to I-80 to provide the additional noise reduction necessary to meet the City's standard and to reduce impacts to a less than significant level.

***Mitigation Measure – Residential Parcel Noise Impacts***

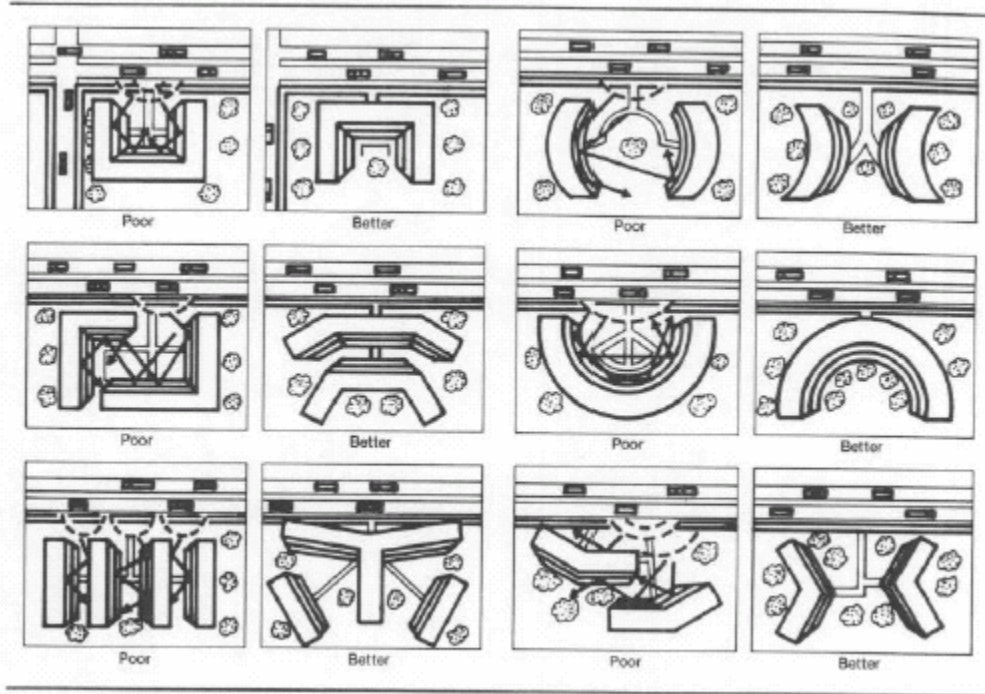
*The applicant shall incorporate the following measures into the building plans for the residential parcel subject to review and approval of the Community Development Director:*

- a) A minimum setback of 260 feet from the centerline of I-80 shall be required of all noise sensitive land uses on the residential parcels;*
- b) An alternate form of ventilation, such as an air conditioning system and trickle ventilation, shall be required for all residential units directly exposed to I-80 to ensure that windows can remain closed for a prolonged period of time;*
- c) Windows with a minimum STC-32 rating shall be required for all residential units with façades directly exposed to I-80; and*
- d) All outdoor active use areas (including playgrounds, patios, and balconies) shall be located on the south side of buildings on the residential parcels.*

Implementation of the above mitigation measure would reduce indoor noise impacts on the residential parcel to a **less than significant level**.

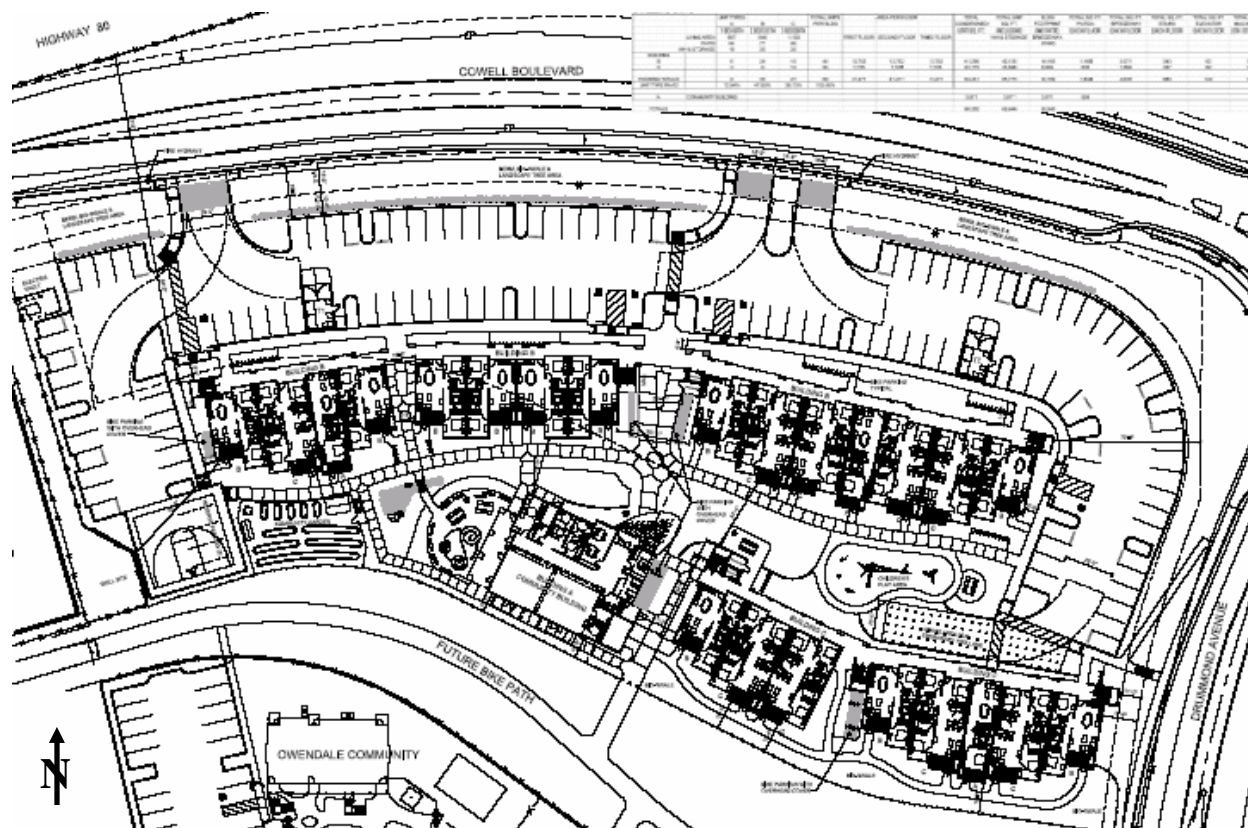
**Exterior Noise Levels**

Exposure to future traffic noise levels of 73.9 dBA on the proposed residential parcel would fall within the City's range for normally unacceptable exterior noise levels of 70-75 dBA and result in a potentially significant impact. Noise levels can be reduced with berming, landscaping, and structures. The LSA Acoustical Analysis recommended locating the project's outdoor active use areas, which include yards, playgrounds, patios, decks, and balconies, on the south side of the residential buildings to reduce the noise impacts. It is consistent with the Department for Housing and Urban Development (HUD) recommendations, published in *The Noise Guidebook*, that are relevant for the proposed project. HUD's recommendations for orientation of buildings on a project site to reduce traffic noise impacts are shown in Figure 4.2 below.



**Figure 4.2: Recommended Building Orientations for Noise Attenuation (HUD Noise Guidebook)**

A building located between the noise source and receptor would provide a minimum of 15 dBA reduction. It would reduce the exterior noise levels in the active outdoor areas to at least 58.9 dBA ( $73.9 \text{ dBA} - 15 \text{ dBA} = 58.9 \text{ dBA}$ ) and would meet the normally acceptable noise level standard of 60 dBA for residential uses established by the City. The project applicant has designed the site layout to comply with these recommendations. The project layout places Building B roughly parallel to the highway to provide noise protection to the active outdoor use areas (Figure 4.3). The project has also incorporated a partial berm and landscaping with a buffer of trees along the northern property line on Cowell Boulevard to provide further noise buffering. These measures which have been included in the project design reduce exterior noise impacts to a **less than significant level** and no further mitigation would be required.



**Figure 4.3: New Harmony Site Plan**

### Impacts to Office/Commercial Parcel

Although no development is proposed on the office parcel, the site was included in the noise analysis. Existing traffic noise levels at the nearest property line of the office/commercial parcels to I-80 range up to 78.7 dBA CNEL; this is within the normally unacceptable range for new office/commercial building development according to the City's standards for exterior noise exposure. Therefore, noise attenuation features would need to be incorporated into the design and construction of the proposed office/commercial parcel development to meet the City's interior noise level standard of 55 dBA CNEL and exterior standard of 75 dBA CNEL for office/commercial land uses. It would result in a potentially significant impact.

To reduce the traffic noise impacts, a noise barrier analysis was performed by LSA Associates assuming future year 2025 roadway traffic conditions. A berm of 4 feet, 6 feet, and 8 feet in height was modeled at the northern property line of the office/commercial parcels next to I-80. The sound levels from traffic noise sources on I-80 were calculated using a setback distance of 165 feet from the centerline of I-80 for sensitive receptors. The modeling shows that a berm at least 4 feet in height above the finished pad elevation would reduce I-80 traffic noise to 69.2 dBA CNEL at the closest ground level sensitive receptor on the office/commercial parcels. The effective height of this barrier would be approximately 5 feet in height due to the change in

elevation between the expected finished pad elevation at the office/commercial units and the existing I-80 roadway elevation. Landscaping with dense vegetation and trees would also aid in blocking the line of sight to the I-80 noise source. This berm and landscaping would reduce traffic noise levels to within the City's conditionally acceptable ranges for new office/commercial developments. The estimated exterior and interior future traffic noise levels at sensitive receptors on the office/commercial parcels are shown in Table 4.15.

**Table 4.15: Future (2025) Calibrated Traffic Noise Levels as Sensitive Receptors on Office Parcel**

	Ground Floor Units	Upper Floor Units
Exterior of closest receptor without barrier	77.1	77.1
Exterior of closest receptor with 4-foot barrier	69.2	77.1
Interior of closest receptor with 4-foot barrier with windows open <sup>1</sup>	54.2	62.1
Interior of closest receptor with 4-foot barrier with windows closed <sup>2</sup>	44.2	52.1
Interior of closest receptor without barrier with STC-32 windows closed <sup>3</sup>	47.1	47.1
Interior of closest receptor with 4-foot barrier with STC-32 windows closed <sup>3</sup>	39.2	47.1

<sup>1</sup> Assumes a 15 dBA exterior to interior noise reduction for entire wall assembly.

<sup>2</sup> Assumes a 25 dBA exterior to interior noise reduction for entire wall assembly.

<sup>3</sup> Assumes a 30 dBA exterior to interior noise reduction for entire wall assembly. This measure would not be necessary to meet interior standard of 55 dBA CNEL for office/commercial land uses.

Source: LSA Associates, Inc., 2007.

Based on the EPA's Protective Noise Levels (EPA 550/9-79-100, November 1978), with a combination of walls, doors, and windows, standard construction for northern California buildings would provide more than 25 dBA in exterior to interior noise reduction with windows closed and 15 dBA or more with windows open. With windows open, first floor rooms of offices facing I-80 would meet the City's interior noise standard of 55 dBA CNEL for office/commercial land uses (i.e., 69.2 dBA – 15 dBA = 54.2 dBA). However, upper floor rooms facing I-80 would be exposed to traffic noise levels of up to 77.1 dBA CNEL and would not meet the interior noise standard with windows open (i.e., 77.1 dBA – 15 dBA = 62.1 dBA). Therefore, an alternate form of ventilation, such as an air conditioning system, would be required to ensure that windows can remain closed for a prolonged period of time to meet the City's interior noise standard for office/commercial land uses of 55 dBA CNEL (i.e., 77.1 dBA – 25 dBA = 52.1 dBA) and to reduce impacts to a less than significant level.

***Mitigation Measure – Office Parcel Noise Impacts.***

*The applicant shall incorporate the following measures into the building plans for the commercial parcel subject to review and approval of the Community Development Director:*

- a) A berm a minimum of 4 feet in height above the finished pad elevation and extending the length of the property should be constructed on the northern property boundary adjacent to I-80;*
- b) The berm should be landscaped with dense vegetation and tree cover to aid in blocking the line of sight to the traffic noise source;*

- c) *A minimum setback of 165 feet from the centerline of I-80 shall be required of all noise sensitive land uses on the office/commercial parcel;*
- d) *An alternate form of ventilation, such as an air conditioning system, shall be required for all office/commercial spaces directly exposed to I-80 to ensure that windows can remain closed for a prolonged period of time.*
- e) *Outdoor active use areas shall be placed on the south side of the berm or of the building.*

Implementation of the above mitigation ensures that potential noise impacts to the commercial/office parcel are **less than significant**. If construction of the berm is not feasible, the alternate ventilation would still keep impacts to a less than significant level for the lower level offices.

### **Short-Term Construction-Related Impacts**

The project site is bordered by multi-family residential units to the south. Single-family residences are located further south of the project along Albany Avenue and Benbow Court, and to further west along Koso Street. Impacts of construction noise to these adjacent land uses would potentially be significant. Project construction could result in short-term noise impacts, as discussed below.

Noise levels from typical site preparation and other construction activities for the proposed project may range up to 91 dBA L<sub>max</sub> at the closest residential uses adjacent to the project site for very limited times when construction occurs near the project's boundary. Construction related noise impacts from the proposed project would be potentially adverse; however, compliance with the City's construction noise mitigation requirements would reduce the impact to a less than significant level.

The project will produce short-term increases in construction-related noise that could impact nearby residences as a result of construction-related traffic and construction activities associated with excavation, grading, and erecting of buildings. Construction related short-term noise levels would be higher than existing ambient noise levels in the project area, but would no longer occur once construction of the project is completed.

### **Impacts from Construction-Related Traffic**

The report determined that the potential noise level from construction-related traffic on access roads leading to the site could be high for a single event. For example a truck passing at 50 feet would generate a maximum of 86 dBA L<sub>max</sub>. However, the incremental increase in the longer term (hourly or daily) noise levels would be small. Therefore, the construction-related traffic noise impact would be **less than significant**.

**Impacts from Construction Activities**

Excavation, grading, and construction activities can also result in a substantial noise increase. According to the noise report, construction noise can range as high as 91 dBA  $L_{max}$  at 50 feet during the noisiest phases. Although it would not be a permanent increase in noise levels, it can be an intermittent and sustained increase during the construction phase. Existing residential units and outdoor activity areas at the Owendale Apartment Community are located within 50 feet of potentially active construction areas and could be impacted. Because the noise from construction equipment potentially exceeds the City's standards for acceptable level for construction activities of 86 dBA at the edge of the property plane, the impact is potentially significant unless mitigated.

**Office Parcel Construction**

The closest existing noise sensitive receptor to the office/commercial parcels are residential land uses located southeast of the project site on Koso Street. They are approximately 465 feet away and would not be significantly impacted by construction noise. However, the proposed residential units are approximately 160 feet from potential active construction areas on the commercial/office site. If the residential parcel is developed and occupied before construction begins on the commercial/office site, construction-related noise would impact sensitive receptors and would be potentially significant unless mitigated.

***Mitigation Measure - Construction Noise Impacts.***

*In order to reduce potential impacts from short-term construction noise on nearby residences to a less than significant level for development of the residential parcel, the project contractor shall implement the following measures to be included as notes on grading and building plans. If the residential parcel is developed and occupied before construction on the commercial/office parcel occurs, the following measures shall also be implemented for construction on the commercial/office parcel.*

- a) The project contractor shall permit only one piece of earthmoving equipment (including scrapers, haul trucks, rollers, dozers, tractors, front end loaders, hydraulic backhoes or excavators, graders, or similar equipment) to operate at any single time within 100 feet of the Owendale Community property line;*
- b) During all project site excavation and on-site grading, the project contractors shall equip all construction equipment, fixed or mobile, with properly operating and maintained mufflers and bafflers consistent with manufacturers' standards;*
- c) The project contractor shall place all stationary construction equipment so that emitted noise is directed away from sensitive receptors nearest the project site; and*
- d) The construction contractor shall locate equipment staging in areas that will create the greatest possible distance between construction-related noise sources and noise-sensitive receptors nearest the project site during all project construction.*

- e) *During all project construction, the construction contractor shall limit all noise-producing construction related activities to the hours of 7:00 a.m. to 7:00 p.m., Monday through Friday, and to the hours of 8:00 a.m. and 8:00 p.m. on Saturdays and Sundays. For the office/commercial parcels which are located more than two hundred feet from existing homes, the contractor may request a special use permit to begin work at 6 a.m. on weekdays from June 15<sup>th</sup> until September 1<sup>st</sup>.*

Implementation of the above mitigation measure and compliance with the City's Noise Ordinance ensures that potential impacts are **less than significant**.

## SECTION 5

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### 5.0 ANALYSIS OF ALTERNATIVES

#### 5.1 INTRODUCTION

The discussion in this section focuses on the project alternatives. The purpose of the following analysis is to describe reasonable alternatives to the proposed project that could feasibly attain the basic objectives of the project and to evaluate the comparative merits of the alternatives. This analysis meets the requirements of the CEQA Guidelines, Section 15126(d). As required by Section 1512(d)(3) of the CEQA Guidelines, the alternatives to the proposed project are analyzed in less detail than the proposed project. If a significant project-related impact would be avoided under an alternative, or if the alternative would result in a significant environmental impact that would not occur under the proposed project, the impact is discussed below.

Section 15126.6(a) of the CEQA Guidelines states that the primary intent of the alternatives evaluation in an EIR is to:

“... describe a range of reasonable alternatives to the project, or to the location of the project, which would feasibly attain most of the basic objectives of the project but would avoid or substantially lessen any of the significant effects of the project, and evaluate the comparative merits of the alternatives. An EIR need not consider every conceivable alternative to a project. Rather it must consider a reasonable range of potentially feasible alternatives that will foster informed decision making and public participation. An EIR is not required to consider alternatives which are infeasible...”

Section 15126.6 (f) states that:

“... The range of alternatives required in an EIR is governed by a “rule of reason” that requires the EIR to set forth only those alternatives necessary to permit a reasoned choice. The alternatives shall be limited to ones that would avoid or substantially lessen any of the significant effects of the project...”

Section 15126.6 (e)(1) of the CEQA Guidelines states that a ‘no project’ alternative should be evaluated along with its impact. It reads as follows:

“The specific alternative of the “no project” shall also be evaluated along with its impact. The purpose of describing and analyzing a no project alternative is to allow decision makers to compare the impacts of approving the Proposed Project with the impacts of not approving the Proposed Project. The no project alternative analysis is not the baseline for determining whether the proposed project’s environmental impacts may be significant, unless it is identical to the existing environmental setting analysis which does establish that baseline...”

**Selection of Alternatives.** Consistent with CEQA Guidelines, the alternatives included and evaluated in this EIR must be feasible alternatives and are described below.

## 5.2 ALTERNATIVE #1: NO PROJECT

The No Project Alternative would not result in development of the project. Under this alternative, the site would remain undeveloped and the zoning and land use would not be changed. CEQA requires that this alternative be analyzed.

**Air Quality.** Under this alternative the site would not be developed for the proposed residential use and there would be no air quality health impacts.

**Noise.** Under this alternative the site would not be developed for the proposed residential use and there would be no noise impacts.

**Consistency with Project Objectives.** The No Project Alternative would not provide the desired housing. It would not meet the Project Objectives and an alternative site to meet the City's Regional Housing Needs Allocation (RHNA) requirements would need to be identified.

## 5.3 ALTERNATIVE #2: NO PROJECT – OFFICE DEVELOPMENT

The No Project – Office Development Alternative would result in development of the site under the existing zoning and land use. It would allow a business park/office-type use with residential as a possible secondary use.

**Air Quality.** Under this alternative the site would be developed as an office project with possible secondary residential uses. Offices are not considered sensitive receptors and consequently there would be no air quality impact for the office use. However, development of the site with residential as a secondary use would result in the same potential air quality issues as the proposed project. There would still be potentially significant impacts.

**Noise.** Under this alternative the site would be developed as an office project with potential secondary residential uses. However, the site would still be exposed to freeway noise levels that exceed thresholds for office and residential uses established by the General Plan. Mitigation would be required to address the indoor and outdoor noise levels. Additionally, this alternative would have the same construction noise impacts as the proposed project. There would still be potentially significant impacts.

**Consistency with Project Objectives.** The No Project - Office Development Alternative could include housing on the site as a secondary use, but would not provide the desired amount of housing. It would not meet the Project Objectives.

## 5.4 ALTERNATIVE #3: REDUCED PROJECT

The Reduced Project Alternative would reduce the number of units on the project site to increase the distance between the freeway and the residential building. Noise and air quality impacts generally lessen the farther the sensitive receptor is from the source. However, moving all of the apartment units to the back of the property would substantially reduce the total number of units that could be accommodated on the site. In this alternative, the larger apartment building, Building B with 45 units, would be placed adjacent to the greenbelt where Building C and the Community Building are currently proposed. The Community Building would be placed closer to roadway and Building C with 24 units would be eliminated. It would maximize the distance from the highway and provide additional space for other uses. Although the site would lose the protective buffering provided by Building B under the Proposed project, adequate space would be gained to allow a combination of on-site sound walls, berms, and vegetation to buffer the site.

**Air Quality.** Under this alternative, air quality health impacts would not be significantly reduced. The entire site is within 500 feet of the freeway and the additional 100 to 200 feet in distance that would be gained is not enough to significantly improve the air quality conditions compared to the proposed project. There would still be potentially significant impacts.

**Noise.** Under this alternative, noise impacts from the freeway would be reduced compared to the proposed project due to the increased setback. However, the site would still be exposed to freeway noise levels that exceed noise thresholds established by the General Plan. Mitigation would be required to address the indoor and outdoor noise levels. Additionally, this alternative would have the same construction noise impacts as the proposed project. There would still be potentially significant impacts.

**Consistency with Project Objectives.** The Reduced Project Alternative would help the City meet its RHNA requirements. However, it would not provide the amount of housing desired and would not achieve the economies of scale necessary for the efficient use of City funds.

## 5.5 ALTERNATIVE #4: OFF-SITE PROJECT

The Off-Site Project Alternative would place a similar project for the same number of units at an alternate site, known as the Alhambra Center Site. There are few vacant sites within the City of Davis that could accommodate the proposed project, but this site is potentially feasible. The Alhambra Center site is a 6-acre vacant parcel within the City limits. It is located at the northwest corner of Alhambra Boulevard and Mace Boulevard on the eastern edge of the City limits in east Davis. Current Zoning and General Plan designation of the site is Neighborhood Retail. The site is adjacent to single-family residences and a church site within the City of Davis and agricultural fields within an unincorporated area of Yolo County. It is approximately 2,000

feet north of Interstate 80. The site was approved for a neighborhood shopping center with apartments as a secondary residential use, but development has not yet occurred and the site is still vacant. Development of the site for the proposed project would require a General Plan Amendment and Rezone to allow the multi-family use.

**Air Quality.** Under this alternative, air quality health impacts from highway vehicle emissions would be minimal because of the site's distance from the Interstate 80. Air quality health impacts would be expected to be less than the proposed project. Because of the nearby agricultural land, there would be potential impacts from dust and agricultural operations.

**Noise.** Under this alternative, noise impacts from the highway be minimal because of the site's distance from Interstate 80. Highway noise impacts would be less than under the proposed project. There would still be the potential for construction-related noise impacts and a potential nuisance from agricultural operations.

**Consistency with Project Objectives.** The Off-Site Project Alternative would potentially be able to meet the Project Objectives for affordable housing and efficient use of City funds. Development of the site would require a General Plan Amendment and Rezone to allow a residential project. The financial costs would need to be determined.

## 5.6 ENVIRONMENTALLY SUPERIOR ALTERNATIVE

An EIR is required to identify the environmentally superior alternative from among the range of reasonable alternatives that are evaluated. Section 15126(d)(2) of the CEQA Guidelines states that "if the environmentally superior alternative is the 'no project' alternative, the EIR shall also identify an environmentally superior alternative among the other alternatives." Designating a superior alternative depends in large part on what environmental effects one considers most important. The determination of which impacts are more important is left to the reader and to the decision-makers. It should be noted that the environmental considerations are one portion of the factors that must be considered by the public and the decision-makers in deliberations on the proposed project and the alternatives. Other factors of importance include urban design, economics, social factors, and fiscal considerations, in accordance with CEQA Guidelines.

The environmentally superior alternative would result in no impact or a less than significant impact for noise and air quality while achieving the Project Objectives. The Off-Site Project Alternative is environmentally superior because the site's distance from Interstate 80 would be expected to reduce the highway's adverse effect on noise and air quality to a less than significant. Although designated for retail use, the site is already within the City limits. It is large enough to accommodate the number of units and provides good access. Impacts related to adjacent agricultural operations could be mitigated to less than significant levels.

## SECTION 6

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### 6.0 CEQA-REQUIRED CONSIDERATIONS

#### 6.1 GROWTH-INDUCING IMPACTS

The proposed project is a new 69-unit apartment building that would potentially result in additional growth. The goal of the project is to provide for local housing needs for low and very-low-income households as determined by the City's Regional Housing Needs Allocation. The units are targeted for people who already live or work in the City of Davis, but there is the chance that some of the potential residents would move in from outside of Davis and result in additional population growth. However, the project would not result in the need for any new or expansion of facilities or infrastructure to serve the project. The project would add a relatively small number of new units and falls within the City's projected growth. It would not result in any significant growth.

#### 6.2 CUMULATIVE IMPACTS

The proposed project will result in increased vehicle trips with potential cumulative impacts on air quality and climate change. Although it would generate additional vehicle trips and contribute pollutants which the area is in non-attainment, the project does not result in a cumulatively considerable net increase. The District Air Quality Plan assumes some increase in growth and a cumulative impact from all development projects. It anticipates that all projects will mitigate their incremental emissions contribution as much as possible and is addressed in General Plan policies encouraging infill development, proximity to services, and alternative transportation modes. The Program EIR for the General Plan Update determined that mitigation measures could be implemented to reduce potential air quality impacts, but that the impacts would remain significant and unavoidable.

The project also produces greenhouse gases that contribute global warming impacts. However, information and thresholds are not yet available to determine the project's contribution or appropriate mitigation. As proposed, the project includes a number of elements that help to reduce overall carbon emissions. It is an infill site within the city with a proposed density of 20 units per gross acre that makes efficient use of the site. The location is well-served by transit and is directly adjacent to a city greenbelt/bicycle path and city streets with bike lanes. Siting of the buildings take advantage of southern exposures and roofs will allow for photovoltaics to be installed if desired. The project will comply with city requirements for energy conservation and efficiency. Therefore, the project is considered to have less than significant cumulative impacts.

### **6.3 SIGNIFICANT AND UNAVOIDABLE IMPACTS**

CEQA Section 2100(b)(2) requires that any significant effect on the environment that cannot be avoided from implementation of the proposed project must be identified. If there are significant impacts that cannot be mitigated, the City of Davis must prepare and adopt a Statement of Overriding Considerations. No significant and unavoidable impacts related to the project have been identified.

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## SECTION 7

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### 7.0 REFERENCES, EIR AUTHORS, PERSONS CONSULTED

#### 7.1 REFERENCES

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## **7.2 EIR AUTHORS/PERSONS CONSULTED**

### **Community Development Department, City of Davis**

Katherine Hess

Community Development Director

Michael Webb

Principal Planner

Eric Lee

Assistant Planner II

### **McDonough Holland & Allen**

Harriet Steiner

City Attorney

### **Sierra Research Air Pollution Research and Control**

Gary Rubenstein

Senior Partner

### **Yolo Solano Air Quality Management District**

Matt Jones

Planning Manager

### **Sacramento Metropolitan Air Quality Management District**

Tim Taylor

Land Use & Mobile Source Division Manager

### **Sacramento Area Council of Governments**

Mike McKeever

Executive Director

## **SECTION 8**

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### **8.0 APPENDICES**

- 8.1 Initial Environmental Study, August 26, 2008**
- 8.2 Davis City Council's Findings for Preparation of an EIR, November 6, 2008**
- 8.3 YSAQMD Initial Study Comments, October 3, 2008**
- 8.4 Sierra Research Peer Review and Air Quality Memo, December 19, 2008, and Attachment - Gauderman Lung Development Study, 2007**
- 8.5 Tom Cahill Air Quality Analysis, August 24, 2008**
- 8.6 Tom Cahill Additional Air Quality Memo, November 1, 2008**
- 8.7 LSA Air Quality Analysis, June 2008**
- 8.8 LSA Health Risk Assessment Clarification Memo, November 24, 2008**
- 8.9 LSA Acoustical Analysis, December 2007**
- 8.10 LSA Acoustical Analysis Clarification Memo, December 11, 2007**
- 8.11 New Harmony Project Plans**